Measuring hope among families impacted by cognitive impairment

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Abstract

The current exploratory investigation aims to establish the reliability and validity of a hope measure, the Herth Hope Index (HHI), among families impacted by early cognitive impairment (N=96). Exploratory factor analysis was used to examine the dimensionality of the measure. Bivariate analyses were used to examine construct validity. The sample had moderately high hope scores. A two-factor structure emerged from the factor analysis, explaining 51.44% of the variance. Both factors exhibited strong internal consistency (Cronbach's alphas ranged from .83 to .86). Satisfaction with social support was positively associated with hope, supporting convergent validity. Neurocognitive status, illness insight and depression were not associated with hope, indicating discriminant validity. Families impacted by cognitive impairment may maintain hope in the face of a potentially progressive illness, regardless of cognitive status. The HHI can be utilized as a reliable and valid measure of hope by practitioners providing support to families impacted by cognitive impairment.

Keywords

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Hope has been explored as an important construct related to coping and adaptation at times of great loss, uncertainty or suffering (Folkman, 2010; Herth, 2000). Understanding what factors may cause difficulties in coping with a diagnosis of mild cognitive impairment (MCI) or early stage dementia can be beneficial for care providers and the development of effective supports for affected individuals and their care partners (CPs). While hope has been explored across several disease processes (Herth, 1992, 1993; Lynch, Kroencke, & Denney, 2001; Peleg, Barak, Harel, Rochberg, & Hoofien, 2009), there is less understanding of its meaning among individuals with cognitive impairment with no studies to date assessing quantitative measures of hope among families impacted by cognitive impairment.

Previous work has posited that hope is a coping skill from which therapeutic value can be derived. Dufault and Martocchio (1985) proposed a theoretical model for hope based on interviews with older adults. The model distinguishes between the constructs of global hope and time-specific hope, both of which are multidimensional with affective, cognitive, behavioral, temporal, and contextual domains. Several scales have been developed in attempts to measure this proposed framework (Herth, 1992; Snyder et al., 1991). In particular, the Herth Hope Scale (Herth, 1991) was developed with the intent to measure constructs, such as globalized hope, hope without reliance on interpersonal relationships, relationship engagement and altruism as instilling hope and hope as a means to control emotional and behavioral responses to difficult events or experiences. An abbreviated, 12-item scale was later developed to address the need for a brief, psychometrically validated tool for use in clinical settings (Herth, 1992).

The psychometric properties of the abbreviated scale, the Herth Hope Index (HHI), have been investigated in several studies. Initial work reported a three-factor structure that explained 41% of the total variance in the measure (Herth, 1992). Three different studies using translated versions of the HHI found two-factor structures (Benzein & Berg, 2003; van Gestel-Timmermans, van den Bogaard, Brouwers, Herth, & van Nieuwenhuizen, 2010; Wahl et al., 2004), although item loading varied across studies. One study reported a one-factor structure for young adults and youth diagnosed with cancer (Phillips-Salimi, Haase, Kintner, Monahan, & Azzouz, 2007). Another study of Hispanic primary care patients established construct validity for the HHI using external measures of depression and stress (Katerndahl, Amodei, Larme, & Palmer, 2002).

While the psychometric properties of the HHI have been established in different populations, these properties have not been explored in families impacted by cognitive impairment. The validity of a measure is dependent on the population and must be reestablished when the scale is used in a new population (Streiner & Norman, 1995). Therefore, the current exploratory investigation aims to establish the reliability and validity of the HHI in a sample of family members impacted by cognitive impairment. Because the HHI structure varied across prior studies of various populations (Herth, 1992; Benzein & Berg, 2003; van Gestel-Timmermans et al., 2010; Wahl et al., 2004; Phillips-Salimi, et al., 2007), we did not have an *a priori* expectation of the number of dimensions that were appropriate for measuring hope in our population. Therefore, we utilized exploratory factor analytic methods to examine the factor structure of the HHI. We also explored construct validity by correlating HHI scores with scores from the Mini Mental State Exam (MMSE; Folstein, Folstein, & McHugh,

1975), Clinical Insight Rating Scale (CIR; Ott & Fogel, 1992), and the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960). Additionally, we examined the relationship between hope and social support using an item extracted from a longer social support measure developed for use with older adults (Krause & Markides, 1990). The following hypotheses were tested:

- Hypothesis 1: The HHI will be weakly correlated with the MMSE. These instruments measure two different constructs; therefore, the association should be minimal (Wolverson, Clarke, & Moniz-Cook, 2010).

- Hypothesis 2: The HHI will be negatively correlated with the HRSD. Prior studies reported an association between higher levels of hope and lower levels of depression (Elliott, Witty, Herrick, & Hoffman, 1991; Gum, Snyder, & Duncan, 2006).

- Hypothesis 3: The HHI will be weakly correlated with the CIR. Given previous findings regarding this relationship (Hasson-Ohayon, Kravetz, Meir, & Rozencwaig, 2009), we anticipate a minimal association.

- Hypothesis 4: The HHI will be associated with satisfaction with social support. Previous studies have reported a relationship between social support and hope in other populations (Crothers, Tomter, & Garske, 2005; Dufault & Martocchio, 1985) as well as individuals impacted by dementia (Wolverson et al., 2010); therefore, the association should be in the same direction (positive association).

Method

The current investigation is a secondary analysis of data obtained from 96 members enrolled in the University of Pittsburgh Alzheimer Disease Research Center (ADRC). Requirements for ADRC enrollment can be found elsewhere (Lopez et al., 2000). The primary aim of the parent study was to evaluate a new measurement tool for assessing research participation burden, and was approved by the University of Pittsburgh Institutional Review Board. ADRC registrants eligible for the parent study were referred by the ADRC study recruitment coordinator for participation. ADRC registrants who were eligible for the study were referred by the ADRC study recruitment coordinator for participation. The primary gain from using a sample pulled from the ADRC is that participants have a very specified and accurate diagnosis established through comprehensive evaluation of cognitive symptoms employing current guidelines for dementia (McKhann et al., 2011) and MCI (Albert et al., 2011). Eligibility criteria for study participants included: 1) an ADRC diagnosis of MCI, or early dementia (any type); 2) a Mini Mental State Exam score of 16 or greater; and 3) community-dwelling within a 50-mile radius of the University of Pittsburgh.

Participants

The sample was comprised of 45 individuals with cognitive impairment (IWCI) and 51 care partners (CP), yielding a total sample of 96 study participants. The HHI was completed face-to-face with participants as a part of a larger interview battery conducted by trained

interviewers, along with questions regarding social support. IWCIs and CPs completed independent interview batteries in their home or at the ADRC, and were each compensated for their participation in the parent study. All participants provided informed consent prior to any data collection for the parent study. The Clinical Insight Rating Scale (CIR; Ott & Fogel, 1992) was completed by a clinician, based on the same clinician's medical evaluation of the patient, typically on the same day or within a year following the patient's evaluation. Demographics of the study participants and scoring on the Mini Mental State Exam (MMSE; Folstein et al., 1975) and the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960) were collected from ADRC evaluation records. Chart review data were collected that corresponded most closely in date with when the study battery was administered. Interviews were often held the same day as the ADRC evaluation, or within a year of the patient's evaluation.

Procedure

Measures

Hope: The HHI is a 12-item scale measuring generalized hope. In a previous study, it was reported that the HHI is a multidimensional instrument represented by the domains of 1) temporality and future; 2) positive readiness and expectancy; and 3) interconnectedness (N=172; Herth, 1992). Each item is measured on a four-point scale ranging from strongly disagree (1) to strongly agree (4). Summed scores can range from 12 to 48, with higher scores indicating greater hope.

Neurocognitive status: The MMSE was used to assess neurocognitive functioning for IWCIs and tests memory, orientation, language, recall and attention (Folstein et al., 1975). Scoring ranges from 0 to 30 with higher scores indicative of less cognitive impairment.

Depression: The HRSD (Hamilton, 1960) is a clinician-rated, 17-item scale that assesses the presence and severity of depressive symptoms for IWCIs, including depressed mood, agitation, insomnia, and weight loss (Williams, 1988). Eight items are scored on a 5-point scale ranging from not present (0) to severe (4), while nine items are scored from absent (0) to frequent (2).

Illness Insight: The clinician-rated CIR measures awareness of dementia by scoring IWCIs on a scale of 0 to 2 on their awareness of: 1) the reason for their ADRC visit; 2) cognitive deficits; 3) functional deficits; and 4) disease progression (Ott & Fogel, 1992). Ratings for each domain are based on the IWCI's medical and neurological assessment as well as the care partner interview. A higher score indicates greater impairment and scores may range from 0 to 8.

Satisfaction with social support: One item was used to measure satisfaction with social support for both IWCIs and CPs, independently, with the question: "Overall, how satisfied have you been in the last month with the help you have received from friends, neighbors, or family members?" This item was extracted from a longer social support measure developed for use with older adults (Krause & Markides, 1990). The satisfaction item uses a 4-point scale ranging from not at all (0) to very (3).

Factor Analysis

Exploratory factor analysis (EFA) was utilized to examine the dimensionality of the HHI. The subjects-to-items ratio for an adequate EFA sample size should not be less than five (Bryant & Yarnold, 1995; Hatcher, 1994). With 12 items and 96 subjects in the current analysis, the subjects-to-items ratio was 8, which was sufficient to perform the EFA.

EFA was chosen over principal components analysis (PCA) because it can separate the shared and unique variance in items to extract latent factors (Costello & Osborne, 2005). EFA is considered superior to PCA as it diminishes the inflation of variance estimates (Gorsuch, 1990). Because the HHI item distributions did not meet the assumption of normality, Principal Axis Factoring (PAF) was utilized as the EFA extraction method (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

In accordance with the assumptions of factor analysis, data were screened for multivariate outliers using the Mahalanobis distance method. No influential outliers were identified. Additionally, to assess non-independence and determine whether both IWCI and CP hope scores could be included in one analysis, an intraclass correlation (ICC) was computed (Kenny, Kashy, & Cook, 2006). PAF with both oblique and orthogonal rotations were performed, with a specification that extracted factors had eigenvalues greater than one. The Kaiser-Meyer-Olkin (KMO; Kaiser, 1974) statistic and Bartlett's test of sphericity (Bartlett, 1950) were checked to determine the factorability of the correlation matrix. The scree plot and total variance explained were utilized as guides to assess the viability of the extracted solution. According to Pett, Lackey, and Sullivan (2003), a sufficient solution explains 50-60% of the total variance. Items loadings greater than .40 on a single factor were considered strong. The .40 cutoff is more conservative than the .32 recommendation of Tabachnik and Fiddell (2006). Cross-loading items were identified as those with loadings .40 on two or more factors.

Reliability and Construct Validity

Once HHI subscales were identified, internal consistency reliability estimates were computed using Cronbach's alpha (Cronbach, 1951; Cronbach & Shavelson, 2004). According to Nunnally and Bernstein (1994), internal consistency estimates of .80 or higher are considered "good" estimates. Inter-item correlations and item-total correlations were also inspected.

Because data from a gold standard measure of hopefulness were not collected in the parent study, several *a priori* hypotheses were constructed to supply evidence of construct validity (American Educational Research Association, 1999). HHI subscale scores were correlated with scores from the MMSE, HRSD, CIR, and an item assessing satisfaction with social support using nonparametric correlations. The direction and magnitude of the correlations were examined to draw conclusions regarding the hypotheses. All analyses were performed using SPSS 20.0 (IBM Corp., 2011) and p-values less than .05 were considered significant.

Results

Sample characteristics

The sample was predominantly white (86.9%; see Table 1). Approximately 50% of the IWCI sample was female, ages ranged from 43 to 91 years (M=74.27 years, SD=10.15), and 53.3% had a Bachelor's degree or higher (M=15.51 years, SD=3.07). The majority of IWCI were living with a spouse or partner (79.4%). CPs were younger, ranging in age from 40 to 88 years (M=70.14 years, SD=11.49). CPs were also highly educated (M=14.88 years, SD=2.61). Less than half of the IWCI sample had been diagnosed with MCI (40%) and scored in the mild range of cognitive impairment on the MMSE (M=23.73, SD=4.00). IWCIs had a low mean depression score (M=3.96, range=0-20). As a whole the IWCI sample had generally good insight into illness (M=2.74 SD=2.35). Both IWCIs and CPs reported satisfaction with social support, with CPs reporting slightly less satisfaction than IWCIs (M=2.65, SD=.57; M=2.18, SD=1.01, respectively).

PAF of the HHI

The study participants had moderately high hope scores, with no significant difference noted between IWCI (M=39.71, SD=5.21) and CP scores (M=38.84, SD=5.24). The examination of the intraclass correlation revealed that IWCI and CP scores were independent ($F_{(44,44)}$=0.965, p=.546); thus, all scores were utilized in the exploratory factor analysis. Table 2 shows the means and standard deviations for the items of the Herth Hope Index. Most items were negatively skewed toward agreement with each statement, though adequate variability was demonstrated. All items were significantly correlated with each other, with the exception of "I feel scared about my future" and "I can recall happy and joyful times." The internal consistency reliability estimate of the overall scale was high (α = .90) (Nunnally & Bernstein, 1994). The KMO statistic verified the sampling adequacy for the analysis (KMO = .88). Bartlett's test of sphericity χ^2 (66) = 571.37, $p < .001$ indicated that the correlations between items were sufficiently large for PAF.

A PAF with oblique (Promax) rotation was first performed and results were examined to assess the appropriateness of the solution. No specific number of factors was specified; therefore factors with eigenvalues greater than one were considered viable. The solution revealed three factors with eigenvalues greater than one that explained 56.70% of the variance, with the first factor comprising the majority of the variance (45.71%), and the following two factors explaining 6.43% and 4.56% of the variance. The eigenvalue of the first factor (5.49) was large while the two following factors were weak and less than 1.0 (.77 and .55, respectively). The examination of the scree plot indicated that the slope substantially diminished following the first factor plotting. Additionally, the examination of the factor loadings identified one item as cross-loading, that is, the item had a factor loading greater than the specified cut-off of .40 on more than one factor.

Next, the results of the PAF using orthogonal (Varimax) rotation were examined. The results were similar to the oblique solution, with three factors explaining 56.70% of the variance. The slope of the scree plot again substantially diminished following the first factor plotting. The orthogonal rotation produced four cross-loading items, whereas the solution using

oblique rotation produced one cross-loading item. Due to the lower number of cross-loading items and the fact that the oblique rotation accounts for correlated factors, the subsequent analyses were conducted using the oblique approach.

The dimensionality of the HHI structure was still unclear after conducting the PAF without specifying a particular number of factors. Several previous studies reported a two factor structure for the HHI (Benzein & Berg, 2003; van Gestel-Timmermans et al., 2010; Wahl et al., 2004); therefore, PAF specifying a two factor structure with oblique (Promax) rotation was conducted. Two factors explained 51.44% of the variance, and communalities ranged from .25 to .82. Factor loadings from the pattern matrix are reported in Table 2. Items 2 (presence of goals), 6 (recall happy/joyful times), 7 (sense of direction), 8 (life has value/ worth), 9 (feel all alone), 12 (give and receive caring/love) loaded on Factor 1, while items 1 (positive outlook toward life), 3 (scared about future), 4 (each day has potential), 5 (see light in a tunnel), 10 (faith that gives comfort), 11 (deep inner strength) loaded on Factor 2.

In order to substantiate the findings of a two-factor solution, the internal consistency of each factor was computed. The reliability coefficient for Factors 1 and 2 were α =86 and α =.83, respectively. These coefficient estimates are higher than the recommended cut-off of .8 (Nunnally & Bernstein, 1994), providing strong support for the two-factor solution.

Construct Validity

To test our hypotheses regarding the relationships between hope (HHI) and neurocognitive status (MMSE), depression (HRSD), and illness severity insight (CIR) for IWCIs, as well as hope and social support for the entire sample, Spearman's rho correlations between the total HHI score and the resultant subscales are reported in Table 3. Spearman's rho was used due to normality violations for the MMSE, HRSD, CIR, and social support. As hypothesized and indicative of external validity, hope and satisfaction with social support were positively associated for the HHI total score (r_s=.37) and each subscale (Factor 1: r_s=.31; Factor 2: r_s=. 36). For IWCIs, neurocognitive status, depression, and insight were not associated with hope total score or subscales, supporting our hypotheses and indicating these scales measure constructs that differ from hope (see Table 3).

Discussion

The purpose of this secondary analysis was to evaluate the reliability and validity of the Herth Hope Index by examining the internal factor structure and by exploring its relationship to scales measuring depression, illness insight, neurocognitive status, and satisfaction with social support. Study participants reported high levels of global hope, despite their experience with progressive illness. Studies examining hope in individuals experiencing terminal illness have reported similar results, where no differences were found in hope reports regardless of the individual's closeness to death (Buckley & Herth, 2004; Sanatani, Schreier, & Stitt, 2008). It is therefore important that clinicians explore the hopes of individuals facing cognitive impairment, as this process may aid in setting care goals, even when illness may be progressive and terminal.

This is the first psychometric study to explore the properties of a hope scale utilizing members of families impacted by cognitive impairment. Findings support evidence of internal consistency and construct validity for scores obtained from the HHI. Findings indicating a two-factor structure mirror those of previous studies using differing translations of the HHI (Benzein & Berg, 2003; van Gestel-Timmermans et al., 2010; Wahl et al., 2004), although the theoretical underpinnings of such a structure vary across studies, as do the number of items loading on each factor. Additionally, while Promax (oblique) rotation was use in the current analysis, these previous studies used a Varimax rotation. In the current analysis, Factor 1 seems to cluster around goal orientation (e.g. "I have a sense of direction." "I have short, intermediate and long range goals.") and positive emotions (e.g. "I am able to give and receive caring and love." "I can recall happy and joyful times."), while Factor 2 consists of items associated with a sense of possibility or a generalized future-oriented hope (e.g. "I have a positive outlook towards life." "I believe that each day has potential.").

The three-factor structure reported by Herth (1992) did not play out, possibly due to differences in the context of the population. Differences in item loadings across studies may be attributed to a sample inclusive of individuals facing cognitive impairment; other studies have been comprised of adult outpatients at a primary care clinic (Katerndahl et al., 2002), older adults (Herth, 1992) and individuals with severe mental illness (van Gestel-Timmermans et al., 2010). Given the differences in factor structures across studies, confirmatory factor analysis might help to clarify the underlying structure of the HHI.

In the current investigation, satisfaction with social support was significantly associated with hope. Social support has been previously considered to comprise one of the factors of the 30-item Herth Hope Scale, but has not been reported to be a component of the abbreviated HHI. Other work has pointed to the importance of hope in others in instilling hope in the individual (Herth, 1993). Further examination of the relationship between hope and social support may particularly benefit from more extensive questioning surrounding social support, including what aspects of social support may enhance hope and in turn how this relationship impacts depression.

Depression was not associated with hope in the current study. In relation to a measure of generalized hope, no relationship with depression provides evidence that these scores were measures of two differing constructs. Depressive symptoms may be a target of hope-based therapy (Cheavens, Feldman, Gum, Michael, & Snyder, 2006), therefore further analyses examining the relationship between these constructs is warranted. Psychotherapeutic approaches to fostering hope are being explored and incorporated into palliative care (Buckley & Herth, 2004) and include meaning-centered therapy (Breitbart, 2003) and dignity-conserving therapy (Chochinov, 2003).

Insight into illness and cognitive functioning were also not associated with hope. Previous work has pointed to impaired cognition as being a potential inhibitor of hope (Herth, 1993), however this finding was put forth by cognitively intact older adults, rather than individuals experiencing cognitive impairment. Awareness may differ by stage of impairment which in turn may correspond with varied levels of hope. IWCIs may not perceive a continuum of memory decline, even after a diagnosis of cognitive impairment (Lingler et al., 2006). Those

diagnosed with MCI may overestimate their symptoms while persons with dementia tend to underestimate memory impairment, even during mild stages of the disease (Kalbe et al., 2005). Along these lines, greater insight and concern about symptom progression in the earliest stages of illness may correspond with lessened hope while in the later stages and when awareness is impaired, hope may be elevated.

An alternative hypothesis regarding the relationship between insight and hope, termed "usable insight," reasons that individuals are able to separate disorder from their own sense of identity and therefore maintain hope in times of stress (Lincoln, Lüllmann, & Rief, 2007). Individuals with awareness of their illness may then anticipate future care issues and set realistic life goals. Therefore, how these correlations may be conceptualized among individuals with cognitive impairment is likely all the more complex, when considering the impact of progressive memory loss upon coping and insight, and warrants further exploration. The use of additional measures of insight, including subjective report (Clare, 2004), may also further tease out the relationship between hope and insight. Our study finding of no association between memory functioning and hope implies that sense of hope may be maintained at any stage of cognitive impairment.

There were several limitations to the current investigation. The current sample was comprised of two potentially different subgroups; however, the small sample size prohibited the comparison of the internal structure within the IWCI and CP groups. A systematic review of hope for patients with terminal illness and their caregivers reported that, overall, sustaining hope was critical for both groups of individuals (Clayton et al., 2008). Therefore hope for patients and caregivers may share a similar underlying construct. Structural equation modeling could be utilized to model the relationships between the IWCIs and the CPs. A larger sample would have also allowed for confirmatory factor analysis to verify the results of the exploratory analysis. Future studies should incorporate larger samples and further explore the internal structure of hope for family care partners. Advanced statistical modeling could additionally better tease out the potential psychosocial predictors of hope for both IWCIs and CPs, such as depression and social support.

The sample additionally included individuals with varying degrees of cognitive impairment. In particular, it may be useful to further investigate differences that potentially exist between individuals diagnosed with MCI and those diagnosed with dementia. For the current study, patients were diagnosed with MCI or dementia in a clinic setting, where conversion rates from MCI to dementia are at a greater rate than in community settings and diagnostic protocols may be more comprehensive (Farias, Mungas, Reed, Harvey, & DeCarli, 2009).

In conclusion, the current investigation provides preliminary evidence that the HHI should be scored using a two-factor structure of goal orientation and positive emotions when utilized in a sample of families impacted by cognitive impairment. Scores from each of the two subscales had good internal consistency reliability and showed evidence of validity. Further confirmatory research is needed to substantiate the results of the current investigation.

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Acknowledgements

Biography

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Table 1

Sample Characteristics

	Patients (n=45)	Family Caregivers (n=51)
Sex, n (%)		
Female	21 (46.7)	34 (66.7)
Race, n (%)		
White	43 (95.6)	48 (94.1)
African American	2 (4.4)	3 (5.9)
Age, Mean (SD)	74.27 (10.15)	70.14 (11.49)
Years of education, Mean (SD)	15.51 (3.07)	14.88 (2.61)
Social support satisfaction, Mean (SD)	2.65 (.57)	2.18 (1.01)
HHI, Mean (SD)	39.71 (5.21)	38.84 (5.24)
HRSD, Mean (SD)	3.96 (4.73)	
MMSE, Mean (SD)	23.73 (4.00)	
CIR, Mean (SD)	2.74 (2.35)	
Mild Cognitive Impairment, n (%)	18 (40.0%)	
Mild to Moderate Dementia, n (%)	27 (60.0%)	
Years since symptoms began, Mean (SD)	6.00 (2.53)	

HHI: Herth Hope Index, HRSD: Hamilton Rating Scale for Depression, CIR: Clinical Insight Rating, CDR: Clinical Dementia Rating, MMSE: Mini Mental State Exam

Table 2

Factor loadings for the Herth Hope Index (n=96)

Item Content	Factor 1	Factor 2	Communalities	M (SD)
1. I have a positive outlook toward life.	.23	**.62**	.63	3.43 (.66)
2. I have short, intermediate and long-range goals.	**.62**	−.03	.35	3.18 (.60)
3. I feel scared about my future.[a]	.04	**.47**	.42	2.77 (.86)
4. I believe that each day has potential.	.26	**.43**	.58	3.34 (.50)
5. I can see a light in a tunnel.	.03	**.74**	.35	3.05 (.66)
6. I can recall happy and joyful times.	**.47**	.15	.68	3.54 (.52)
7. I have a sense of direction.	**.86**	−.05	.82	3.22 (.62)
8. I feel my life has value and worth.	**.94**	−.05	.45	3.38 (.64)
9. I feel all alone.[a]	**.51**	.16	.66	3.27 (.69)
10. I have faith that gives me comfort.	.00	**.67**	.58	3.21 (.66)
11. I have a deep inner strength.	−.10	**.88**	.25	3.36 (.60)
12. I am able to give and receive caring and love.	**.65**	.15	.41	3.50 (.52)
% Variance Explained	45.39%	6.05%		
Eigenvalues	5.45	.73		

SD: Standard deviation.

[a]Items 3 and 9 are reverse scored.

Table 3

Spearman's Rho Correlations for Hope Scores and IWCI/CP Characteristics

	HHI Total Score	HHI Factor 1 Subscale	HHI Factor 2 Subscale	Social Support Satisfaction	MMSE[a]	CIR[a]
HHI Factor 1 Subscale	.92**					
HHI Factor 2 Subscale	.94**	.73**				
Social Support Satisfaction	.37*	.31*	.36*			
MMSE[a]	.15	.07	.20	.02		
CIR[a]	−.05	−.09	.01	−.15	−.32*	
HRSD[a]	−.21	−.20	−.18	.04	.05	.09

p<0.001.

*
p<0.05

[a]Only individuals with cognitive impairment (N=45) completed the Mini Mental State Exam, Clinical Insight Rating and Hamilton Rating Scale.
IWCI: Individual with cognitive impairment, CP: Care partner, HHI: Herth Hope Index, HRSD: Hamilton Rating Scale for Depression, CIR: Clinical Insight Rating, MMSE: Mini Mental State Exam.