

Cognitive Remediation and Supported Employment: The Thinking Skills for Work

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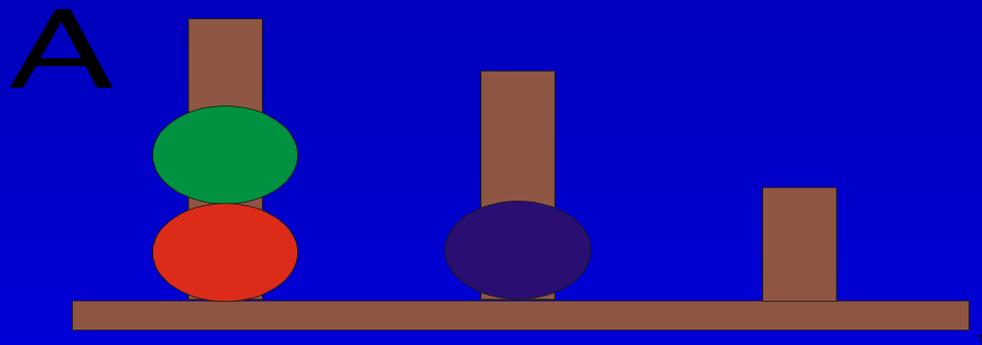
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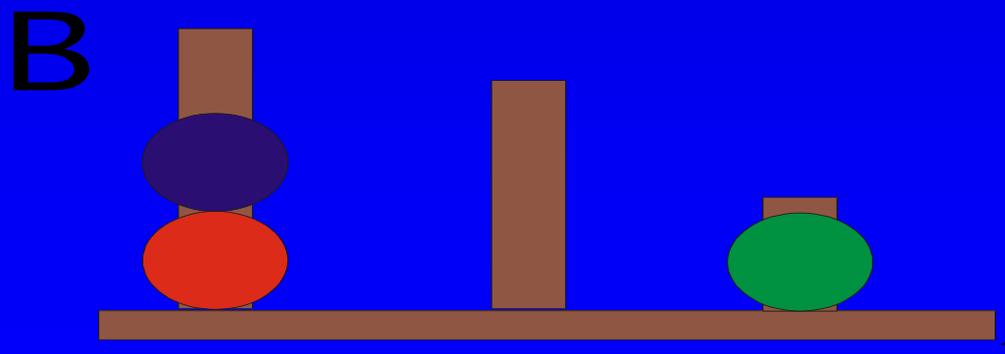
What Are Cognition Skills?

- Mental processes
- Five major areas
 - Attention
 - Psychomotor speed
 - Memory
 - Problem-solving
 - Social cognition

BACS Tower of London



How many moves does it take to make A look like B?

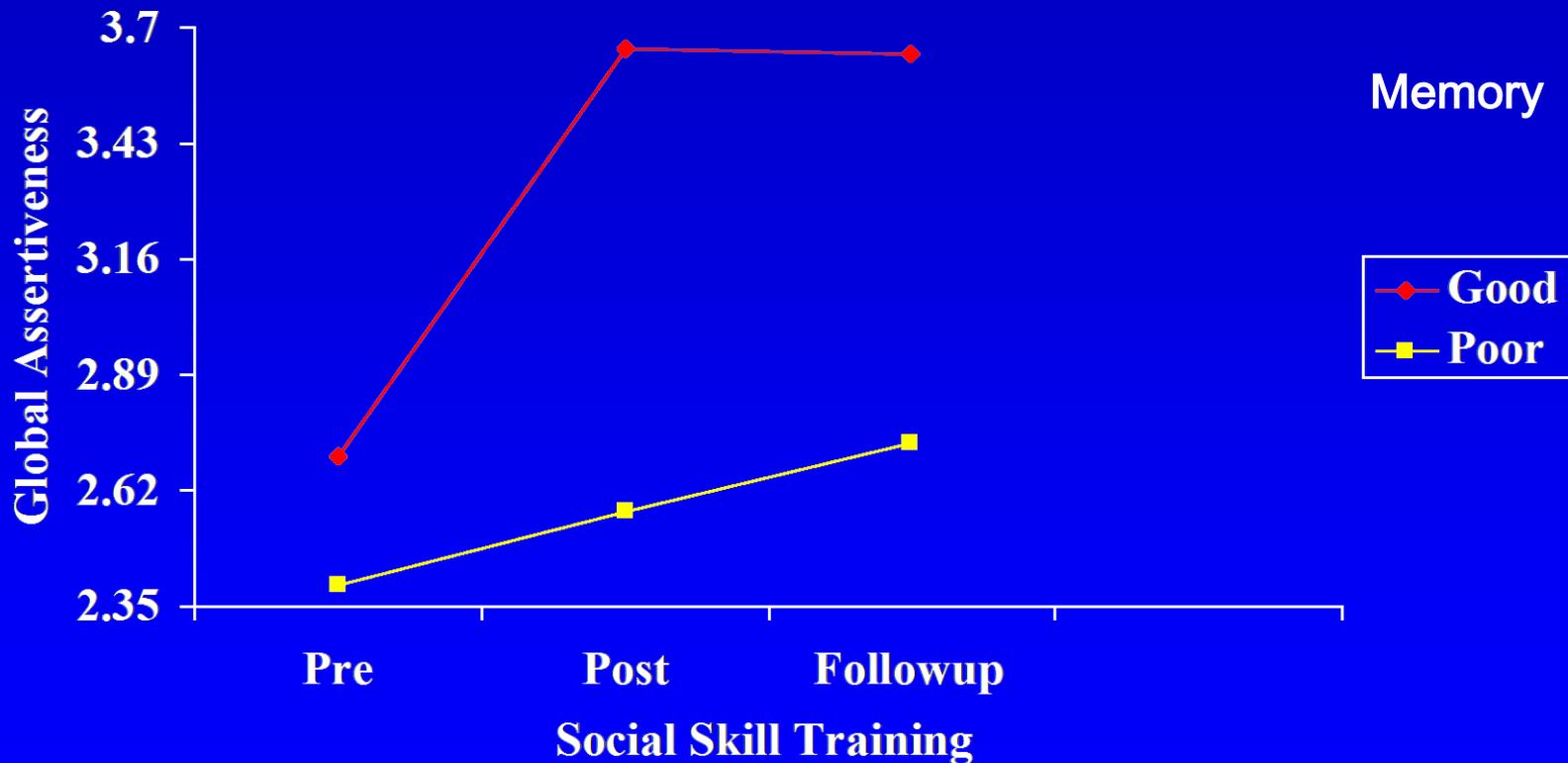


Answer: 2

BACS, 2000

Improvement in Global Assertiveness of Social Skill

(Mueser et al., 1991)



Why is Cognitive Functioning Important in Schizophrenia?

- Cognitive impairments are:
 - Common in persons with schizophrenia
 - Related to a broad range of functioning (such as self-care and independent living, social relationships, work)
 - Predictive of response to rehabilitation (e.g., social skills training, supported employment)

What is Cognitive Remediation?

“Cognitive remediation therapy for schizophrenia is a behavioural training based intervention that aims to improve cognitive processes (attention, memory, executive function, social cognition or metacognition) with the goal of durability and generalisation” (Cognitive Remediation Therapy Expert Working Group; SIRS meeting, 2010)

Cognitive Remediation Programs

- Attempts to improve cognitive functioning in schizophrenia have a lengthy history (40+ years)
- Cognitive remediation approaches, some adapted from treatment of traumatic brain injury, involve a variety of methods, such as computer based or paper and pencil rote practice, strategy coaching, and group-based practice approaches

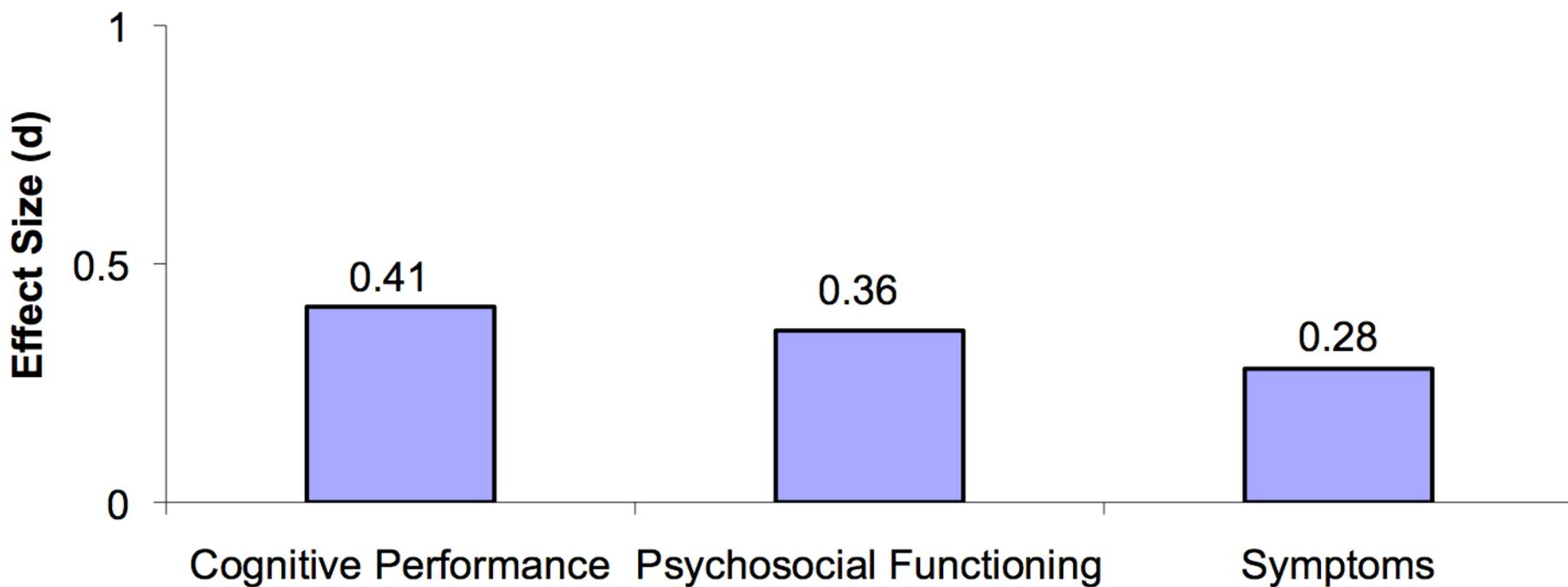
Cognitive Remediation Programs

- Range of intensity and duration of programs:
 - 3 to 75 hours over 1 to 100 weeks
 - 1 to 5 hours per week
- The “average” program provides about 20 hours of practice delivered over about 16 weeks.

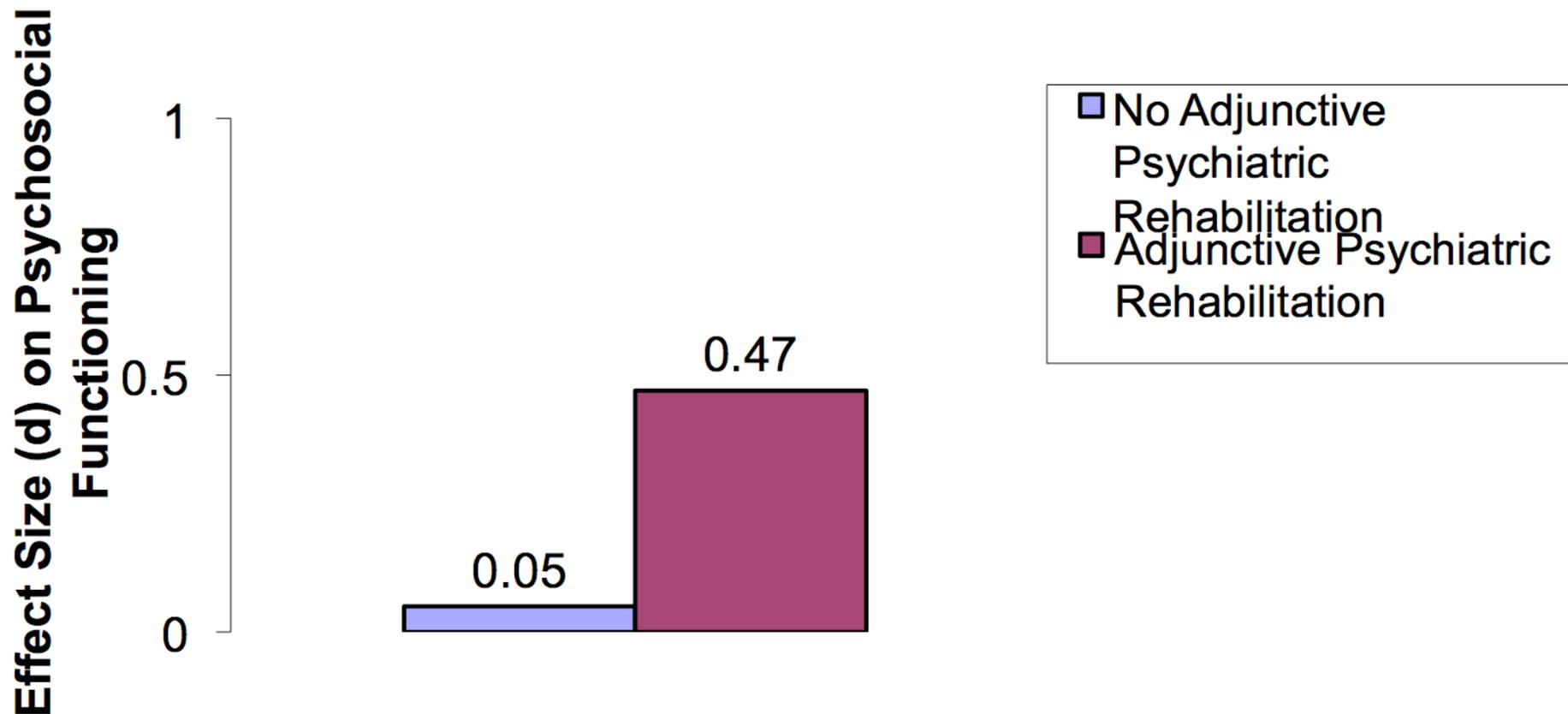
Effectiveness of Cognitive Remediation

- First meta-analysis involving sufficient studies to evaluate effects on psychosocial functioning: (McGurk, Twamley, Sitzer, Wolfe, Mueser (2007))
- 26 studies
- 1151 clients
- Examined effects on cognitive functioning, symptoms, psychosocial functioning
- Explored moderators of outcome, including characteristics of consumers & cognitive remediation programs, and provision of adjunctive psychiatric rehabilitation

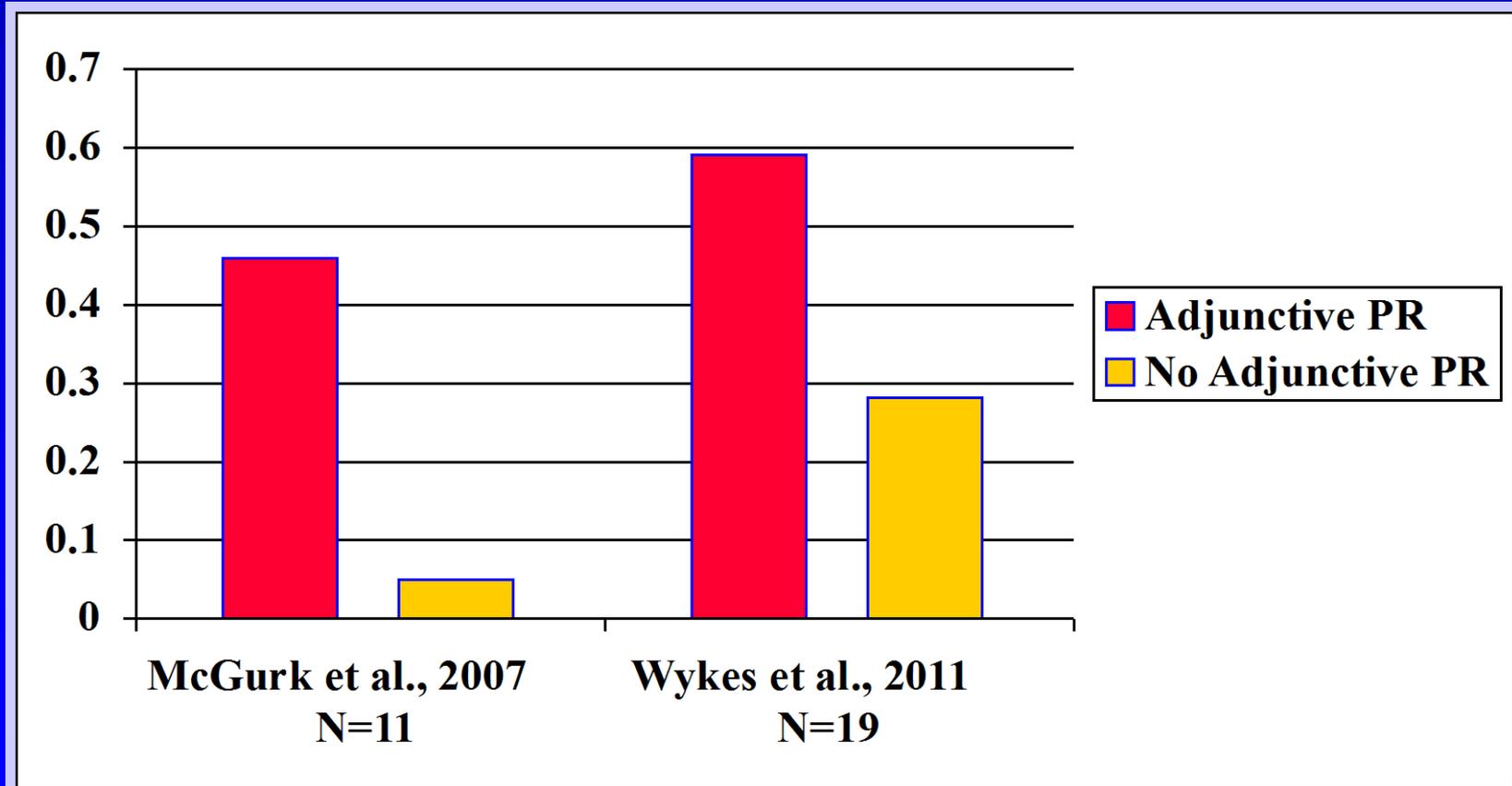
Effect Sizes for 26 Studies of Cognitive Remediation on outcomes for Schizophrenia



Effects of Cognitive Remediation on Psychosocial Functioning in Studies that Provided Adjunctive Psychiatric Rehabilitation vs. Studies that did not



Adjunctive Psychosocial Rehabilitation Moderates Impact of Cognitive Remediation on Functional Outcomes



“Extended” Cognitive Remediation Definition

“Cognitive remediation is an intervention targeting cognitive deficit using scientific principles of learning with the ultimate goal of improving functional outcomes. Its effectiveness is enhanced when provided in a context (formal or informal) that provides support and opportunity for extending everyday functioning.”

(Cognitive Remediation Therapy Expert Working Group; SIRS meeting, 2012)

How does Cognitive Remediation Improve Outcomes of Psychiatric Rehabilitation?

- All rehabilitation programs involve some kind of learning
- People with compromised cognitive functioning learn more slowly and benefit less from psychiatric rehabilitation
- Improved cognitive functioning produced by cognitive remediation may benefit the capacity to learn new skills and result in increased benefit from psychiatric rehabilitation programs.

Rationale for Integrating Cognitive Remediation and Supported Employment

Research on relationship between cognitive functioning and work outcomes in severe mental illness shows that:

- Better cognitive functioning contributes to better employment outcomes
- Better cognitive functioning results in greater improvement in psychiatric rehabilitation, including vocational rehabilitation (e.g., supported employment)

Limitations of Supported Employment

- About one-half of clients work little or not at all
- Between 41%-77% of consumers end their jobs within 6 months
- The average job tenure is about 3 months
- Many job endings are unsatisfactory (e.g., fired, walked off job without other job)

Common Work Problems often Related to Cognition

1. Slowness
2. Poor quality of work (e.g., making mistakes)
3. Forgetting
4. Poor problem solving
5. Lower stamina/Problems with fatigue
6. Being late
7. Not paying attention
8. Disorganization

The Thinking Skills for Work Program

- Fully integrated with vocational rehabilitation
- Combines computer cognitive training with in vivo applications
- Is implemented by a cognitive specialist who is a member of the supported employment team

Components of the Program

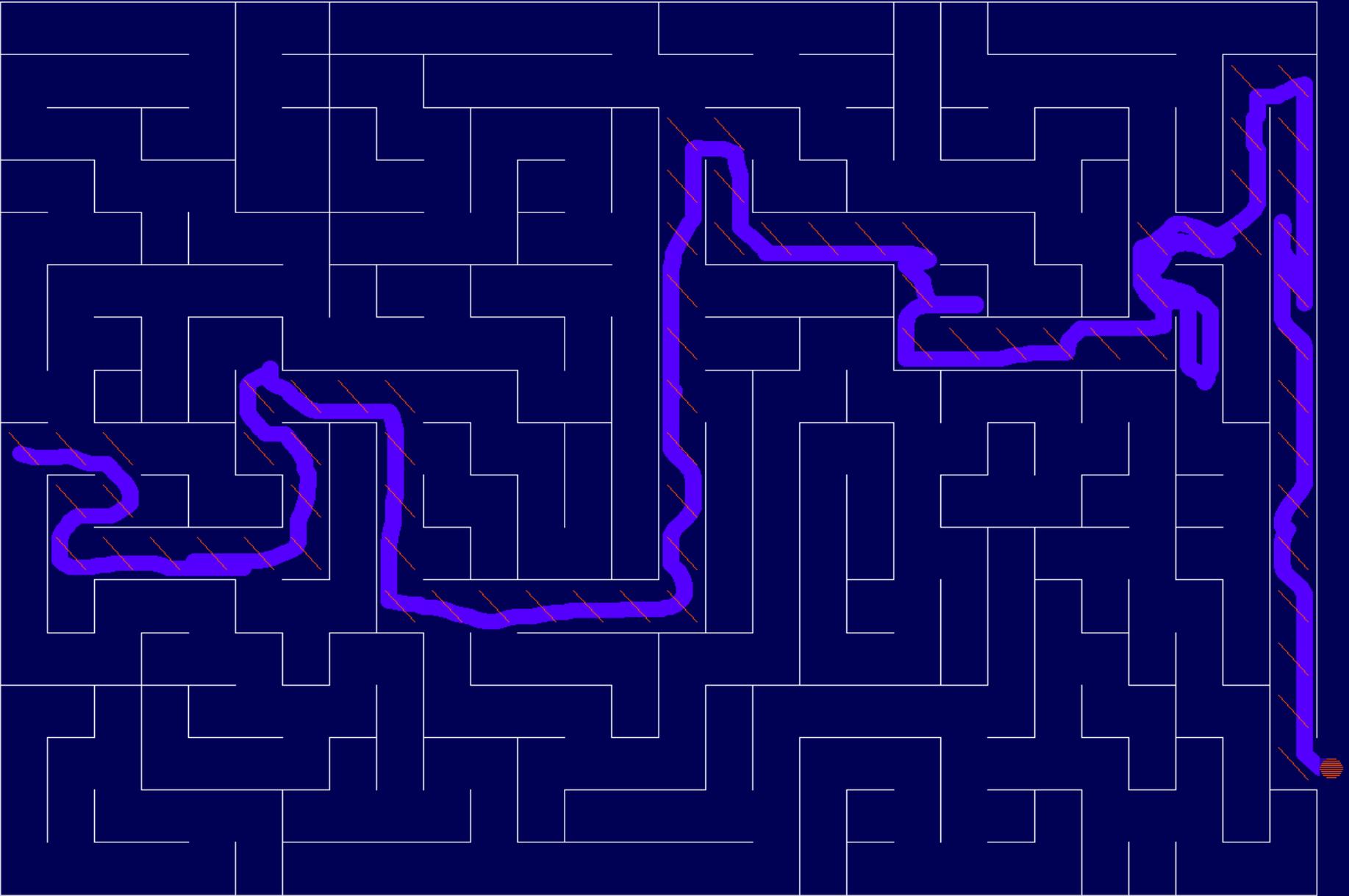
- Assessment
- Computer cognitive remediation
- Job search planning
- Job support consultation

II. Computerized Cognitive Training

- Based on CogPack, a commercially available software program developed for persons with psychiatric illness
- Audiovisual presentation with contextualized formats
- Provides practice of the broad range of cognitive functioning
- Has demonstrated efficacy in improving cognitive skills in persons with SMI

II. Computerized Cognitive Training (cont.)

- Curriculum is standardized and manualized, with 24 sessions (24-40 hours)
- Provides information regarding the speed and accuracy of task performance
- Clients track their performance
- Sessions are repeated to allow for additional practicexs
- Repetition provides opportunity to assess progress



sec: 32 help used: 0 You got it!



Computerized Cognitive Remediation Work Sheets

Data Recording Form (Sessions 1-6)

Session 1

1)- Comparisons (Attention)

subtest b: # Correct: _____

Average working time per task: _____ sec.

2)- Memory (Verbal Memory)

subtest p, variant e: # Correct: _____

Correctness in percent totals: _____

3) Labyrinths (Speed/Planning)

subtest a: # Correct: _____

Average working time per task: _____ sec.

Role of Cognitive Specialist

- Provision of practical help: e.g., solving computer glitches, explaining instructions, demonstrating how to record performance scores
- Helps the client understand/interpret performance scores
- Encourages effort, points out and rewards gains, provides positive reinforcement
- Provides strategy coaching to improve skills
- Helps participant identify how improvement occurs (metacognitive strategies)
- Integrates exercises with work tasks based on client's job preferences or current job

The Computer Session as “Work”

- 1- Timeliness, dress, and demeanor
- 2- Social responsiveness
- 3- Problem recognition
- 4- Asking for help
- 5- Use of suggested strategies
- 6- Frustration
- 7- Cognitive effort and fatigue

Checking In On Work Progress

Is client connecting with work services

If not, why not

Using engagement with cognitive service
to help client engage with work
services

Issues with employment specialist and/or
clinical team, and/or the work place



Take the shortest way.

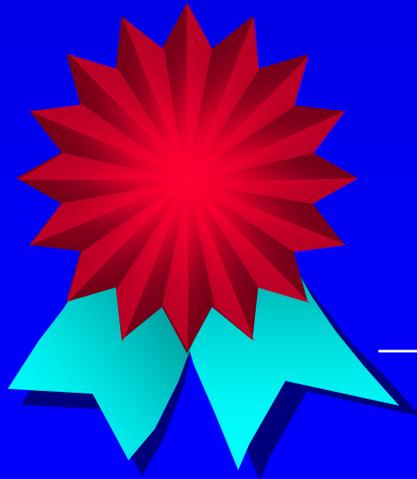
You are to visit all white circles.

The Thinking Skills for Work Cognitive Training Computer Lab *Certificate of Completion*

•is hereby granted to:

•(Client Name)

•for outstanding performance and lasting contribution in the Cognitive Rehabilitation and Supported Employment for Severe Mental Illness Study.



•

Granted: (Date)

*Cognitive Specialist
Clinical director*

Participant Evaluations

- I felt good about myself because I had not lost the ability to learn new things.
- I found it interesting and educational. It was fun and eye opening.
- ...got smarter with the computer- it has helped in my computer skills' confidence
- I looked forward to them (cognitive sessions) because I found the exercises to be challenging and stimulating
- She (cognitive specialist) wanted to bring out strengths, pointed out things I could do to help with the exercises
-having a cognitive specialist - he's the perfect kind of guy doing it, he handles people well, patient...
- The feed back I received was very supportive and made me look forward to the sessions.

III. Job Search Planning

- Conducted collaboratively with employment specialist and cognitive specialist
- Identify need for coping/compensatory strategies for managing persistent cognitive difficulties or self-defeating thinking
- Need for coping skills based on improvements in computer cognitive training, prior job performance, and anticipated or actual job demands
- Concurrent with computer cognitive training
- Coping/compensatory skills taught in session, practiced with employment specialist in vivo
- Activities coordinated with and inform job search

Curriculum Handout Materials

- Cognition and Work
- Challenging Self-Defeating Thinking
- Establishing a Routine
- Coping with Attention Problems
- Coping with Memory Problems
- Improving Psychomotor Speed
- Solving Problems

Coping Strategies for Cognitive Impairments: Job Performance Problems

Evaluate possible cognitive difficulties contributing to performance problem

- More than one area of cognitive functioning may be involved

Identify a coping strategy to address the problem, implement the strategy, and determine whether it improves performance

- More than one coping strategy may be useful, but start with one
- If a strategy does not work, try another one
- Remember, some strategies may directly address symptoms rather than area of cognitive functioning

Establishing a Routine as a Solution to Multiple Cognitive Challenges

- Lack of routine at home can interfere with job search (e.g., lateness for appointments, poor personal hygiene)
- Lack of routine at work can contribute to problems in attention, slowness, memory, and problem solving
- Establishing a routine reduces tax on memory, facilitates attention and speed through practice, and reduces problems by having consistent behaviors
- Everyone benefits from having a routine, especially people with cognitive difficulties

Establishing a Routine

- A routine involves establishing a set pattern for accomplishing activities of daily living or work tasks
 - Tasks done in specified order or on particular days
 - Home or work materials stored in established places
 - Alarm clocks, cell phones, schedulers, checklists, etc. used as needed to help clients stick to schedule
- Review client's current routine, and establish new routine gradually by adding new tasks/organization each week
- Everyone benefits from having a routine, especially people with cognitive difficulties

Self-Defeating Thinking Styles

- Can interfere with effort to succeed or over-reactions to events

Examples of Problematic Thinking Styles:

- Defeatist thinking (“I’ ll never get a job”)
- Catastrophic thinking (“I’ ll get fired!”)
- Excessive self-blame (e.g., focusing only on personal limitations and ignoring strengths)
- Rumination about past setbacks (e.g., about past lost jobs)
- Black and white (all-or-nothing) thinking (“If I’ m not a perfect worker, I’ m a failure”)

Challenging Self-Defeating Thinking

- Introduction to thinking-feeling model: how thinking influences feelings
- Cognitive restructuring:
 - Recognition of upsetting feeling
 - Identification of underlying thought or belief
 - Is this a Common (inaccurate) Style of Thinking? (e.g., catastrophizing, black & white thinking, mental filter, emotional reasoning, excessive self-blame, should or must thinking)
 - Examination of evidence supporting and not supporting thought
 - Change inaccurate thought to more accurate one

Job Performance Problems Related to Attention

How to determine whether the problem is related to attention:

1. Is the person making mistakes? (e.g., monitoring security cameras)
2. Are they not getting the job done because they are “spacing out”?
3. Does the person report being easily distracted?
4. Does the person report problems with attention?

Principles for Addressing Problems Related to Attention

1. Self management techniques

- Self-verbalization of steps of task
- Schedule rest breaks: gradually increase amount of work time occurring between breaks

2. Environmental modification

- Remove distracters
- Provide cues

Example of Coping with Attention Problems

Self-management techniques:

- Schedule frequent rest breaks, and then gradually increase amount of work time occurring between breaks.

“I asked employer for the okay for “quick” cigarette breaks. The client was able to concentrate better knowing that he could slip out for 5 minutes each hour to have a smoke. We worked on decreasing the number of breaks over time.”

Another Example Coping with Attention Problems

Self-management techniques: self-verbalization of steps:

“A client found it helpful to say out loud the steps of the xeroxing and filing task, such as ‘Put the paper on the plate, put down the lid, push the bottom...’ and so on. Eventually she was able to think the steps without saying them.”

Job Performance Problems Related to Slowness

How to determine whether the job problem is due to slowness:

1. Is the client doing the job too slowly, despite good attention?
2. Is the client not finishing the job on time?
3. Is the client holding up other people?

Principles of Coping with Slowness

1. Find more efficient ways of doing the job

- Some job tasks can be broken down into steps that are repeated multiple times, rather than the longer sequences of different actions; e.g., step 1, step 1, step 1, then step 2, step 2, step 2, etc. rather than step 1 step 2, step 3, step 4, etc
- Short-cuts in doing jobs can sometimes be found that don't compromise the quality of the job

2. Overlearn job tasks by repeated practice

- Repeated practice of a few steps, and then gradual increasing number of practiced steps, can lead to improved speed as the tasks become "automatic" and thereby reduced need for information processing

How “Over-Learning” Increases Speed

Speed of procedures in operating a motor vehicle people learning how to drive vs. those who are experienced drivers.....

Practice reduces the amount of thought required to produce the response

Example of Environmental Modification

“A client had a job in a grocery store that involved marking items with a price gun. He reported that he would put down the price gun, wouldn't remember where, and wind up walking up and down the aisles looking for it. We asked the employer for a special belt with a hook to put the price gun when the client wasn't using it”

Steps of Collaborative Problem Solving

When problems are encountered, walk the client through the steps of problem solving together:

1. Define problem
2. Brainstorm solutions
3. Evaluate pros & cons of solutions
4. Choose best solution or combination
5. Make plan to implement solution
6. Follow-up and do additional problem solving as needed

IV. Job Support Consultation

- Once a job is attained, the cognitive and employment specialist and client meet
- The discussion focuses on the specific tasks the client will be performing at the job
- Use of coping strategies that may help boost performance levels and/or help compensate for cognitive weaknesses are reviewed or identified and taught
- Ongoing meetings conducted after job is obtained to evaluate performance and need for additional skills

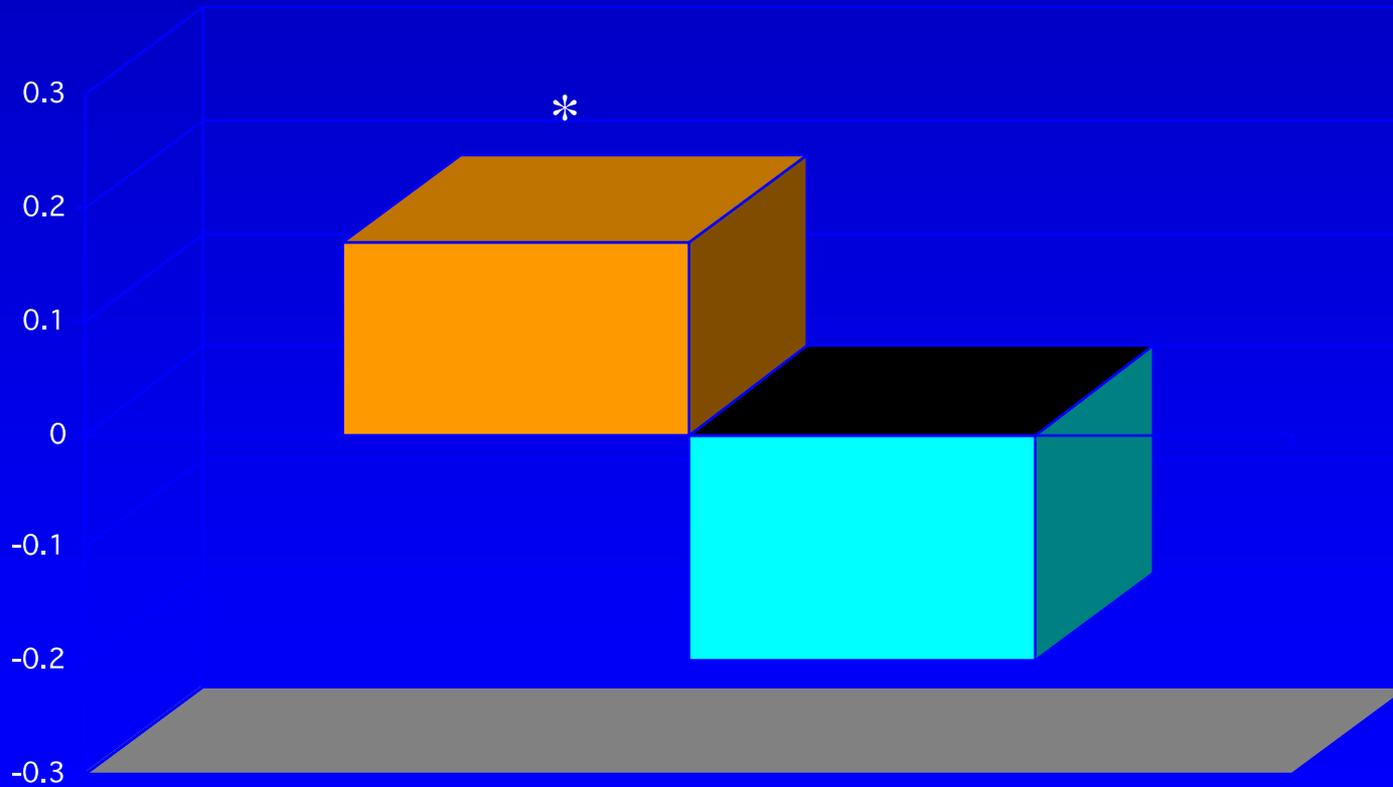
Components of TSW

- 1) **Assessment:** Determine client's cognitive strengths and weaknesses
- 2) **Cognitive Skills Training:** Improve cognitive skills through focused computerized practice with Cogpack software
- 3) **Job Search Planning:** Anticipate the need for compensatory strategies for cognitive areas that may remain of concern
- 4) **Job Support Consultation:** Ongoing consultation regarding individually tailoring of specific compensatory strategies based on the client's needs and job demands

Brooklyn Pilot of The Thinking Skills for Work Program (McGurk et al., 2005, 2007)

- RCT: Cognitive Remediation and Supported Employment (TSW+SE) vs. Supported Employment only (SE Only)
- Eligible participants had SMI and history of job failures (e.g., getting fired; walking off job, etc.)
- Three month cognitive and symptom follow up
- Two mental health agencies in Brooklyn, NY
- Integrated supported employment programs
- Two+ years follow up of competitive work

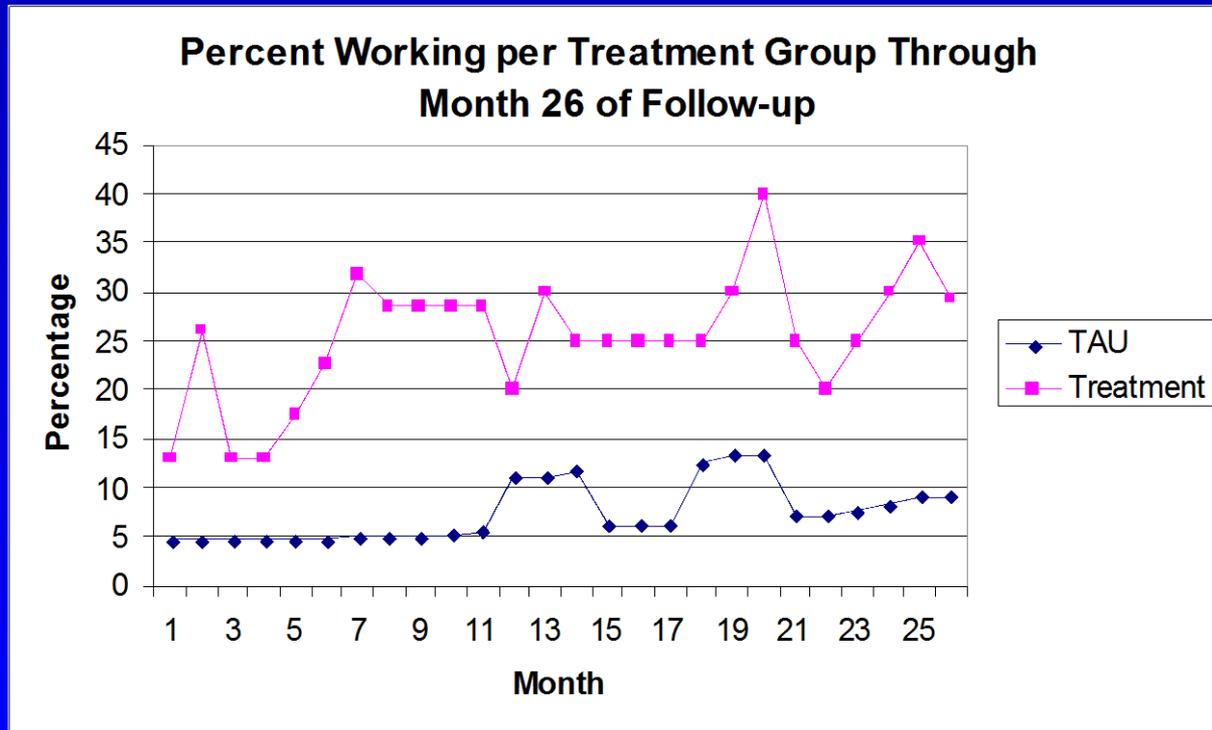
Post-Treatment Cognitive Composite Scores



McGurk et al. (2005)

* $p < 0.05$

2-3 Year Employment Outcomes



**Is The Thinking Skills for
Work Effective for Supported
Employment Non-responders?**

Recently Completed R01 Study

- Conducted at two high fidelity IPS supported employment programs
- Addressed question of whether people who failed to benefit from supported employment will benefit from the TSW Program

Design and Methods

- RCT of TSW + Supported Employment vs. Supported Employment Alone
- Focus on “non-responders” to supported employment
- Comprehensive cognitive (MATRICS), symptom (PANSS), quality of life (QLS) assessment at baseline, post-computer cognitive remediation, 12- and 24 months post-randomization
- Two year weekly follow-up and tracking work activity
- Two sites: Manchester, NH, and Thresholds, Chicago

Inclusion Criteria

- Severe mental illness
- Enrolled in supported employment (SE) program
- Has not worked for past 3 months or more in SE program, or lost a job in SE that lasted less than 3 months
- Willing and able to provide written informed consent

Rehabilitation Programs

- Clients randomized to:
 - TSW + Enhanced Supported Employment
 - OR--
 - Enhanced Supported Employment Only
- E-SE: employment specialists received training on the importance of cognitive functioning, how to recognize cognitive difficulties interfering with work, and how to teach compensatory strategies for dealing with cognitive difficulties

Demographic, Diagnostic, and Psychiatric History Characteristics of Study Sample

Categorical Variables				Categorical Variables				Categorical Variables			
		N	%			N	%			N	%
Treatment Group	TSW	57	52	Competitive job (past 5 years)	No Comp. Job	36	33	Psychiatric Diagnosis	Schizophrenia	27	25
	Enhanced	53	48		Comp. Job	69	63		Schizoaffective	24	22
Site	Manchester	76	69	Worked in SE (past 3 months)	No	91	83		Bipolar	25	23
	Thresholds	34	31		Yes	19	17		Major Depression	18	16
Education	High School	79	72	Current Substance Use Disorder	No	76	68	Continuous Variables	Other	16	15
	< High School	31	28		Yes	33	32			Mean	SD
Marital Status	Ever Married	39	35	History of Substance Use Disorder	No	42	38	Age		44.33	11.1
	Never Married	71	64		Yes	78	62	Months since last job		39.35	50.6
								Months in SE		26.54	31.6

Treatment Group Effects from GLMM Analyses for Cognitive and Symptom Outcomes

	Intent-to-Treat				Treatment Exposed			
	<i>df</i>	<i>F</i>	<i>P</i>	Effect Size	<i>df</i>	<i>F</i>	<i>P</i>	Effect Size
Cognition								
Cognitive composite	1,60	10.67	0.0018	0.70	1,53	16.12	0.0002	1.00
CPT	1,58	1.22	0.27	0.19	1,51	2.66	0.10	0.26
Trails A	1,60	3.22	0.07	0.30	1,53	5.05	0.03	0.32
HVLT 1-3	1,60	3.59	0.06	0.29	1,53	6.26	0.015	0.49
BVMT 1-3	1,60	4.19	0.04	0.62	1,52	6.44	0.014	0.74
LNS	1,60	2.31	0.13	0.24	1,53	4.53	0.038	0.43
Trails B	1,55	10.77	0.0018	0.52	1,49	13.41	0.0001	0.66
MSCEIT	1,60	3.71	0.058	0.30	1,53	3.44	0.069	0.28
Symptoms								
PANSS - Excitement	1,60	3.81	0.055	0.22	1,53	3.17	0.08	0.22
PANSS - Negative	1,60	3.29	0.07	0.50	1,53	2.38	0.13	0.37

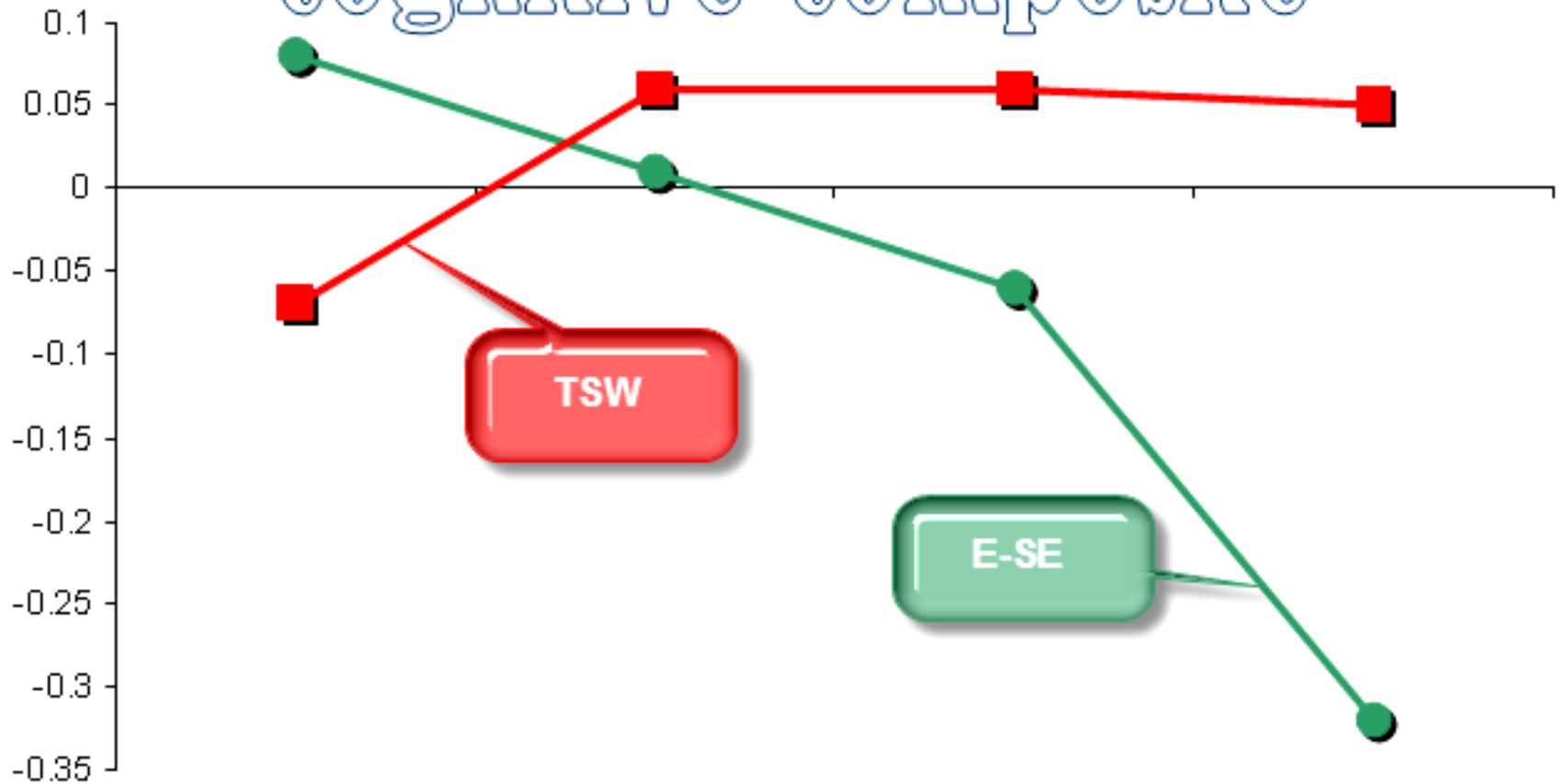
Exposure to TSW

Exposure to TSW (6 or more cognitive sessions)	71%
Weeks to complete computerized cognitive remediation	18.4

Treatment Group Effects from GLMM Analyses for Cognitive and Symptom Outcomes

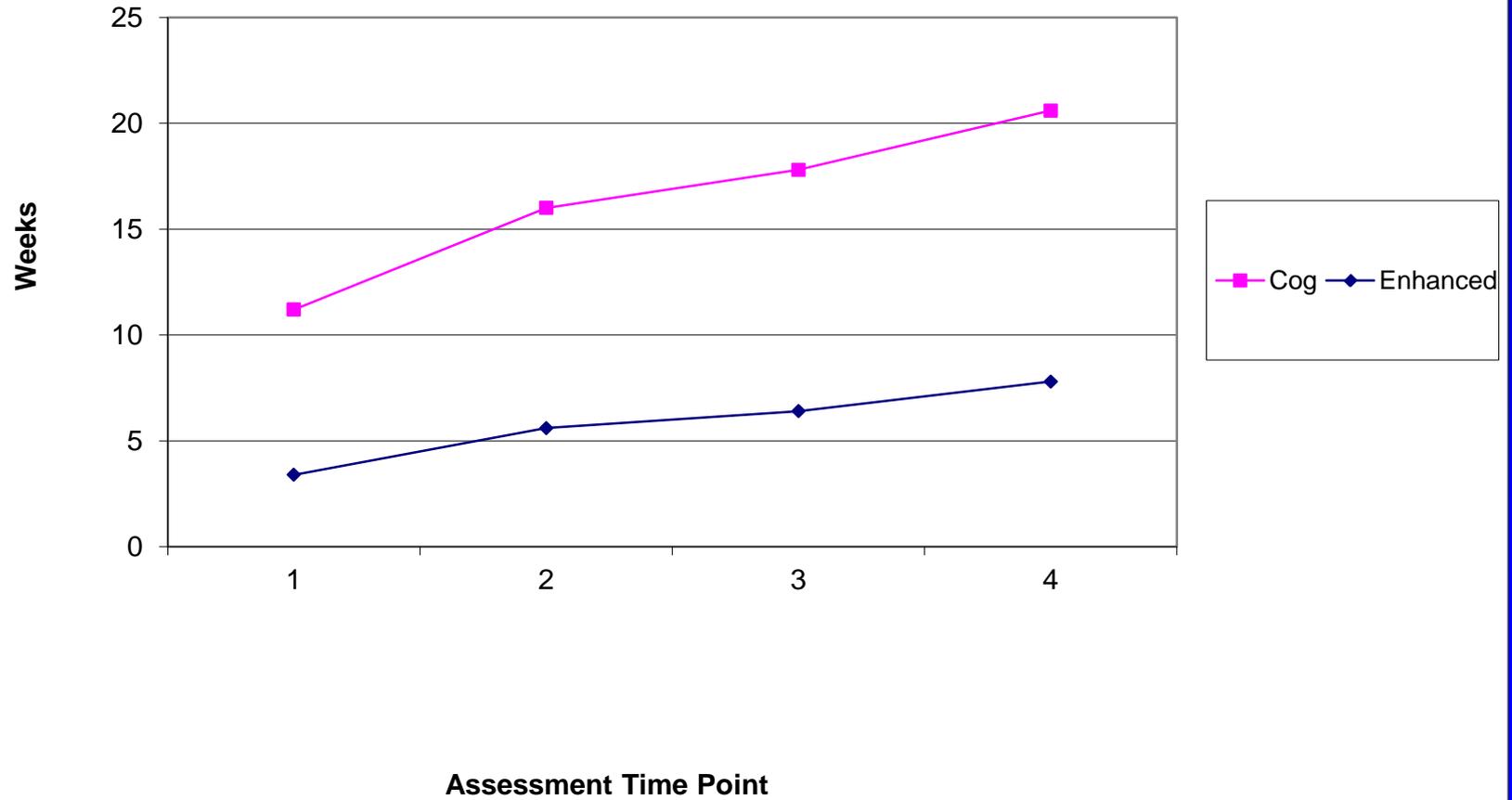
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Cognitive Composite



$F(1,60) = 10.67, P < 0.0018$

Mean Weeks Worked Per 6 Month Period



Next Questions

- TSW program has improved cognitive and vocational outcomes in 4 RCTs
- TSW includes computer cognitive practice and teaching compensatory skills
- The relative contribution of these cognitive remediation components to cognitive and work outcomes is unclear
- Dismantling study of TSW program (McGurk, R01 competing renewal study)

Is Computerized Cognitive Training Critical to Improving Cognition and Work in TSW?

- Computerized cognitive training is most resource intensive component of TSW:
 - Requires special equipment, space, training and personnel to deliver
 - Time intensive
 - These attributes may diminish opportunity for wider dissemination of TSW in supported employment programs
- Dismantling Design:
 - Full Thinking Skills for Work Program vs.
 - Compensatory skills training alone (“Cognitive Skills for Work”)

Research Team

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Thank you