

Predicting Readiness and Responsiveness to Skills Training: The Micro-Module Learning Test

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Introduction by the column editors: In the current era of limited funding for mental health services, public and private agencies would benefit from a means of most cost-effectively deploying specialized resources and personnel. Schizophrenia expresses itself in disparate ways—with great variability in psychopathology, response to treatment, psychosocial functioning, course of illness, and neurocognition. Accordingly, better methods for individualizing treatment planning are required to match patients with appropriate services and effectively allocate scarce treatment resources. This month's column describes the Micro-Module Learning Test, an assessment instrument designed to determine readiness for rehabilitation among individuals with serious mental disorders. The authors demonstrate how this measure can help prescribe a balance of skills training and environmental manipulation that maximizes the probability of improving the individual's level of functioning.

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Although recent controlled studies of social skills training for persons with schizophrenia and other mental disabilities have shown that the acquisition of skills improves social and community adjustment (1–3), little work has been conducted on the development of a user-friendly assessment tool for determining a person's readiness for and responsiveness to skills training. If such a tool were available, it would be possible to identify mentally disabled persons who are most likely to benefit from skills training.

There are additional practical uses for an empirically based tool for differentiating mentally disabled persons who have varied capacities for learning social skills. Having reliable information about the learning capacity of clients who are participating in rehabilitation would enable service providers to match clients with the optimal level, complexity, and pace of social skills training. Thus an instrument that would accurately evaluate the rate at which individuals might learn social skills could be used in making decisions about the composition of skills training groups. For example, a rehabilitation readiness scale might inform clinicians whether a person should participate in groups or should be treated individually and whether he or she should participate in services organized for learning skills at a rapid or a slow pace. Moreover, persons who have very limited capacities for absorbing and sustaining social and independent living skills might benefit from individualized training

using “shaping” techniques (4), peer tutoring, and repetition of sessions.

An instrument that measures rehabilitation readiness could fulfill a variety of clinical needs for initial and periodic updating of treatment plans. First, such an instrument could determine when an individual is not ready for structured skills training or vocational rehabilitation because his or her symptoms or psychosocial learning capacity have not yet stabilized. As a consequence, a “moratorium” could be placed on intensive educational or work experiences that might be stressful and overstimulating. Second, a rehabilitation readiness tool could identify the form of learning-based services tailored to a person's unique deficits and strengths. For example, some individuals might benefit from explicit or verbal learning, whereas others might learn best from implicit techniques that emphasize modeling and behavioral rehearsal (5). Finally, such an instrument could be used to identify individuals who will need considerable supports and wraparound services to function in educational, employment, or community settings—for example, supported employment or supported housing.

The Micro-Module Learning Test

The Micro-Module Learning Test (MMLT) presents a series of tasks that provide opportunities for respondents to demonstrate their ability to perform on the fundamental building blocks of social learning, employment, and independent living skills.

These basic learning steps can be summarized by the words “listen,” “look,” and “practice.” Comprehension of verbally presented material reflects learning by listening. Comprehension of visually presented demonstrations of a skill, annotated by audio descriptions, utilizes implicit learning through models. And enactment of the visual and verbal demonstrations of a skill measures learning through practice. Thus the MMLT indicates participants’ potential responsiveness to various elements of skills training.

The MMLT takes approximately 30 minutes to administer. The assessor begins by reading the verbal material and asking seven questions to assess the respondent’s comprehension. When a correct answer is given, the next question is asked; when an incorrect answer is given, the material is reread with some distractors removed and with prompting for the appropriate answer added. The same procedure is used to present the visual material—for example, a videotaped scene that demonstrates a skill relevant to successful community adaptation—and to score the respondent’s answers. When an incorrect answer is given, the scene is replayed. For the enactment of the verbally and visually presented skill, the respondent is asked to role-play the skill demonstrated in the video. For incomplete role-plays, the practice scenario is repeated with as much prompting, verbal feedback, and coaching as needed until the respondent approximates the appropriate behavior.

Thus, embedded in the MMLT is a progressive scaffolding process in which information is systematically simplified and highlighted to identify the learning capacity of the individual. A score of 3 is given if the respondent’s initial performance on a particular item is correct, a score of 2 if the performance is adequate after one replay, a score of 1 if the performance is adequate only after the second replay, and a score of zero if the individual fails to meet the performance criterion even after two tries. The sums of scores from each of the segments yield ratings of each of the building blocks of learning, and the grand sum represents overall learning capacity.

The psychometric properties of the MMLT, including internal consistency for the listen, look, and practice segments and test-retest reliability, have been found to be adequate and are reported in full elsewhere (6). The discriminant validity of the MMLT was evaluated by comparing the participants who had schizophrenia with 25 control participants matched for age, ethnicity, and education. The results indicated statistically significant differences on all components of the MMLT that favored the controls.

The MMLT, neurocognitive functions, and community adjustment

Because neurocognitive functions are influenced by novel antipsychotic drugs and, in turn, serve as “rate limiting” factors in the acquisition of skills and community functioning of persons with schizophrenia, we asked the question, Do neurocognitive functions predict functioning on the MMLT? Thirty-nine persons with schizophrenia, 75 percent of whom were women, with an average age of 30.4 years and an average duration of illness of 5.8 years, participated in this research. All the participants were attending a university outpatient clinic and were receiving low dosages of risperidone. Scores on cognitive tests of memory (the California Verbal Learning Test) and sustained attention (the Span of Apprehension Task), administered at least one year before administration of the MMLT, were significantly related to performance on all three segments of the MMLT. Correlation coefficients between each of these two neurocognitive tests and the summary score of the MMLT were .537 and .427, respectively ($p=.01$).

Does performance on the MMLT predict success in acquiring new skills when individuals with schizophrenia participate in social skills training? Analyses indicated that all three MMLT components correlated with subsequent learning of conversational skills when the training was conducted with use of the Basic Conversation Skills Module (2). If MMLT performance predicts the extent of learning skills during social skills training, does it also correlate with everyday community functioning? Results of the

analysis indicated a statistically significant relationship between MMLT performance and the Inventory of Use of Skills, a measure of the use of disease management skills in areas of medication use and relapse prevention. These skills are critical for sustaining community tenure and were specifically taught in the university clinic in which this study was performed, using the modules for Medication and Symptom Management.

Knowing that performance on the MMLT can predict the learning capacity of clients with schizophrenia who participate in social skills training as well as their use of independent living skills in everyday life, what is the relationship between community functioning and quality of life? Correlating the Lehman Quality of Life measure with ratings of everyday use of skills in the community resulted in correlation coefficients ranging between .341 and .374 ($p=.01$). Higher scores on the Inventory of Use of Skills also were significantly correlated with reduced frequencies of rehospitalization ($p=.01$).

Conclusions

Performance on the MMLT, which reflects the basic processes for learning skills, was predicted by two key neurocognitive functions: memory and sustained attention. The quality of life of persons with schizophrenia whose symptoms were stabilized by using low dosages of risperidone at an outpatient clinic was significantly correlated with indexes of instrumental role functioning, which, in turn, reflected participants’ performance on the MMLT. Thus it appears that the MMLT is a useful means of anticipating individuals’ success in social skills training, which, in turn, is associated with higher levels of community functioning and a better quality of life.

Afterword by the column editors:

If psychiatric clinicians had a user-friendly tool for making judgments about the readiness of mentally disabled clients for rehabilitation requiring skills training, more efficient treatment planning could be done. Most clinicians and mental health facilities have traditionally used “seat of the pants” methods of assessment, us-

ing global and subjective hunches to recommend one type of treatment or another. This ad hoc mode of treatment planning covers clinical decisions stretching from prescription of medication to selection of psychosocial services. Psychiatry as a medical specialty would gain status and reduce stigma if its practitioners were to adopt reliable and valid methods of measurement for treatment planning and evaluation.

Although early studies of atypical antipsychotics supported the efficacy of these agents for improving neurocognition among persons with schizophrenia, judgment on these findings has been suspended, with later studies reporting little difference between atypical antipsychotics and conventional neuroleptics, especially when similarly low dosages have been used. More research must be conducted to determine whether and which atypical antipsychotics can raise the starting point for clients with

schizophrenia who are embarking on psychosocial treatment and rehabilitation. The Micro-Module Learning Test is a tool that could be readily harnessed to the requisite research.

One recent study that compared low dosages of haloperidol and risperidone found consistent improvement in neurocognition over a two-year period among the risperidone-treated patients (7). This finding may explain the results of the study reported here of significant relationships among neurocognition, learning capacity, community functioning, and quality of life, given that participants received low-dosage risperidone for at least one year. ♦

References

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Submissions Invited for Child & Adolescent Psychiatry Column

The editor of *Psychiatric Services'* Child & Adolescent Psychiatry column, Charles Huffine, M.D., invites papers focusing on systems of care for children and adolescents with serious and complex mental and behavioral disorders. In recent years great progress has been made in developing methods of addressing serious disorders in this population. In 2002 the journal began publishing a quarterly column in hopes of providing a forum for introducing some of these innovations to a broad mental health readership.

Dr. Huffine is soliciting reports of collaborative work on behalf of children's mental health among pediatric medical care systems, social service agencies, special education programs, the juvenile justice system, drug and alcohol treatment programs, and family advocacy groups. The column will feature papers that describe innovations in programming and new clinical methods to address the complex social and developmental problems of seriously emotionally disturbed children and adolescents. Papers should describe innovative clinical programs that are mindful of contextual issues, training that prepares psychiatrists to work in changing systems of care, clinical issues that arise in cross-agency collaborative work, and a broad range of related topics.

Papers should be no more than 1,600 words and should be submitted directly to Dr. Huffine. For more information about the new column or to propose a submission, please contact Dr. Huffine by e-mail (chuffine@u.washington.edu) or by mail (3123 Fairview Avenue East, Seattle, Washington 98102).

For general information on formatting, visit the journal's Web site at www.psychiatryonline.org. Click on the cover of the journal and scroll down to Information for Authors, which includes a section on columns.