In Vivo Amplification of Skills Training: Promoting Generalization of Independent Living Skills for Clients with Schizophrenia

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In Vivo Amplified Skills Training, IVAST, functions to bridge the gap between clinic-based skills training and use of social and independent living skills in everyday life for persons with schizophrenia and other serious and persistent mental illness. IVAST utilizes a specialist case manager who provides individualized, community-based teaching using behavioral techniques to promote clients' use of skills that were learned in classroom group sessions. The IVAST trainer also liaises with the client's psychiatrist and other clinic-based staff, family members, and community agencies to create opportunities, encouragement and reinforcement for the client's independent use of skills in the community.

The aim of IVAST is to accelerate autonomous functioning of persons with mental disabilities in the community and thereby reduce their dependency on case managers and other therapists. To the extent that IVAST can empower clients to solve their own problems and attain their personal goals, enduring improvements in social role functioning and quality of life should ensue. A controlled study of IVAST has documented improvements in social adjustment when behavioral learning techniques are employed in the community settings of the clients.

An IVAST case study is presented to illustrate the community-based use of medication management, symptom management, and social problem solving in the attainment of personally relevant goals. Obstacles to success of IVAST may derive from deficits in personal motivation, family involvement, community support, financial resources, premorbid functioning, and medication compliance.

The availability of atypical antipsychotic medications, which improve both positive and negative symptoms with fewer debilitating side effects, raises the possibility that many more persons with schizophrenia now have the potential to benefit from the innovative psychiatric rehabilitation strategies that have been developed in the past 20 years (Kane and Malhotra 2001; Kopelowicz et al. 1996; Liberman, Kopelowicz, and Smith 1990; Seitz-

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man et al. 1998). One of the rehabilitation strategies, social skills training, has been favorably evaluated as a psychosocial treatment in the context of adequate pharmacotherapy. Pharmacotherapy has its principal effects on ameliorating symptoms and protecting against relapse, while psycho-social skills training exerts its major effects on the functioning of individuals in every day life. Thus, these two elements of treatment of schizophrenia are complementary and both are essential for achieving optimal outcomes.

While clinic- or hospital-based social skills training has had demonstrable efficacy in achieving significant improvements in acquisition, generalization, and maintenance of specific skills in persons with schizophrenia (Benton and Schroeder 1990; Dik and Beld 1996, Marder et al. 1996; Mueser and Fond 2000), community-based support for the use of these skills appears essential for enabling the training to have a favorable impact on broader categories of social adjustment (Penn and Mueser 1996; Stokes and Baer 1977; Stokes and O'Connor 1989; Tatum, Wallace, and Lecomte 2000). The task of generalization, then, is to create opportunities, encouragement, and positive reinforcement for individuals with serious mental disorders to utilize their newly acquired skills in their everyday lives (Liberman and Fuller 2000, Liberman, Kopelowicz, and Young 1994). In this paper, we present the evolution of In Vivo Amplified Skills Training (IVAST), a novel and systematic approach to promoting the generalization of social skills training in the community with the aim to improve overall role functioning. We begin with an overview of IVAST, then describe its efficacy and present a case description of its use, and conclude with a discussion of the challenges we have encountered in its implementation.

MODULES FOR SOCIAL SKILLS TRAINING

As a prototype for social skills training, we utilized modules from the UCLA Social and Independent Living Skills Program (Kopolowicz et al. 1995; Liberman and Corrigan 1993; Liberman and Wallace 1993). Because they were well-structured by trainer's manuals, participant workbooks, and videos, these "user-friendly" modules could be employed by a wide range of professional and paraprofessional staff for teaching mentally disabled persons to live with greater independence in residential programs, family homes, and other types of independent living settings (Eckman et al. 1990; Wallace et al. 1992). The modules incorporate principles of social learning with highly structured, systematic curricula and training techniques derived from task analyses of competencies for community living. As shown in Table 1, the modules utilize seven learning activities based on a wide range of behavioral techniques. The UCLA Social and Independent Living Skills series of modules have been developed for clinicians to teach independent living skills on a variety of topics relevant for community adaptation, including Medication Management, Symptom Management, Substance Abuse Management, Recreation for Leisure, Interpersonal Problem-Solving, Conversational Skills, Friendship and Intimacy, and Community Re-Entry. The skill areas, or "chapters," for six of these modules are shown in Table 2. Behavioral rehearsal, repetition and overlearning, prompting, modeling, coaching, role playing, shaping, fading, videotape feedback, and positive reinforcement are all used to help overcome the cognitive deficits and symptomatic obstacles of clients as they learn coping skills for community living (Liberman and Wallace 1993). Participation in modules has been shown to yield significant increases in knowledge and skills, which were maintained over 1 year and were independent of psychopathology (Eckman et al. 1992; Helms, Liberman, and Kopelowicz 2000; Wallace et al. 1992). Social skills training has also been shown to result in improvements in some areas of social adjustment in the community, especially in personal quality of life, social activities, interpersonal intimacy, and leisure (Marder et al. 1996; Wallace and Liberman 1985).

The modules can be conducted reliably
and skillfully in ordinary community-based and residential settings by facility staff after completing a 2-day training workshop, or even with simply the provision of telephone consultation (Corrigan, Mackin, and Liberman 1994; Eckman et al. 1993; Wallace et al. 1992). In addition, the modules appear to be readily adapted by practitioners in various countries and cultures, with translations now exist in 17 languages, and with demonstrated efficacy of implementation in such disparate places as Japan, China, Switzerland, Norway, Peru, and Quebec (Liberman, 1998). Moreover, the modules appear adaptable for use in short-term inpatient units for treatment of acutely ill psychotic patients as well as in a wide spectrum of residential rehabilitation and ambulatory care facilities (Kopelowics et al. 1998).

Although the modules have demonstrated their versatility and replicability, they are not easily used with clients in their natural environments. There are singular advantages to being able to teach people skills in the very locations where they will be required to use the skills, but it is not often logistically or interpersonally feasible to mount a video-assisted module in an individual’s apartment, or in stores, agencies, and recreational facilities. Impediments are sometimes experienced in gaining access to board and care homes, and it is not always cost-effective to lead a module for one person, rather than a group. Some caretakers complain that their priorities must be devoted to custodial tasks and that their time is too limited for organizing and running regularly scheduled skills training groups.

These hindrances prompted us to develop IVAST as an alternative strategy for promoting generalization of social skills, through the use of a trainer who works with individuals or in small groups to create personalized prompts and reinforcers in the community for skills that have been initially learned in a clinic. The trainer could be drawn from the ranks of paraprofessional case managers and provided competencies in skills training through supervised practice and the availability of a highly prescriptive clinical manual. Given the widespread availability of case managers in community-support programs and mental health centers, we viewed this strategy as one that could potentially be adopted by many different types of agencies.

**IVAST OVERVIEW**

IVAST builds upon the intensive outreach case management techniques that were pioneered by Stein and Text in their innova-
TABLE 2
Skill Areas of the Social and Independent Living Skills Modules

MEDICATION MANAGEMENT MODULE
- Skill Area 1: Obtaining Information about Antipsychotic Medication
- Skill Area 2: Knowing Correct Self-Administration and Evaluation of Medication
- Skill Area 3: Identifying Side Effects of Medications
- Skill Area 4: Negotiating Medication Issues with Healthcare Providers
- Skill Area 5: Taking Long-Acting Medication by Injection

SYMPTOM MANAGEMENT MODULE
- Skill Area 1: Identifying Warning Signs of Relapse
- Skill Area 2: Managing Warning Signs of Relapse
- Skill Area 3: Coping with Persistent Symptoms
- Skill Area 4: Avoiding Alcohol and Street Drugs

CONVERSATION SKILLS MODULE
- Skill Area 1: Verbal and Non-Verbal Communication Behaviors
- Skill Area 2: Starting a Friendly Conversation
- Skill Area 3: Keeping a Friendly Conversation Going
- Skill Area 4: Ending a Conversation Pleasantly
- Skill Area 5: Putting it All Together

RECREATION FOR LEISURE
- Skill Area 1: Identifying Benefits of Recreational Activities
- Skill Area 2: Getting Information about Recreational Activities
- Skill Area 3: Finding Out What's Needed for a Recreational Activity
- Skill Area 4: Evaluating and Maintaining a Recreational Activity

COMMUNITY RE-ENTRY
- Session 1: Introduction to the Community Re-Entry Program
- Session 2: Symptoms of Disabling Mental Disorders
- Session 3: Determining Discharge Readiness
- Session 4: Community Re-Entry (Discharge) Planning
- Session 5: Connecting with the Community
- Session 6: Coping with Stress in the Community
- Session 7: Planning a Daily Schedule
- Session 8: Making and Keeping Appointments
- Session 9: How Medications Work to Prevent Relapse
- Session 10: Evaluating the Effects of Medication
- Session 11: Solving Medication Problems
- Session 12: Solving Medication Side Effects
- Session 13: Identifying Warning Signs of Relapse
- Session 14: Keeping Track of Warning Signs
- Session 15: Developing an Emergency Relapse Prevention Plan
- Session 16: Bringing your Emergency Plan to the Community

INTERPERSONAL PROBLEM-SOLVING SKILLS MODULE
- Paying Attention
- Describing Problems
- Thinking of Ideas for Solutions
- Evaluating Solutions
- Putting Solutions into Action
tive work with the Program for Assertive Community Treatment (PACT) in Madison, Wisconsin (Dixon 2000; Stein and Test 1980; Test 1992). The primary goals of assertive community treatment were (1) to reduce use of hospitalization through the provision of on-site support and rapid response to emergencies, and (2) to improve the client’s quality of life by linking him or her to available social services and establishing trust and rapport with the PACT team. IVAST aims to supply the missing ingredient that has proven to be an obstacle in the efforts of assertive community case managers to inculcate durable social and independent living skills to clients—namely, the use of an expert or specialist who utilizes highly prescriptive and structured behavioral techniques to teach clients to function more autonomously (Mueser et al. 1998; Test, Knodler, and Allens 1991).

In contrast to the indefinite and comprehensive assertive case management, IVAST is a more focused, time-limited, skills-training intervention. IVAST and skills training can be viewed as interconnected modules that can be plugged into more comprehensive community-support programs such as PACT, psychosocial clubhouses, or day treatment programs. The IVAST trainer uses behavioral techniques to assist clients to utilize what they have learned in a clinic-based skills training group. The IVAST trainer has ties with the clinic-based module trainer to keep abreast of the skills that are being taught. Contact is also maintained with other members of the client’s treatment team (e.g., psychiatrist, nurse, and case manager), hence IVAST is compatible with a broad array of service delivery systems. The community-based and specialized IVAST trainer also enriches the treatment team by consulting with the client’s natural support systems, family members, community support people, mental health, substance abuse, housing, and other social service agencies to promote opportunities and reinforcement for the generalization of social skills learned in a clinic or mental health center. To free time for community-based services by the IVAST trainer, typical case management tasks (e.g., scheduling non-emergency medical appoint-

ments, securing housing, and completing disability applications) are deferred to other members of the case management team. The IVAST trainer has a small caseload of approximately 20 clients, yielding sufficient time to work cooperatively and individually with each client to set and achieve personal goals.

As shown in Table 3, the IVAST trainer utilizes behavioral techniques to promote the client’s use of self-management rating sheets in becoming autonomous in medication management, symptom management, and social problem solving. It cannot be overemphasized, however, that the role of the IVAST trainer in strengthening and generalizing skills must be embedded in a strong and mutually respectful relationship with the client. Additionally, the trainer must help to motivate the client’s participation in IVAST by frequently prompting the client to grasp the role of skills training in a stepwise progression toward his or her own personally meaningful goals in life. For some clients, managing their own medication may be linked to staying out of the hospital or having their own apartment; for others, medication self-management may be a milestone toward getting a job. It is beneficial for the client to view the IVAST trainer as a life coach or personal trainer, not unlike the individuals who facilitate the attainment of career goals or physical fitness and well-being.

As depicted in Table 4, each IVAST session is based on six tasks: (1) to offer “booster sessions” that use behavioral techniques such as shaping, prompting, rehearsal, feedback, coaching, and positive reinforcement to promote the client’s more durable maintenance of skills; (2) to encourage the client to maintain the primary responsibility for achieving his or her goals, with the IVAST trainer serving as a consultant to help the client move toward autonomy; (3) to help the client identify resources (e.g., people) and opportunities for developing support in the community to implement independent living skills; (4) to approach every challenging situation in the community with a formal problem-solving orientation; (5) to select the module skills which are most relevant to the client’s life and inculcate
these skills in the natural environment, and (6) to assign IVAST homework in addition to the clinic-based module homework assignments to further reinforce use of skills in community settings.

The IVAST clinician's manual (Blair 1994) was designed to operationalize the six overarching IVAST tasks by using a structured and systematic format that directly paralleled the seven learning activities in each skill area of the UCLA Social and Independent Living Skills modules. The IVAST clinician's manual is a "how to" approach for using behavioral techniques, identifying opportunities to use module skills, reinforcing the use of skills, and expanding the client's support network in the community. For example, one IVAST activity focuses on using skills to make an appointment with a doctor to report a side effect.

The manual provides prescriptive, in vivo activities for each of the seven learning activities in each skill area. These community-based interventions aim to bridge the gap between clinic-based learning of skills and their use in the natural environment. The systematic and structured use of cognitive-behavior therapy techniques in both the clinic-based modules and IVAST helps clients to overcome or compensate for learning disabilities posed by persistent positive symptoms, negative symptoms, depression, social, and performance anxiety, and neurocognitive deficits (Kopelowicz and Liberman 1994, Liberman, 2001). The IVAST clinician also completes an IVAST Skill
TABLE 4  
IVAST Session Format

1. Meet the client in the community.
2. Review any module homework that was assigned in the last session.
3. Review any IVAST homework that was assigned in the last session.
4. Review client’s notebook including any self-monitoring sheets, such as the  
   • Self-Assessment Rating Sheet  
   • Warning Signs Rating Sheet  
   • Persistent Symptoms Rating Sheet  
   • Constructive Activities Rating Sheet
5. Conduct current session activity which reinforces a skill being learned in the clinic-based groups.
6. Use behavioral techniques in conducting IVAST sessions such as repetition, modeling, role playing,  
   coaching, prompting, and positive reinforcement.
7. Observe for continued use of skills learned in previous skill areas. (Provide booster training, if  
   needed.)
8. Identify any current problems or obstacles preventing use of skills or anticipated stressors.
9. Make IVAST homework assignments. When possible, ask the client to bring to the next session a  
   tangible product of completing the assignment such as receipts, tickets, brochures, catalogues, etc.
10. Provide feedback and positive reinforcement for any and all achievements and effort expended in the  
    current session.
11. Schedule the next appointment. Watch the client write the day and time on a calendar in his/her  
    notebook.

Attainment Record for each client at module skills are demonstrated in the community.

CONTEX OF IVAST AT THE  
VA GREATER LOS ANGELES  
HEALTHCARE CENTER

IVAST was used as part of the study,  
Management of Risk of Relapse in Schizophrenia,  
at the Veterans Administration (VA) Greater  
Los Angeles Healthcare Center. This project  
icorporated a comparison of two antipsy-  
chotic medications and two modes of social  
skills training. Clients were randomly assigned  
either to the two medication conditions  
(risperidone or haloperidol) and then to skills  
training in the clinic alone or training in the  
clinic plus IVAST. Patients were stable but  
nill symptomatic outpatients diagnosed with  
schizophrenia. The pharmacological hypothe-  
sis of this double-blind study was that, com-  
pared to haloperidol, risperidone would be  
more effective in treating negative symptoms  
of schizophrenia and in facilitating more ef-  
f ective and efficient learning of social skills,  
and would be associated with fewer side effects  
and better treatment compliance. The psy-  
chosocial hypothesis was that participants ran-  
domized to IVAST in addition to clinic-based  
modules would achieve better social outcomes  
than those assigned to the clinic-based mod-  
ules alone.

In conjunction with their double-blind medication, all participants received case man-  
gement and sessions with a psychiatrist on a  
weekly basis throughout the 15 months of the  
study. Participants attended four different  
clinic-based Social and Independent Living  
Skills groups, which included the Medication  
Management and Symptom Management  
modules twice a week for 90-minute sessions  
each over a 4-month period. This was fol-  
lowed by weekly, 90-minute group sessions  
featuring interpersonal problem solving for  
5 months. The skills training concluded with  
weekly, 1-hour groups for 6 months of Per-  
sonal Effectiveness for Successful Living  
(Liberman, DeRisi, and Maser 1989), in  
which participants worked toward achieving  
individualized and personally relevant goals.  
The IVAST trainer engaged each IVAST  
participants.
client in a single meeting for an average of 2
hours per week, but the actual amount of time
varied across the 15-month study. Flexible lev-
el of IVAST were essential to match the indi-
vidual needs of each client. For example, con-
tacts for initial orientation and alliance building
during the engagement phase of IVAST occa-
sionally exceeded 2 hours per week. After com-
pleting the Medication Management and Sym-
tom Management modules, longer sessions
were occasionally scheduled when clients were
learning to use social problem solving or com-
pleting their homework assignments to achieve
personal goals as part of the Personal Effec-
tiveness for Successful Living group. Finally,
during the final fading phase of IVAST, which
occurred during the last 2 months of the study,
the IVAST trainer decreased weekly meetings
to every other week.
Every IVAST activity was recorded us-
ing an IVAST Contact Rating Sheet as shown
in Table 5. The IVAST trainer, who was a
para-professional with a bachelor’s degree, re-
ceived weekly consultation and clinical super-
vision from a clinical psychologist who had
experience in social skills training. Feedback
about the appropriateness of IVAST interven-
tions was given to the trainer during weekly
supervision with the psychologist, using com-
pleted IVAST Contact Rating Sheets as guides.
The psychologist also conducted quality assur-
ance monthly when accompanying the IVAST
trainer into the community and directly observ-
ing her work with clients.

EMPIRICAL EVALUATION
OF IVAST

Was IVAST in combination with
clinical-based skills training superior to clinical-
based skills training alone in terms of general-
ization and use of social and independent liv-
ing skills in the community? Were there any
interactions between the two drug conditions and the two skills training conditions? While
the results of the comparison of risperidone
versus haloperidol will be reported in another
publication at a later time, it is possible to sum-
marize some of the outcomes accruing to clients
who received the IVAST in addition to clinic-
based skills training. The two outcome scales
used to measure generalization of skills into
the “real world” were the Social Adjustment
Scale II (Schoeberl, Hagerty, and Winstead
1979) and the Quality of Life Scale (Hein-
Risperidone was better tolerated than
haloperidol with fewer side effects. Similarly,
clients who participated in IVAST together
with clinical-based skills training had a greater
attachment to their treatment program, with
more support and success in using their skills
in everyday life. Thus, adherence to treat-
ment, as opposed to attrition, was seen in a
larger proportion of clients who were ran-
domized to the risperidone plus IVAST treat-
ment condition.

While both cohorts of clients—that is,
those participating in clinical-based skills train-
ing alone or supplemented with IVAST—
showed significant improvements in social
functioning and quality of life, clients who
were in the IVAST-supplemented program
had significantly greater improvements in
overall social functioning, instrumental roles,
family relations, interpersonal relations, and
total quality of life (Glynn et al. in press).
The benefits of IVAST on generalization of
skills training was particularly in evidence
since the acquisition of skills subsequent to
clinical-based training, as documented by role
play and interview-based tests, was similar and
substantial for clients in both the psychoso-
cial treatment conditions.

CASE STUDY OF IVAST

SL was a 45-year-old male who had his
first psychiatric hospital admission at the VA
hospital prior to entry into the study, after 5
years of uncontrolled psychosis with poor psy-
chosocial functioning. He had been living in
his car for 6 months prior to his admission to
the VA hospital. He was unemployed, de-
pressed, disheveled, received his meals from
missions and shelters, and was in debt because
he had received overpayments of unemployment
insurance.
### TABLE 5
**IVAST Contact Rating Sheet**

<table>
<thead>
<tr>
<th>Client’s Name</th>
<th>Evaluation Date</th>
<th>Session #</th>
<th>Session Time</th>
<th>Money Spent</th>
<th>Total Miles</th>
</tr>
</thead>
</table>

Appointment Location: (Circle all those applicable during contact)
1. Veteran Affairs Campus
2. Client’s home or apartment with caretaker included in the session
3. Client’s house or apartment without caretaker included in session
4. Doctor’s office
5. Coffee shop or restaurant
6. Social Service Agency
7. Recreation area
8. Shopping area
9. Vocational
10. Pharmacy
11. Residential care home
12. Other:

Specify:

Session Activities (Circle all that occurred in session)
1. Obtain tangible reinforcers
2. Review IVAST homework assigned in last session
3. Identify nd/or meet people who can be a resource to client
4. Crisis intervention
5. Review notebook
6. Family session
7. IVAST Medication Management Module #
8. IVAST Symptom Management Module #
9. IVAST Social Problem Solving, Step #
10. IVAST Successful Living Assignment
11. Assigned IVAST Homework
12. Other:

Self-Monitoring: (Circle all that apply based upon inspection of the client’s notebook and environment)
1. Medication Self-Management Rating Sheet
2. Warning Sign Rating Sheet
3. Persistent Symptoms Rating Sheet
4. Coping Techniques for Persistent Symptoms

Evaluation of Homework Assignment from Prior Session: (Circle all that apply)
1. Completed IVAST homework successfully
2. Did not attempt IVAST homework assignment because
3. Attempted IVAST homework but did not complete because
4. No IVAST homework assigned

(continued)
TABLE I
IVAST Contact Rating Sheet

Obstacles reported by client or observed during session that interfered with obtaining rehabilitation goals (Circle all that apply)
1. Lack of needed resources
2. Warning signs flaring up
3. Side effects causing discomfort
4. Family/caregiver stressor
5. Use of street drugs or alcohol since last visit
6. Environment stressor
7. Persistent symptoms
8. Exacerbation of pre-existing
9. Other (describe) ________

Plans and assignments for next IVAST cont....

His highest level of adulthood functioning was when serving in the Navy as a jet engine mechanic, 12 years before. He had received a honorable discharge from the military, was a plumber for 6 years and then worked for the post office for 1 year. He was terminated from his job at the post office as a result of persecutory delusions and thought broadcasting, which led him to accuse his supervisor of trying to harm him. This was his first reported psychotic episode, although he had been treated for depression 8 years previously. SL had no family or friends and wandered aimlessly from day to day.

After symptom stabilization as an inpatient and giving informed consent, SL entered the randomized study. At that point, he had very poor insight into managing his symptoms and medication. At every clinic visit, he requested to see the doctor to report physical complaints. He frequently refused to take his antipsychotic medication.

Assessment and Goal Setting

At the beginning of the intervention, SL revealed to the IVAST trainer his personal motivation to achieve independent living goals but expressed hopelessness about achieving them. He lacked financial resources, structure in his daily living routine, and any type of community support system, and was preoccupied with his indebtedness, homelessness, and troublesome somatic symptoms. SL identified and achieved his first goal of finding housing by moving into the VA Medical Center's domiciliary. He then set a long-term goal of moving into independent housing.

The IVAST trainer provided education and reinforcement to help SL establish a schedule to meet his daily grooming and hygiene needs, and to engage in a recreational activity at least once a week. His clinical case manager helped him apply for Social Security disability benefits and the IVAST trainer prompted and reinforced his attendance at follow-up appointments to obtain these Social Security benefits. SL also set a long-term goal of resolving his debts and worked with the IVAST trainer to learn how to use problem-solving and communication skills effectively to that end.

Medication and Symptom Management Modules

During the IVAST sessions in the first 6 months, SL received encouragement and problem solving to integrate the medication management and symptom management skills he learned in the clinic-based groups into his
daily routine. Despite his somatic complaints and akathisia side effects, SL began to use the medication management and symptom self-management skills reliably. The IVAST trainer used repetition, coaching, modeling, role playing, cues and prompts, homework assignments, and self-monitoring techniques to encourage SL's independent use of the skills. As a result, SL was able to experience success in reporting symptoms and side effects and in developing a systematic method to take his medications regularly. Once on medication reliably, his residual positive psychotic symptoms subsided. He also utilized an emergency plan for warning signs of relapse with his treatment team, for which he received abundant praise from the IVAST trainer.

Social Problem-Solving Group

After graduating from Medication Management and Symptom Management groups, SL attended the Social Problem Solving group. He learned skills to (1) identify social problems, (2) generate alternative solutions, (3) prioritize possible solutions, and (4) implement a solution using communication skills effectively. As he learned these skills in the group, SL would practice using the skills in the community with opportunities created by the IVAST trainer, who also gave positive feedback for his use of these fledgling skills.

One of his goals was to develop a fuller social life. The IVAST trainer accompanied him in vivo as he identified the places, people, and specific situations where he then practiced using conversational skills in the community. After practicing the skills with the trainer's prompting and modeling, SL was given IVAST homework assignments to shape his independent use of conversational skills. A typical, early assignment was to start a brief conversation with someone he knew everyday and write down the results in his notebook for later review with the IVAST trainer. A later assignment was to introduce himself to people he did not know three times each week and have a brief conversation with each of these people.

SL completed his clinic-based and IVAST homework assignments without fail, and, as a result, began to experience more favorable social interactions with others in the community. As his competence increased, he experienced enhanced interest, comfort, confidence, and pleasure when interacting with others. As he gradually experienced natural reinforcement from these interactions, he required less intervention from the IVAST trainer, who faded her praise and recognition for his social successes. This freed up time for her to shift the focus of the IVAST to new goals he had established in the realm of vocational activity, helping him to use problem solving to concretize realistic options for vocational rehabilitation and to plan the implementation of stepwise assignments for exploring and achieving success in this area. Meanwhile, his autonomy in the area of socialization was gradually consolidated by his initiating social activities independently through attending programs at a church in his neighborhood and going to the movies with several veterans whom he met at the VA Domiciliary.

Personal Effectiveness for Successful Living Group

The final group he attended was Personal Effectiveness for Successful Living in which he was guided to establish more individualized goals that would build on his demonstrated capacity for managing his illness and expanding his social contacts. In this group, which lasted 5 months, he set more advanced vocational and socialization goals, which included a long-term desire to become an auto mechanic. As he formulated the component steps to achieve this long-term goal, SL received IVAST coaching in the community to achieve each step in his plan. For example, the first step in his goal plan was to obtain information about automobile mechanic training programs in his area and the resources he would need to enroll in the program. He was coached by the IVAST trainer to use the same problem-solving method learned in the clinic-based modules to identify alternative programs, their pros and cons, and how to remove obstacles to obtaining information about them.
SL was able to execute a plan for every step in his pathway to become an auto mechanic. The IVAST trainer and SL went to one of the schools, where the IVAST trainer modeled how to use good verbal and nonverbal communication skills to obtain information about the program. Then the IVAST trainer role played the skills with SL whereupon SL and the IVAST trainer went to the next school, where SL used the skills to obtain information with coaching from the IVAST trainer. Through repetition and rehearsal, SL was able to obtain information about the remaining schools on the list by completing independent IVAST homework assignments. By the time he graduated from the Personal Effectiveness group, SL had enrolled in an automobile mechanic program at a local trade school and completed one course successfully.

Using the same methods of skills training during the final month of the program, he had also obtained SSI benefits and financial aid for tuition at the local trade school, moved into a government-subsidized apartment, and was living independently. He continued to achieve socialization goals by going to dances, attending more church activities, enrolling in community-based leisure activities, and making initial attempts to date. He continued to use medication and symptom management skills to remain psychiatrically stable. For example, as he extended his scope of activities and level of independence, he experienced three transient episodes of stress-related prodromal symptoms. He was able to implement his relapse prevention program by bringing his warning signs to the attention of the treatment team and to receive time-limited, supplemental antipsychotic medication to protect him from the stress he was experiencing.

Two-Year Follow-Up

Two years after completing 15 months of skills training in the clinic and IVAST in the community, SL continued to see his case manager in the clinic. He attended all of his clinic appointments, continued with his trade school course work, dated women with pleasure, and maintained independent living in his own apartment. He had no further psychotic exacerbations or hospitalizations.

**DISCUSSION**

The IVAST procedure incorporates several principles that have been identified as playing a key role in the generalization of skills to natural environments (Kendall 1989, Liberman et al. 2000, Stokes and Bass 1977, Stokes and Ousby 1989). Practice is conducted in the actual environments where the skills must be used. The IVAST trainer ensures that the client is encouraged to use skills in everyday life that have been learned in the clinic groups. Moreover, the trainer gives abundant reinforcement for even small approximations of use of the skills in the community. In addition, the trainer creates natural opportunities for the skills to be used, removing impediments to the client’s progress. Environmental modification is also an element in IVAST, with the trainer recruiting potential support persons and teaching caregivers (e.g., family members, agency workers, employers) how to reduce stress and reinforce use of skills.

Based on our experience in conducting IVAST with over 30 adult clients having schizophrenia, what have we noted to be the benefits of IVAST, as well as the challenges encountered in its implementation? One of the benefits of IVAST comes from its articulation with the Social and Independent Living Skills modules. Because of their cognitive and symptomatic problems, individuals with schizophrenia can learn new skills more efficiently in the clinic where the setting is quiet and devoid of distractions. After repeated practice and mastery in the clinic or mental health center, employing the skills with the support of an expert trainer in vivo can lead to further success experiences.

Another advantage of the combined use of the modules to teach skills and IVAST to generalize the skills is the capability of low-cost, nonprofessional staff for this work. Both the modules and IVAST were designed to be used by a wide array of mental health workers and do not require the use of highly trained...
clinical staff. IVAST appears to work well when both the clinic-based and IVAST trainees have effective interpersonal skills, teaching ability, empathic understanding of persons with serious and persisting psychiatric illness, and a systematic approach to treatment. The manuals are explicit and provide clear guidance to the trainers and, when combined with selection of enthusiastic, down-to-earth and well-organized trainers, can be implemented with clinical effectiveness. From this vantage point, IVAST is similar to the Individual Placement and Support method of vocational rehabilitation (Drake et al. 1999). Both techniques are guided by manuals but require clinicians with energy, spontaneity, and a systematic approach to service delivery.

Varying Levels of Motivation to Change

In both the IVAST procedure and the Personal Effectiveness for Successful Living group, clients are encouraged to (1) identify personal goals that they would like to achieve, (2) make systematic plans to meet these goals, and then (3) implement a stepwise effort to achieve their goals. Clients’ personal motivation to improve the quality of their lives becomes a salient issue here. We have observed that clients who report high satisfaction with their current lifestyle find it very difficult to set and implement new goals. These individuals appear to have little motivation to change their status quo daily routines. In the terms of Prochaska and DiClemente (1982; Prochaska, DiClemente, and Norcross 1992), they are in the “pre-contemplation” or early “contemplation” phases of readiness for rehabilitation.

In contrast, those clients who can articulate specific and feasible long-term personal goals are motivated to participate in skills training that can make an impact on their life styles. For example, goals set by individuals at our clinic have included finding productive activities to do with their time, making more money, living in better residential settings, expanding their social life, and going back to school. Obtaining work, having more satisfying intimate relationships, and improving the cordiality in family relationships are other goals that often appeal to persons with schizophrenia.

It is possible to enhance the motivational state of individuals with schizophrenia, even those with negative symptoms such as apathy and anergia. Motivation is not an “intrinsic” and enduring trait but rather is dynamically in balance with social factors and tangible reinforcers that can be introduced into a person’s life (Lecomte, Liberman, and Wallace 2000). Thus, asking questions of clients such as “What would make your daily life more enjoyable and pleasurable?” or “What activities would bring you more enjoyment when you feel bored?” can help persons with schizophrenia to consider change, especially when social skills training can be offered as a vehicle for change. Other techniques for enhancing motivation include reinforcer sampling that involves exposing individuals to activities, people, places, events, and things that they have not been associated with enjoyment or preferences previously or even never experienced in the past.

Availability of Environmental Resources

Using IVAST to support the use of skills in everyday life requires the IVAST trainer to identify and liaise with community resources for the client. IVAST activities include linking the client with mental health and health care agencies, churches, recreational districts, social services, board and care operators, families, and acquaintances of the client. An example is identifying the staff member at a board and care home whom the client has nominated as a potential support person in identifying early warning signs of relapse. Another example is prompting the client to use his conversational skills to invite a friend to join him in going to a coffee shop or library. We have found in another study of generalization of social skills training that natural supporters of the clients—whether friends, roommates, or staff members in residential care homes—can serve as effective in vivo amplifiers of the skills that have been taught in clinic-based modules (Tauber et al. 2000). Members of the client’s natural social support network
can be trained and supervised with minimal expenditure of time and costs, thereby making the skills training enterprise more cost-effective.

As the client identifies currently available community resources and is observed on the pathways of daily life in the community, the IVAST trainer can assess deficits, inappropriate behaviors, and strengths in social and instrumental role functioning. One of the IVAST trainer’s most important roles is to pick out the client’s strengths and reinforce them, since rehabilitation depends on accentuating the positive. Often, amplification of assets and abilities will displace symptoms, deficits, and deviant behavior which in the past may have led the client to be estranged from the community. When the IVAST trainer keeps alert to opportunities for the client’s exercising independent living skills and then liaises with people in the client’s network to encourage them to make opportunities and encouragement available for using the skills, it becomes possible to craft a “map” of the client’s desired lifestyle, and to facilitate his or her traversing its routes with success.

Environmental Obstacles to IVAST

Neighborhood safety, perceived dangerousness of activities and locations, and lack of social and recreational resources may interfere with generalizing the use of medication and symptom management skills (Breke et al. 2001). An IVAST client who lived in a dangerous neighborhood was only with great difficulty able to obtain medication and use a telephone to report any warning signs of relapse or medication side effects. The local pharmacy was a hangout for drug dealers and the public telephone that was available to him in his boarding home was used by other residents who were gang members. The dangerousness of the environment can impede clients attaining their personal goals in social and recreational domains as well. For example, one client in the IVAST program was unable to go for a walk at a nearby park because of illicit drug activities and bullying by local teenagers. When leaving his house, he would walk directly to the bus stop but was unable to stroll through his neighborhood for an evening walk or engage in any type of recreational activity. Sounds of police helicopters and sirens were much more commonly heard in his neighborhood than children laughing or adults playing a friendly game of basketball. When clients are limited to a small radius of movement in their neighborhoods, access may be precluded to resources for independent living such as trade schools, libraries, and stores with low prices.

Community obstacles to the development of a new and better lifestyle may be addressed by engaging the client in a supported employment, supported living, recreational, or educational program over a long period of time. If the client’s pathway toward greater autonomy can be expanded through involvement at an accessible community mental health center, supported employment program, or Section 8 housing, a fresh lifestyle outside the client’s immediate home neighborhood may be feasible. However, we have found that this cannot be accomplished in a short period of time. Psychosocial skills training programs may have to be in place for many years continuously to confer benefits of an improved quality of life to indigent clients with schizophrenia. Fifteen-month programs, such as the one at our VA Medical Center, are time-limited by grants and do not necessarily meet the long-term needs of clients.

Support System

Many clients do not have any support system in the community. Family members have long ago become estranged, old friends have faded into the past, and ashenbolus, social anxiety, and attrition interfere with the development of new relationships. Occasionally, there may be an empathic staff member at a client’s residential facility who takes an interest in being a source of support. This was the case for an IVAST client who had one of these “angels” to do laundry for her, select clothes for her, and assist her to negotiate personal needs with a conservator. The IVAST trainer identified opportunities to expand this client’s social network, while simultaneously
building on the value of the existing support person.

In one case, a board and care operator was a source of support for the client in maintaining his grooming skills. The relationship between this board and care operator and the IVAST client was one of low "expressed emotion" and provided stability during a critical time in the client's life. The stability enabled the client to be able to have a sense of family and to engage in normal community activities, such as riding the bus to appointments or recreational activities, and to blend into the crowded city because of being clean and appropriately dressed. There was a distinct advantage for the client to be dressed in casual slacks, a clean shirt and sweater, and polished shoes, as this client tended to smile appropriately in response to internal stimuli. Consequently, he was perceived by strangers riding with him on a bus as being "happy" when dressed sharply, and was ostracized less in social situations because of his odd smiling. To expand this client's network, the IVAST trainer used skills training to help the client develop relationships with the "regulars" at local restaurants and coffee shops that the client frequented.

Clients with good premorbid functioning who respond well to their antipsychotic medication and who are not involved in a dependent relationship with a caretaker tend to be the most amenable to broadening their social network as well as achieving independent living goals in the community. As in the case study described earlier, SL, had worked for many years before his psychiatric illness interfered with his ability to function. While he was initially without any support or social obligations of any kind, his good premorbid functioning, high motivation, and self-discipline to follow a stepwise plan in practicing skills in the community all contributed to his success.

Another social factor that is an obstacle for some clients in achieving independent living goals is their being assigned the role of caregiver for another family member (or members) who are impaired or financially indigent. The care provided by the client may include financial support for the household through disability benefits or meeting the physical or nursing needs of an ill parent or other relative. When a family depends on the client for care, stress is often the consequence. This creates a very restrictive environment in which the client has difficulty in setting and achieving his or her own independent living goals. Attempts at more independence may be challenged by the family, and the client may find it difficult to take the next step in a rehabilitation plan.

One IVAST client who functioned in the role of a caregiver had to care for his aging, ill parents. The client's days were scheduled with tasks of cleaning the house, cooking meals, and tending to the needs of his parents. This left very little time for self-care or setting personal goals. Here the IVAST trainer educated the family on the role of environmental stress on exacerbating schizophrenic symptoms and generated alternative ways to get family needs met, such as hiring part time help to cook meals in advance and freeze them and to clean the house once a week. Other community resources were mobilized to meet the family's needs, such as "Meals on Wheels" and community agencies that provided home nursing care, thereby freeing the client for more independent living.

SUMMARY

As an active, community-based training process, IVAST utilizes the assistance of an on-site trainer to compensate for the deficits of persons with schizophrenia in personal motivation, tangible and social resources, and community support. When clients are motivated for change, have identified personal goals, have formed a therapeutic alliance with the IVAST trainer, and can create opportunities in the natural environment for using social and independent living skills, significant gains may be made with IVAST to achieve goals that expand clients' "life space." The IVAST trainer can also assist clients to develop a "community map" of resources that can lead to improved quality of life. As shown in the flow...
chart in Figure 1, IVAST incorporates assessment, education, naturalistic supports, monitoring, and positive reinforcement to create opportunities for clients to experience success in using their skills to achieve their goals in the community.

The lessons learned from IVAST suggest the need for further innovations in promoting generalization of clinic-based skills training into the everyday life of clients with schizophrenia. For example, self-monitoring may allow the individual to judge the effectiveness of the skills being used in the natural environment and determine future selection of skills or needs for learning alternative skills. Therefore, teaching self-monitoring and other self-management strategies may add to the use of skills "where the rubber meets the road" (Chudley-Rosch 1986). Overtraining, fading, and errorless training procedures during clinic-based learning may also be low-cost yet effective means for maintaining skills acquired in the clinic (Hoang and Coze 1997). Cognitive remediation may succeed in teaching clients strategies to improve memory and learning, building a higher plateau from which clients can embark on their skills training enterprise (Liberman, 2001).

![Flowchart](image)

**Figure 1.** A flow chart showing the operations of the IVAST procedure.
Long-term follow-up services that go far beyond the usually limited lives of research projects may be needed to maintain skills that have tenuous survival value in natural settings when the latter are not always supportive (Cuvio and Davis 1983). Just as the PACT or variants of intensive case management teams have adopted well-trained employment specialists to provide supported employment services that have improved clients' vocational outcomes, these continuous treatment teams could also utilize skills trainers in conjunction with an IVAST trainer to advantage for improving social adjustment outcomes.

The IVAST role could be readily adopted by already employed members of the intensive care management team, since these staff are already engaged in mostly in vivo, outreach services. Adding clinic-based modules for training the spectrum of skills would undoubtedly require the hiring of dedicated staff for that purpose in PACT teams or mental health centers. Another long-term, open-ended service delivery system that could admit IVAST as a modality is the psychosocial clubhouse (Beard, Propst, and Malamud 1982; Cook and Jonkis 1996; Dincin 1975). Already, many of these consumer-oriented clubs utilize modules for teaching social and independent living skills.

By embedding skills training and IVAST into existing continuous treatment teams—whether they be housed in community mental health centers, psychosocial clubhouses, or mobile outreach programs—policymakers and administrators can capitalize on already established principles of continuity of care as well as indefinite provision of services to individuals with lifelong disorders such as schizophrenia. While flexible levels of service are keyed to the stage of illness or need of the individual with schizophrenia, one never says "goodbye" to such individuals. Psychosocial skills as well as antipsychotic medications need to have a "maintenance" function. The knowledge and skills of all people, both those with and without serious mental disorders, are subject to the same laws of learning and forgetting. Therefore, the long-term availability of an IVAST trainer to provide booster sessions for disease management, social-recreational involvement, and independent living skills of persons with schizophrenia is no different from our employing ski instructors or personal trainers to sharpen our skills on the slopes or in the gym that may have eroded because of disuse or lack of practice.

REFERENCES


