Intervention and Support: Individuals with Self-Regulatory (Executive Function) Impairment

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For Elaboration

Articles and chapters:

WWW.SCSSCONSULTING.COM

TO DO

1. **Concept of EF/SR**
2. **Relation to meta-cognition, self-determination, learned helplessness/optimism**
3. **Development of EF/SR**
4. **EF/SR impairment**
5. **[Assessment]**
6. **Facilitation via everyday routines of interaction**
7. **Educational and Communication Interventions/Strategy intervention**

Impaired Self-Regulation

- Illustrations

ILLUSTRATIONS

- Adam
- Janet
- Ben
- Janet

EXECUTIVE FUNCTIONS/ SELF-REGULATION

- **Self-determination**
- **Self-control**
- **Self-management**
- **Self-direction**
- **Maturation**

EXECUTIVE FUNCTIONS

"… those mental capacities necessary for formulating goals, planning how to achieve them, and carrying out the plans effectively" (Lezak, 1982)

"…ability to maintain an appropriate problem-solving set for attainment of a future goal." (Welsh & Pennington, 1988)

EXECUTIVE FUNCTIONS

"… the executive functions serve as an integrated directive system exerting regulatory control over the basic domain-specific neuropsychological functions (e.g., language, visuospatial functions, memory, emotional experience, motor skills) in the service of reaching an intended goal."

Gioia & Isquith, 2003

Self-Regulation

"Using thought to guide behavior" (L. Berk)

"Self-regulation refers to the many processes by which the human psyche exercises control over its functions, states, and inner processes."

Vohs, K.D., & Baumeister, R.F. (2004). Understanding self-regulation: An introduction. In R.F. Baumeister & K.D. Vohs (Eds.), Handbook of self-regulation: Research, theory and applications (pp. 1-9). New York: Guilford Press.

EF/SR

Organizing and controlling action, thought, and emotion in a way that is (1) not determined by immediate environmental events, (2) not determined by immediate impulse or states of the body, (3) not determined by the control of others, (4) directed toward personal goals, (5) while taking into account environmental factors such as the goals and intentions of others

- **Conscious/effortful OR automatic/habitual**

EF/SR

- **"COLD": Self-regulation of covert cognitive and linguistic processes**
  - **Associated with dorsolateral prefrontal cortex**
  - **E.g., working memory tasks**
- **"HOT": Self-regulation of emotions and observable social behavior**
  - **Associated with orbital and ventromedial prefrontal cortex**
  - **E.g., delayed gratification tasks; "gambling" tasks**
- **Interact in the real world – despite neuroanatomic and neuropsychological separability**

Denckla, 1996

EF/SR: UNORGANIZED LIST

- **Setting and managing goals**
- **Planning**
- **Organizing**
- **Initiating**
- **Inhibiting**
- **Self-monitoring**
- **Strategic thinking**
- **Problem solving**
- **Working memory**
- **Flexible shifting**
- **Deliberately controlling any cognitive**
- **Delaying gratification**
- **Social perception**
- **Controlling emotions**
- **Learning from consequences**
- **Organized sense of self**

EF/SR SYMPTOMS

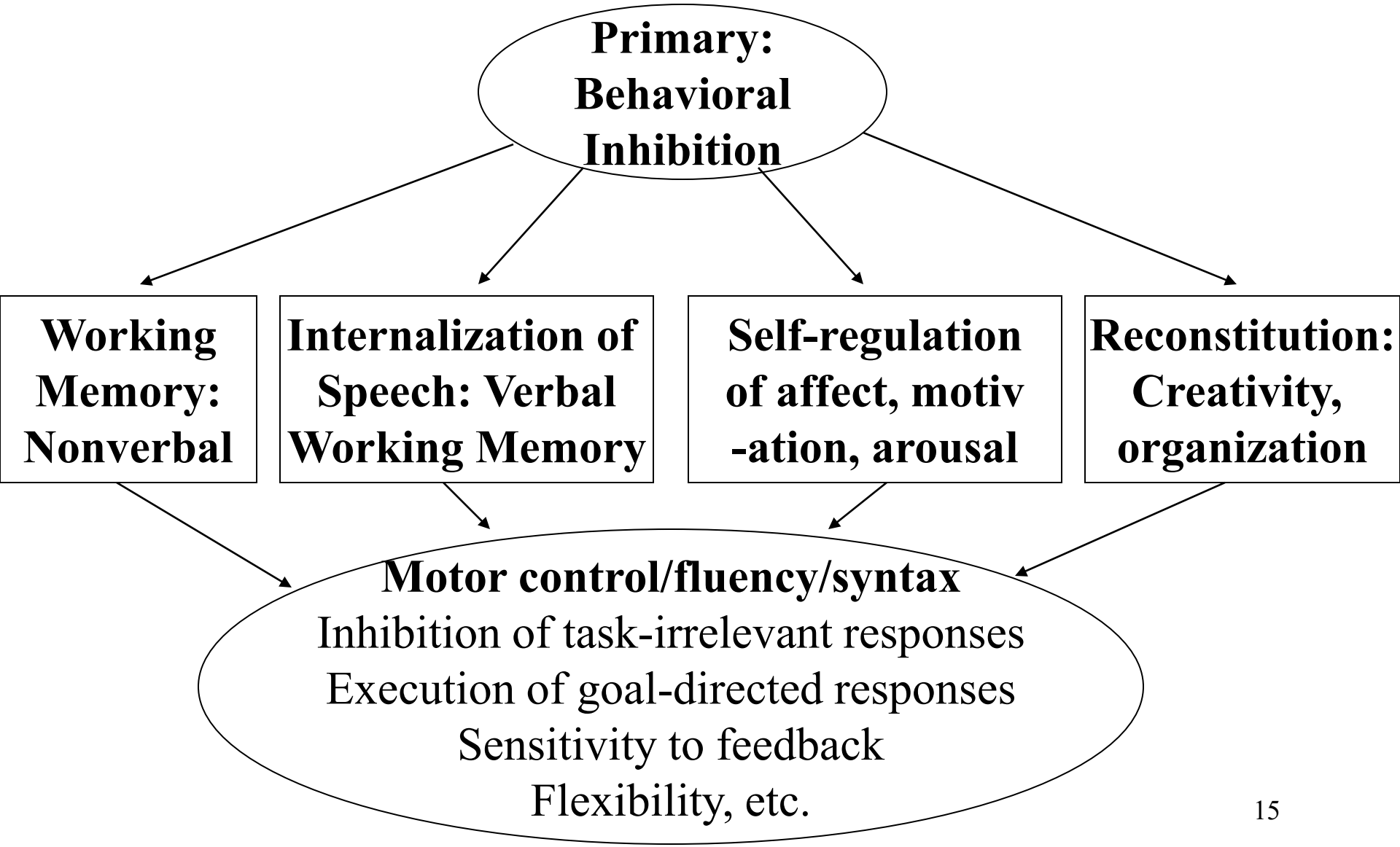
- impulsiveness
- poor social judgment
- social disinhibition
- egocentrism
- difficulty interpreting the behavior of others
- perseveration
- poorly regulated attention
- disorganization (in thinking, talking, and acting)
- weak goal formulation
- ineffective planning
- decreased flexibility/ shifting
- slowed processing
- diminished divergent thinking
- concrete thinking
- immature problem solving
- weak self-monitoring
- inefficient responses to feedback/ consequences
- reduced initiation
- dulled emotional responses

EF: FACTOR ANALYSES

- **Several attempts have been made to organize lists of EF symptoms using factor analytic procedures.**
  - **The variety of lists recommends caution in interpretation!!**
- **From an intervention perspective, these results are not especially useful – for both technical and clinical reasons.**
  - **Neuropsychological separability does not necessarily recommend intervention separability**
- **Factor analyses are vulnerable to the limitations of the tests administered**

EF/SR: Theory Construction

R. Barkley



EF/SR: FUNCTIONAL DEFINITION

Based on analysis of strategic action

- **Self-awareness of strengths and limitations (what's hard to do; what's easy to do)**
- **Goal setting**
- **Planning/organizing**
- **Initiating**
- **Inhibiting**
- **Self-monitoring and evaluating**
- **Strategic thinking and acting**
- **Flexible shifting, adjusting, benefiting from feedback**

OTHER ASPECTS OF EF/SR

- **Transfer from learning context to application context**
- **Think abstractly and flexibly**

??Assume a non-egocentric perspective ("theory of mind")

EF/SR: UNITARY OR SEPARABLE COMPONENTS?

- **Separable components: must be separated for neuropsychological and clinical investigations**
- **Should be seen as integrated for purposes of functional intervention (versus fragmented, discrete-trial "training" of components)**
- **Compare: language**

SR/EF: DOMAIN SPECIFIC?? CONTEXT AND CONTENT?

Does effective SR/EF performance in one domain or setting predict equal performance in others?

- **No: Everyday example: Effective goal setting, planning, initiating, inhibiting, self-monitoring, strategic behavior in football does not predict equally successful SR/EF in academic domains**

SR/EF: DOMAIN SPECIFIC?? CONTEXT AND CONTENT?

Does effective SR/EF performance in one domain or setting predict equal performance in others?

- **No: Research: Pediatric studies: vary context – different results**

EF/SR

- **Routine, habitual, easy**

  Versus

- **Non-routine, novel, hard, effortful**
  - **Strategic thinking demands**
  - **Working memory demands**
  - **Inhibition of pre-potent response demands**
  - **Maintenance of goal-directed behavior**
- **HOWEVER: Aspects of executive functioning can (and should) become routine/automatic**

EF/SR AND COGNITION: DELIBERATELY CONTROLLED

- **Attention**
- **Memory and learning**
- **Organization (including discourse)**
- **Reading and writing**

EF/SR AND LANGUAGE:
DELIBERATELY CONTROLLED:

- **Effortful word retrieval**
- **Discourse (organized language), including reading comprehension and organized writing**
- **Social perception and interaction (including pragmatics and "theory of mind")**
- **Flexibility in shifting social registers**
- **Flexibility in multiple interpretation tasks**
- **Efficient language learning (effortful encoding and retrieval)**
- **Indirect language**
- **Abstract language**

EF/SR: Illustrations

PRESCHOOL

- Fall off balance beam, try it sideways, succeed
- One cookie now or two later?? Two later
- Lose toys, get in habit of putting them in cubby
- Request help when tasks are difficult

HIGH SCHOOL

- Fail exam, study harder, succeed
- Distracted by video games, go to another room to study
- Use multiple social registers as appropriate
- Suppress impulses in the service of long-term academic, social and vocational goals

METACOGNITION

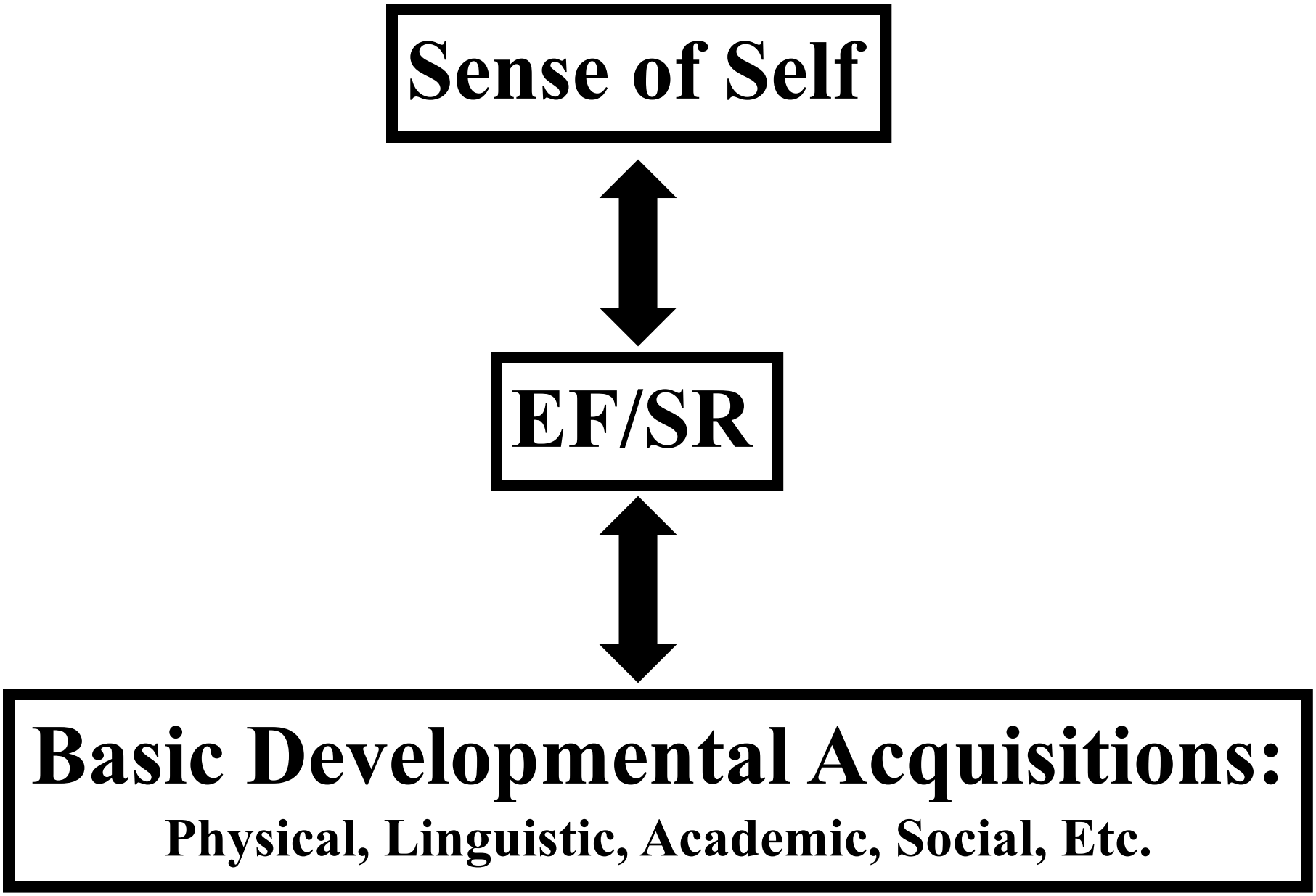
- **STATIC: Knowledge/awareness of one's cognitive and academic processes and skills, and of procedures ("strategies") that enhance performance**

- **DYNAMIC: Executive control over cognitive and academic processes in everyday learning and problem solving: *Doing something special* to overcome obstacles and succeed with difficult tasks**

SELF-DETERMINATION

- **AUTONOMY:** Act independently, free from undue external influence
- **SELF-REGULATION:** Formulate, enact, and evaluate plans of action, with revisions as necessary
- **PSYCHOLOGICAL EMPOWERMENT:** Act on the belief that one can influence important outcomes
- **SELF-REALIZATION:** Capitalize in a beneficial way on a reasonably accurate knowledge of self

Michael Wehmeyer and colleagues


Sense of Self
EF/SR
Basic Developmental Acquisitions:
Physical, Linguistic, Academic, Social, Etc.

IMPORTANCE OF EF/SR

CRITICAL FACTOR IN:

- **Social success**
- **Academic success**
- **Vocational success**
- **Independent living**

Importance of Self-Regulation/ EF Development

- **Measures of delayed gratification (i.e., "hot" aspects of EF/self-regulation) at age 4 predict adolescent SAT scores and ratings of social-emotional and cognitive competence (Mischel and Ayduk, 2004)**
- **And predicted educational level and use of crack cocaine at age 27 (Ayduk et al., 2000)**

SELF-DETERMINATION AND ADULT OUTCOME

- **Wehmeyer et al.study**
- **LD and EMR**
- **Rank on self-determination scale**
- **IQ not a predictor of self-determination**
- **Follow one year after ending school career**
- **High self-determination: dramatic superiority in having a job, checking account, etc.**

EF/SR IMPAIRMENT:
INTERFERES WITH EDUCATIONAL INTERVENTION

- **Unaware -- unengaged**
- **Reduced inhibition – impulsive cognitive and academic behavior**
- **Reduced initiation – failure to use available skills**
- **Reduced monitoring – failure to appreciate value of strategic behavior**
- **Inefficient response to consequences – remain stuck**

EF/SR and Learned Helplessness

Learned Helplessness: Core concept = "I have no control over events in my life, particularly negative events"

May result in:

- **Depression**
- **Passivity/apathy**
- **Anger, hostility, and acting out**
- **Combination**

Learned Helplessness and Attribution

Negative Attribution

- **Stable attribution: things will never change**
- **Global attribution: everything happens like this in my life**
- **Internal helplessness: I can't do anything right**

Learned Helplessness and TBI

- **Individuals who experience a world in which most events are out of their control show increased negative affect, slower problem solving, failure to master tasks, and persistent use of unhelpful strategies.**
- **After TBI, there is a natural tendency to remove opportunities for control from the person, risking learned helplessness (manifested as apathy, depression, or anger)**

Learned Optimism

Optimism is associated with:

- **Effective self-regulation of behavior and cognition**
- **Initiation and maintenance of goal-directed behavior**
- **A disposition to obtain relevant information in order to make effective decisions and plans**
- **A tendency to attend to risks as problems to be solved rather than barriers to success**
- **Positive attribution: My strategic effort affects the outcomes of my actions**

Teaching Optimism

Pennsylvania Optimism Program: School-Based (Context-Sensitive) Intervention

1. **Teach a flexible/realistic attributional style**
2. **Encourage: describe ones behavior first, then identify related factors**
3. **Teach problem-solving skills in the context of the academic and social "curriculum"**
4. **Correct errors in social perception/cognition**
5. **Facilitate assertiveness and negotiation**
6. **Address cognition, emotion, and behavior as necessarily interdependent**

EF/SR DEVELOPMENT Themes

- **Start early**
- **Develop slowly**
- **Continue into adulthood**
- **Influenced by biologic and environmental factors**
- **Variability: Context (person, setting and task), motivation, culture**

THEORIES OF EF/SR DEVELOPMENT

All theories of human development account in some way for development of self-regulation. And all theories posit some sort of basic drive toward mastery and control over events on one's life.

THEORIES OF EF/SR DEVELOPMENT

- **Operant behavioral**
- **Social learning**
- **Psychoanalytic**
- **Piagetian**
- **Vygotskyan**
- **Information processing**

EF/SR DEVELOPMENT: The Role of Experience

Children are more likely to develop effective self-regulation if they:

- **Experience adequate social attachment**
- **Experience an organized and predictable world**
- **Receive "authoritative/apprenticeship" parenting, including effective modeling and verbal mediation**
- **Are rewarded for appropriate self-regulation and control by adults who value self-regulation and autonomy**

Parental Impact on Development of Self-Regulation

- **Associated with effective self-regulation in the child: A parental style that is responsive, supportive, sensitive, stimulating, guiding, non-punitive, with positive expression of emotion ("authoritative" parenting)**
- **Associated with ineffective self-regulation in the child: A parental style that is unresponsive/ intrusive, unsupportive, insensitive, directive, punitive, with negative expression of emotion**

EF/SR IMPAIRMENT
Vulnerable Populations

- **TBI/Frontal Lobe Injury**
- **ADHD**
- **Autism (ASD)**
- **???Tourette's Syndrome**
- **Fetal Alcohol Syndrome**
- **Heavy cocaine exposure**
- **Epilepsy**
- **Meningitis**
- **Early Treated Phenylketonuria (disrupts dopamine production)**
- **Heavy Lead Burden**
- **Very Low Birth Weight (in some cases)**
- **Hydrocephalus/Spina Bifida**
- **Certain Malignancies**
- **OCD**
- **???Conduct Disorder**
- **Chaotic Environments (e.g., multiple foster placements)**
- **Children with learned helplessness**

NEUROPATHOLOGY OF EF/SR DISORDERS

- **Congenital or acquired**
- **Structural or metabolic**
- **Focal or diffuse**
- **Focal:**
  - **Prefrontal structures**
  - **Prefrontal-striatal-cerebellar systems**
- **Diffuse:**
  - **Perhaps disruption of widely distributed complex neural systems can cause EF dysfunction**

THEMES FROM STUDIES OF EARLY PREFRONTAL DAMAGE

- **Importance of PF cortex for social development (possibly primary social/behavioral disability)**
- **Protracted development of PF cortex re: EFs**
- **Inter-hemispheric effects between PF cortices**
- **Early differentiation of rudimentary EFs**
- **Recovery from early PF damage is neither simple nor linear**
  - **Possibly delayed developmental consequences**
  - **Possibly younger more vulnerable (reverse of traditional plasticity principle)**
  - **Pre- and post-injury environments critical factors**
- **Relative sparing of basic cognitive and language abilities: Possibly unusual profiles**

Eslinger, P.J., Biddle, K.R., & Grattan, L.M. (1997). Cognitive and social development in children with prefrontal cortex lesions. In N.A. Krasnegor, G.R. Reid, & P.S. Goldman-Rakic (Eds.), Development of prefrontal cortex: Evolution, neurobiology, and behavior. Baltimore, MD: Paul Brookes Publishing.

- Brain graphics

PART 2

ASSESSMENT

PARADOX OF EF ASSESSMENT

“PROSTHETIC FRONTAL LOBES”

"Close observation suggests that, in structured testing situations, the examiner acts as the frontal lobes for these patients...." (Stuss & Benson, 1986, p. 105).

"Some patients with significant frontal lobe disturbance may perform excellently on "frontal lobe tests" but be significantly impaired making even simple real-life decisions." (Stuss & Buckle, 1992).

PEDIATRIC EF TESTS & LAB PROCEDURES

- **Cold EFs**
  - **Child versions of adult tests (e.g., Stroop color word naming, WCS)**
  - **Experimental procedures (e.g., go-no-go; ant-imitation tasks; Tower of Hanoi, 20 Questions)**
  - **Developmental tasks with EF spin (e.g., multiple hiding tasks)**
- **Hot EFs**
  - **Flexible decision making with emotionally charged material: e.g., delayed gratification; gambling task**

QUESTION: ECOLOGICAL VALIDITY!!

STANDARDIZED SCALES

- **Child Behavior Checklist**
- **Connors Teacher Rating Scale**
- **BRIEF**
- **Preschool BRIEF (DIAPER ☺)**

BRIEF
Behavior Rating Inventory of Executive Functions

Behavioral Regulation

- Inhibit
- Shift
- Emotional Control

Metacognition/Problem Solving

- Initiate
- Working Memory
- Plan/Organize
- Organization of Materials
- Self-Monitor

STUDENT PARTICIPATION

The Arc's Self-Determination Scale

- **Autonomy**
- **Self-regulation**
- **Psychological empowerment**
- **Self-realization**

Student participation in IEP development

DYNAMIC ASSESSMENT

ONGOING CONTEXTUALIZED COLLABORATIVE HYPOTHESIS-TESTING ASSESSMENT

ASSESSMENT

See: www.bianys.org/learnet

DYNAMIC ASSESSMENT

- **Follow static standardized tests with feedback/ support**
  - **Just feedback**
  - **Task modification**
  - **Coaching**
  - **Other scaffolding**
- **For purposes of**
  - **Identifying learning potential (“ZPD”)**
  - **Identifying causes of failure**

WHY TEST HYPOTHESES?

- **Failure on any complex task is multiply interpretable**
- **Complex students can be supported in a variety of ways**
- **Test results do not necessarily indicate how best to achieve success on specific tasks**

COMPREHENSION FAILURE

- **Physical**
- **Sensory/perceptual**
- **Cognitive: attention**
- **Cognitive: orientation**
- **Cognitive: memory**
- **Cognitive: WM**
- **Cognitive: organization**
- **Cognitive: speed**
- **Cognitive: lack of strategies**
- **EF: failure to execute (e.g., initiation, inhibition)**
- **Language**
- **Academic**
- **Motivational/ behavioral**

WHY COLLABORATE?

- **Increase observations and experiments**
- **Increase compliance**
- **Educate family, staff, others**
- **EF training for student**
- **Show respect**

WHY IN REAL CONTEXTS?

- **Inconsistency**
- **Validity problems of standardized testing**
- **Impact of setting, person, activity**
- **Impact of stress**
- **Observe real-world initiation, inhibition, self-monitoring, problem solving**
- **Observe effects of real-world supports and routines**
- **Observe support behaviors of others**

CCH-TA PROCESS

- **Define problem**
- **Identify need for dynamic assessment**
- **Generate hypotheses**
- **Choose which (combination) to test**
- **Create “experiments”**
- **Implement (collaborate in context)**
- **Interpret**
- **Proceed to intervention or another test**
- **Continue to monitor and adjust**

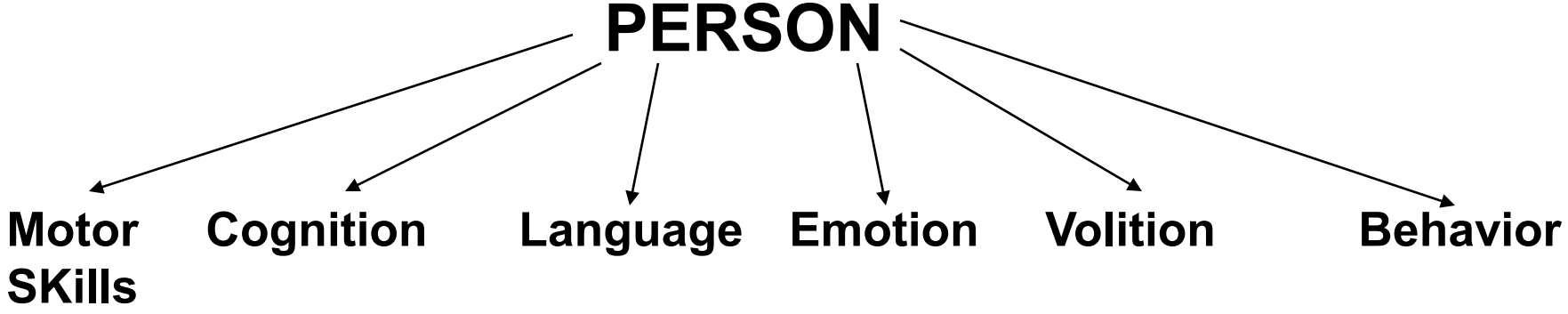
PART 3

EF/SR INTERVENTION

THEME: INTEGRATION

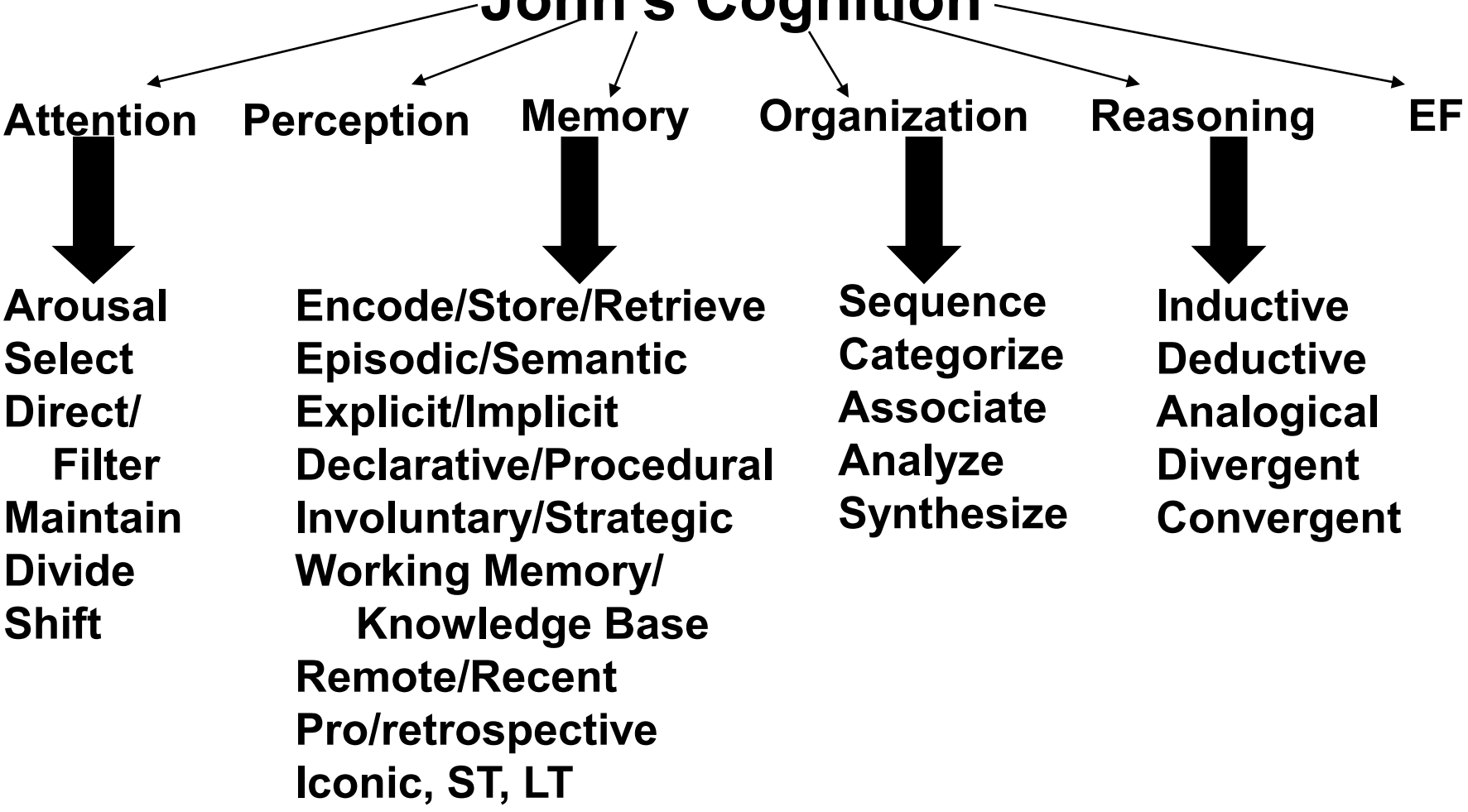
- **Across domains of functioning**
- **Across everyday contexts**
- **Across time and developmental stages and accomplishments**
- **Across the individual's evolving preinjury and postinjury sense of self**
- **Across themes from various disability populations**
- **Across professionals and everyday people**
- **Across systems of care**

TWO FUNDAMENTALLY OPPOSING CONCEPTIONS OF HUMAN REALITY



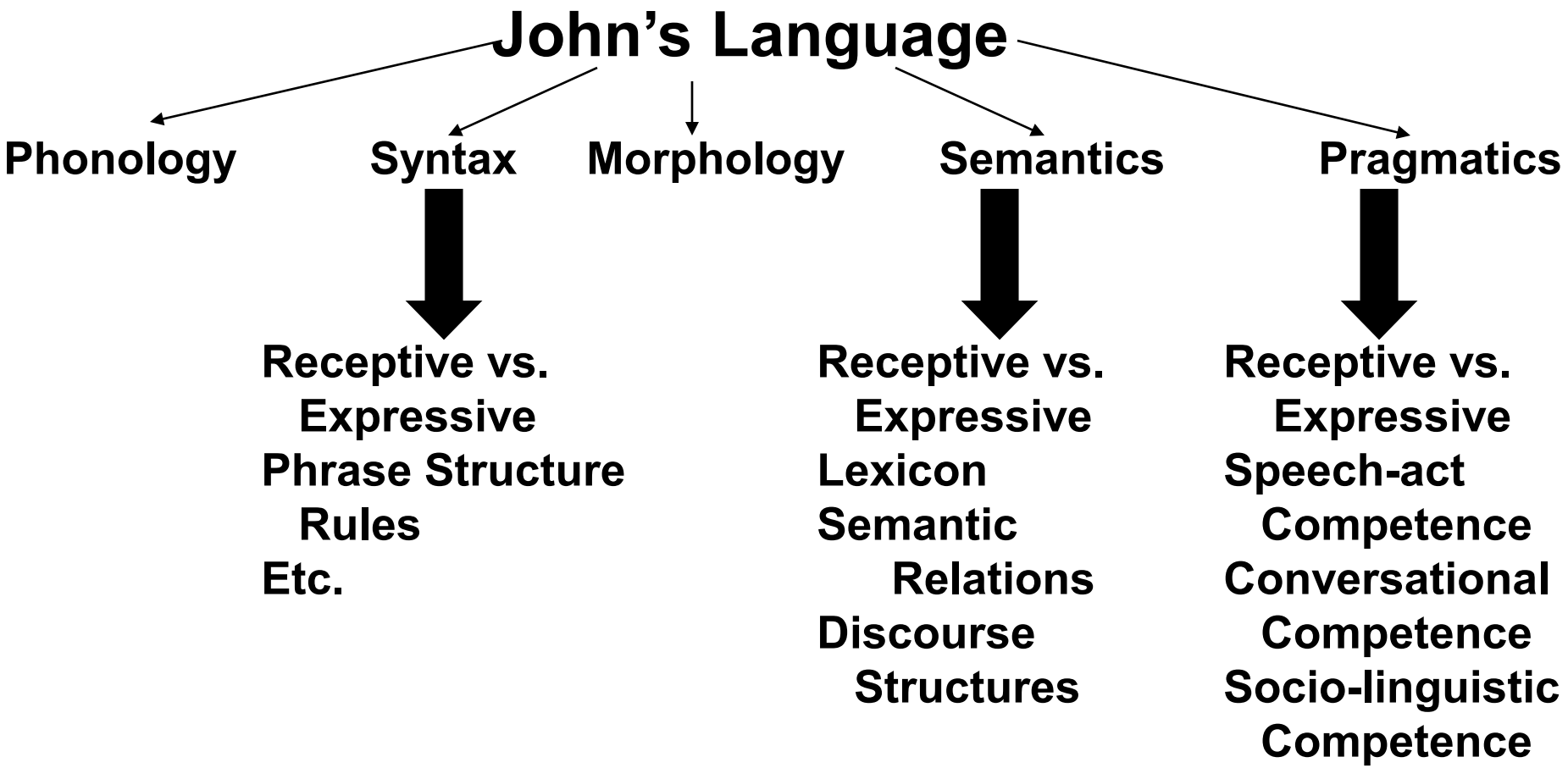
Human beings are a collection of relatively independent structures, processes, and systems

John's Cognition



Goals for John: John will:

1. Increase duration of maintained attention
2. Increase prospective memory from 3 to 5 minutes
3. Increase category naming from 3 to 5 members per category

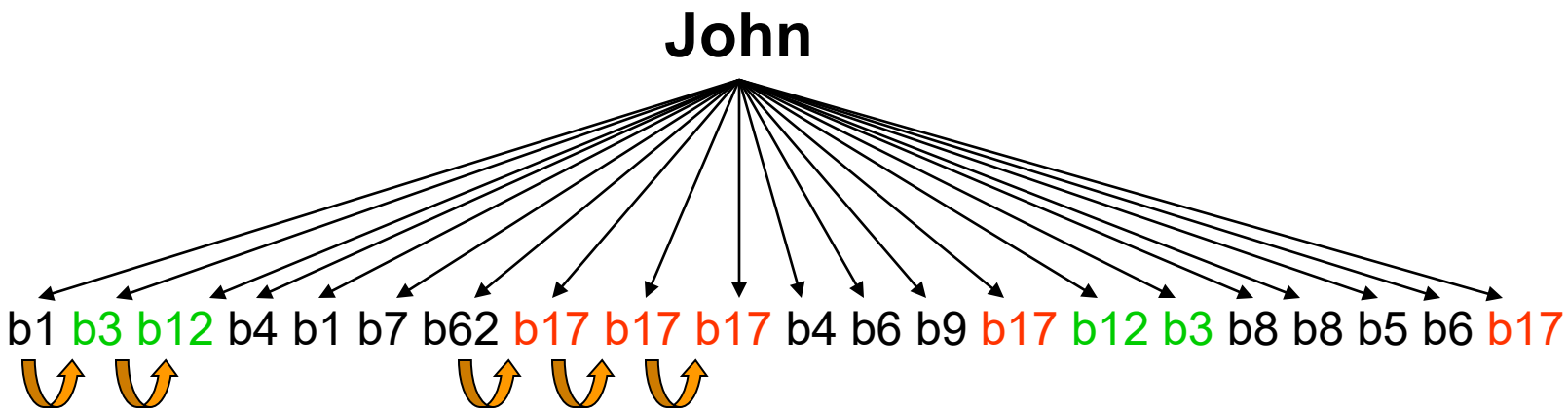


Goals for John: John will

1. **Decrease mean naming latencies from 3 to 2 seconds**
2. **Include 5 basic story grammar elements in retellings**
3. **Use politeness markers in greeting people: 90%**

John's Behavior

John is the totality of his behaviors and the systematic relationships among them



Goals for John: John will

1. **Increase frequency of b3 and b12**
2. **Decrease frequency of b17**

Alternative Understanding of Human Beings

Sarah

Pursuing personally meaningful goals

While participating in culturally valued activities

In social, cultural, and historical contexts

Mediated as necessary by individuals with greater expertise in that domain

Using cultural tools, such as language, category schemes, mathematics, organizational supports, domain-specific strategies

In the presence of varied context facilitators and barriers

"And the rest is abstraction"

Rehabilitation Goals

Sarah will successfully complete ___ meaningful task, with ___ supports, possibly using ___ "tools/strategies", in ___ context (setting, people, activities), in order to achieve ___ goal.

Possibly focusing intervention attention on some specific aspects of cognition, communication, social skills, behavioral self-regulation, or educational/vocational skills – aspects that are either particularly weak or particularly important for Sarah.

“And the rest is abstraction”

Alfred North Whitehead: Science and the Modern World

“The Fallacy of Misplaced Concreteness”

“The advantage of confining attention to a definite group of abstractions is that you confine your thoughts to clear-cut definite things, with clear-cut definite relations. Accordingly, if you have a logical head, you can deduce a variety of conclusions respecting the relationships between these abstract entities. Furthermore, if the abstractions are well-founded, that is to say, if they do not abstract from everything that is important in experience, the scientific thought which confines itself to these abstractions will arrive at a variety of important truths relating to our experience of nature.……

Whitehead on Abstractions:

"The Fallacy of Misplaced Concreteness" (cont'd)

"The disadvantage of exclusive attention to a group of abstractions, however well-founded, is that, by the nature of the case, you have abstracted from the remainder of things. In so far as the excluded things are important in our experience, your modes of thought are not fitted to deal with them. You cannot think without abstractions; accordingly, it is of the utmost importance to be vigilant in criticizing your modes of abstraction. It is here that philosophy finds its niche as essential to the healthy progress of society. It is the critic of abstractions."

A.N. Whitehead, *Science and the Modern World* (pp 58-59)

A Community Culture that Values Self-Regulation

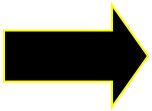
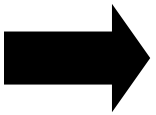
Value: Autonomy/Self-Regulation

Shared	Individual
Purpose	Needs/Contribution
"Creed"	Identity
Roles	Roles, Jobs
Plans/Scripts	Routines, Supports
Projects	Projects

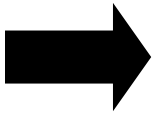
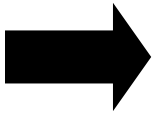
Feedback, Adjustment, Community Meetings

W.H.O.

TRADITION:

IMAPIRMENT  **ACTIVITY**  **CONTEXT**

ALTERNATIVE:

CONTEXT  **ACTIVITY**  **IMPAIRMENT**

EF/SELF-REGULATION INTERVENTION

Premises:

1. **(Deliberate) self-regulation is self-regulatory self-talk**
2. **Self-regulatory self-talk is internalized from effective adult-child interaction**
3. **Everyday routines, including routines of interaction, in school and at home should be organized in such a way that the child is engaged, as much as possible and with needed supports, in the executive/self-regulatory dimensions of everyday activities.**

EVERYDAY ROUTINES OF INTERACTION

Everyday routines in school and at home should be organized in such a way that the child is engaged, as much as possible and with needed supports, in the executive dimensions of everyday activities.

ILLUSTRATIONS

- **Tim H: interactive EF routines**
- **Southgate routines**
- **Timmy K**
- **Chrissy**
- **David J**

THEORETICAL SUPPORT: VYGOTSKY

"Higher mental functions evolve through social interactions with adults; they are gradually internalized as the child becomes more and more proficient and needs less and less cuing and other support from the adult."

SELF-REGULATION

- **Within the Vygotskyan tradition, the development of self-regulation is understood as the gradual internalization/appropriation of well-conceived routines of adult-child interaction. Initially, regulation exists as adult regulation of the child. Gradually, the child practices overt spoken regulation (of dolls, pets, peers, etc.), then spoken self-directed regulatory talk, and finally covert self-regulatory "talk".**

VYGOTSKY: MAIN POINTS

1. **Cognitive growth as internalization/ appropriation of well-conceived interaction**
2. **Dynamic assessment to identify ZPD**
3. **Teaching as mediated and "scaffolded" participation in valued activities ("apprenticeship")**
4. **Gradual reduction of supports as the child gains competence**

Note: NOT clinic-based CBM

PERFORMANCE-ORIENTED TEACHING

CONTEXT

- **Training context**
- **Performance demanded by teacher**
- **Solo performance**
- **Hierarchical organization of tasks**

PERFORMANCE-ORIENTED TEACHING

TASK STRUCTURE

- **Model (teacher)**
- **Performance demand**
- **Performance (student)**
- **Reinforcement OR cues, prompts, simplification, etc**
- **Repeated practice**
- **Transfer procedures**

APPRENTICESHIP TEACHING

CONTEXT

- **Natural context; perhaps projects with a meaningful goal**
- **Social, collaborative activity**
- **Success due to collaboration**
- **Non-hierarchical organization of tasks**

APPRENTICESHIP TEACHING

TASK STRUCTURE

- **Engagement in guided observation**
- **Collaborative, goal-oriented work, with supports as needed**
- **Learner contributes as possible**
- **Ongoing coaching, encouragement, modeling, brainstorming, etc.**
- **Supports systematically withdrawn**
- **Transfer guaranteed because of context and procedures**

Support/ Scaffolded Participation/ Socially Co-Constructed Activity

“Participating to learn”

vs.

“Learning to participate”

"Automatizing" SR/EF

- **Effortful self-regulation strategies: slow, attention and capacity consuming, relatively difficult to access, subjectively uncomfortable**
- **Automatic self-regulation strategies: fast, not attention and capacity consuming, easy to access, subjectively comfortable**
  - **ex: Seat belts**
- **From effortful to automatic/comfortable:**
  - **Point-of-participation practice**
  - **Success**
  - **Association with compelling sense of self**

Facilitation of Nonconscious/ Automatic Self-Regulation

- **Internalized EF scripts habitually associated with specific environmental conditions**
- **Internalized sense of self essentially connected to self-regulatory strategies habitually associated with specific environmental conditions**

Thus, for people who are "stimulus bound" due to their disability, the environment becomes the stimulus for nonconscious self-regulation

Illustrations of Nonconscious/ Automatic Self-Regulation

- **Investigators have shown that people placed in positions of power tend to pursue goals and use strategies that they associate with power, without being aware of the source of the goals or strategies.**
- **Similarly people have been shown to pursue goals and implement strategies associated with specific people (e.g., family members) when primed with a representation of that person (e.g., WWJD)**

Nonconscious Self-Regulation

"Goals can be primed and activated by environmental cues outside of awareness. Once activated, these goals can enhance performance, persistence in the face of failure, and the resumption of disrupted goal-directed behavior in the presence of alternatives." p. 198

Cervone, D., Mor, N., Orom, H., Shadel, W.G., & Scott, W.D. (2004). Self-efficacy beliefs and the architecture of personality. In R.F. Baumeister & K.D. Vohs (Eds.), Handbook of self-regulation: Research, theory and applications (pp. 188-210). New York: Guilford Press.

POSITIVE INTERACTION STYLE: COLLABORATION

- **Intent**
- **Cognitive support**
- **Emotional support**
- **Meaningful, supported question**
- **Collaborative turn taking**

POSITIVE INTERACTION STYLE: ELABORATION

- **Topics**
- **Elaborative organization**
- **Elaborative explanation**

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EVERYDAY SR/EF ROUTINES

GENERAL EF ROUTINE

Goal

Obstacle

Plan

(Predict)

Do

Review

What worked?? What didn't work??

General SR/EF Script

"Let's think about this; we can figure out how to make this work!"

- **Think: Block impulsive response**
- **We: This is collaboration; you are not performing for me**
- **Figure out: This is a problem we can solve**
- **Make it work: The point = achieve your goal**

SPECIFIC SR/EF SCRPITS: FORMAT

- **Identify the issue**
- **State a reason**
- **Generate a strategy**
- **Offer general reassurance: “There’s always something YOU can do to make it work”**

EXPERIMENT SCRIPT "THIS WAY OR THAT?"

- **Identify issue or conflict**
- **Try both ways**
- **Identify most successful**
- **General reassurance**

PROBLEM-SOLVING SCRIPT

- **Identify issue or conflict**
- **State the reason**
- **Generate a solution/strategy**
- **General reassurance**

HARD TO DO/EASY TO DO SCRIPT

- **Identify task as hard or easy**
- **State the reason**
- **Generate a strategy (if hard)**
- **General reassurance**

READY/NOT READY SCRIPT

- **Identify ready or not ready**
- **State the reason**
- **Generate a plan (if not ready)**
- **General reassurance**

BIG DEAL/LITTLE DEAL SCRIPT

- **Identify the issue as a big deal or a little deal**
- **State the reason**
- **Generate a strategy (if a big deal)**
- **General reassurance**

"Play to Change Plays" SCRIPT

- **Identify the issue: Change or deviation from routine**
- **State the reason**
- **Generate a strategy (e.g., ask for help)**
- **General reassurance**

SCARY/NOT SCARY SCRIPT

- **Identify situation as scary or not scary**
- **State the reason**
- **Generate a solution/strategy**
- **General reassurance**

MY DEAL/YOUR DEAL SCRIPT

- **This is my deal (or your deal)**
- **It's my deal because**
- **Because it's my deal, this is what I will do…**
- **There's always something that works**

WHAT ABOUT YOU? SCRIPT

- **It's important to know what John thinks/John feels**
- **It's important because...**
- **Here's a way to find out ...**
- **There's always something that works**

The Importance of Part 4

- **"There's always something that works"**

- **Many people – especially those who have had a hard time in life (school, social life, work) do NOT believe that there is always something that works**
- **Effectively strategic people DO believe that there is always something that works**
- **Therefore Part 4 is a critical component of the SR scripts for many people**

Illustrations

- **Tim H**
- **Watervl.**
- **Tim K**
- **David J**

SR/EF SCRIPTS: DELIVERY

- **Conversational, non-threatening interaction**
- **Well-selected language**
- **Avoid boredom, irritation**
- **Mainly positive: “easy” “non scary” “not a problem” “not a big deal”**
- **Massed and distributed practice (hundreds!!)**
- **Embedded in meaningful activity**
- **Across all everyday partners**

NOT Clinic-Based CBM

- **Superficial, decontextualized self-talk training has not been supported in the research literature**
  - **Clinic-based, out of context**
  - **Self-talk scripts that may not be directly related to everyday life difficulties**
  - **Self-talk scripts devoid of positive associations**

"Genuine" Self-Regulatory Self-Talk

- **Origin in supportive, scaffolded interactions between adults and children during authentic tasks**
- **Development in childhood**
  - **Everyday interaction during meaningful participation**
  - **Child talks to self as running commentary**
  - **Child talks to self in attempt to understand, contol, regulate**
  - **Self-talk becomes less audible and more compressed**
  - **Fully inner speech emerges as self-regulation**
  - **Self-regulatory self-talk becomes automatic**
  - **Self-talk may again be audible if tasks are difficult**

General Evidence-Based Practices in SR Strategy Instruction: e.g., SRSD

- **Self-regulation procedures: Throughout instruction, facilitate**
  - **Identifying task difficulty**
  - **Setting goals**
  - **Planning**
  - **Self-monitoring**
  - **Self-evaluating**
  - **Self-reinforcing**
  - **General strategic procedures like asking for help**
- **Help students help peers**

General Evidence-Based Practices in Strategy Instruction

- **Motivational procedures**
  - **Ensure successful application of strategies**
  - **Possibly compare performance with versus without strategy help – teach correct attribution!**
    - **Or in other ways facilitate an understanding of the personal usefulness of strategies**
  - **Provide systematic positive feedback**
  - **Facilitate the use of self-monitoring, self-evaluating, self-reinforcing systems**
  - **Help students develop a project on the usefulness of strategies**

Study Questions

- **Is it possible for elementary school teachers to acquire a habit of using relevant self-regulation scripts with their students across the curriculum and across the school day given limited instruction and support?**

- **If so, does teacher use of self-regulation scripts improve student self-regulation over the short term (4 months)**

Participants

- **School: Elementary school in mainly white middle class suburb of Albany, New York**

- **Teachers: 5 regular education (grades: K, 2, 2, 4, 4) and 2 special education (one lower, one upper elementary age). All teachers volunteered for the project**

- **Students: All of the students in these classrooms (see note about BRIEF)**

Participants: Teachers

- **5 regular education; 2 special education**
- **All masters degree**
- **1 to 18 years of teaching experience (mean 12.5)**
- **Undergraduate and graduate preparation in SR intervention: By teacher report, minimal to none in every case**

Measures

- **Structured teacher interview: Pre and post**
  - **Early February to early June (i.e., students accustomed to classroom routines at the outset)**
- **BRIEF (Behavioral Rating Inventory of Executive Functions): Teacher Form: Pre and post**
  - **All special education students**
  - **4 or 5 students in each of five regular education classrooms identified by the teachers as especially immature in self-regulation development**

Instruction/Support for Teachers

- **1-hour introduction to the project, concept of self-regulation, and self-regulation scripts**
- **Pre-interview in which concepts were elaborated**
- **Invitation to use the Self-Regulation Tutorial on the web site (including video illustrations). All but two of the teachers used the web site.**
- **2-3 brief classroom observations for each teacher, with feedback regarding use of self-regulation scripts**
- **Invitation to use colleagues as supports: 3 of the teachers highlighted this**

Results: Teacher Use of Scripts

- **All of the teachers reported that they gained comfort in frequent conversational use of at least some SR scripts**

- **This was confirmed by classroom observation**

Results: Scripts Selected

- ***Big deal/little deal*** **and** ***ready/not ready*** **selected by all teachers**
- ***Hard/easy*** **used to varying degrees by most of the teachers**
- ***Choice/no choice*** **used by 3 teachers**

Interpretation: Most of the teachers saw SR intervention as more relevant to behavioral and emotional issues than to cognitive and academic issues. None selected G-O-P-D-R.

Results: Manner of Use of Scripts

Variability

- **Some began with elaborated scripts and moved toward telegraphed use as they gained comfort**
- **Others began with telegraphed use and moved toward elaborated use as they gained competence**
- **Others chose elaborated or telegraphed use as circumstances dictated**

Results: Student Comfort with SR Scripts

- All teachers reported that their students were comfortable with SR scripts
- All teachers reported that everyday conversational use of the scripts was most critical
- Some teachers taught the scripts and their significance explicitly
- Some teachers had the students make posters
- One teacher had students create and video SR vignettes

Results: Quantitative

- **BRIEF: yet to be analyzed**

Results: Quantitative

Estimated amount of adult time saved for instruction (pre versus post estimated adult time per activity devoted to SR concerns)

- **Regular Education:**
  - **Average 27 minutes/day**
  - **ca. 66 hours/year/classroom**
- **Special Education**
  - **Average 177 minutes/day**
  - **ca. 530 hours/year/classroom**

Results: Quantitative

Estimated number of removals of a student from an activity or classroom (rarely from a classroom):

- **Pre-average 20 (considerable variability)**
- **Post-average 5.8**

Results: Quantitative

Frequency of teacher SR cues/reminders during various classroom activities

- **Pre-Average rating: 3.5 (frequently-to-very frequently)**
- **Post-Average rating: 2.5 (sometimes-to-frequently)**
- **Scale:**
  - **4: very frequently**
  - **3: frequently**
  - **2: sometimes**
  - **1: never**

Results: Qualitative

General Benefit for the Students:

All of the teachers highlighted a number of benefits of the SR project for their students.

Examples:

- **general self-reliance**
- **improved problem solving**
- **increased independence**
- **improved self-organization**
- **improved emotional regulation**
- **increased time for instruction**

Results: Qualitative

General Benefit for the Teachers:

Most of the teachers reported that having a common scripted language for self-regulation:

- **increased their level of confidence (average pre: somewhat lacking in confidence; average post: very confident = 2 point average increase)**
- **reduced their anxiety during difficult interactions with students**
- **created a calmer and less emotional atmosphere**
- **helped them proceduralize SR**
- **increased teaching/learning time**

Teacher Recommendation

Each teacher recommended that the SR project be generalized to the entire building.

Summary:

Uncontrolled preliminary study:

Can elementary school teachers acquire a habit of using SR scripts with their students with minimal support?

- **YES**

Summary:

Uncontrolled preliminary study:

Do elementary age students benefit from a relatively short period of exposure to SR scripts used in their classrooms?

- **Suggestive evidence:**
  - **improved self-regulation;**
  - **increased independence;**
  - **reduced time engaged in self-regulation-related disruptions; calmer classroom environment**
  - **increased time for instruction;**
  - **increased calm in the learning environment**

TEACHNG THINKING

Children are our apprentices in thinking and self-regulation

- **Think (out loud) with the person**
- **A lot**
- **Interesting and important issues**
- **Highlight the thinking process**
- **Use motivating analogies, metaphors, etc**
- **Use external supports as needed**
- **Be a model of thoughtfulness**
- **Promote experimental orientation**
- **Gradually remove supports**
- **Help the person help others**

SELF-COACHING AND SELF-REGULATION

Possible alternative for older students: Self-regulatory scripts can be explicitly taught as self-coaching: "the coach's voice in your head that helps you succeed when the game is tough"

HISTORY

Since at least the early 1980s, self-coaching has been used as a metaphor and set of procedures in TBI rehabilitation

Ylvisaker, M., & Holland, A. (1986). Coaching, self-coaching and rehabilitation of head injury. In D. Johns (Ed.), Clinical management of neurogenic communicative disorders. 2nd Edition. Boston: Little, Brown and Co.

Self-Coaching Metaphor

- **Population: active young people who typically have personal experience and positive associations with sports**
- **Self-coaching metaphor: yields insight into self-regulatory/ "executive system" concerns and potential educational and social goals**
- **Upshot: Individuals who have self-regulatory impairment but who desire effective achievement of goals in their lives often agree to organize themselves around self-coaching procedures despite opposition to other intervention approaches.**

Self-Coaching Philosophy

- **Self-regulation is self-regulatory self-talk:**
  - **Plato**
  - **Vygotsky**
  - **Many others**
- **Ideally automatically triggered**
- **Related to CBM (Meichenbaum, 1977), but:**
  - **Context-sensitive (versus clinic-bound)**
  - **Negotiated**
  - **Supported by positive images and associations**
  - **Practiced to automaticity (videos)**

Principles

- **Automatic self-regulation**
- **Participant involvement**
- **Specificity of real-world needs**
- **Negotiation of scripts and metaphors**
- **Self-scripts and communication partner scripts**

FRAMEWORK

GOAL

OBSTACLE

PLAN

DO

REVIEW

WORK? NOT WORK?

Stick with winners; give up losers

Why Self-Observation on Video?

- **Repetition/habituation**
- **Self-monitoring/self-awareness**
- **Everyday Communication Partner Self-Observation**
- **Education**
- **Concreteness and immediacy**

TEACHNG THINKING

- **Think (out loud) with the person**
- **A lot**
- **Interesting and important issues**
- **Highlight the thinking process**
- **Use motivating analogies, metaphors, etc**
- **Use external supports as needed**
- **Be a model of thoughtfulness**
- **Promote experimental orientation**
- **Gradually remove supports**
- **Help the person help others**

Diamond, A., Barnett, W.S., Thomas, J., & Munro, S. (2007). Preschool program improves cognitive control. *Science*, *318*, 1387-1388

- **Program = "Tools of the Mind" (Bedrove & Leong)**
- **Focus = inhibition, working memory, cognitive flexibility**
- **"EF's are more strongly associated with school readiness than intellectual quotient (IQ) or entry level reading or math skills"**
- **Tools curriculum based on Vygotsky: 40 EF promoting activities: teach self-talk, dramatic play, memory aids**
- **Efs promoted during 80% of school day; "Only when EFs were challenged and supported by activities throughout the day did gains generalize to new contexts"**
- **Tools of the Mind children did substantially better on outcome tasks that emphasized EF than controls**
- **EFs can be improved in preschoolers; play may be an essential part; improving EFs early may eliminate many later diagnoses (eg ADHD), need for expensive services, and school failure**

RELEVANT RESEARCH HISTORIES

SUPPORT FOR CONTEXT-SENSITIVE INTERVENTION

- **Transfer of training**
- **Teaching reading strategies**
- **Teaching cognitive strategies generally**
- **CBM (context-sensitive versus not)**
- **Vocational training**
- **Cognitive intervention generally**

EF/SR Routines as a Component of Behavioral Interventions

Single -subject experiments (9) and case studies

- **Feeney & Ylvisaker (1995): adolescents**
- **Feeney & Ylvisaker (2003, 2005, 2008): young elementary age children**
- **Ylvisaker & Feeney, 1998**

CONTEXT SENSITIVITY: EDUCATIONAL INTERVENTION

Theme emerging from studies of academic strategy intervention:

- **Delivery of cognitive/educational interventions within the context of relevant curricular content (transfer)**
- **Direct instruction with multiple and varied application trials**
- **Long-term (i.e., years)**
- **Intensive (i.e., daily)**
- **Focus on attribution and motivation**

Rand Reading Study Group Review of Research on Reading Instruction

Sweet & Snow, 2002

Principle #3: Explicit: "The explicitness with which teachers teach strategies makes a difference in learner outcomes, especially for students who are low achieving and who profit from greater explicitness."

Principle #6: Embedded: "Teachers who provide comprehension strategy instruction deeply connected within the context of subject matter learning, such as history and science, foster comprehension development"