

Cognitive Stimulation Therapy (CST)

Making a Difference for People with Dementia



Perry County Memorial Hospital

People Care More Here

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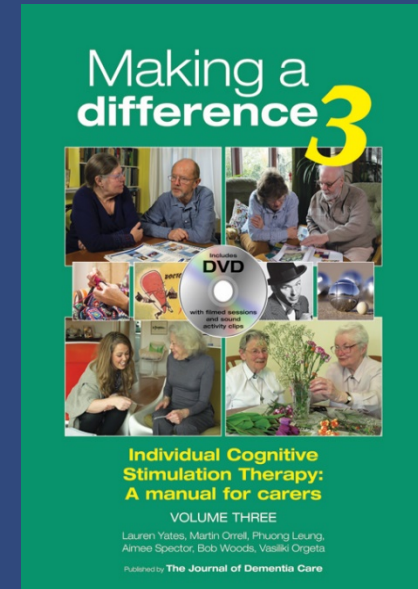
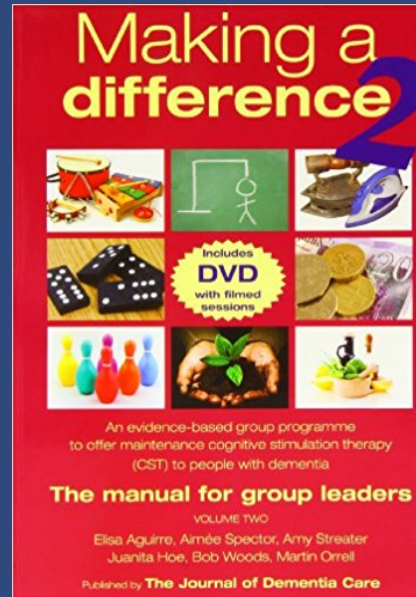
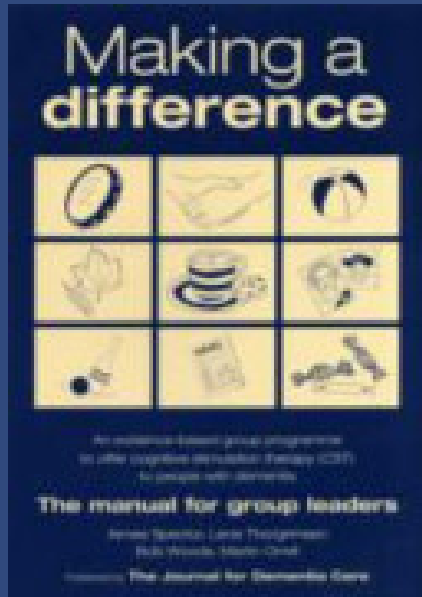
Geriatric Workforce Enhancement Project Coordinator
A.T. Still University

**Acknowledgements: Saint Louis University Geriatric Education Center CST Team
led by Marla Berg-Weger PhD, LCSW**

Objectives

- Provide a brief overview of CST, its development and evidence-base.
- Provide an overview of presenter's results of CST with and without exercise
- Provide the reasoning behind the efficacy of CST
- Provide an overview of the key features, principles and structure of CST
- Provide resources for further information and training in CST

Cognitive Stimulation Therapy (CST)



Translated into seven different languages and being used in numerous countries

What is Cognitive Stimulation Therapy?

- A brief evidence-based group intervention for people with mild to moderate dementia.
- Can be administered by a wide range of professionals (e.g. social workers, OT, ST, nurses and activity directors).
- 14 themed sessions, typically twice a week for 7 weeks. Key aims: to improve cognitive functioning through using techniques that exercise different cognitive skills.
- Based on concept of 'use it or lose it': brain needs to be exercised in order for skills to be retained.

Development of CST

- CST was developed largely by Dr. Aimee Spector, as her PhD thesis, with Dr. Martin Orrell at University College London and Bob Woods, Bangor University, UK
- Prior to the late 1990's, no psychological interventions with a robust evidence-base

How was CST Developed?

- Systematic review of the literature on the main non-pharmacological therapies.
 - Reality Orientation (Spector et al, 1998a) and Reminiscence Therapy (Spector et al, 1998b)
 - Also reviewed evidence on other key psychological therapies. Validation Therapy (e.g. Feil,1992) and Multisensory Stimulation (e.g. Baker et al, 2001).
- Combined best elements of each therapy to create an evidence-based group therapy program for people with dementia.
- Size of trial, methodology and outcome measures to match that of the major drug trials.

Spector et al (2000); Spector et al (2001); Woods et al (2005)

Randomized Control Trial

- 201 participants with dementia in 23 centers (18 residential care homes, 5 day centers)
- 14 sessions program ran twice a week for 45mins
- Study measured group intervention program against “usual activities” – which was described as usually nothing
- Size of trial, methodology and outcome measures to match that of the major drug trials.

RESULTS

- Significant improvements in cognition, quality of life and language.
- Specific areas of language that were positively effected:
 - Naming
 - Word-Finding
 - Comprehension
- Positive trends in communication and memory.
- CST shown to be comparable to dementia medications and to be cost effective.

Spector et al, 2003

Longer-term maintenance CST(MCST)

- Studied participants who continued once a week for additional 24 sessions
- Results
 - Continued improvements in cognition
 - Greater improvements in the medication plus MCST group

Individual CST (iCST)

- One-on-one CST involves one-to-one CST, led by caregivers or professionals. Similar themes to group CST.
- Family members supported to deliver sessions at home.
- Results: no differences in any of the primary outcomes, improved relationship with caregiver and quality of life/health in caregiver.

Orgeta et, al, 2015

What is the outcome of all this Research?

- The only UK government recognized non-pharmacological treatment for dementia.
(Government guidelines National Institute for Health and Clinical Excellence (NICE), 2006)
- The World Alzheimer's Report (Alzheimer's Disease International), stated that CST should routinely be given to people with early stage dementia.
(World Alzheimer's Report 2011)
- Many interventions show effectiveness, yet do not make a clinical impact due to insufficient implementation

Incorporating Exercise into CST Sessions

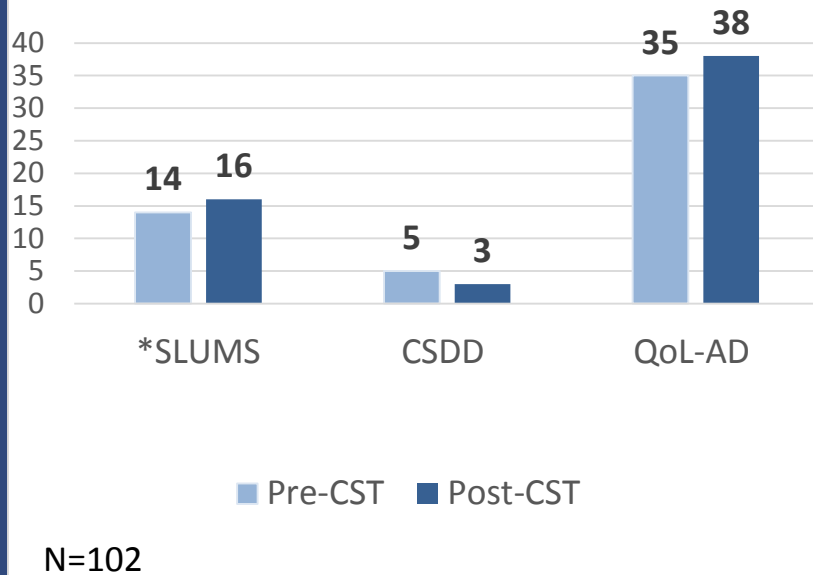
- Research suggests that exercise improves cognitive functioning and assists in improving and maintaining functional status.

Lam, Chau and Wong, 2012; Yamada, Arai, Sonda and Aoyama, 2012; Herzog, Kremer, Wilson and Lindenburger, 2008

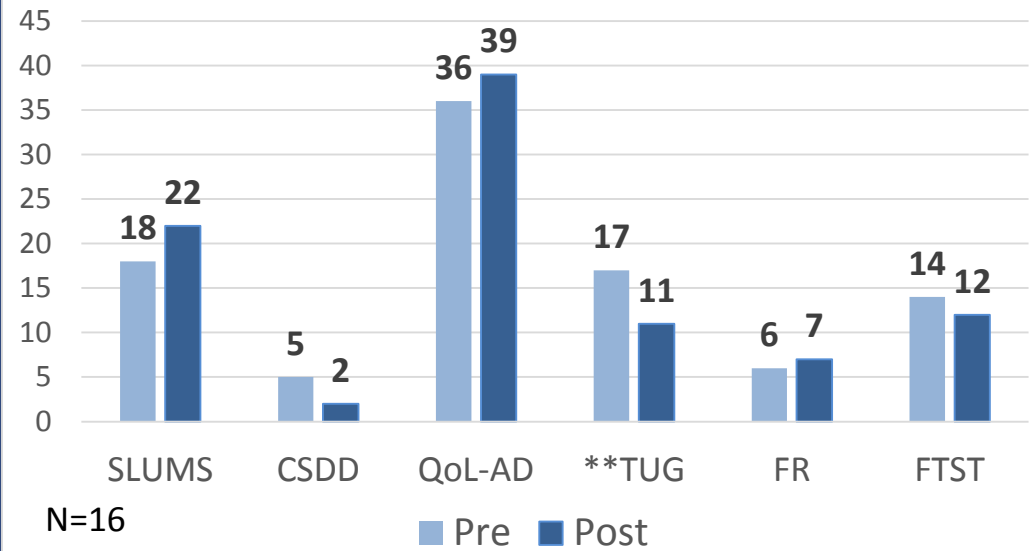
- Integrating exercise into CST should benefit cognition and functional status.
- 25-30 minutes of exercise component was added to CST.

Our CST Experience

Comparison of Means Pre & Post CST (7wks)



Comparison of Means Pre & Post CST Including Exercise (7wks)



Combined scores from St. Louis University /A.T. Still University / Perry County Memorial Hospital

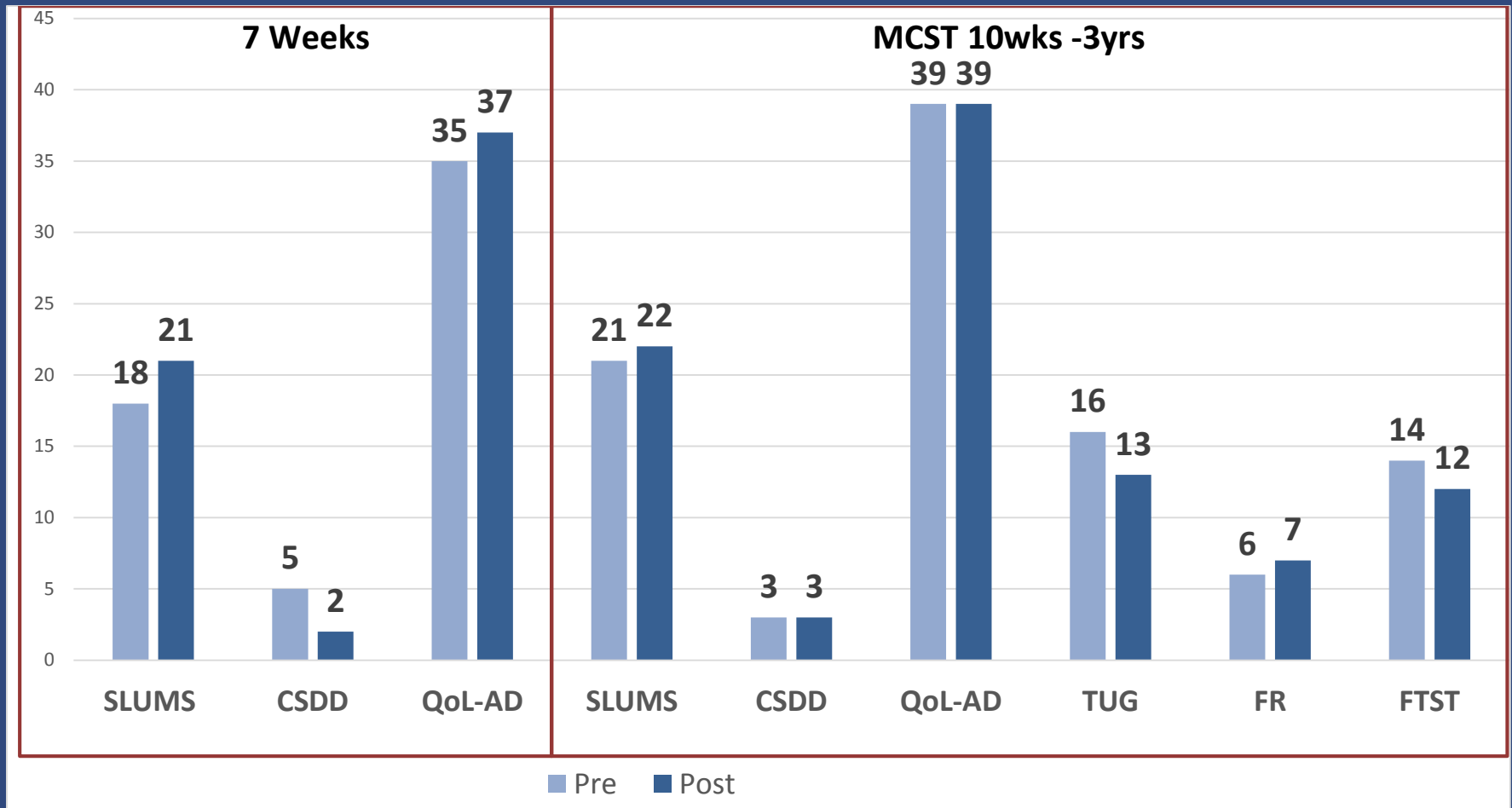
Perry County Memorial Hospital

*SLUMS (out of 30)---CSDD (> 12depression) ---QoL-AD (out of 52)

** TUG (> 12 seconds) ---FR (< 6 inches)--- FTST (> 13.6 seconds)

Community Dwelling MCST with Exercise

Comparison of means pre and post CST and MCST pre and post with CST and exercise



Why Does CST Work?

- **Short Term Memory-** How many pieces of information you can hold onto for short period of time. Information comes in from auditory and visual systems primarily.
- **Long Term Memory-** If value is placed on information in short term memory, it will move to long term. Intensity about information helps it “stick.”
- **Working Memory-** Taking information from short and long term and assimilating or manipulating it. Basis for higher executive function.

CST guides participants through prompting memories and thoughts to stimulate working memory for assimilation and manipulation of thoughts. “Turning the lights on.”

**Creating New
Thoughts and
Associations**



**Creating New
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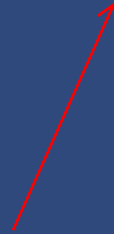
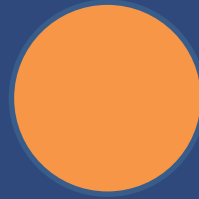




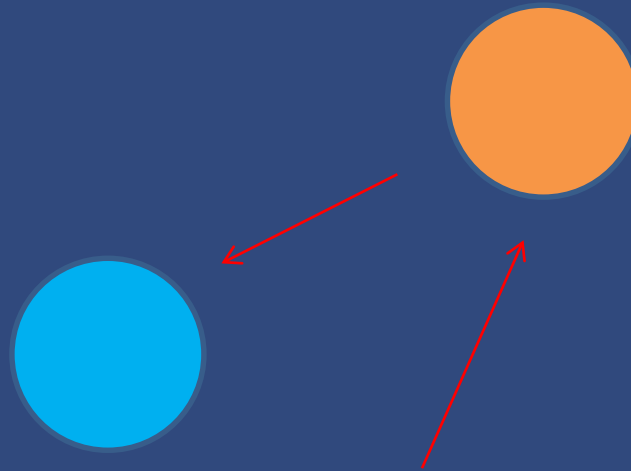




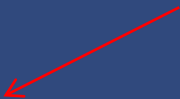
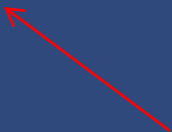
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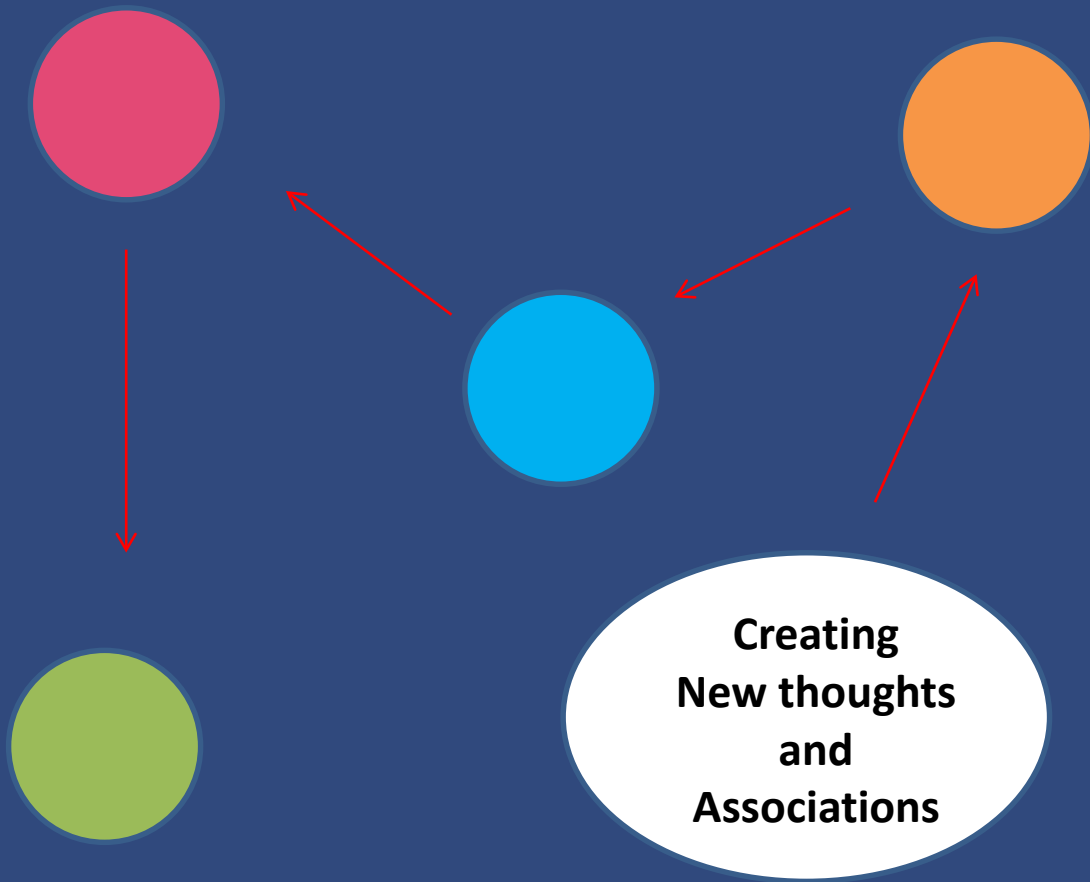
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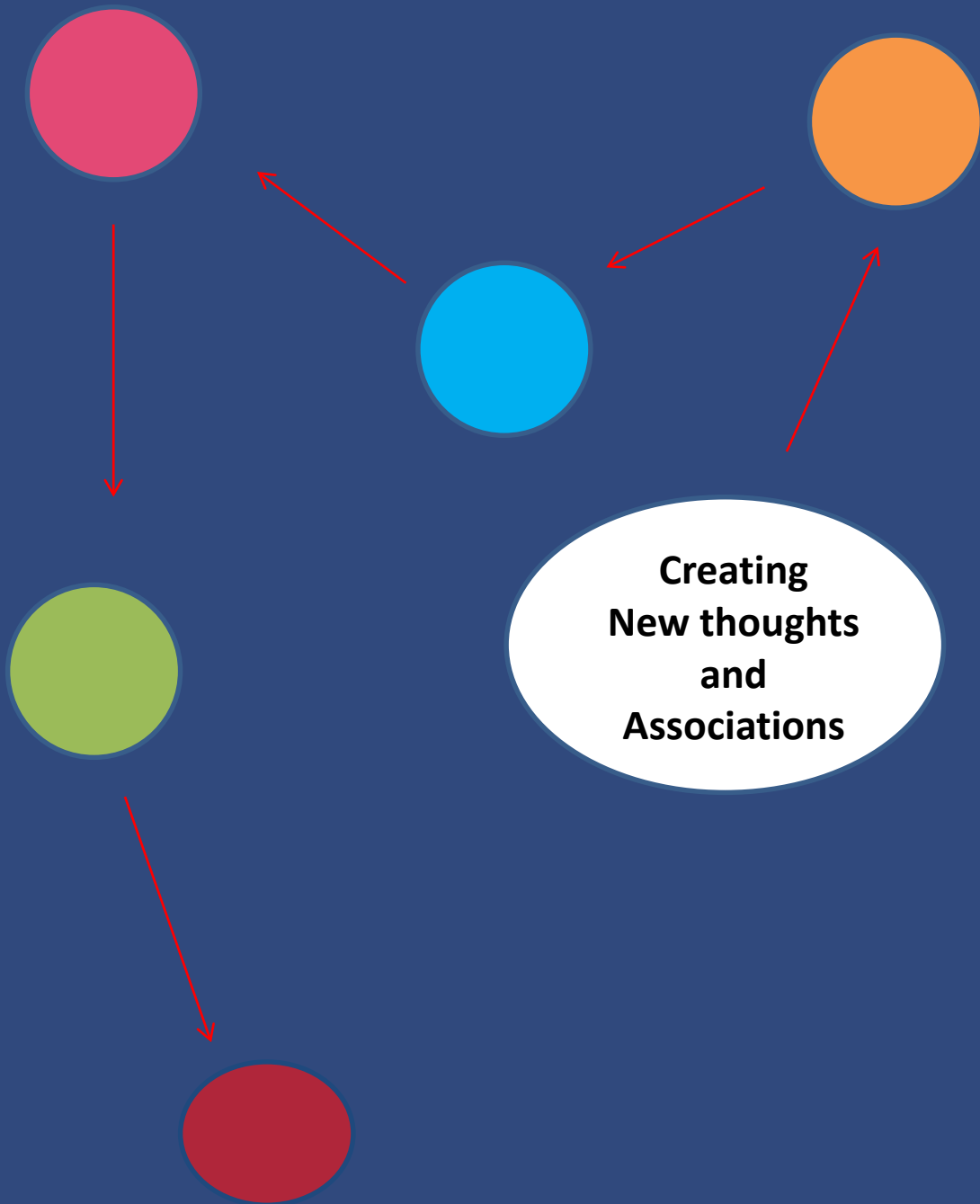


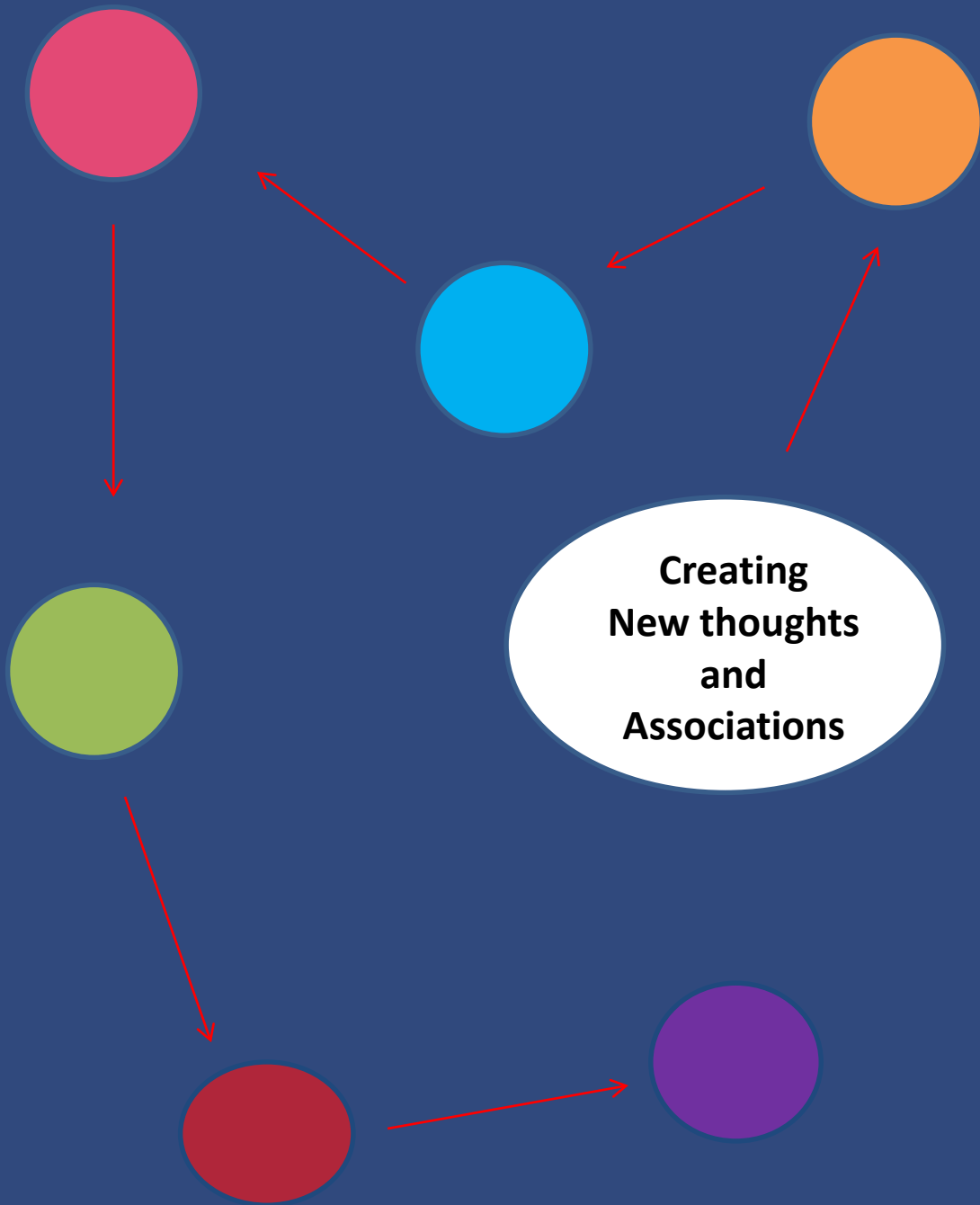
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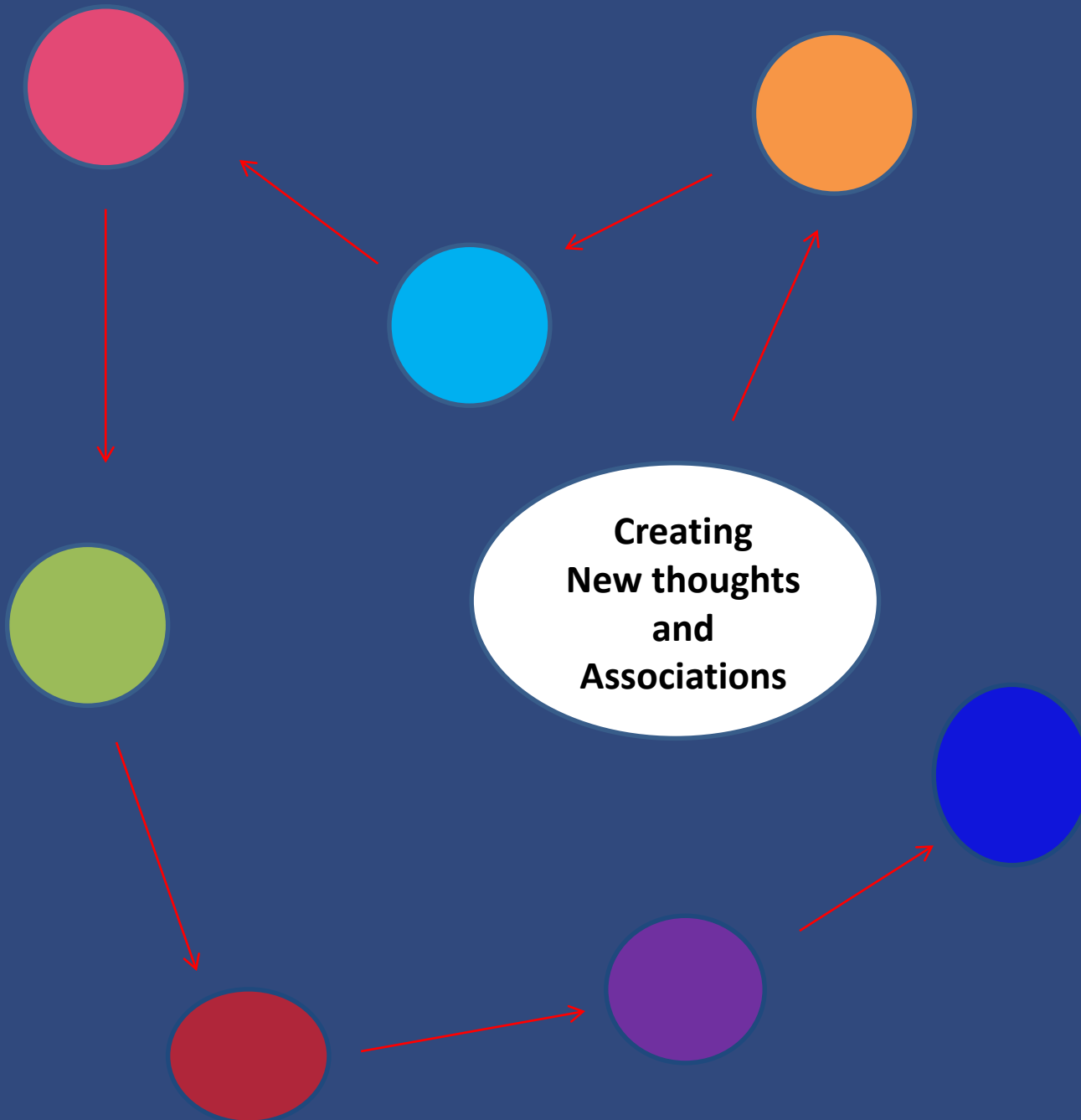
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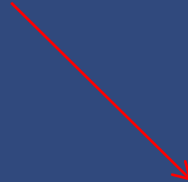
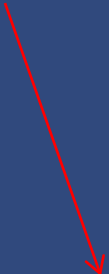
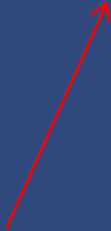
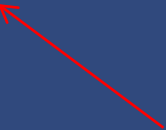
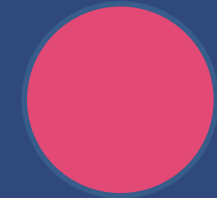




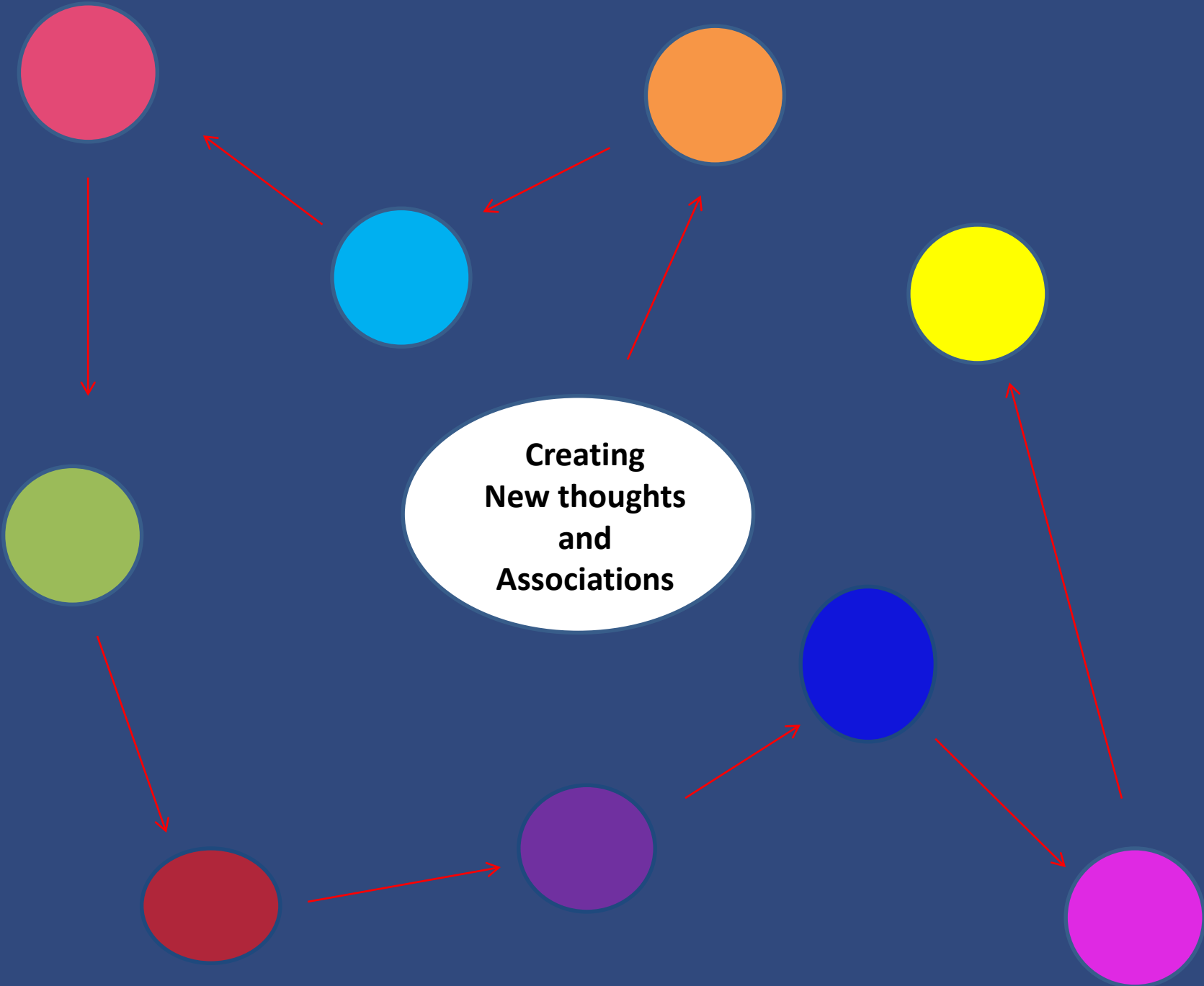
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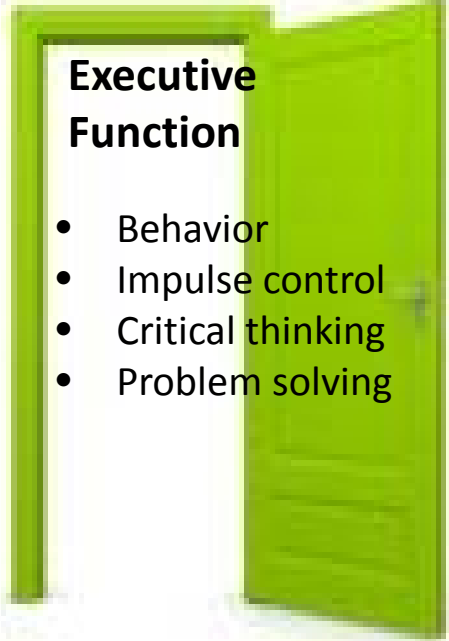


**Creating
New thoughts
and
Associations**



Working Memory





Executive Function

- Behavior
- Impulse control
- Critical thinking
- Problem solving

HPA Axis

- Amygdala- activates stress response, role in fear/emotion (sub-dominant), over-rides prefrontal cortex (executive function)
- Hippocampus-role in connecting old and new learning (dominant) and in negative feedback system to shut off HPA axis, vulnerable to cortisol levels (atrophy)
- HPA axis negative feedback system- elevated cortisol levels inhibit hypothalamus and pituitary so system shuts off

STRESS
(Psychological and Physical)

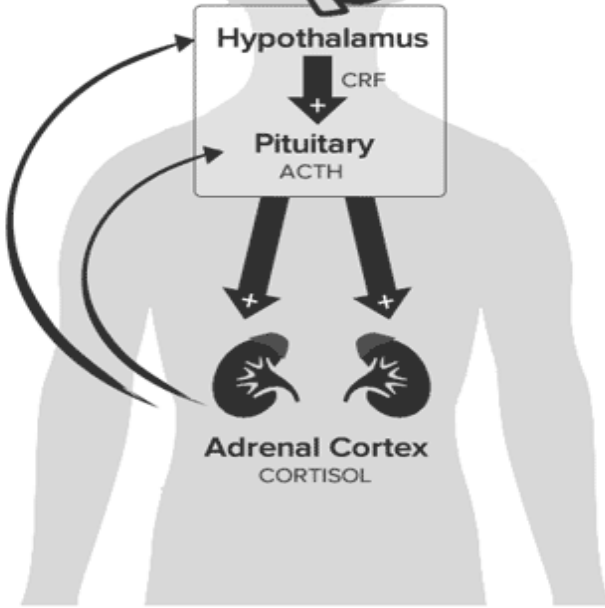


Hypothalamus

↓ CRF

Pituitary
ACTH

↓ + ↓ +
Adrenal Cortex
CORTISOL



Benefit of CST: Low Stress Environment

- Participants perceive CST as an enjoyable experience and are more likely to continue to participate
- Provides for controlling anxiety and therefore the HPA axis cycle activation by avoiding placing participant in an uncomfortable or anxious position this in turn allows for memory recall and learning to take place (hippocampus/dominant hemisphere)
- Sense of belonging, sense of achievement and getting physiological rib cage expansion with slow release all aide in serotonin release
- Improves overall self-esteem, confidence

Affect of Stress on Memory

Older persons often have lost 20-25% of cells in their hippocampus which causes even more cortisol production.

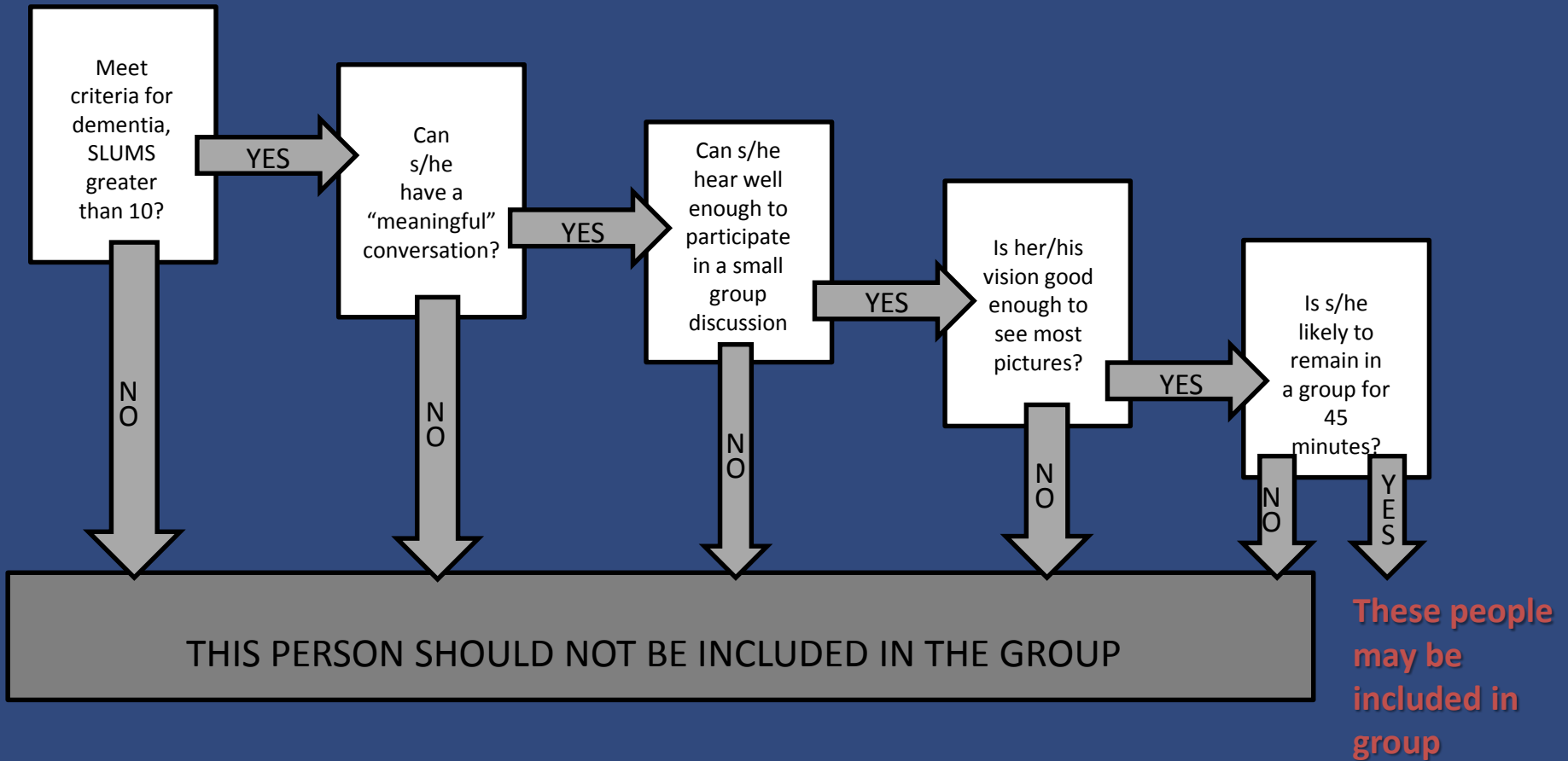
“Degenerative Cascade”.

(Brain Longevity, Dharma Singh Khalsa, M.D.)

Videos on CST

Developing and Implementing a CST Group

Who is appropriate for CST?



Key Features of CST Program

- 14 CST sessions, usually twice a week
- 45 minutes to an hour
- Ideally 5-8 participants in a group, run by two therapists/facilitators
- Each session has a choice of activities, to cater for interests and abilities of group (categorization, word association and discussion of current events)
- Group members should ideally be at similar stages of dementia, so activities can be pitched accordingly
- Attention should be paid to gender mix

Key Principles of CST



Mental Stimulation

- Getting people's minds active and engaged.
- You might explain that you are trying to get them to exercise skills that may not be used so much and stimulate different parts of the brain. Some sessions will be harder than others, but trying hard=good mental exercise! It can be useful to explain the evidence for CST from the research.
- When you plan sessions, the aim is to pitch activities so that people have to make an effort, but not too high (so they can potentially feel deskilled)

New Thoughts, Ideas and Associations

- Often with people with dementia, we tend to talk about things from the past. While this is enjoyable, it often involves recalling information that has been over-rehearsed.
- The aim of CST is to continually encouraged new ideas, thoughts and associations, rather than just recall previously learned information.

Example- faces session. Show more than one face and ask questions such as “What do they have in common?” “How are they different?” “ Who would you rather be?”

Opinions Rather Than Facts

- People will often be wrong. If we ask people for their opinions, they may be amusing, sad, unusual, controversial or puzzling, but they cannot be wrong.
- Example: ask “What do you think of politicians?” rather than “Who is the current president of the U.S. ?”
- Avoid questions beginning “Who can remember...?”



Stimulating Language

- Evidence from the research that language skills improve after CST.
- Sessions stimulate language , for example naming of people and objects, word construction and word association.



Stimulating Executive Functioning

- Executive functioning skills, particularly involving planning and organizing, are often very impaired in dementia.
- Several sessions exercise these skills, for example planning and executing stages of a task (making a cake in “being creative”, selecting food for a meal in “food”).
- Mental organization is exercised through the discussion of similarities and differences.

CST SESSIONS

1. Physical Games
2. Sounds
3. Childhood
4. Food
5. Current Affairs
6. Faces and Scenes
7. Associated Words
8. Being Creative
9. Categorizing Objects
10. Orientation
11. Using Money
12. Number Games
13. Word Games
14. Team Quiz

Session Structure

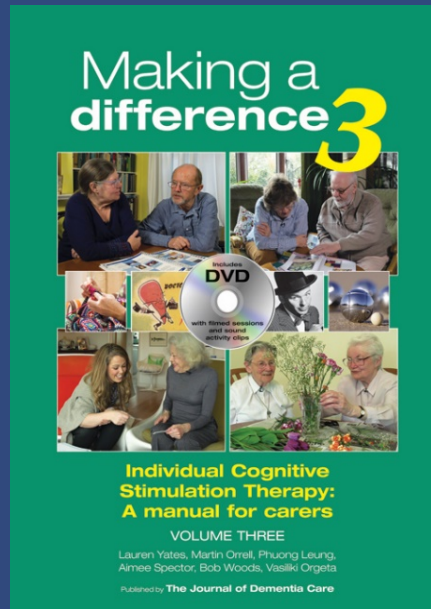


- Introduction
 - Welcome every member individually
 - Group name
 - Soft ball toss (warm up and orientation of members)
 - Reference to day, weather, season (always on board as cue).
 - Any discussion of important events in their lives since last session.
- Theme Song
- Current Affairs (Local and national).
- Main Activity
- Suggested activities for home (may include in take home handout).
- Closure (discuss time, day, and activity for next session-get opinions).

Monitoring progress

- Outcome measures
 - SLUMS- measures cognitive change
 - QOL-AD- measures quality of life
 - Cornell Depression screen
- Feedback from group and caregivers
- Regular support and supervision is essential

CST with a Individual (iCST)



Use of the same basic key principles as group CST with an emphasis on strengthening the relationship between the person with dementia and the caregiver.

Professional-led iCST vs. Caretaker:

- Some evidence of improvement of the caregiving relationship and carers' health-related quality of life
- Not significant for cognition and quality of life for people with dementia.
- Most people received fewer than the recommended number of iCST sessions.
- Further research is needed
- Research is needed to determine the effectiveness of professional-led iCST.

CST Training and Resources

- Saint Louis University Geriatric Education Center: For CST learning modules and information on future CST trainings (aging.slu.edu)
- Perry County Memorial Hospital Cognitive Stimulation Therapy Services and CST training (pchmo.org)
- CST UCL (U.K.) website (cstdementia.com)
- Making a difference CST manuals can be found on Amazon and Hawker publications (U.K.)



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