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Negative Emotions and the Course of Depression During Psychotherapy in Suicidal Older Adults With Depression and Cognitive Impairment

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Abstract

Objective: The study examines the relationship of negative emotions with: 1) non-emotional symptoms (e.g., vegetative and physical symptoms) and 2) the course of depression in suicidal older adults with Major Depressive Disorder (MDD) and cognitive impairment treated with psychotherapy.

Design: The authors identified a subgroup of participants (N = 26) who expressed suicidal ideation at Baseline or Week 12 from a randomized controlled trial (RCT) of two psychosocial interventions, Problem Adaptation Therapy (PATH) and Supportive Therapy for Cognitively Impaired. The authors assessed negative emotions, non-emotional symptoms of depression, depression severity, and suicidal ideation at entry, week 4, week 8, and week 12.

Participants: Participants were 65 years and older and had a diagnosis of unipolar depression, varying degrees of cognitive impairment (up to moderate dementia) and suicidal ideation.

Setting: The study was conducted in the Outpatient Department of New York Presbyterian/Weill Cornell Medicine in Westchester, NY.

Measurements: Negative emotions and non-emotional items were identified with the 24-item Hamilton Depression Rating Scale (Ham-D).

Results: Among participants with suicidal ideation, the reduction in negative emotions from baseline to week 4, week 4 to week 8, and week 8 to week 12 was significantly associated with the reduction in non-emotional symptoms of depression at weeks 4, 8, and 12 ($F_{(1, 35)} = 6.20$, $p = 0.02$) and with the reduction in overall depression severity at weeks 4, 8, and 12 ($F_{(1, 35)} = 26.63$, $p < 0.0001$) after controlling for depression severity at baseline (HAM-D total score) and time trends.

Conclusion: Our findings may guide the treatment of older patients with depression and suicidal ideation to help reduce depression and suicide risk.

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Keywords

Suicide/self-harm; depression; elderly; cognitive impairment; negative emotions

OBJECTIVE

Suicide has broad and detrimental consequences for families, communities, and society. Despite significant efforts by researchers, clinicians, and policy makers, suicide rates in the US have steadily increased in the past 10 years.[1] Older adults have elevated suicide rates and men 85 years or older have the highest suicide rate among any other 5-year increment age group.[1] Identifying modifiable risk factors for suicide is a National Institute of Mental Health priority and may guide the development of psychosocial interventions for late-life suicide.[2]

Major depression and cognitive impairment are high-risk factors for late-life suicide.[3–5] Psychological autopsy studies reveal that the most frequent diagnosis associated with suicide is major depression.[3,4] Cognitive deficits, including executive dysfunction and impaired cognitive control and decision making, contribute to increased suicide risk in the elderly population.[6] Even though patients with later stages of dementia may have reduced suicide risk, early diagnosis of dementia may lead to elevated suicide risk.[7] Because both depression and cognitive impairment are risk factors for suicide, reducing depression in older adults with cognitive impairment, especially in those with suicidal ideation, may help reduce suicide risk and improve suicide prevention.

Major depression is characterized by emotional and non-emotional symptoms. Emotional symptoms of depression include negative emotions such as sadness, anxiety, guilt, hopelessness, worthlessness, helplessness, and irritability. Non-emotional symptoms include vegetative symptoms, physical symptoms, and impairment in functioning. Even though both negative emotions and non-emotional symptoms may decrease during psychosocial treatment as severity of depression decreases, the mechanism through which these symptoms lead to a reduction of depression is not clearly understood, i.e., it is unclear whether a reduction of negative emotions precedes and predicts a reduction of non-emotional symptoms or vice versa. Understanding this mechanism is heuristically and clinically important, especially in older, depressed, suicidal patients, a population at high risk for suicide, because it will help us to prioritize which symptoms to target first in order to accelerate depression remission during psychotherapy.

The present study examines the relationship of negative emotions with non-emotional symptoms and with the course of depression in suicidal older adults with major depression and cognitive impairment treated with two home-delivered psychotherapies. We hypothesize that reduction of negative emotions precedes and predicts reduction in nonemotional symptoms of depression in these suicidal patients. We also aim to identify subgroups of suicidal patients based on the degree of reduction of their negative emotions during psychosocial treatment and examine their demographics and clinical characteristics. The latter analysis will help us identify older suicidal patients whose depression is resistant to

psychotherapeutic treatment and may guide us in the development of interventions to help these vulnerable patients.

METHODS

We conducted a randomized controlled trial of two psychosocial interventions, Problem Adaptation Therapy (PATH) and Supportive Therapy for Cognitively Impaired (ST-CI), and recruited 74 older adults with major depression, cognitive impairment, and disability.[8] Participants were recruited through community agencies. Results on acute treatment outcomes of depression and disability in the whole sample have been reported in a separate article.[8] The present study focuses on the relationship between the change of negative emotions and the change of nonemotional symptoms of depression (i.e., vegetative, physical, inactivity, and lack of insight) during treatment. The study is concentrated on 63 participants who completed the 12-week treatment, and specifically, on 26 of those participants who reported suicidal ideation at the beginning or the end of treatment.

Participants who met study inclusion criteria 1) were 65 years or older; 2) had an unipolar nonpsychotic MDD diagnosis; 3) had a Montgomery-Åsberg Depression Rating Scale[9] total score equal or more than 17; 4) demonstrated varying degrees of cognitive impairment (up to moderate dementia); 5) had disability (i.e., at least one impairment in activities of daily living); and 6) were not taking any antidepressants, cholinesterase inhibitors or memantine or taking a stable dose of these medications for at least 6 weeks prior to study entry. Participants were ineligible for the study if they were diagnosed with any comorbid Axis I diagnosis (except anxiety disorders diagnosis); diagnosed with an acute or severe medical illness during the 12 weeks prior to entry; prescribed drugs known to trigger depression; actively suicidal with intent or plan; involved in talk therapy; moderately to severely demented (Mini-Mental State Examination[10] score <17); and aphasic or unable to speak English. Potential participants signed Informed Consent. Their capacity to consent was assessed with Cornell Scale for Capacity to Consent. A screening assessment was then conducted and if participants met study criteria they were randomly assigned to home-delivered PATH or home-delivered ST-CI. Research assistants conducted the research assessments and were unaware of participants' randomization status and the study hypotheses. The research study was approved by the Weill Cornell institutional review board, and the clinical trial was registered with the National Institutes of Health.

Assessment and Instruments

We assessed depression severity and suicidal ideation at entry (baseline), week 4, week 8, and week 12 with the 24-item Hamilton Depression Rating Scale[11] (Ham-D total score) and Ham-D suicidal item 3 respectively (Ham-D SI item, rated on a scale of 0–4; 0 = absent;1 = feels life is not worth living; 2 = wishes he or she were dead or any thoughts of possible death to self; 3 = suicidal ideas or gesture; 4 = attempts at suicide). Symptoms of negative emotions ("Negative Emotions" variable) included Depressed mood (Ham-D Item 1), guilt (Ham-D Item 2), agitation (Ham-D Item 9), anxiety [psychic anxiety (Ham-D Item 10), somatic anxiety (Ham-D Item 11), hypochondriasis (Ham-D Item 15), obsessive and compulsive symptoms (Ham-D Item 21)], and feelings of helplessness (Ham-D Item 22),

hopelessness (Ham-D Item 23), and worthlessness (Ham-D Item 24). Nonemotional depression symptoms ("Non-Emotional Symptoms" variable) included the rest of Hamilton items: vegetative symptoms [insomniaearly (Ham-D Item 4), insomnia-middle (Ham-D Item 5), insomnia-late (Ham-D Item 6) and appetite disturbances (Ham-D Item 12)], physical symptoms [retardation (Ham-D Item 8), somatic symptoms-general (Ham-D Item 13), genital symptoms (Ham-D Item 14) and loss of weight (Ham-D item 16), impairment in functioning [Work and Activities (Ham-D Item 7)], lack of insight (Ham-D Item 17), diurnal variation (Ham-D Item 18), depersonalization and derealization (Ham-D Item 19), and paranoid symptoms (Ham-D Item 20)].

We also evaluated instrumental and subjective social support, social interactions, disability, cognitive functioning, and intensity of antidepressant treatment at baseline. Duke Social Support Index[12] was used to measure Instrumental Support, Subjective Support and Social Interaction, and Multilevel Assessment Instrument[13] was used to evaluate social support. Disability was assessed with Multilevel Assessment Instrument – Instrumental Activities of Daily Living (MAI-IADL) and the World Health Organization Disability Assessment 12 Item (WHODAS-II).[14] Overall cognitive functioning and memory was evaluated with Mini-Mental State Exam and Hopkins Verbal Learning Test – Revised (HVLT),[15] respectively. Finally, intensity of antidepressant medication treatment (measuring the dosage and frequency of antidepressants during the 6 weeks prior to study entry) was assessed with the Composite Antidepressant Score-Revised for older adults.[16,17]

Doctoral-level clinical psychologists, clinical social workers, and a doctoral candidate in a clinical psychology program administered both PATH and ST-CI. Evaluation of treatment fidelity by rating random audiotapes demonstrated very good to excellent treatment fidelity ratings.[8]

Interventions

Participants were randomized to one of two home-delivered interventions, PATH or ST-CI, administered in 12 weekly sessions. Supportive Therapy promotes nonspecific factors of psychotherapy such as fostering empathy and understanding, and facilitating a supportive environment. PATH utilizes individually tailored emotion regulation strategies to reduce negative and promote positive emotions, integrates environmental adaptations and compensatory strategies to bypass the patient's behavioral and functional limitations and reduce their emotional impact, and incorporates the participation of an available and willing caregiver in treatment to help improve the patient's emotion regulation.

Statistical Analysis

The analyses included all participants who completed the 12-week treatment (N = 63). We tested differences between those participants with suicidal ideation (as defined by the suicide Ham-D item 3 score >0 at baseline or week 12; N = 26) versus those without suicidal ideation (N = 37) on demographics and baseline (i.e., entry to the study right before the beginning of treatment) clinical variables using the t test (continuous variables) and the Fisher's exact (categorical variables).

We evaluated whether changes of "Negative Emotions" precede and predict changes in "Non-Emotional Symptoms" by constructing a linear mixed model with changes in "Negative Emotions" variable from baseline to week 4, week 4 to week 8, and week 8 to week 12 as the independent variable and the score of "Non-Emotional Symptoms" at weeks 4, 8, and 12 as the dependent variable (i.e., the change in negative emotions from baseline to week 4 predict the nonemotional symptoms at week 4 etc.). In addition, a patient-specific random intercept and fixed effects for baseline HAM-D total score and time were included in the model. A similar mixed model was constructed to evaluate a "reverse" mechanism, i.e., whether changes in "Non-Emotional Symptoms" precede and predict changes in "Negative Emotions."

To identify subgroups of suicidal patients who had different degrees of improvement in negative emotions, we performed a hierarchical cluster with the change from baseline to 12 weeks in the 10 items of negative emotion ("Negative Emotions" variable) among patients with suicidal ideation. Hierarchical clustering is a way to find subgroups with homogeneous features. The clustering algorithm used Ward's D^2 as the agglomeration method and maximum distance method to define distance between clusters. The choice of the number of clusters was based on maximizing the Calinski-Harabasz Index,[18] a ratio of between-cluster to within-cluster variation, size of each cluster ($\geq$10) and clinical judgment. After identifying the two subgroups, we tested differences between the two subgroups on demographics, baseline clinical variables, and changes in negative emotions from baseline to Week 12 using the t test (continuous variables) and the Fisher's exact (categorical variables). The comparisons between the two clusters are performed for the purpose of describing these groups and not for inferential testing. A two-tailed alpha level was used for each statistical test. All analyses were performed with SAS 9.4.

RESULTS

Participant Characteristics

The 63 randomized participants had a mean age of 80.52 years (standard deviation [SD] = 7.7) and an average of 13 years of education (SD = 3). They had moderate depression (mean Ham-D total = 21.2; SD = 3.5), cognitive impairment ranging from mild cognitive deficits to moderate dementia (mean DRS total = 118.2; SD = 12) and pronounced disability (mean WHODAS-II total = 32.8; SD = 6.2) (Table 1). All 63 participants completed the 12-week treatment trial.

Twenty-six participants (41%) had suicidal ideation at entry to the study (right before the beginning of treatment) or at the end of treatment. At baseline, participants with suicidal ideation reported less disability (MAI IADL and WHODAS-12 total scores), better memory scores in the first and second recall tasks of HVLT, lower instrumental (Duke Social Support – Instrumental Support subscale) and social support (MAI Social Support), and less non-emotional symptoms compared to participants without suicidal ideation (Table 1).

Increase in Negative Emotions Precede and Predict a Worsening Course of Non-emotional Symptoms and Depression in Suicidal Patients

Among participants with suicidal ideation at baseline or week 12 (HAM3 > 0; N = 26), reduction in negative emotions from baseline to week 4, week 4 to week 8, and week 8 to week 12 was significantly associated with reduction in non-emotional symptoms of depression at weeks 4, 8, and 12 ($F_{(1, 35)} = 6.20$, p = 0.02) after controlling for depression severity at baseline (HAM-D total score) and time trends. Reductions in negative emotions by one unit in any time period (e.g., baseline to week 4) reduced non-emotional depression symptoms by 0.29 points (95% confidence interval: 0.054, 0.526; p = 0.02) at the subsequent time period (e.g., week 4). A nonsignificant association was observed in the nonsuicidal patients (N = 37; $F_{(1, 38)} = 3.26$, p = 0.0790).

To examine the directionality of the relationship between negative emotions and non-emotional symptoms in suicidal patients, we tested whether the results were significant in the opposite direction, i.e., whether reduction in nonemotional symptoms baseline to week 4, week 4 to week 8, and week 8 to week 12 was significantly associated with reduction in negative emotions at weeks 4, 8, and 12. There was no significant association in this direction.

Finally, as expected, reduction in negative emotions from baseline to week 4, week 4 to week 8, and week 8 to week 12 was significantly associated with reduction in overall depression severity at weeks 4, 8, and 12 ($F_{(1, 35)} = 26.63$, p <0.0001) after controlling for depression severity at baseline (HAM-D total score) and time trends.

Subgroups of Suicidal Patients Based on Reduction in Negative Emotions During 12 Weeks of Psychotherapy

Because reduction of negative emotions is critical in suicidal patients, we aimed to identify subgroups of suicidal patients with varying degrees of reduction of negative emotions during 12 weeks of psychotherapy. A hierarchical cluster analysis of the reduction (baseline to week 12) in negative emotional items of HAM-D among participants with suicidal ideation revealed that suicidal patients were segregated into two clusters (subgroups): 1) those who had minimal or no improvement in negative emotions over 12 weeks [N = 7; Week 12 – Baseline: Mean = −0.29, SD = 3.30] (called "Resistant Group" because its depression is resistant to improvement of negative emotions through psychotherapy); and 2) those who had substantial improvement in negative emotions over 12 weeks [N = 19; Week 12 – Baseline: Mean = 6.47, SD = 3.17] (called "Non-resistant Group" because its depression is not resistant to improvement of negative emotions through psychotherapy; Fig. 1).

The "Resistant Group" had a significantly higher Composite Antidepressant Score (greater intensity of antidepressant treatment during the 6 weeks prior to study entry), higher scores on guilt feelings and less impairment in instrumental activities of daily living than the "Non-resistant Group" at baseline (Table 2).

One of 19 patients (5%) in the "Non-resistant" group had worse scores on suicidal ideation from baseline to week 12, compared to 2 of 7 participants (28.5%) in the "Resistant" group. However, this difference was not statistically significant.

CONCLUSION

The main findings of this study of suicidal older adults with depression and cognitive impairment are twofold. First, reduction of negative emotions precedes and predicts reduction of non-emotional symptoms of depression and reduction of depression severity in depressed, cognitively impaired, older adults with suicidal ideation who underwent 12 weeks of psychotherapy. Second, suicidal patients whose negative emotions improved ("Non-resistant group") had less intense antidepressant medication treatment, more disability and less intense guilt feelings at baseline than those suicidal patients whose negative emotions did not improve ("Resistant Group").

The findings are heuristically and clinically significant because they can guide the treatment of older patients with depression and suicidal ideation to help reduce depression and improve suicide risk. Our main findings highlight that negative emotions need to be targeted early in treatment to accelerate the reduction of non-emotional symptoms, and therefore, contribute to the reduction of depression. Furthermore, patients with intense antidepressant medication treatment and increased guilt at the beginning of treatment may need additional psychotherapeutic techniques to reduce negative emotions during psychotherapy.

This is the first study, to our knowledge, that identifies a mechanism of reduction of depression in suicidal older adults with depression and cognitive deficits. Because depression is the most frequent diagnosis in older adults who die by suicide,[19] and reduction of depression may lead to reduced suicide risk, identifying a mechanism through which depression is reduced in suicidal older adults is clinically significant. Our findings demonstrate the importance of improving negative emotions as the initial target of psychosocial interventions for this population. However, additional research that will explicitly examine the causal relationship between emotional and nonemotional symptoms in this population is needed to validate these results.

Our results highlight that older adults with suicidal ideation have different clinical characteristics from those without suicidal ideation. Specifically, compared to older non-suicidal patients, older suicidal patients have early-onset (versus late-onset) depression, less cognitive deficits, and less disability. These characteristics may reflect different etiologies of depression and potentially two different populations. Future investigations may examine the theoretical and clinical implications of these two different groups.

Depression is characterized by both the presence of negative emotions and the absence of positive emotions, such as pleasure. Because the Hamilton Depression Rating Scale does not have specific items measuring positive emotions, including pleasure,[20] our study could not examine the effects of positive emotions on the course of depression in depressed, suicidal older adults. Future studies need to further examine the relationship between negative emotions, positive emotions, and reduction of depression in suicidal older adults.

Through hierarchical cluster analyses, we identified a group of depressed, suicidal older adults whose depression is resistant to improvement in negative emotions and another group whose depression is non-resistant to improvement in negative emotions during psychotherapy. At baseline, the "Resistant group" had greater intensity of antidepressant

treatment, stronger feelings of guilt, and less impairment in Instrumental Activities of Daily living than the "Non-resistant group." This "Resistant group's" baseline profile signifies a group of suicidal older adults who may suffer from a different type of depression (drug treatment-resistant depression without significant disability) than the "Non-resistant" group. Despite the etiology of their depression, the "Resistant group" may benefit from more intense emotion regulation techniques, and possibly, repetition of these techniques to ensure that these techniques will have the maximum effects. Application of extra homework or additional technology to practice these techniques may help these patients reduce their negative emotions and improve their depression.

The study has the following limitations. First, our sample size is relatively small. As a result, we did not have enough power to examine whether there were any differential effects between our two home-delivered psychotherapies in the relationship between negative emotions and nonemotional symptoms. Furthermore, due to inadequate power, we may not have detected an association between reduction of nonemotional symptoms and negative emotions, or additional demographic or clinical characteristics between the "Resistant" and the "Non-resistant" clusters. Despite the small sample size, our results demonstrate a significant relationship between reduction of negative emotions and improvement of the course of depression in suicidal older adults with cognitive impairment, a group of patients that has been understudied. Second, we used a single item (Ham-D Suicide Item) to assess suicidality. Even though single suicide items have been used in studies of suicidal ideation in older adults,[21] future investigations need to evaluate suicidal ideation with more thorough suicide assessments. Third, patients with active suicidal ideation were excluded from the study. Therefore, we could not examine whether the same mechanism of action exists in patients at imminent suicide risk. Future investigation on older suicidal patients with depression and active suicidal ideation is critical if we want to reduce depression in these high-risk suicidal patients.

In conclusion, this study demonstrates that reduction of negative emotions precedes and predicts reduction of non-emotional symptoms of depression in depressed, cognitively impaired, suicidal older adults during psychotherapy. Furthermore, antidepressant treatment-resistant depression and increased guilt are associated with resistance in the improvement of negative emotions. These results may guide the development of psychosocial interventions to reduce negative emotions and improve suicide prevention in this population, which is at high risk for suicide.

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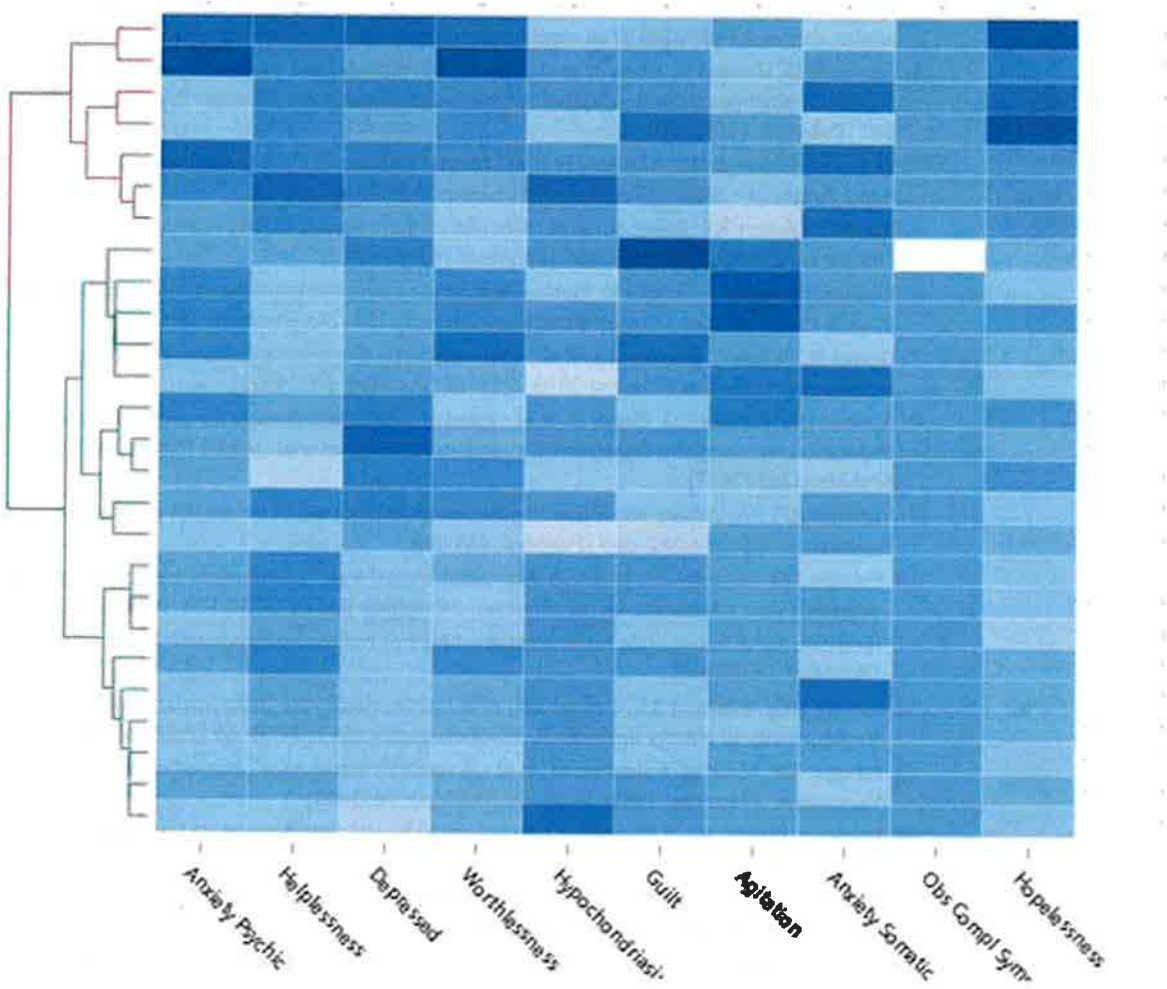

FIGURE 1.

Hierarchical clustering of improvement in negative emotional HAM-D items from baseline to week 12. Each row represents each subject and each rectangle reflects the changes of negative emotions scores from Baseline to Week 12. Specifically, darker colored rectangles denote less improvement in negative emotions from Baseline to Week 12 than lighter colored rectangles. Each column represents a negative emotion. There are two clusters (subgroups of suicidal patients): "Resistant Group" (Red) versus "Non-Resistant Group" (Green).

TABLE 1.

Demographic and Clinical Characteristics of 63 Older Adults With Major Depression and Cognitive Impairment, Who Completed 12 Weeks of Treatment, by the Presence of Suicidal Ideation

	Patients With Suicidal Ideation (N = 26)		Patients Without Suicidal Ideation (N = 37)		
	N	Perc (%)	N	Perc (%)	Fisher's Exact (p)
Gender					0.58
Female	18	69.23	28	75.68	
Race and ethnicity					0.11
Caucasian	24	92.31	28	75.68	
African American	2	7.69	9	24.32	
Hispanic (all Caucasian)	2	7.69	1	2.70	0.56
Probable dementia	11	42.31	22	59.46	0.21
Number of depression Episodes (≥3)	14	63.64	18	51.43	0.42
On antidepressants	17	65.38	22	59.46	0.79
Treatment resistant	13	50.00	12	32.43	0.20
On cognitive enhancers	4	15.38	5	13.51	1.00

					t test		
	Mean	SD	Mean	SD	t	df	p
Age	79.62	7.05	81.16	8.11	0.79	61	0.45
Age at onset of depression	49.27	24.69	61.10	26.70	1.68	56	0.05
Education (years)	13.52	2.43	12.86	2.70	−0.95	58	0.28
HAM[a] 24 item total	23.04	4.15	22.37	3.36	−0.70	61	0.99
HAM[a] Negative Emotions Symptoms	13.32	2.41	12.24	2.61	1.53	61	0.12
HAM[a] Non-emotional Symptoms	8.58	2.53	10.14	2.46	2.44	61	0.01
MAI[b] social support score	3.56	0.96	4.16	0.93	2.47	60	0.02
MAI[b] activities of daily living	3.16	0.80	2.78	0.82	−1.79	60	0.11
MAI[b] instrumental activities of daily living	21.21	3.30	17.27	3.49	−4.37	58	0.0014
WHODAS 12 item Total[c]	30.12	5.19	34.68	6.20	3.07	61	0.0032
Duke social instrumental support	7.41	2.44	9.12	2.21	2.69	53	0.01

	Mean	SD	Mean	SD	t test t	df	p
Duke social interaction	5.50	2.02	5.79	1.75	0.56	53	0.58
Duke social support subjective support	16.41	2.00	17.51	2.45	1.76	53	0.08
MMSE total[d]	26.71	2.79	26.76	3.13	0.06	55	0.73
HVLT[e] first recall	4.40	1.44	3.44	1.66	−2.33	59	0.02
HVLT[e] second recall	6.16	1.97	4.89	2.33	−2.23	59	0.03
HVLT[e] third recall	6.44	2.52	6.22	2.60	−0.33	59	0.75
HVLT[e] delayed recall	4.96	2.88	4.75	3.17	−0.26	59	0.80
Intensity of antidepressant Medication treatment[f]	1.92	1.62	1.71	1.51	−0.53	58	0.56

[a] Hamilton Depression Rating Scale (HAM).

[b] Multilevel Assessment Instrument (MAI).

[c] World Health Organization Disability Assessment Schedule-II (WHODAS-II).

[d] Mini-Mental State Examination (MMSE).

[e] Hopkins Verbal Learning Test-Revised (HVLT).

[f] Composite Antidepressant Score (CAD) – Revised.

TABLE 2.

Demographic and Clinical Characteristics of Patients With Suicidal Ideation Based on Their Level of Improvement in Negative Emotions During Psychotherapy, i.e., Resistant to Improvement in Negative Emotions Group versus Non-resistant to Improvement in Negative Emotions Group

	Resistant Group (N = 7)		Non-resistant Group (N = 19)		
	N	Perc (%)	N	Perc (%)	Fisher's Exact (p)
Gender					1.00
Female	7	71.43	19	68.42	
Race and ethnicity					1.00
Caucasian	7	100.00	17	89.47	
African American	0	0.00	2	10.53	
Hispanic (all Caucasian)	0	0.00	2	0.53	1.00
Number of depression Episodes (≥3)	3	60.00	11	64.71	1.00
On antidepressants	7	100.00	10	52.63	0.06
On cognitive enhancers	2	28.57	2	10.53	0.29

					t test		
	Mean	SD	Mean	SD	t	df	p
Age	77.42	6.29	80.42	7.30	−1.00	24	0.35
Age at onset of depression	55.40	23.02	47.47	25.44	0.62	20	0.54
Education (years)	12.83	3.00	13.76	2.25	−0.80	21	0.43
Baseline (Study Entry)							
HAM[a] 24 item total	21.85	4.41	23.47	4.09	−0.90	24	0.39
HAM[a] Non-emotional symptoms	8.14	2.91	8.73	2.45	−0.50	24	0.61
MAI[b] Social Support Score	3.17	0.98	3.68	0.95	−1.20	23	0.26
MAI[b] activities of daily living	3.50	0.55	3.05	0.85	1.21	23	0.24
MAI[b] instrumental activities of daily living	23.43	3.46	20.29	2.85	2.31	22	0.03
MMSE total[c]	27.60	1.67	26.45	3.01	0.80	22	0.43
Intensity of antidepressant Medication treatment[d]	3.00	0.82	1.53	1.68	2.21	24	0.04

[a]Hamilton Depression Rating Scale (HAM-D).

[b] Multilevel Assessment Instrument (MAI).

[c] Mini-Mental State Examination (MMSE).

[d] Composite Antidepressant Score (CAD) – Revised.