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Predictors of Providing Informed Consent or Assent for Research Participation in Assisted Living Residents

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Abstract

Objectives—This study's goal was to identify factors associated with providing either informed consent or assent for research in individuals at high risk for cognitive impairment.

Design—Cross-sectional, baseline data were used to identify predictors of consent/assent status.

Setting—The study was conducted at 22 assisted living facilities in Maryland.

Participants—A stratified random sample of 198 assisted living residents participated.

Measurements—Residents' consent/assent status was documented as providing either informed consent, written assent or verbal assent/no objection. Potential predictors included residents' demographic characteristics, measures of physical and mental health status and neuropsychological test performance.

Results—The majority of participants provided written assent (32.8%) or verbal assent/no objection (30.3%) rather than informed consent (36.9%). While many resident characteristics correlated with consent/assent status based on bivariate analyses, few variables distinguished those who provided written assent from those in the verbal assent/no objection group. Based on multiple discriminant analysis, the best predictors of consent/assent status were Mini-Mental State Examination scores, impairments in instrumental activities of daily living and dementia diagnosis, which together classified correctly 63.6% of residents.

Conclusions—The relatively small proportion of participants who could provide informed consent highlights the importance of assessing decisional capacity for research in a high-risk population and identifying an appropriate surrogate decision maker to provide proxy consent if needed. Consensus on how to define assent is lacking, and specific measures of assent capabilities are needed to better characterize the assent capacity continuum.

Keywords

decisional capacity; dementia; research ethics

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OBJECTIVE

Since the establishment of the Nuremberg Code [1], obtaining informed consent has been a fundamental requirement for conducting human subjects research. Informed consent for research is an authorization given voluntarily by an individual who has the capacity to understand the protocol and decide whether to participate [2]. When a study requires the participation of individuals who may lack or have limited decisional capacity, such as cognitively impaired adults, federal regulations require that "additional safeguards" be included to protect their interests. However, the regulations do not delineate those added protections for cognitively impaired adults as they do for children (45 CFR 46.101). In the absence of federal guidelines, concerned groups and individuals have suggested how to provide adequate protection for cognitively impaired research participants [3–7]. These recommendations commonly suggest assessing the individual's decisional capacity, obtaining informed consent from those capable of providing it, identifying an appropriate surrogate decision-maker to provide informed consent for those who lack capacity or may lose it during the study, and obtaining the potential subject's assent to participate. Respect for persons is the ethical foundation for seeking informed consent or assent from potential research participants [8].

A large body of research has addressed the issue of decisional capacity in adults [9–11], including the abilities required to give informed consent for treatment and research, methods for assessing decisional capacity and the development of assessment instruments. The general consensus is that decisional capacity requires the ability to: (1) understand relevant information, (2) appreciate the nature of the situation and its consequences, (3) reason by manipulating information, and (4) express a choice [12]. Decisional capacity is a dimensional concept, but for practical and policy purposes cut-points must be placed on the continuum to identify those who lack the requisite abilities to perform specific tasks [2]. The threshold is often based on a tradeoff between respect for persons and beneficence. As either the potential risks or benefits of an intervention increase, the abilities required to accept or reject the intervention should be increased [2]. Thus, the determination of decisional capacity requires an analysis of an individual's cognitive abilities and the study's likely harms and potential benefits.

Much less attention has been given to the issue of assent in adults who lack capacity to provide informed consent. Assent in the cognitively impaired has been defined in different ways by different groups [7, 13, 14]. For example, the National Commission [13] defined assent as "an authorization by a person whose capacity to understand and judge is somewhat impaired by illness or institutionalization, but who remains functional." The definition of assent in the Common Rule for children (i.e., "affirmative agreement to participate in research") is often applied to research with adults who lack decisional capacity [3, 15]. While there is no current consensus on the standards for assessing assent in adults with impaired decisional capacity [5, 16], recommendations commonly require some level of understanding and some ability to choose and express a choice. For example, the National Commission [13] suggested that standards for assent to research require subjects to: (1) know what procedures will be performed, (2) choose freely to undergo those procedures, (3) communicate their choice unambiguously, and (4) be aware that they may withdraw from participation. The Commission [13] also recommended that, for those who lack capacity to assent, the absence of objection is sufficient for participation in research that is relevant to the subject's condition and poses no more than minimal risk. Seeking assent serves to maximize the individual's involvement in the consent process, but little is known on how those who can provide informed consent differ from those who lack consent capacity but can provide assent and what distinguishes individuals who have assent capacity from those who have crossed a critical threshold beyond which assent cannot be provided.

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A growing segment of elders at high risk for cognitive impairment resides in assisted living (AL) facilities [17]. Nationwide, approximately one million older adults live in AL [18], and this number will increase as the population over age 75 grows in the next 25 years [19]. From one-third to three-fourths of this population has dementia or cognitive impairment [17, 20–22], one-third have behavioral symptoms [23] and one-fourth have non-cognitive psychiatric disorders (e.g., depression) [24]. Dementia often goes unrecognized and untreated in these facilities [25]. In light of this high morbidity, AL residents have become the focus of epidemiologic surveys, health services studies and clinical trials. However, the high rate of cognitive disorder raises concerns about obtaining informed consent and assent in this setting, particularly because many of these individuals do not have an identified surrogate decision maker [21].

This study used data from the Maryland Assisted Living (MD-AL) Study to identify predictors of providing informed consent or assent for study participation. The factors examined include participants' demographic characteristics, indicators of physical and mental health status and performance on a battery of neuropsychological tests. We hypothesized that those without dementia and those with less functional and cognitive impairment would be more likely to provide informed consent than assent. Findings from this study provide a broad picture of similarities and differences between individuals who have capacity to give informed consent for research and those who can provide assent, either in writing or verbally.

METHODS

The MD-AL study was conducted to estimate the prevalence of dementia and other psychiatric disorders in residents of AL facilities. The institutional review board at the Johns Hopkins School of Medicine reviewed and approved all study procedures. Outcomes of the informed consent process (i.e., whether participants gave informed consent or assent) for the MD-AL study were used for secondary data analysis to identify predictors of participants' consent/assent status.

Sample Selection and Informed Consent Procedures

The methods used to conduct the MD-AL study have been described in detail elsewhere [20]. In brief, the MD-AL study ascertained a random sample of residents from 22 central Maryland AL facilities, stratified by facility size. Of those approached, 74% of residents agreed to participate or their surrogate decision-maker agreed on their behalf.

Informed consent was obtained from each resident or, if appropriate, from a legal representative, using the Maryland Health Care Decisions Act (1993) as a guide. Two clinical investigators, experienced in assessing decisional capacity, conducted the consent procedures. One was a faculty level nurse (CS) with a masters degree and extensive experience in evaluation and treatment of dementia, and the other was a neuropsychiatrist (AR) who directs a neuropsychiatry and memory clinic. In every case, a three-step process was used to assess decisional capacity and obtain informed consent. First, one of the investigators asked the facility administrator whether the resident was routinely making his or her own medical and financial decisions. Second, the investigator contacted the family member or legal representative who routinely represented the resident's interests in interactions with the facility. If the resident already had a dementia diagnosis, many family members volunteered this information when approached to discuss consent. Third, the investigator interviewed the resident. Whenever possible, the interview and consent process was conducted with a family member and a facility representative present.

When meeting with the resident, the investigator described the purpose and procedures of the study, explained that the resident could withdraw at any time from the procedures, and used unstructured questions to assess the resident's decisional capacity, including the ability to

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understand, appreciate, reason and express a choice. To cite some examples of the assessment process, if the resident was handling all of her own medical and financial decisions and, on interview, clearly understood the rationale, procedures, risks and benefits of the study and asked pertinent questions, she was judged to have capacity to give informed consent. If routine decisions about health and finances were being handled by a relative with power of attorney and, on interview, the resident could not appreciate the consequences of research participation and retain new information long enough to discuss the study, she was judged to lack consent capacity. For residents incapable of consenting, informed consent was obtained from their legal representative. If a resident, who was unable to provide informed consent, understood that he would be asked a few hours of questions, would be examined by a physician and called back later to see how he was doing, he was judged to have assent capacity. Those able to co-sign the consent form were identified as providing written assent. Residents with severe impairments and unable to provide assent were included as participants if they expressed no objection to study procedures. In each case, the investigator documented whether the resident had provided informed consent, written assent or was too impaired to sign the consent form but provided verbal assent or expressed no objections. The rates of assigning residents to each consent/assent category did not differ significantly between the two investigators (X^2=0.592, df=2, p=.744).

Data Collection

After informed consent was obtained, a clinical evaluation and detailed history was obtained from the resident, a family informant and facility staff. The resident's AL chart was reviewed to abstract information on all diagnoses and treatments. A geriatric psychiatrist conducted a general mental status examination, a neurological examination and examined the resident using the structured clinical interview from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (SCID) [26]. A series of 19 standardized measures of cognition, psychopathology, physical health and function were administered to the resident or other informants. Thirteen of those measures specific to the resident's condition were analyzed for this report: the Neuropsychiatric Inventory (NPI), Cornell Scale for Depression in Dementia (CSDD), General Medical Health Rating (GMHR), Psychogeriatric Dependency Rating Scale (PGDRS)—Physical Subscale, Instrumental activities of daily living (IADL), Mini-Mental State Examination (MMSE), Word-List Generation Test, Hopkins Verbal Learning Test—Revised (HVLT-R), Narrative Sub-Test of the Rivermead Behavioral Memory Battery (RBMB), Development Test of Visual-Motor Integration (VMI), Bakker-Brandt Naming Test (BBNT), Brief Test of Attention (BTA), and the Trails Making Test Parts A and B. (See Rosenblatt et al. [20] for a description of and reference for each measure.) Residents with MMSE scores ≤ 10 were not administered most of the other neuropsychological tests.

Results of all examinations, interviews, record reviews and tests were combined for review by a multi-disciplinary panel of clinicians, who were blind to the opinion of the assessing psychiatrist. The panel formed a consensus opinion on each participant regarding the presence of any psychiatric disorder based on DSM-IV-TR criteria [27] or dementia using standard clinical criteria for Alzheimer disease [28], vascular dementia [29], Lewy body dementia [30] and dementia due to frontotemporal degeneration [31].

As reported elsewhere [20], 198 residents participated in the MD-AL study. Most participants were female (79%), white (83%) and widowed (70%). Their mean age was 85.7 (SD=8.25) and mean education was 13.6 (SD=3.09). A total of 134 residents had dementia, 11 had cognitive disorder not otherwise specified, and two had borderline intellectual functioning, for a total of 74% of participants with clinically significant cognitive dysfunction. Fifty-two (26.3%) residents had a current non-cognitive psychiatric diagnosis, with the most common

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being mood (n=37), anxiety (n=26) and psychotic (n=24) disorders. Overall, 80% of participants had either dementia or an active psychiatric diagnosis, with 14% having both.

Data Analysis

Univariate analyses (i.e., percentages, means and standard deviations) were used to describe study participants based on their consent/assent status, demographic characteristics, measures of physical and mental health status and performance on neuropsychological tests. To determine the correlates of residents' consent/assent status, bivariate relationships were examined using either chi-square analysis or ANOVA with Bonferroni tests used for post hoc multiple comparisons among the three consent/assent groups for each analysis. Stepwise multiple discriminant analysis (MDA), based on an F-to-enter test for individual variables, was then used to determine which factors best discriminate among those who provided informed consent, written assent or verbal assent/no objection. For the classification component of the MDA analysis, overall means of predictor variables were used to replace missing data. The data were analyzed using SPSS 13.0 for Windows [32]. To reduce the chance of a Type I error, p-values <.01 were considered statistically significant for all analyses.

RESULTS

Of the 198 MD-AL study participants, 73 (36.9%) provided informed consent, 65 (32.8%) provided assent documented by co-signing the consent form and 60 (30.3%) provided verbal assent or expressed no objection. Based on clinical evaluations, four residents (2.0%) had limited or no ability to speak, and nine others (4.6%) had speaking difficulties described with terms such as "garbled at times," "frequently disorganized" or "sometimes doesn't make sense." Based on bivariate analyses (not shown), none of the residents' demographic characteristics (sex, race, age, education) were predictive of their consent/assent status (p-values ranged from p=.078 to p=.310). Table 1 shows that measures of function, mental health status and most neuropsychological tests were significantly associated with residents' consent/assent status. Consent/assent status was not correlated (at p<.01) with General Medical Health Rating (GMHR) scores, symptoms of depression (CSDD) or the auditory multiple choice component of the BBNT.

Post hoc multiple comparison tests showed that most of the significant measures in Table 1 did not distinguish between the two assent groups. However, all three consent/assent groups were significantly different from one another based on five measures: IADLs, MMSE scores, the VMI test and the two visual measures of the BBNT. Since three of these five measures are particularly dependent on vision, we examined the bivariate relationship between residents' consent/assent status and the PGDRS item that documented any vision impairments, with the four response categories for that item dichotomized (i.e., full vision or slight vision problem versus severe vision problem or blind). This analysis showed that visual impairment was not significantly associated with consent/assent status (X^2=3.444, df=2, p=.179).

Data were missing for some residents on each neuropsychological test. While MMSE scores were missing for only two residents (1%), those with missing data on the other neuropsychological tests ranged from 16% (Wordlist Generation test and BBNT) to 34% (Trails Making Test Part B). A series of bivariate analyses (not shown) were conducted to compare the consent/assent status of those with and without missing data on each neuropsychological test. Residents with missing neuropsychological test data were significantly more likely to have provided verbal assent/no objection (58.2% to 73.7%) than those without missing data (15.3% to 22.3%) (chi-square values ranged from X^2=31.898, df=2, p<.001 to X^2=51.237, df=2, p<.001).

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The statistically significant variables (at p<.01) shown in Table 1 were included in the stepwise MDA to identify the best linear combination of variables able to discriminate between the three consent/assent groups. Table 2 shows that three variables entered the model: MMSE scores, IADL impairments and dementia diagnosis. Since the dependent variable had three groups, two functions were calculated (i.e., number of dependent groups minus 1). Also shown in Table 2 are the standardized discriminant function coefficients, which indicate the relative importance of these three independent variables in predicting residents' consent/assent status, and a structure matrix, which shows the correlations between the three significant variables and each discriminant function. Function 1 accounted for most (95.2%) of the variance in the dependent variable and was correlated with lower MMSE scores, higher IADL scores and having a dementia diagnosis, all of which reflect greater cognitive impairment. Function 2, which is orthogonal to Function 1, accounted for a small, but significant, portion of the total variance (4.8%). It correlated most with higher MMSE scores, was associated less with having a dementia diagnosis and had essentially no relationship to IADL impairments. The final equation using these three significant variables accurately classified 74.0% of residents who provided informed consent, 33.8% of those who provided written assent, and 83.3% of those who provided verbal assent/no objection. Overall, 63.6% of participants were classified correctly according to their consent/assent status.

DISCUSSION

This study documents that residents of assisted living facilities who participated in the MD-AL study were more likely to provide either written assent or verbal assent/no objection (63%) than informed consent at enrollment. More than two-thirds of these residents had dementia, and few of them (16%) provided informed consent, with slightly more providing verbal assent/no objection than written assent. These findings illustrate the need to assess decisional capacity of all potential research participants who are members of a population at high risk for cognitive impairment. They also emphasize the importance of identifying an appropriate surrogate decision maker to participate in the consent process for research focused on dementia or psychiatric disorders and to provide proxy informed consent if needed.

While many resident characteristics included in our bivariate analyses were associated significantly with consent/assent status, three factors—MMSE scores, IADL impairments and having dementia—were the best predictors of whether these AL residents provided informed consent, written assent or verbal assent/no objection. Others have reported significant relationships between indicators of decisional capacity and either MMSE scores [9, 33, 34], having dementia [34, 35] or neuropsychological test performance [36, 37]. We are not aware of any other studies that have examined distinctions between those capable of providing written assent versus those giving verbal assent or expressing no objection to research participation. However, given the sensitivity of discriminant analysis, the number of variables included as candidate predictors and the number of subjects with missing values in this sample, these findings should be regarded as exploratory.

Based on bivariate analyses, most of the neuropsychological measures distinguished residents who provided informed consent from all other participants. However, the distinction between providing written assent and verbal assent/no objection was reflected by residents' physical function (IADLs and ADLs), global cognitive function (MMSE scores) and their performance on neuropsychological tests highly dependent on visual processing (the VMI test and the visual components of the BBNT). Mean scores for each of these measures showed an ordered decline in function across the three consent/assent groups. While primary visual impairments may have influenced some test scores, poor performance could also be due to a higher order visual impairment (e.g., agnosia) or to alexia.

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The linear combination of the three significant variables in the MDA (MMSE scores, IADLs, dementia diagnosis) correctly classified almost two-thirds of the participants according to their consent/assent status, with greater accuracy for the informed consent and verbal assent/no objection groups than for those in the middle group who provided written assent. This suggests that, other than this very concrete indicator of cognitive function (i.e., the ability to sign the consent form), more specific measures of an individual's assent capabilities are needed to better characterize the assent capacity continuum. In some cases, for example, the assenting resident may have not provided a signature due to a physical disability.

The limitations of the MD-AL study should be noted. First, since the MD-AL study included only AL residents, the findings may not be generalizable to other populations at risk for cognitive impairments (e.g., elders living independently in the community, nursing home residents). Second, the MD-AL study was not designed to systematically examine the informed consent process, although the consent procedures followed recommendations of the Alzheimer's Association [3] and mirror those of most dementia studies. For each subject, the investigator's determination of decisional capacity was based on the clinician's judgment using unstructured questions. Data were not recorded on the specific content of their interviews or the decisional abilities judged to be lacking in those unable to provide informed consent, and inter-rater reliability was not assessed. However, the strong and consistent relationships found between residents' consent/assent status and the objective measures of their cognitive function support the validity of the investigators' capacity judgments. Third, since multiple bivariate analyses were conducted using an alpha level of $p<.01$, the chance of a Type I error is 0.24 (1-.99^27). Finally, neuropsychological test data were missing for the most severely impaired participants. Using mean imputation for missing data may have biased the results of the classification phase (e.g., percent total correct) of the MDA.

While considerable progress has been made in establishing criteria and methods for assessing capacity to give informed consent, less attention has been paid to criteria for assessing assent capacity. However, before consensus can be reached on how to assess assent capacity, researchers must agree on how to define assent in cognitively impaired adults. For example, Karlawish suggests that simply saying "yes" or "no" may be insufficient evidence of an individual's ability to assent or dissent [16]. We suggest that some degree of comprehension is necessary to provide assent and that research is needed to define the minimum necessary capacity. In addition, the capacity to assent depends on the potential risks and benefits of the research and should be assessed using a standardized method. For individuals who lack assent capacity, we agree with the Commission's recommendation that it is acceptable to include those who express no objection in research posing no more than minimal risk that is relevant to their condition. In seeking assent, investigators should explicitly ask potential participants if they are willing to join the study and, for those who agree to participate, explain why the surrogate's consent is required [38]. These methods will help to ensure that the remaining autonomy of those with diminished decisional capacity is respected.

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Table 1

Bivariate Relationships Between Residents' Consent / Assent Status and Other Characteristics (n=198)

Resident Characteristics*	Totals	Consent / Assent Status: Informed Consent	Written Assent	Verbal Assent / No Objection	Statistics
Physical Health & Function	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
GMHR (n=198)	2.75 (0.78)	2.84 (0.82)	2.71 (0.70)	2.70 (0.83)	F = 0.650, df=2, p=.523
IADLs (n=198)	26.4 (3.46)	23.7 (3.47) [a]	27.1 (2.52) [b]	29.0 (1.58) [c]	F = 64.769, df=2, p<.001
PGDRS (n=196)	12.3 (8.47)	8.6 (6.55) [a]	11.7 (7.55) [a]	17.6 (8.86) [b]	F = 23.503, df=2, p<.001
Mental Health	%	%	%	%	
Dementia					
Yes (n=134)	67.7	15.7	41.0	43.3	X^2 = 82.10, df=2, p<.001
No (n=64)	32.3	81.3	15.6	3.1	
Non-Cognitive Psychiatric Disorder					
Yes (n=52)	26.3	55.8	26.9	17.3	X^2 = 11.51, df=2, p=.003
No (n=146)	73.7	30.1	34.9	34.9	
CSDD (n=195)	5.2 (4.53)	5.2 (5.04)	5.6 (4.26)	4.9 (4.17)	F = 0.373, df=2, p=.689
NPI (n=197)	11.5 (14.22)	7.48 (11.51) [a]	12.5 (12.74) [a,b]	15.4 (17.40) [b]	F = 5.564, df=2, p=.004
Neuropsychological Tests					
MMSE (n=196)	18.2 (8.77)	25.1 (4.53) [a]	17.4 (7.23) [b]	10.8 (7.77) [c]	F = 77.87, df=2, p<.001
HVLT-R (n=155)					
Total Recall	13.1 (6.43)	16.3 (6.01) [a]	11.1 (5.05) [b]	9.1 (5.97) [b]	F = 22.468, df=2, p<.001
Delayed Recall	2.4 (3.05)	4.2 (3.30) [a]	0.96 (1.83) [b]	0.74 (1.65) [b]	F = 31.832, df=2, p<.001
Retention (%)	32.4 (37.17)	54.1 (37.00) [a]	16.1 (27.28) [b]	11.8 (24.73) [b]	F = 30.190, df=2, p<.001
Recog/Discrim Index	6.4 (3.61)	8.1 (2.90) [a]	5.3 (3.45) [b]	4.5 (3.71) [b]	F = 17.925, df=2, p<.001
VMI (n=161)	11.5 (3.89)	13.2 (3.45) [a]	11.1 (3.53) [b]	9.0 (3.84) [c]	F = 16.507, df=2, p<.001
BTA (n=143)	2.41 (2.37)	3.0 (2.33) [a]	2.1 (2.33) [a,b]	1.4 (2.20) [b]	F = 5.203, df=2, p=.007
Word-List (n=166)	11.8 (6.42)	15.4 (6.17) [a]	9.5 (5.42) [b]	8.2 (4.67) [b]	F = 26.718, df=2, p<.001
Trails Making Test					
Trails A (n=148)	127.8 (76.79)	102.8 (58.75) [a]	141.0 (79.32) [b]	167.0 (92.57) [b]	F = 8.426, df=2, p<.001
Trails B (n=131)	367.4 (186.06)	280.6 (148.45) [a]	420.1 (180.59) [b]	521.7 (165.90) [b]	F = 20.428, df=2, p<.001

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Resident Characteristics*	Totals	Consent / Assent Status			Statistics
		Informed Consent	Written Assent	Verbal Assent / No Objection	
Rivermead					
Immediate (n=153)	3.21 (2.68)	4.7 (2.63) [a]	2.2 (2.2) [b]	1.6 (1.49) [b]	F = 26.949, df=2, p<.001
Delayed (n=153)	1.6 (2.25)	2.8 (2.39) [a]	0.6 (1.68) [b]	0.5 (1.03) [b]	F = 25.889, df=2, p<.001
BBNT					
Auditory (n=150)	9.1 (4.89)	10.9 (4.88) [a]	8.3 (4.08) [b]	6.5 (4.77) [b]	F = 11.034, df=2, p<.001
Auditory MC (n=150)	5.6 (2.81)	5.0 (2.82) [a]	6.4 (2.69) [b]	5.5 (2.81) [a]	F = 3.372, df=2, p=.037
Visual (n=166)	16.2 (4.27)	18.2 (2.26) [a]	15.8 (4.12) [b]	12.9 (5.21) [c]	F = 24.386, df=2, p<.001
Visual MC (n=165)	2.7 (3.03)	1.4 (1.88) [a]	3.0 (2.78) [b]	4.7 (3.97) [c]	F = 16.679, df=2, p<.001

GMHR - General Medical Health Rating; IADLs - Instrumental Activities of Daily Living; PGDRS - Psychogeriatric Dependency Rating Scale; CSDD - Cornell Scale for Depression in Dementia; NPI - Neuropsychiatric Inventory; MMSE - Mini Mental State Examination; HVLT-R - Hopkins Verbal Learning Test-Revised; VMI - Developmental Test of Visual-Motor Integration; BTA - Brief Test of Attention; Word-List - Word-List Generation Test; Rivermead - Story Recall from Rivermead Behavioral Memory Battery; BBNT - Bakker-Brandt Naming Test, MC - Multiple Choice.

[a, b, c] Indicate groups significantly different based on Bonferroni post hoc multiple comparison tests.

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Table 2

Multiple Discriminant Analysis for Consent/Assent Status (n=116)

Steps Resident Characteristics Entered Model	Stepwise Statistics		Standardized Canonical Discriminant Function Coefficients		Structure Matrix	
	Wilks' Lambda	Exact F (df1, df2), p-value	Function 1 [a]	Function 2 [b]	Function 1	Function 2
1 – MMSE	598	37.959 (2, 113), p<.001	−.309	1.217	−.753	.534
2 – IADLs	.496	23.522 (4, 224), p<.001	.597	.254	.722	.009
3 – Dementia	.439	18.853 (6, 222), p<.001	.475	1.035	.708	.336

[a] Function 1 - Eigenvalue 1.155, 95.2% of Variance, Canonical Correlation .732; Wilks' $\lambda = .439$, $X^2 = 92.245$, df=6, p<.001.

[b] Function 2 - Eigenvalue .058, 4.8% of Variance, Canonical Correlation .233; Wilks' $\lambda = .945$, $X^2 = 6.277$, df=2, p=.043.

MMSE – Mini Mental State Examination

IADL – Instrumental Activities of Daily Living