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Differences in Assessment of Everyday Preferences Between People With Cognitive Impairment and Their Care Partners: The Role of Neuropsychiatric Symptoms

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Abstract

Objectives—As cognitive impairment progresses, people with dementia increasingly rely on surrogate decision-makers for everyday activities. Yet, little is known about concordance on everyday preferences between persons with cognitive impairment and their care partners.

Methods—The sample included 69 dyads of persons with cognitive impairment (Clinical Dementia Rating Scale = 0.5) and their care partners. We used the Preferences for Everyday Living Inventory (PELI) to assess preferences for activities and lifestyle choices among persons with cognitive impairment. The PELI was concurrently but separately administered to care partners, who answered as surrogate decision-makers. Factor analysis was used to ascertain factor structure of the PELI; reliability measures were computed within the sample. Paired sample *t*-tests were used to estimate differences in scores of corresponding PELI items for each factor. Multiple regression models were used to relate predictors, including neuropsychiatric symptoms, to agreement levels.

Results—Four factors were identified from the PELI: autonomous choice, social engagement, personal growth, and keeping a routine. Significant participant-care partner discrepancy was found in “social engagement” preferences (e.g., regular contact with family, meeting new people, volunteering). Geriatric Depression Scale-15 score and care partner sex were significantly associated with participant-care partner discrepancies in “social engagement” preferences.

Conclusions—This study yields new insights regarding the most important preferences for persons with cognitive impairment and clarifies a path to optimizing surrogate decision-making around everyday preferences by highlighting areas of apparent disagreement and identifying potential predictors of discrepancy.

Keywords

dementia; bioethics; surrogate-decision making

Objectives

As cognitive impairment progresses, people with cognitive impairment and dementia increasingly rely on surrogate decision-makers in all aspects of life, both through formal adjudication as well as more informal day-to-day decision-making (1). Because the median survival after a diagnosis of dementia has been found to be as high as twelve years, there is a lengthy period during which the quality of life for a person with dementia may be directly impacted by the decisions made by a surrogate, depending on what extent the surrogate is involved in decision-making (2). It is an ethical imperative in the care of people with cognitive impairment and dementia that their lives are led in a manner that is most consistent with their values and preferences. Thus, understanding the contributors to discrepancy between preferences and care partners' impressions of those preferences in surrogate decision-making is critical.

Evidence suggests that many people with cognitive impairment, even those with more advanced dementia, can still articulate their values and preferences in a reliable manner (1, 3, 4). As such, studies have explored agreement levels between people with dementia and their surrogate decision-makers (5–8). Although the evidence base is sparse, results have generally indicated that discrepancies between people with dementia and those of surrogate decision-makers are common. For example, in one study of 266 people with mild-to-moderate dementia and their family caregivers, caregivers were found to underestimate the importance of a subset of care-related values (autonomy, burden, control, family, and safety) as measured by the Values and Preferences Scale (5). Additionally, spouses were found to be less knowledgeable in predicting psychosocial preferences (e.g., social involvement, personal development, leisure) for people with dementia as cognitive impairment became more severe (8).

An important limitation of prior studies, however, has been their primary emphasis on values and preferences related to dementia care and end-of-life treatment decisions. Yet for people with cognitive impairment, a much broader range of values and preferences must be considered. Surrogate decision-makers are increasingly involved not only in determining care and treatment selections but also in making everyday decisions that directly impact quality of life; such decisions may involve choices regarding recreational, physical, and/or sexual activity (9). Thus, there is a need to characterize everyday preferences of persons with cognitive impairment and their care partners, with a view toward alignment of preferences and optimizing quality of life for this vulnerable population.

Relationship characteristics between the participant and surrogate decision-maker (e.g., length of relationship and degree of relatedness), severity of cognitive impairment, and care partner variables (e.g., intensity of care involvement) appear to affect surrogate decision-making (5, 8, 10–12). Little is known, however, regarding how the burden of neuropsychiatric symptoms (NPS) (e.g., anxiety, agitation, psychosis, depression,

disinhibition, and sleep disturbance) among persons with cognitive impairment relates to concordance of care partners' decisions regarding preferences assessment. Not only are NPS common (prevalence of NPS approaches 100% among people with dementia during the disease course), they are also associated with increased morbidity/mortality for the person with dementia, increased caregiver stress and depression, more rapid disease progression, and earlier institutionalization (13). Indeed, higher levels of caregiver stress and depression have been associated with larger discrepancies between caregivers and persons with dementia in assessments of quality of life for persons with dementia (14, 15).

This study will 1) characterize separately the everyday values and preferences of persons with cognitive impairment and their care partners, 2) validate the measurement of preferences and identify major groups or themes of preferences, 3) identify those preferences that are rated as most important by participants, and 4) assess levels of discrepancy in everyday preferences assessments between persons with cognitive impairment and their care partners acting as surrogate decision-makers. In addition, we will address cognitive impairment severity, relationship status, demographic factors and neuropsychiatric symptom burden as potential predictors of any observed discrepancies in preferences assessments between persons with cognitive impairment and their care partners.

Methods

Study Population

We enrolled 69 dyads comprising persons with cognitive impairment (Clinical Dementia Rating Scale (CDR) ≥ 0.5) and their care partners. Participants were recruited from the Massachusetts Alzheimer's Disease Research Center (MADRC) Clinical Core longitudinal cohort, which has been described previously (16, 17). At the initiation of the current study, the actively followed cohort was comprised of 536 older adults (mean age = 75.6 years) with and without cognitive impairment, with diagnoses ranging from cognitively normal to mild cognitive impairment (MCI) to dementia; all cohort participants have care partners who provide collateral information as part of MADRC procedures. In the MADRC there are no specific requirements for frequency of contact between the cohort participant and care partner. Of these MADRC cohort participants, 123 were diagnosed with dementia and 88 had MCI. All cohort participants with CDR ≥ 0.5 (i.e., persons with either MCI or physician-determined clinically meaningful cognitive impairment without meeting formal MCI criteria) who presented to the MADRC with their care partner over a 13-month period from 2017–2018 were invited to participate in the current study; those who agreed to participate were enrolled. Approximately 74% of cohort participants approached were ultimately enrolled in the study. Reasons for non-enrollment included cohort participants being too impaired to complete the study measures, not having enough time to complete the study measures, and refusing to participate.

MADRC cohort participants and their care partners complete annual evaluations that follow the Alzheimer's Disease Centers Uniform Data Set (UDS) protocol (18). Briefly, the evaluation features a standard battery of cognitive assessments (e.g., in memory, attention, executive function, fluency, etc.), ascertainment of demographic information among both cohort members and care partners, the CDR (19), behavioral and symptom measures (e.g.,

Neuropsychiatric Inventory brief Questionnaire [NPI-Q] (20) and 15-item Geriatric Depression Scale [GDS-15] (21)), functional assessment (Functional Assessment Questionnaire) and general cognitive testing (e.g., Montreal Cognitive Assessment [MoCA] (22)), as well as a medical history and neurological examination. In addition to administering the UDS battery, the MADRC includes supplemental measures of activities of daily living and additional neurocognitive testing. Participants provided written informed consent, and the Partners HealthCare Institutional Review Board reviewed and approved this study.

Preferences Assessment

Persons with cognitive impairment completed the Preferences for Everyday Living Inventory (PELI). The PELI is a validated preferences assessment tool for older adults comprising 55 items; it was initially designed to include items in five specified domains: growth activities, enlisting others in care, diversionary activities, social contact, and self-dominion (Supplementary Material, Table 1) (23). Participants were asked to rate current preferences on a 4-point Likert scale ranging from 1 (most important) to 4 (not at all important). Their care partners also completed the PELI from the perspective of the persons with cognitive impairment (i.e., as if he/she were acting as a surrogate decision-maker). PELI data from participants and care partners were collected in a cross-sectional fashion; no longitudinal data were included in the analyses. Versions of the PELI have been used previously for persons with cognitive impairment and with surrogate decision-makers articulating preferences for another person (8, 24).

Statistical Analyses

Frequencies (%) of the preferences rated as most important by persons with cognitive impairment were tabulated, along with frequencies (%) of the preferences rated as most important by care partners acting as surrogate decision-makers for the persons with cognitive impairment.

To validate the PELI in our own sample, achieve item/variable reduction, and identify empirically-determined groups of items, we conducted factor analysis with oblique Promax rotation on the 55 PELI items using the data from the persons with cognitive impairment. Specifically, as the five previously specified domains of the PELI were originally derived through concept mapping among a small subset of older adults, and those domains showed limited internal consistency (Cronbach's alpha range of 0.155 to 0.664), we used factor analysis to achieve data-driven validation and to test reliability of the scale in our own sample (23, 25). The factor analysis was performed with the preference data for the persons with cognitive impairment, as the PELI was designed to be a tool for older adults to articulate their own preferences, not necessarily for care partners of various ages articulating preferences for someone else. For an item to be included in a given factor, a factor loading cutoff of 0.4 was used. The internal consistency reliability of the items included in each factor was assessed using Cronbach's alpha.

The mean preference score for each person (participant or care partner) was computed across those PELI items assigned to each factor. Then, for each factor separately, a paired *t*-

test comparing persons with cognitive impairment and their care partners on this mean preference score was performed. Because of the scaling of the PELI, lower scores denote assignment of higher importance and higher scores denote assignment of lower importance. Thus, a positive difference between persons with cognitive impairment and care partners denotes an overestimation of the importance of a particular factor for persons with cognitive impairment by their care partners and a negative difference denotes an underestimation. To account for multiple testing, the stepdown Šidák correction of p -values was used (26).

For factors showing a significant difference, a multivariable-adjusted general linear model (GLM) was used to identify predictors of disagreement in persons with cognitive impairment vs. their care partners in the role of surrogate decision-makers. The dependent measure was the raw difference of the factor-preference scores between persons with cognitive impairment and their care partners. Model predictors were global CDR score, total NPI-Q score, GDS-15 score, care partner's relationship to the cohort participant (spouse/partner/companion, child, friend, and sibling or other relative) and years known to the participant, as well as age (years), sex, and years of education of both cohort participant and care partner. MoCA score was not included as a predictor in the model due to significant correlations with total NPI-Q and global CDR score (Pearson Correlation, degrees of freedom = 63, $r = -0.46$ and -0.56 , p -values = 0.0001). For similar issues of multi-collinearity, both global CDR scores and CDR sum-of-boxes (CDR-SB) could not be included in the same model; global CDR score was used instead of the CDR-SB because the model including global CDR score had a superior R -square value. A graphical analysis of residuals from this GLM was conducted to confirm assumptions of normality and homoscedasticity were reasonably met. All statistical analyses were performed using SAS Version 9.4 (SAS, Cary, NC, USA).

Results

Participant characteristics are shown in Tables 1 and 2. The cohort was just over half male (55%) and predominately white (88%), highly educated (71% with education ≥ 16 years), married (65%), and living in a private residence (88%). Among the persons with cognitive impairment, approximately 25% had dementia (65% with an amnesic syndrome including Alzheimer disease), 32% had MCI, and 44% fell into the ADRC program's "cognitively impaired, not MCI" category (i.e., global CDR score = 0.5 but without evidence of objective deficits on neuropsychological testing) (27); average global CDR score was 0.59; average CDR-SB was 2.6; average MoCA was 22.8 points. The majority of care partners were women (73%), white (89%), highly educated (65% with education ≥ 16 years), spouses/partners (68%), living with the cohort participant (68%) and tended to have had long relationships with the cohort participant (average of 48 years of having known the participant). If not living with the participant, all care partners had contact with the participant at least 3x/month.

Preferences ranked as most important by persons with cognitive impairment included: regular contact with family; having books, magazines, and newspapers to read; taking care of the place where you live. Preferences ranked as most important by care partners acting as surrogate decision-makers included: regular contact with family; keeping up with the news;

having books, magazines, and newspapers to read (see Table 3). Preferences ranked as least important by persons with cognitive impairment included: ordering takeout food; talking to a mental health professional if feeling sad; drinking alcohol on occasion. Preferences ranked as least important by care partners acting as surrogate decision-makers included: ordering takeout food; talking to a mental health professional if feeling sad; being a member of a club (Table 3). Detailed preferences rankings for all items are provided in Supplementary Material, Table 2.

The PELI reflects that everyday preference is a multidimensional construct. Thus, factor analysis was employed as an empirical approach to identify and label potential sub-scales embedded within the 55-item PELI. After identifying the PELI items that resided within each sub-scale, we computed the coefficient of internal consistency among those items. This analysis identified four factors, which were labeled “autonomous choice,” “social engagement,” “personal growth,” and “keeping a routine” (see Supplementary Material, Tables 3 and 4 for the items in each sub-scale). For the persons with cognitive impairment, items loading most heavily on each factor showed good reliability, with Cronbach’s alpha values all > 0.75 ; item-total correlations ranged from 0.33–0.68 (data not shown). Using the same items to define each factor for care partners acting as surrogate decision-makers, the internal consistency of items loading on each factor was somewhat lower but still good (Cronbach’s alpha values ranged from 0.53–0.87) with “autonomous choice” and “social engagement” showing better internal consistencies than “personal growth” and “keeping a routine” (Supplementary Material, Table 4).

Comparing ratings from persons with cognitive impairment and their care partners acting as surrogate decision-makers, there was significant discrepancy observed for preferences related to “social engagement” (paired *t*-test, *t*-statistic -2.62 , degrees of freedom 68, multiple testing-corrected *p*-value 0.043; mean difference -2.54 ; standard deviation 8.04) (Table 4). Thus, this negative effect estimate indicates statistically significant underestimation of the importance of “social engagement” preferences among care partners compared to persons with cognitive impairment. Multiple regression was then used to identify predictors of the discrepancy between participants’ and care partners’ preferences related to “social engagement” (model: $R^2 = 0.41$; degrees of freedom = 13). Scores on the GDS-15 for persons with cognitive impairment were associated with discrepancy in assessment of “social engagement” preferences by care partners (*B* 0.96, *t*-value 2.11, *p*-value 0.042) (Table 5). Further, male care partners, compared to female care partners, tended to have a larger underestimation of the importance of “social engagement” preferences for persons with cognitive impairment (*B* 12.40 (difference of adjusted means for females minus males), *t*-value 3.15, *p*-value 0.003) (Table 5).

Conclusions

This study presents an in-depth characterization and novel findings regarding the everyday values and preferences of persons with cognitive impairment and their care partners acting as surrogate decision-makers. After validating factor structure of the PELI within this sample, we identified significant discrepancy in preferences related to the “social engagement” factor, but not the other factors (“autonomous choice,” “personal growth,” or

“keeping a routine”). Specifically, care partners tended to underestimate preferences related to “social engagement” – which includes spending time with family/friends, participating in groups, meeting new people and volunteering – relative to persons with cognitive impairment.

It was notable that participant-care partner discrepancy was noted only in the “social engagement” factor. One speculative possibility is that “social engagement” may be more susceptible to such discrepancy because these preferences are more mutable for people at earlier stages of cognitive impairment and thus more open to misinterpretation by care partners, even in hypothetical scenarios; however, the data do not permit us to evaluate this directly. Overall, these novel findings contribute to a better understanding of the everyday experience of persons with cognitive impairment and, more importantly, specific preference areas where care partners may be more consistently misjudging the importance of these preferences for their loved ones with cognitive impairment.

Novel findings were also observed regarding potential predictors of discrepancy in preferences between participants and care partners. Male sex of the care partner and score on the GDS-15 were both significantly associated with discrepancies in ratings of “social engagement” preferences. Previous work examining discrepancy between participants and surrogate decision-makers similarly identified an association between surrogate characteristics and discrepancy of preferences (10, 12). Prior work, however, had not necessarily investigated preferences for the full range of everyday experiences and instead had tended to focus on decision-making related to end-of-life or advanced care needs. We observed that male care partners, compared to female care partners, tended to significantly underestimate the preferences of persons with cognitive impairment; this finding clearly warrants further exploration to uncover potential reasons for this discrepancy. Other care partner characteristics such as relationship status, years known to the participant, age, and years of education were not significantly related to discrepancy in “social engagement” preferences. Characteristics such as caregiver distress and depression have been associated with discrepancy in previous studies (14, 15), but these were not specifically explored in the current work.

Although severity of cognitive impairment was shown to impact surrogate decision-making in previous studies of participants with dementia (5, 8), we did not observe an association between discrepancy in “social engagement” preferences and cognitive function as measured by global CDR score. As the average cognitive impairment levels in this sample were milder compared to those that would be observed in a sample consisting entirely of persons with dementia, we may have been unable to detect the potential impact of more severe cognitive impairment on discrepancy. Alternatively, it is possible that discrepancy in preferences related to “social engagement” is not as susceptible to changes in cognitive function.

Regarding neuropsychiatric predictors of discrepancy in preferences, higher scores on the GDS-15 (i.e., more severe depression symptoms) were associated with more positive discrepancy scores (i.e., trend toward overestimation of preferences) for “social engagement” by care partners. Several cautious interpretations may be offered as explanation for this finding. For example, it is possible that increased depression symptoms

among participants may lead to anhedonia and lower rating of “social engagement” preferences – which may not necessarily be appreciated by care partners. Alternatively, participant-care partner discrepancy in “social engagement” preferences may increase the likelihood that persons with cognitive impairment are engaged in activities that are less important to them, which may then lead to more intense feelings of depression. Due to the cross-sectional nature of this analysis, temporality of the association cannot be determined.

Interestingly, total neuropsychiatric symptom burden as measured by the NPI-Q was not significantly associated with discrepancy in assessment of preferences related to “social engagement.” As the average total NPS burden among participants in this sample was mild compared to that typically observed among participants with moderate to severe dementia, however, NPS severity may not have had sufficient range to detect associations with discrepancy in preferences assessment. In addition, the NPI-Q covers a broad range of symptoms, from agitation to depression to appetite and sleep problems, which may have variable associations with “social engagement” preferences.

Strengths of the study design include a comprehensive assessment of preferences for everyday decision-making in a well-characterized sample, verification of the reliability and validity of the PELI in our own sample, and use of gold-standard cognitive and neurobehavioral measurement and assessment tools. This design allowed for a broader window into the lives of persons with cognitive impairment and a more accurate investigation into the types of decisions in which care partners may be involved on a day-to-day basis. Possible limitations are the modest sample size, cross-sectional study design, and higher education levels compared to similarly aged participants nationally, which could affect generalizability. Additionally, as the cognitive impairment of the participants in this study was relatively mild, with only 25% of the participants carrying a diagnosis of dementia, it is unlikely that the care partners were the primary decision-makers for most of the participants or that surrogate decision-making itself was an active need of the participants at the time of the study.

Overall, this study adds to the body of literature on preference discrepancy in surrogate decision-making with a focus on everyday preferences for persons with cognitive impairment in community settings. Clinically, these findings may open innovative avenues for treatment of depression in the context of cognitive impairment. For example, strategies to resolve discrepancy in preferences related to “social engagement” may offer a novel therapeutic approach to depression in the setting of cognitive impairment, and this could be explored in future work. Additionally, this work can provide a foundation for further assessment of discrepancy in everyday preferences for persons with more advanced cognitive impairment and for those living in long-term care settings.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Description of participants: demographic and clinical characteristics (n=69).

Age (mean ([Standard Deviation, S.D.]	81.2 (7.1)
Sex (female) (<i>n</i> [%])	31 (44.9%)
Education (<i>n</i> [%])	
<12 years	2 (2.9%)
12 years	5 (7.2%)
13–15 years	11 (15.9%)
16 years	17 (24.6%)
>16 years	32 (46.4%)
Unknown	2 (2.9%)
Race (<i>n</i> [%])	
White	61 (88.4%)
Black or African American	5 (7.3%)
Asian	2 (2.9%)
American Indian or Alaska Native	1 (1.4%)
Ethnicity (<i>n</i> [%])	
Hispanic or Latino	2 (2.9%)
Not Hispanic or Latino	67 (97.1%)
Marital Status (<i>n</i> [%])	
Married	45 (65.2%)
Widowed	13 (18.8%)
Divorced	4 (5.8%)
Separated	1 (1.4%)
Never Married	1 (1.4%)
Domestic Partner	5 (7.3%)
Residence (<i>n</i> [%])	
Private residence	61 (88.4%)
Retirement Community	4 (5.8%)
Assisted Living Facility	3 (4.4%)
Skilled Nursing Facility	1 (1.4%)
Dementia [<i>n</i> (%)]	17 (24.6%)
Amnestic (including Alzheimer's disease)	11 (64.7%)
Lewy Body	4 (23.5%)
Non-amnestic	2 (11.8%)
Mild Cognitive Impairment (MCI) [<i>n</i> (%)]	22 (31.9%)
Amnestic	17 (77.2%)
Non-amnestic	5 (22.7%)
Cognitively impaired, not MCI [<i>n</i> (%)]	30 (43.5%)

Global Clinical Dementia Rating (CDR) Score (mean ([S.D.]	0.59 (0.29)
CDR Sum of Boxes (mean ([S.D.]	2.6 (2.1)
Neuropsychiatric Inventory brief Questionnaire (NPI-Q) Score (mean ([S.D.]	3.3 (3.7)
Montreal Cognitive Assessment (MoCA) Score (mean ([S.D.]	22.8 (5.1) ^a
Geriatric Depression Scale, 15-item (GDS-15) Score (mean ([S.D.]	2.3 (3.0) ^b

Note. All scores based on $n = 69$, unless otherwise noted. Percentages might not add up to 100% due to rounding.

^a
 $n = 65$.

^b
 $n = 60$.

Table 2.

Description of care partners: demographic characteristics (n=69).

Age (mean ([Standard Deviation, S.D.]) ^a	73.1 (12.6)
Sex (female) (n [%])	50 (72.5%)
Education (n [%])	
<12 years	1 (1.4%)
12 years	8 (11.6%)
13–15 years	7 (10.1%)
16 years	23 (33.3%)
>16 years	22 (31.9%)
Unknown	8 (11.6%)
Race (n [%]) ^b	
White	59 (89.4%)
Black or African American	5 (7.6%)
Asian	2 (3.0%)
Ethnicity (n [%]) ^b	
Hispanic or Latino	0 (0%)
Not Hispanic or Latino	66 (100%)
Relationship to participant (n [%])	
Spouse/Partner/Companion	47 (68.1%)
Child	13 (18.8%)
Friend	4 (5.8%)
Sibling or other relative	5 (7.2%)
Years known participant (mean ([S.D.]) ^c	47.6 (16.7)
Lives with participant (yes) (n [%])	47 (68.1%)
If no, frequency of visits (n [%]) ^d	
Daily	3 (13.6%)
At least 3x/week	9 (40.9%)
Weekly	6 (27.3%)
At least 3x/month	2 (9.1%)
Monthly	2 (9.1%)
If no, frequency of telephone calls (n [%]) ^d	
Daily	9 (40.9%)
At least 3x/week	5 (22.7%)
Weekly	6 (27.3%)
At least 3x/month	2 (9.1%)

Note. All scores based on n = 69, unless otherwise noted. Percentages might not add up to 100% due to rounding.

^a
n = 67.

^b
 $n = 66.$

^c
 $n = 65.$

^d
 $n = 22.$

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Table 3.

Highest and lowest everyday preference scores ranked by assessment.

Persons with Cognitive Impairment				Care Partners Acting as Surrogate Decision-Makers			
Rank	PELI Item	Mean	S.D.	Rank	PELI Item	Mean	S.D.
1	Regular contact with family	1.28	0.62	1	Regular contact with family	1.39	0.73
2	Have books, magazines, newspapers	1.41	0.60	2	Keep up with the news	1.54	0.76
3	Take care of the place you live	1.44	0.68	3	Have books, magazines, newspapers	1.57	0.87
4	Go outside to get fresh air when the weather is good	1.48	0.78	4	Learn about topics that interest you	1.63	0.71
5	Keep up with the news	1.49	0.66	5	Do what helps you feel better when you are upset	1.65	0.69
51	Eat at restaurants	2.71	0.86	51	Be involved in cooking	2.67	1.13
52	Be a member of a club	2.76	0.99	52	Drink alcohol on occasion	2.80	1.13
53	Drink alcohol on occasion	2.82	1.05	53	Be a member of a club	2.80	1.08
54	Talking to a mental health professional if feeling sad	2.87	0.98	54	Talking to a mental health professional if feeling sad	2.84	0.93
55	Ordering takeout food	3.15	0.83	55	Ordering takeout food	3.15	0.76

Abbreviations: PELI = Preferences for Everyday Living Inventory; S.D. = Standard Deviation.

Note. PELI items are ranked on a 4-point Likert scale with 1=very important, 2=somewhat important, 3=not very important, and 4=not at all important.

Table 4.

Mean differences (standard deviation, S.D.) in preference scores between persons with cognitive impairment and their care partners acting as surrogate decision-makers for each Preferences for Everyday Living Inventory (PELI) preferences factor.*

Factor	Mean Difference (S.D.)	<i>t</i> -statistic	Raw <i>p</i> -value ^a	Corrected <i>p</i> -value ^b
1; "autonomous choice"	1.00 (7.91)	1.05	0.30	0.43
2; "social engagement"	-2.54 (8.04)	-2.62	0.011	0.043
3; "personal growth"	-0.97 (6.91)	-1.17	0.25	0.43
4; "keeping a routine"	0.67 (3.90)	1.42	0.16	0.41

* Preference score is based on the corresponding PELI items contributing to each factor.

^a Comparisons were made with the paired sample *t*-test. Degrees of freedom = 68.

^b *p*-values corrected using the stepdown Šidák correction.

Table 5.

Multiple regression of key predictors to the difference between persons with cognitive impairment and their care partners acting as surrogate decision-makers in “social engagement” preference scores (n=51; degrees of freedom = 13).*

Predictor	B ^a	Adjusted mean ^b	Standard Error	t-value	p-value
Participant Age (years)	-0.51		0.32	-1.62	0.11
Participant Education (years)	-0.92		0.48	-1.93	0.061
Care Partner Age (years)	0.58		0.29	1.97	0.057
Care Partner Education (years)	0.29		0.44	0.67	0.51
Care Partner Years Known Participant (years)	0.030		0.11	0.28	0.78
Global Clinical Dementia Rating (CDR) Score (points)	5.21		4.55	1.15	0.26
Neuropsychiatric Inventory brief Questionnaire (NPI-Q) Score (points)	-0.65		0.32	-2.00	0.053
Geriatric Depression Scale, 15-item (GDS-15) Score (points)	0.96		0.46	2.11	0.042
Relationship to Participant					0.095 ^c
Spouse/Partner/Companion	0 [Reference]	-6.98	--	--	
Child	12.39	5.42	9.12	1.36	
Friend	-6.13	-13.11	6.27	-0.98	
Sibling or other relative	-5.39	-12.36	5.90	-0.91	
Participant Sex					0.38
Male	0 [Reference]	-8.55	--	--	
Female	3.58	-4.97	4.04	0.89	
Care Partner Sex					0.003
Male	0 [Reference]	-12.96	--	--	
Female	12.40	-0.56	3.94	3.15	

*“Social engagement” preference score is based on the 15 Preferences for Everyday Living Inventory (PELI) items contributing to that factor.

^aB is the unstandardized regression coefficient from the model.

^bAdjusted means of the raw difference in preference scores related to “social engagement” between persons with cognitive impairment and their care partners acting as surrogate decision-makers.

^cNo individual comparison between variables showed a significant difference (p -value = 0.05) using a Tukey-Kramer adjustment for multiple comparisons (data not shown).