Published in final edited form as:

Int J Geriatr Psychiatry. 2011 March ; 26(3): 256–262. doi:10.1002/gps.2521.

A Home-Delivered Intervention for Depressed, Cognitively Impaired, Disabled Elders

Dimitris N. Kiosses, Ph.D.¹, Linda Teri, Ph.D.², Dawn I. Velligan, Ph.D.³, and George S. Alexopoulos, M.D.¹

¹Weill Medical College of Cornell University

²University of Washington in Seattle

³University of Texas in San Antonio

Abstract

Objective—Problem Adaptation Therapy (PATH) is a new home-delivered intervention designed to reduce depression and disability in depressed, cognitively impaired, disabled elders. A new intervention is needed in this population as antidepressant treatment is effective in only a minority of these patients.

Methods—PATH focuses on the patient's ecosystem, which includes the patient, the caregiver, and the home environment, to address the needs of depressed, cognitively impaired, disabled elders. It builds on the therapeutic framework of Problem Solving Therapy (PST), which has been efficacious in decreasing depression and disability in cognitively intact depressed elders. To address the needs of depressed elders with advanced cognitive impairment, PATH incorporates environmental adaptations and invites caregiver participation.

Results—To illustrate the administration of PATH, two case studies with varying degrees of cognitive impairment and caregiver participation are presented. Both patients were administered 12 weeks of PATH at their home. At the end of treatment their depression and disability was significantly reduced.

Conclusions—PATH is a new home-delivered intervention for depressed elders with cognitive impairment and disability focusing on reducing depression and disability by employing environmental adaptations and inviting caregiver participation. This intervention may provide a treatment alternative for a population with limited success of antidepressant treatment.

Keywords

Depression; Cognitive Impairment; Disability; Home-delivered Intervention; Dementia

INTRODUCTION

Depression, cognitive impairment and disability often coexist in the elderly and contribute to detrimental consequences. In community residents, the combination of impaired cognition and depressive symptoms doubles in frequency at each 5-year interval after the age of 70 years (Arve et al., 1999); combined depression and cognitive dysfunction is present in 25% of 85-year-old subjects. Cognitive impairment increases the risk of depression and is associated with impairment in activities of daily living (Alexopoulos, 2005). Furthermore,

depression, cognitive impairment and disability are independent contributors to increased medical morbidity and mortality (Reynolds et al., 2008; Unutzer et al., 2002).

Antidepressant treatment is effective only in a minority of depressed, cognitively impaired, disabled elders. While antidepressant medication treatment is effective in depressed elders, it has poor or slow response in depressed elders with cognitive impairment, especially impairment in some executive functions (Simpson et al., 1998; Kalayam et al., 1999; Alexopoulos et al., 2004; Potter et al., 2004; Sneed et al., 2007). Furthermore, psychosocial interventions for this population focus on depressed elders either with mild cognitive deficits and varying degrees of disability (Alexopoulos et al., 2003; Miller et al., 2007; Gellis et al., 2007) or with moderate to severe dementia and pronounced disability (Teri et al., 1997). To address the needs of patients with intermediate cognitive impairment and disability, we developed Problem Adaptation Therapy (PATH), a home-delivered psychosocial intervention designed to reduce depression and disability in this population.

PATH focuses on the patient's "ecosystem," which includes the patient, the caregiver, and the patient's home-environment. Specifically, PATH imparts problem-solving skills to patients by utilizing Problem Solving Therapy (PST) as its basic therapeutic framework (D'Zurilla et al., 1999; Areean et al., 2002). Furthermore, it integrates environmental adaptation tools, which circumvent the patient's functional and behavioral limitations, and thus, create an easier environment to negotiate (Velligan et al., 2000a; 2000b). Finally, PATH invites caregiver participation in the problem-solving process, the use of environmental adaptation tools, and the patients' engagement in pleasurable activities (Teri et al., 1997), when the patients' cognitive impairment prevents them from performing these tasks alone. A behavioral treatment for depression utilizing caregiver participation demonstrated significant reduction in patient's depression in elders with moderate to severe dementia (Teri et al., 1997). Because cognitively impaired patients may have difficulty in learning and utilizing the problem-solving steps, adapting to a unfriendly environment, or initiating pleasurable activities, the systematic use of environmental adaptation tools and caregiver participation creates an "ecosystem," which facilitates problem resolution and adaptive functioning.

Environmental adaptation tools (PATH tools) are carefully planned a) to bypass the patient's functional and behavioral limitations; and b) to utilize the patients' cognitive strengths (Velligan et al., 2000a; 2000b). PATH tools include notebooks, calendars, checklists, magnetized notepads, alarms, signs, colored tags, diaries, timers, timed pre-recorded messages, voice alarms, customized audiotapes, step by step division of a task. PATH tools are selected based on the severity of patients' cognitive impairment; their areas of relative cognitive strength; their physical and behavioral limitations; and the specifics of the targeted problem.

PATH is administered at the patients' living environment where cognitively impaired, disabled elders face most of their difficulties. Caregiver participation is decided by the patient with the collaboration and the help of the caregiver and the therapist. The following considerations are important to make this decision: the patient's cognitive and physical limitations; the nature of the specific problem; the patient's cognitive functioning and strive for independence; and the ability and willingness of the caregiver to participate.

Structure of PATH

The Initial Assessment: PATH is a 12-session intervention conducted weekly and consists of the initial assessment (the first two sessions), the problem-solving and adaptation phase (sessions 3-10), and the conclusion phase (sessions 11-12). The initial assessment is critical as the therapist gathers all relevant clinical and behavioral information to create a

personalized treatment plan (Alexopoulos, 2008). The therapist assesses (through a structured interview and review of scores of pertinent instruments) the patient's home environment, severity of depression, type (executive dysfunction, memory, and attention) and severity of cognitive impairment as well as areas of cognitive strength. Furthermore, the therapist evaluates the patient's physical and behavioral limitations as well as the caregiver's physical ability, availability, and motivation to help.

At the end of the second session, the patient and the therapist, with the help of the caregiver when necessary, create two lists: a list of the patient's problems that contribute to the patient's depression and impaired functioning and a list of the patient's pleasurable activities, which the patient may or may not have been engaged in during the recent episode of depression.

The Problem-Solving and Adaptation Phase: Treatment Implementation The following 8 sessions (50-minute each) focus on: a) solving the patient's problems, b) identifying and utilizing PATH tools, c) incorporating the help of the caregiver, and d) encouraging the patient's participation in pleasurable activities. The process of selecting and solving each problem, described in detail in the PATH Manual (Kiosses et al., 2008), follows the PST stages: identify the problem, define the problem, brainstorm possible solutions, evaluate each solution, choose the best solution, create a plan, and implement the solution (Nezu et al., 1989; D'Zurilla et al., 1999; Areal et al., 2002). Priority is placed on safety concerns, critical health issues, and adherence to medication identified by the patient or the caregiver. The therapist will explore any disagreement between the patient and the caregiver (or even the therapist) taking into consideration the safety of the patient as well as the risk of breaching the patient-therapist rapport (Kiosses et al., 2008).

During this phase, the therapist also utilizes PATH tools that will facilitate the problem-solving process and "bypass" the patient's physical and behavioral limitations. Furthermore, the caregiver's participation is assessed for every problem; the caregiver may help solve some problems but not others (Kiosses et al., 2008). Finally, the PATH therapist encourages the patient's weekly participation in pleasurable activities that will improve the patient's mood.

The Conclusion Phase: In the last 2 sessions, the PATH therapist reviews the solutions of the targeted problems and summarizes the most important aspects of the treatment. Resolved problems are discussed, obstacles to finding a solution are identified, and strategies to overcome these obstacles are explored. Finally, the PATH therapist hands out a personalized booklet to the patient and the caregiver that describes the patient's problems and proposed solutions and presents a list of PATH tools that were utilized during treatment and may be utilized in the future.

TWO CASES OF PATH

To illustrate the administration of PATH, we report two successful treatment cases with different levels of cognitive impairment, degree of disability, and caregiver participation. They were outpatients participating in a preliminary study comparing PATH vs. home-delivered Supportive Therapy (Kiosses et al., under review). Even though written informed consent was obtained by the participants, some demographic characteristics have been changed to mask the patient's identity.

CASE 1

Relevant personal history: Mr. X is an 84 year old African-American who had been happily married for 64 years. Mr. X retired early (56 years old) as his eyesight deteriorated, but he

continued to enjoy pleasurable activities with his wife, such as volunteering at the nearby church, taking walks, or visiting their son who lived out of state. When he reached 78 years old, his wife was diagnosed with Dementia of the Alzheimer's type and Mr. X became the primary caregiver of his ailing wife. As his wife's condition deteriorated, Mr. X became increasingly depressed. The house and caregiver responsibilities were overwhelming and Mr. X felt guilty that he was not "strong enough to deal with them." Finding it very hard to meet these responsibilities, he decided to place his wife in a nursing home. This decision exacerbated his depression and enhanced his guilt feeling. A month later he entered PATH study. **The Initial Assessment:** Clinical, neuropsychological, and physical assessment: Mr. X met DSM-IV criteria for unipolar major depression, single episode of mild severity. The clinical interview and his scores in neuropsychological instruments (Table 1) revealed moderate executive dysfunction and mild memory deficits. Mr. X had compromised vision due to a legally blind left eye and to cataract on the right eye. He had diabetes and hypertension difficult to control with medication. *Caregiver participation:* Mr. X requested that his closest relative, a niece who lived a few miles away, not participate in treatment because he did not want to burden her. His son lived out of state and even though he was not physically available, he provided emotional support during the treatment. *Environmental assessment:* Mr. X's environment did not present any risk for his safety or health. PATH tools, however, were still introduced to improve his functioning (described below).

Mr. X identified the following problems: 1) Guilt feelings associated with placing his wife into a nursing home; 2) *Loneliness*; 3) *Organizing his schedule*: Mr. X had difficulty organizing and keeping his appointments with his doctors. The appointments were written on business cards that were placed in a disorganized fashion on a coffee table; 4) *Poor eyesight*: Mr. X's reading and writing ability were impaired. As a result, he had missed several consecutive appointments with his ophthalmologist and his primary care physician. Even though Mr. X did not report any difficulty taking his medication, the therapist wanted to monitor his medication adherence because of his poor eyesight and cognitive dysfunction.

Treatment Planning and Implementation

To compensate for Mr. X's vision problems and cognitive impairment, the therapist wrote the collaborative weekly goals of therapy in large print on a notebook. The goals were reviewed at the beginning of the following session. If the weekly goals were not met, the therapist discussed the obstacles that Mr. X faced during the week, and they both developed strategies to overcome them.

Education about Depression and Alzheimer's Disease: The PATH therapist educated Mr. X about Alzheimer's disease and caregiver's depression, and encouraged him to contact support groups for family members of patients with Alzheimer's disease. *Decrease Guilt and Loneliness:* After exploring the pros and cons of placing his wife in the nursing home, Mr. X acknowledged that he could not have provided adequate care for his wife and that the nursing home would better serve her needs. Mr. X visited his wife 3 times a week and he agreed to engage in other activities during the rest of the week. Mr. X and the therapist created a list of senior centers and churches around Mr. X's neighborhood. After visiting the first three centers on his list, Mr. X decided to attend the neighboring church and the senior center. Motivation signs with large prints ("Going to church will make me feel better," "Looking forward to see friends at senior center" "Staying home makes me sad") placed in visible areas of the living room reinforced Mr. X's participation in the church and senior center. *Organizing and Keeping Doctors' Appointments* The therapist worked with Mr. X in setting up a plan to organize and keep the doctors' appointments. The therapist provided Mr. X with a large calendar to record his appointments. Mr. X and the therapist also created a list of the doctors' addresses and phone numbers and a list of phone numbers of cab services. In addition, the therapist provided Mr. X with: a) a telephone with large numbers and letters

and b) a large magnifying glass. *Medication management:* The therapist brought a medication kit and Mr. X filled it up. Every week, the therapist checked whether Mr. X took all his medication and found that he was adherent. *Poor eyesight:* Mr. X made and kept his appointment with his ophthalmologist and agreed to contact the Lighthouse.

Outcome at 3 months

At the end of treatment, Mr. X did not meet DSM-IV criteria for major depression and his clinical picture as well as his Hamilton Depression Rating Scale (HDRS) score (=3) were indicative of remission (Table 1). His functioning was improved as indicated by the patient's self-report and his scores on the Sheehan Disability Scale (Leon et al., 1997) (Table 1). He reported increased attendance at the church and the senior center and greater adherence to doctor's appointments. To help Mr. X maintain the remission of depression and the improvement in functioning, the PATH therapist gave Mr. X a personalized booklet that included a description of Mr. X's problems, the solutions that were successfully implemented, the problem solving stages, and PATH tools that may be effective in future problem resolution. Even though Mr. X's performance worsened in the measure of executive functioning (DRS-IP) at the end of treatment, his performance was not associated with any further cognitive or functional decline.

CASE 2

Relevant personal history: Mrs. Y, a 91 year old Caucasian, was a housewife who throughout her adult life took care of her husband and her two children. Her husband, a car mechanic who suffered from bipolar illness, had periods of promiscuous behavior and heavy drinking, during which he instigated verbal fights. When Mrs. Y was 70 years old, Mr. Y separated from her. Mrs. Y perceived the separation as both a loss and a relief. She moved to a small house adjacent to a family friend's house in the neighborhood while her husband moved to another state. Mrs. Y continued to independently perform most of her activities of daily living. A year before she started PATH she suffered a stroke that partially paralyzed her left side and significantly impaired her memory and executive functioning. After months of physical therapy, she was able to slowly walk without assistance and was able to use her left arm to perform light activities.

The Initial Assessment

Clinical, neuropsychological, and physical assessment: In the first PATH session, Mrs. Y was diagnosed with unipolar major depression (by DSM-IV), single episode of mild severity, and probable Vascular Dementia. The clinical interview and the scores in neuropsychological assessment revealed moderate to severe executive dysfunction and memory deficits (Table 1).

Caregiver participation: Mrs. Y lived alone and her family friend who lived nearby was her caregiver. They both agreed that her caregiver would become involved in Mrs. Y's PATH treatment.

Mrs. Y's main problems were her memory and organizational difficulties, which contributed to Mrs. Y's depression and impaired everyday functioning. These difficulties interfered with Mrs. Y's daily activities, i.e. making and keeping appointments, shopping, medication management, planning and performing pleasurable activities and even remembering the day and date. Her impaired performance of daily activities contributed to low self-esteem, helplessness, and hopelessness.

Treatment Planning and Implementation

Memory and organizational difficulties: To help Mrs. Y remember the day and date, the therapist provided Mrs. Y with a large digital clock that showed the time, day, date, and year. The clock was placed on a table that can be easily seen from both her bedroom and the kitchen in her small studio.

The therapist also provided Mrs. Y with a medication kit to increase medication adherence. Mrs. Y's caregiver was putting each medication in the kit once a week. Mrs. Y kept the medication kit in the kitchen to remember taking the medication after her meals. Despite this arrangement, Mrs. Y had still difficulty remembering taking the bedtime medication, because she was eating her dinner in her bedroom rather than in the kitchen. The therapist and Mrs. Y decided to place a sign "Take evening medication," written in heavy red ink, on her bedroom table. The large letters and the red color captured Mrs. Y's attention; as a result, she noticed the sign before she went to bed and was able to take her medication.

The therapist worked with Mrs. Y and her caregiver to create a plan that would help Mrs. Y make and keep her appointments. The therapist, Mrs. Y, and her friend created a list of telephone numbers and addresses of all friends, relatives, doctors and other frequently used telephone numbers (f.e., the nearest pharmacy and senior center, etc). The list was kept in a folder placed in a conspicuous place below Mrs. Y's calendar. Mrs. Y's friend was helping Mrs. Y to make the appointment and to mark it on the calendar. Then, Mrs. Y was able to call and arrange for transportation. As a result, Mrs. Y was able to follow her physical therapy appointments and make an appointment for hearing aid.

To help Mrs. Y with shopping, Mrs. Y's caregiver, following a therapist's suggestion, created a shopping list and placed it on the refrigerator's door with a pen attached to it. Thus, Mrs. Y was able to write on the shopping list whatever she needed to buy. Once a week, Mrs. Y went shopping with her caregiver. To remind Mrs. Y to take her shopping list, the therapist placed a sign "Don't forget your shopping list" on the front door. With these arrangements in place, Mrs. Y could buy the necessary items without putting additional burden to the caregiver.

Finally, the patient with the help of her caregiver and the therapist created a daily list of pleasurable activities. Every morning the caregiver placed the list near the calendar; the list was kept as a reminder for the patient to perform these pleasurable activities. When the patient performed an activity, she checked it off the list. At the end of the day, the patient and her caregiver-friend reviewed the list.

Outcome at 3 months

At the end treatment, Mrs. Y's did not meet criteria for major depression and her HDRS score was 8. Her functioning had improved significantly as it was shown by Mrs. Y's and her friend's report, and her scores on the Sheehan Disability Scale (Table 1). Both the patient and the caregiver reported satisfaction with treatment. The PATH therapist gave Mrs. Y and her caregiver a personalized booklet that described each problem, each implemented solution, the problem-solving stages, and the PATH tools that were helpful to solve Mrs. Y's problems.

CONCLUSION

PATH is a new home-delivered intervention designed to reduce depression and disability in depressed, cognitively impaired, disabled elders. A new intervention is needed as antidepressant drug treatment often has limited success in these patients. PATH focuses on the patient's ecosystem and employs environmental adaptations to bypass behavioral

limitations due to the patient's cognitive deficits. Furthermore, PATH invites caregiver participation to help the resolution of problems and to promote the patient's adaptive functioning.

The two case studies illustrate the administration of PATH in this population. First, both patients were at risk for poor response to antidepressant medication because of their cognitive impairment, and especially, their executive dysfunction (Kalayam et al., 1999; Alexopoulos et al., 2004; Sneed et al., 2007). Second, the patients' cognitive and physical deficits imposed significant limitations in following a weekly outpatient therapy program; therefore, a home-delivered therapy was strongly recommended. Third, PATH addressed the patients' cognitive and physical limitations as they were contributing to the patients' depression and impaired functioning. PATH utilized environmental adaptation tools to bypass the patients' behavioral limitations and invited caregiver participation when the patients could not solve their problems alone. Therefore, PATH created an "ecosystem" that fostered current and future problem resolution.

These cases highlight the need for an individualized approach to treatment that depends on the patient's severity of depression, type and severity of cognitive deficits, specific physical and behavioral limitations, as well as the willingness and availability of the caregiver. For example, Mr. X had mild to moderate executive dysfunction and mild memory deficits that contributed to mild organizational and planning difficulties. Because of his mild cognitive deficits and his ability to solve problems alone, Mr. X and the therapist agreed that the caregiver participation was not necessary. The final individualized plan for Mr. X included education about depression, the appropriate PATH tools to target and successfully bypass his physical and behavioral limitations, as well as initiation of pleasurable activities. As a result, PATH contributed to successful depression and disability outcomes.

Mrs. Y had moderate to severe executive dysfunction and memory deficits that contributed to significant organizational and planning difficulties. Therefore, Mrs. Y and the therapist agreed that the caregiver's participation will be beneficial. The proposed PATH tools assisted her to function independently in specific areas (e.g. make the doctor's appointment, arrange transportation, take medication), increase her participation in pleasurable activities, and decrease her depression. As a result, the caregiver burden was decreased. Similarly to Mr. X's case, PATH contributed to successful depression and disability outcomes.

The study has several limitations and presents challenges for future projects. Limitations include the description of only two cases, the lack of measures on caregiver's burden and the lack of assessments after the end of treatment. Furthermore, revisions of the PATH manual may include techniques to decrease anxiety as anxiety frequently occurs in geriatric depression and is associated with poor outcomes. Finally, the efficacy of PATH needs to be evaluated in a randomized clinical trial. If PATH is found efficacious, follow-up studies may focus on PATH's cost-effectiveness and dissemination. Even though psychologists may not be available in home-care settings, clinical social workers often offer psychosocial interventions in home-care (Gellis et al., 2007) and their services are Medicare-reimbursable.

Acknowledgments

This work was supported by the following grants: National Institute of Mental Health K23 MH074659, National Alliance for Research on Schizophrenia and Depression (NARSAD), the Cornell Center for Aging Research and Clinical Care, and the Mental Health Initiative Foundation.

REFERENCES

- Alexopoulos GS. Depression in the elderly. *Lancet* 2005;365:1961–1970. [PubMed: 15936426]
- Alexopoulos GS. Personalizing the care of geriatric depression. *Am J Psychiatry* 2008;165:790–2. [PubMed: 18593780]
- Alexopoulos GS, Kiosses DN, Murphy CF, et al. Executive dysfunction, heart disease burden, and remission of geriatric depression. *Neuropsychopharmacology* 2004;29:2278–84. [PubMed: 15340393]
- Alexopoulos GS, Arean P, Raue P. Problem-solving therapy versus supportive therapy in geriatric major depression with executive dysfunction. *Am J Geriatr Psychiatry* 2003;11:46–52. [PubMed: 12527539]
- Arean, PA.; Raue, P. Social Problem Solving Therapy for Depression and Executive Dysfunction. 2002. Unpublished Manual
- Arve S, Tilvis RS, Lehtonen A, et al. Coexistence of lowered mood and cognitive impairment of elderly people in five birth cohorts. *Aging (Milano)* 1999;11:90–5. [PubMed: 10386168]
- Brandt, J.; Benedict, RHB. Hopkins Verbal Learning Test-Revised. Professional Manual. Psychological Assessment Resources; Lutz, FL: 2001.
- D’Zurilla, TJ.; Nezu, AM. Problem-solving therapy: a social competence approach to clinical intervention. Singer; New York: 1999.
- Folstein MF, Folstein SE, McHugh PR. “Mini-Mental State”: A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975;12:189–198. [PubMed: 1202204]
- Gellis ZD, McGinty J, Horowitz A, et al. Problem-solving therapy for late-life depression in home care: a randomized field trial. *Am J Geriatr Psychiatry* 15:968–78. [PubMed: 17846101]
- Hamilton M. A rating scale for depression. *J Neurol Neurosurg Psychiatry* 1960;23:56–62. [PubMed: 14399272]
- Jurica, PJ.; Leitten, CL.; Mattis, S. DRS-2. Dementia Rating Scale-2. Professional Manual. Psychological Assessment Resources, Inc; Lutz, FL: 2001.
- Kalayam B, Alexopoulos GS. Prefrontal dysfunction and treatment response in geriatric depression. *Arch Gen Psychiatry* 1999;56:713–718. [PubMed: 10435605]
- Kiosses DN, Arean PA, Teri L, et al. Home-delivered Problem Adaptation Therapy (PATH) for depressed, cognitively impaired, disabled elders: A preliminary study. under review *Am J Geriatr Psychiatry*.
- Kiosses, DN.; Alexopoulos, GS. Problem Adaptation Therapy (PATH) Manual. 2008. Unpublished manual
- Leon AC, Olfson M, Portera L, et al. Mental disorders and disability among patients in a primary care group practice. *Am J Psychiatry* 1997;154:1734–40. [PubMed: 9396954]
- Miller MD, Reynolds CF 3rd. Expanding the usefulness of Interpersonal Psychotherapy (IPT) for depressed elders with co-morbid cognitive impairment. *Int J Geriatr Psychiatry* 2007;22:101–105. [PubMed: 17096459]
- Nezu AM, Perri MG. Social problem-solving therapy for unipolar depression: an initial dismantling investigation. *J Consult Clin Psychol* 1989;57:408–413. [PubMed: 2738213]
- Potter GG, Kittinger JD, Wagner HR, et al. Prefrontal neuropsychological predictors of treatment remission in late-life depression. *Neuropsychopharmacology* 2004;29:2266–2271. [PubMed: 15340392]
- Reynolds SL, Haley WE, Kozlenko N. The impact of depressive symptoms and chronic diseases on active life expectancy in older Americans. *Am J Geriatr Psychiatry* 2008;16:425–32. [PubMed: 18448853]
- Simpson S, Baldwin RC, Jackson A, et al. Is subcortical disease associated with a poor response to antidepressants? Neurological, neuropsychological and neuroradiological findings in late-life depression. *Psychol Med* 1998;28:1015–1026. [PubMed: 9794009]
- Sneed JR, Roose SP, Keilp JG, et al. Response inhibition predicts poor antidepressant treatment response in very old depressed patients. *Am J Geriatr Psychiatry* 2007;15:553–63. [PubMed: 17586780]

- Teri L, Logsdon RG, Uomoto J, et al. Behavioral treatment of depression in dementia patients: a controlled clinical trial. *J Gerontol B Psychol Sci Soc Sci* 1997;52:P159–66. [PubMed: 9224439]
- Unützer J, Bruce ML. NIMH Affective Disorders Workgroup. The elderly. *Ment Health Serv Res* 2002;4:245–247. [PubMed: 12558011]
- Velligan DI, Bow-Thomas CC. Two case studies of cognitive adaptation training for outpatients with schizophrenia. *Psychiatr Serv* 2000a;51:25–29. [PubMed: 10647132]
- Velligan DI, Bow-Thomas CC, Huntzinger C, et al. Randomized controlled trial of the use of compensatory strategies to enhance adaptive functioning in outpatients with schizophrenia. *Am J Psychiatry* 2000b;157:1317–1323. [PubMed: 10910797]

Table 1

Depression, Neuropsychological, and Disability Scores of Mr. X and Mrs. Y at Baseline and After 12 Weeks of PATH

	Mr. X		Mrs. Y	
	Baseline	12-wks	Baseline	12-wks
Depression				
Hamilton Depression Rating Scale-24 item (HDRS) ¹	17	3	18	8
Cognitive Impairment				
<u>Overall Cognitive Impairment</u>	27	27	25	24
Mini Mental State Exam (MMSE) ²				
<u>Executive Dysfunction Screening</u>	33	29	22	31
DRS-IP ³				
<u>Memory</u>				
HVLT-R ³				
Recall 1	4	3	1	3
Recall 2	5	5	3	4
Recall 3	6	6	5	5
Delayed Recall	4	3	1	0
Disability				
Sheehan Disability Scale (SDS) ⁵	7	3	12	4
Cost of PATH Tools⁶				
Total	\$ 38.59		\$ 31.32	

¹ Hamilton Depression Rating Scale-24 item (Hamilton M, 1960)

² Mini Mental State Exam (Folstein et al., 1975)

³ Mattis Dementia Rating Scale (DRS-II) Initiation/Perseveration Subscale; scores range 0-37 and higher scores indicate better executive functioning (Jurica PJ et al., 2001)

⁴ Hopkins Verbal Learning Test - Revised; scores represents the number of words recalled (Brand J et al., 2001)

⁵ Sheehan Disability Scale scores are the sum of SDS-Family Life/Home Responsibilities and SDS-Social Life; scores range 0-10 and higher scores indicate more impaired functioning (Leon et al., 1997)

⁶ Mr. X and Mrs. Y utilized the following PATH tools: notebook, signs, calendar, medication pill box, folder, telephone with large numbers (only for Mr. X), large magnifying glass (only for Mr. X) and digital clock (only for Mrs. Y).