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ANGEL CRESCENCIO MARTÍNEZ ORTIZ

HUMAN FACTORS TRAINING COORDINATOR



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HUMAN FACTORS

HUMAN ERROR AND SELF CONTROL TECHNIQUES



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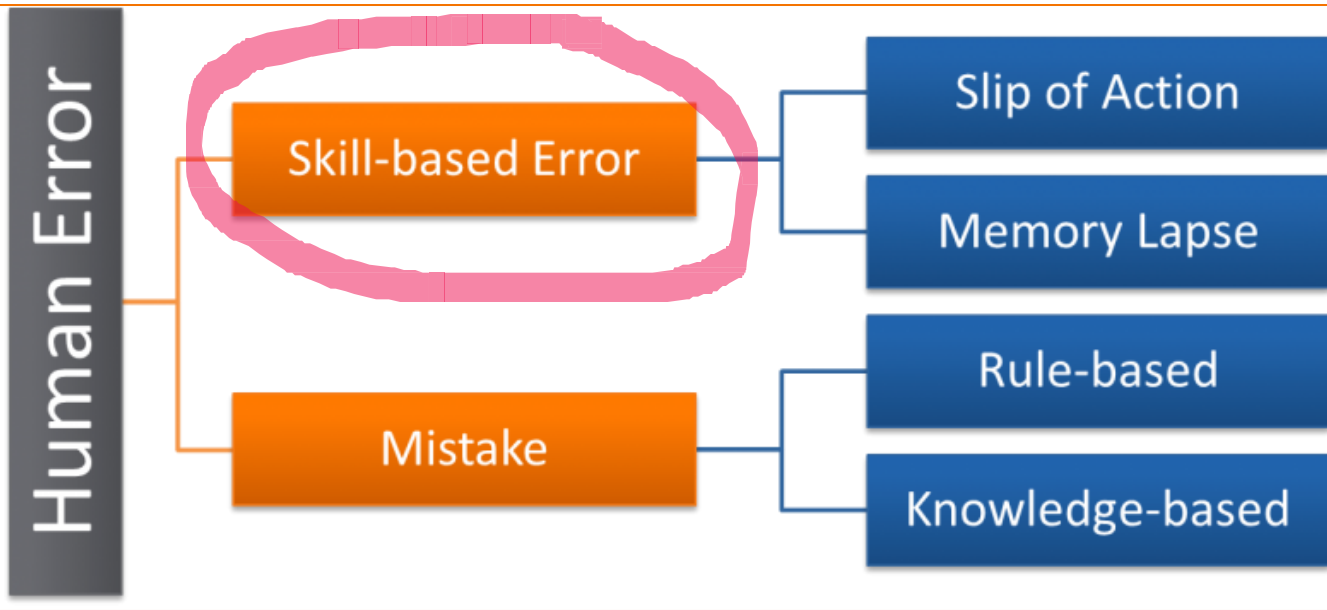
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- ❑ ASSESSMENT AND REINFORCEMENT OF BEHAVIORS

HUMAN ERROR NATURE



CHAPTER 1

Our thesis is that an inadequate balance between the use of intuitive or fast thinking (System 1) and slow or analytical thinking (System 2) is at the root of these skill errors and that, at the same time, self-control techniques may be useful techniques for their prevention.

HUMAN ERROR NATURE

SYSTEM 1

Intuition & instinct



95%

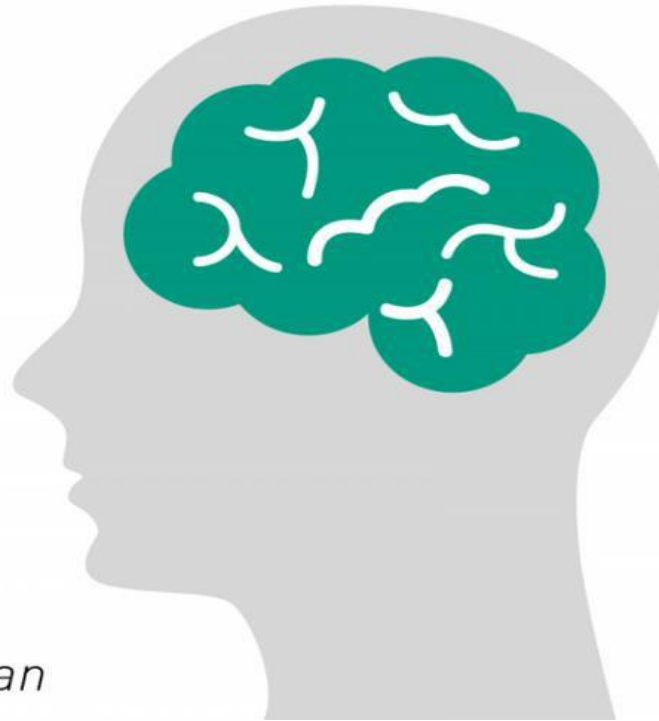
Unconscious
Fast
Associative
Automatic pilot

SYSTEM 2

Rational thinking

5%

Takes effort
Slow
Logical
Lazy
Indecisive



Source: Daniel Kahneman

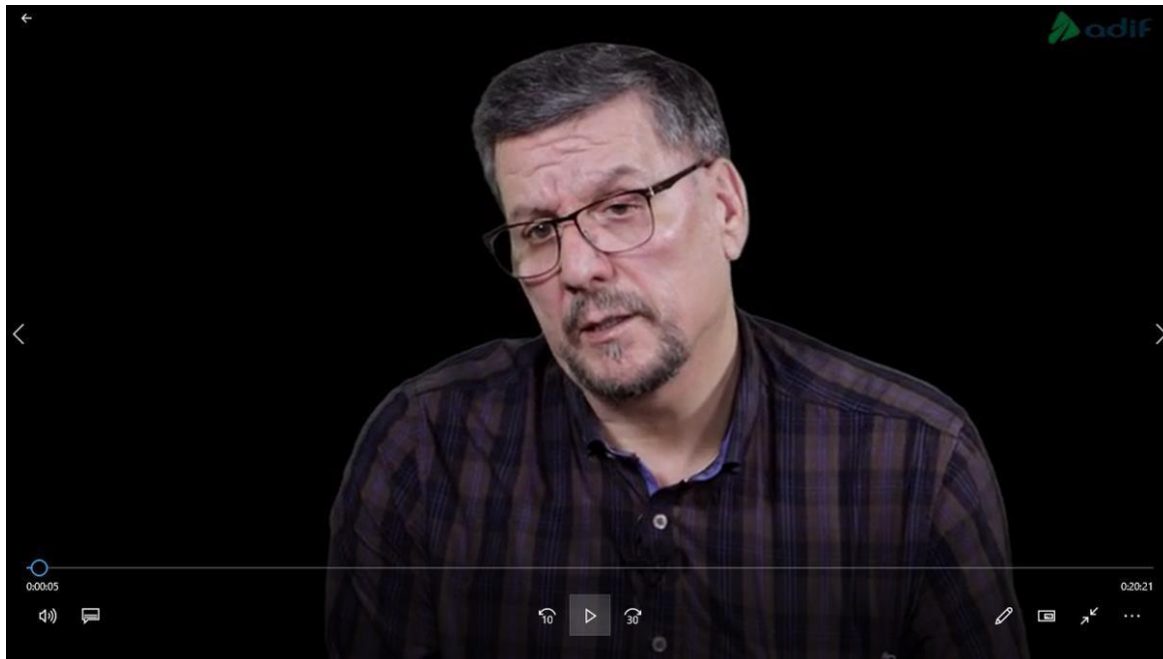
HUMAN FACTORS TRAINING METHODOLOGY

ATTENTION

- ✓ Work like the first day:
 - Stay focused at work

CONSCIOUS

- ✓ Keep calm: Put your mind to work before your hands.





CHAPTER 2 THE ROLE OF LANGUAGE IN THE REGULATION OF BEHAVIOUR SELF CONTROL TECHNIQUES

SELF CONTROL TECHNIQUES

2.1. Self-control techniques.

Self-control is the capacity to direct one's own psychic processes in accordance with chosen goals. It is the quality that differentiates human intelligence from animal intelligence, and it is a quality that is acquired through training. The conclusion is that the way of behaving will depend on the capacity for self-control, which makes this ability an important element in the prevention of error due to involuntary acts.



“The failure in self-control would be at the basis of many of the problems that happen to us in daily life, both those related to our health, with the development of addictive behaviors or aggressiveness, as well as those related to our efficiency and the production of errors”

<<to know yourself is to know the variables that control you>> (Thoresen and Mahoney,

Seriousness consequences	high	S2	S2 blocked track delivery	S2 shunting operations
	medium		S2 Temporary speed restriction	S2 authorisation To pass signal
	low			S2
		low	medium	high
	level of human intervention			

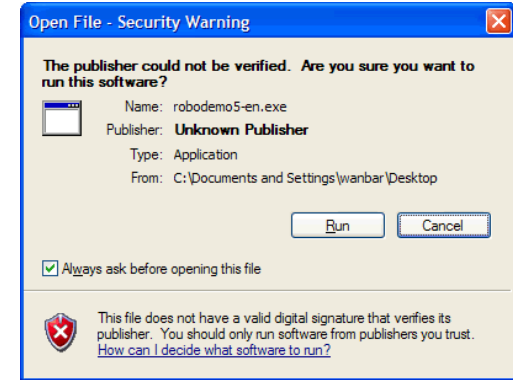
high priority
medium priority
low priority

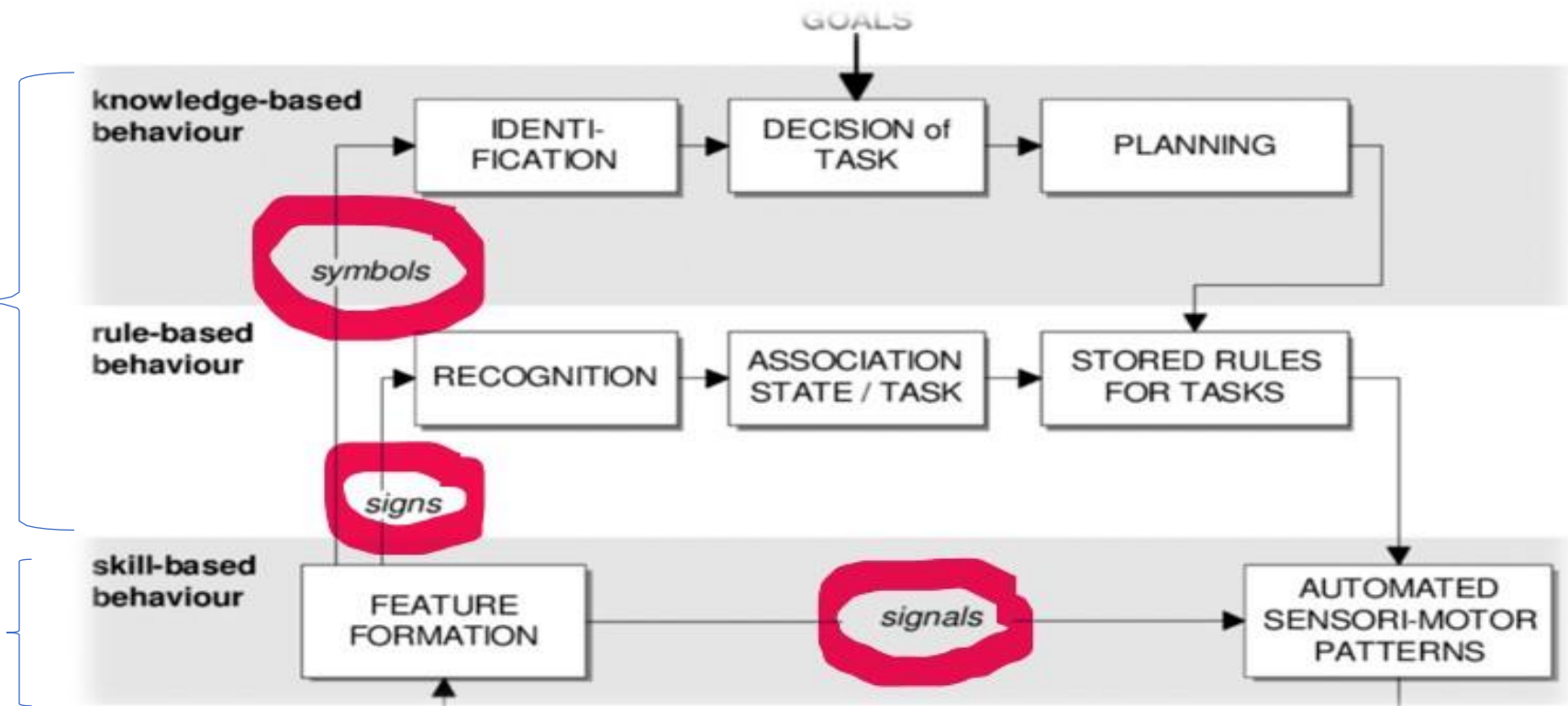
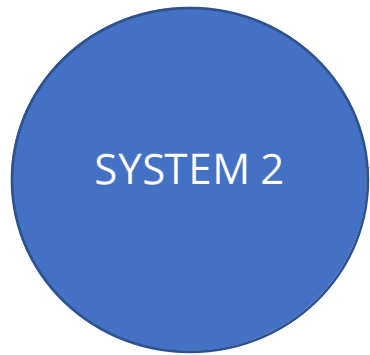
STIMULUS CONTROL TECHNIQUES

- 1.- Change of stimuli: We are referring to change the way of understanding the information coming from the environment, instead of as signals, activators of intuitive thinking, as signs or symbols, activators of analytical or scientific thinking, through the mediation of language.



“The success of this change lies in the different belonging of signals and signs - symbols to different domains of reality”





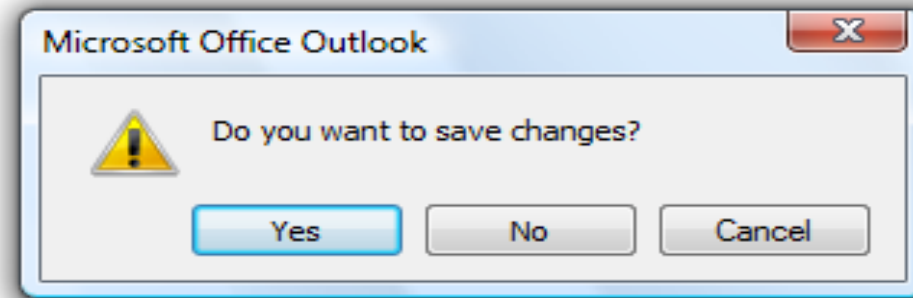
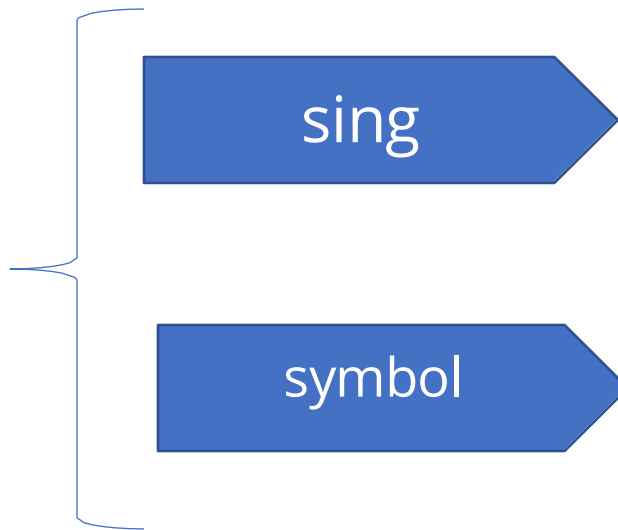
The value of stimuli control techniques and self- instructions as modulators of the types of attention would lies on the function of language to control behaviour and attention

STIMULUS CONTROL TECHNIQUES

Physical world



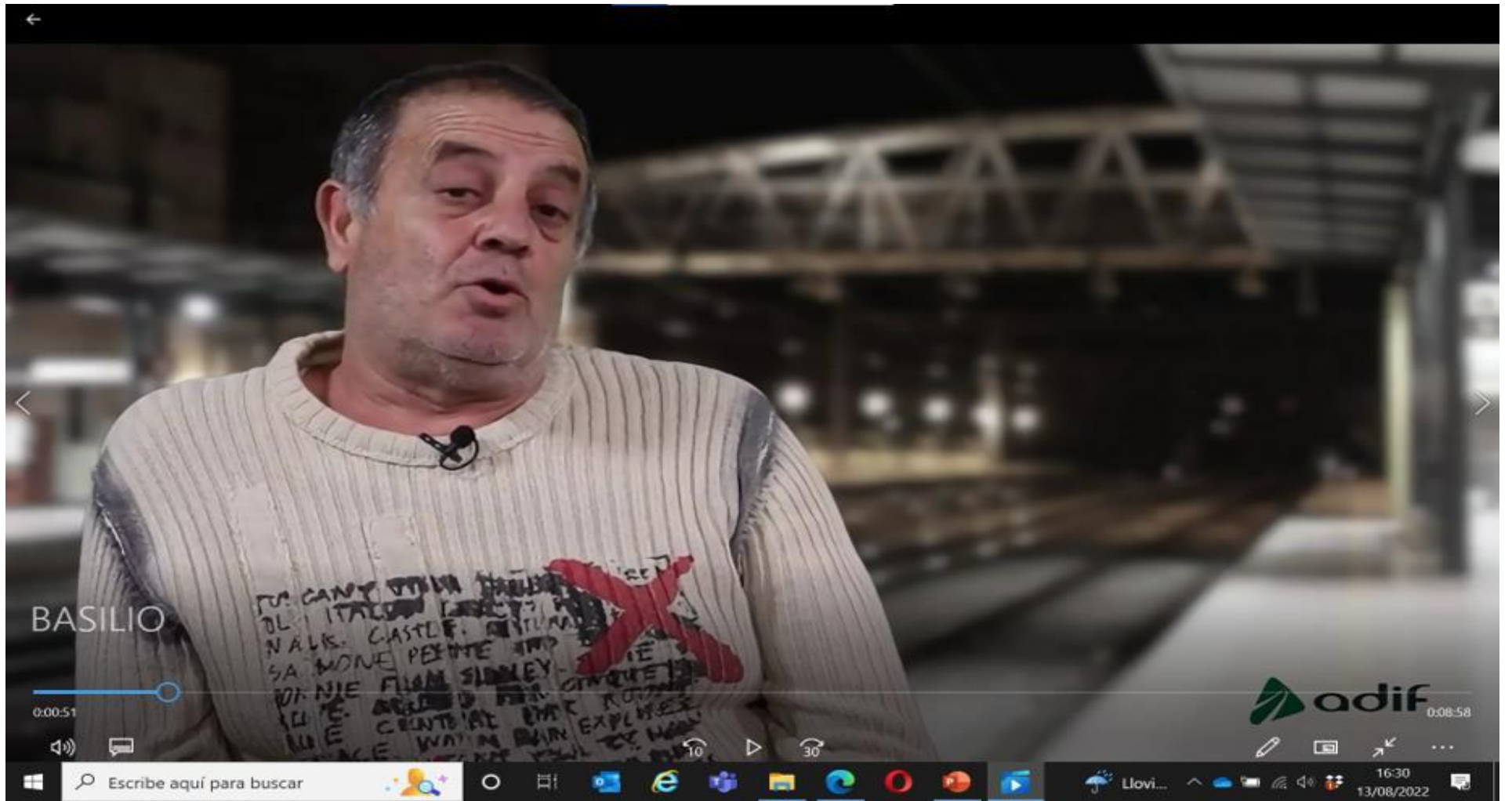
Rational World



LANGUAGE AND THE ENVIRONMENT

- Luria considers that with the use of oral language the perceived environment can be modified, in such a way that it can have the functionality of inhibiting voluntary motor behaviors.





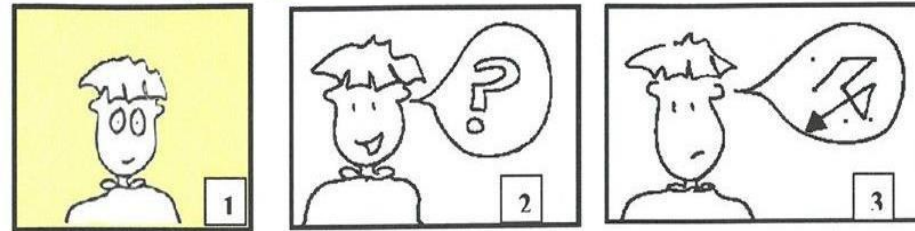


CHAPTER 3 SELF INTRUCTIONS S

SELF-INSTRUCTIONS TRAINING PROGRAM

SELF INSTRUCTIONS

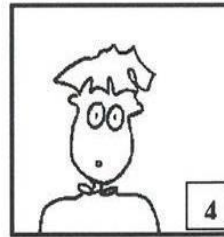
•Donald Meichenbaum (Meichenbaum, 1977) defines self-instructions as a continuous series of statements to ourselves in which we tell ourselves what to think and believe, and even how to behave.



1
First I look and say all that I see.

2
What do I have to do?

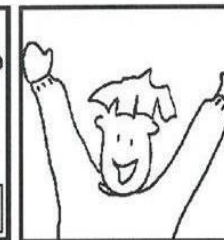
3
How am I going to do it?



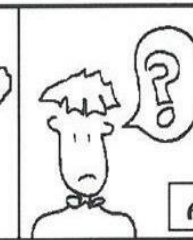
4
I need to be very attentive (and look at all the possible answers).



5
Now I can do it!



6
Great! I've done well!



It hasn't come out well. Why? (I go over each step.) Oh, that's why! All right, next time I won't make that mistake.

Chart 1: Meichenbaum's (1971) Self-Instruction Model adapted by Orjales (1991) (Steps 2 to 6) and Extended Self-Instruction Model by Orjales (1999), (Steps 1 to 6).



COGNITIVE STYLES

Reflective

- * Appear to be day dreaming
 - * Are often lost in thought
 - * Have a tendency to be quiet
 - * Pause before answering questions
 - * Need time to complete work
 - * Work is detailed
 - * Often good observers
 - * Start writing in the last second of the time frame
- * *Make them sit in different places*
 - * *Have list of questions written on the board for them to think*
 - * *When communicating with any student, give them 10 – 20 seconds to response. Don't answer the questions by yourself.*

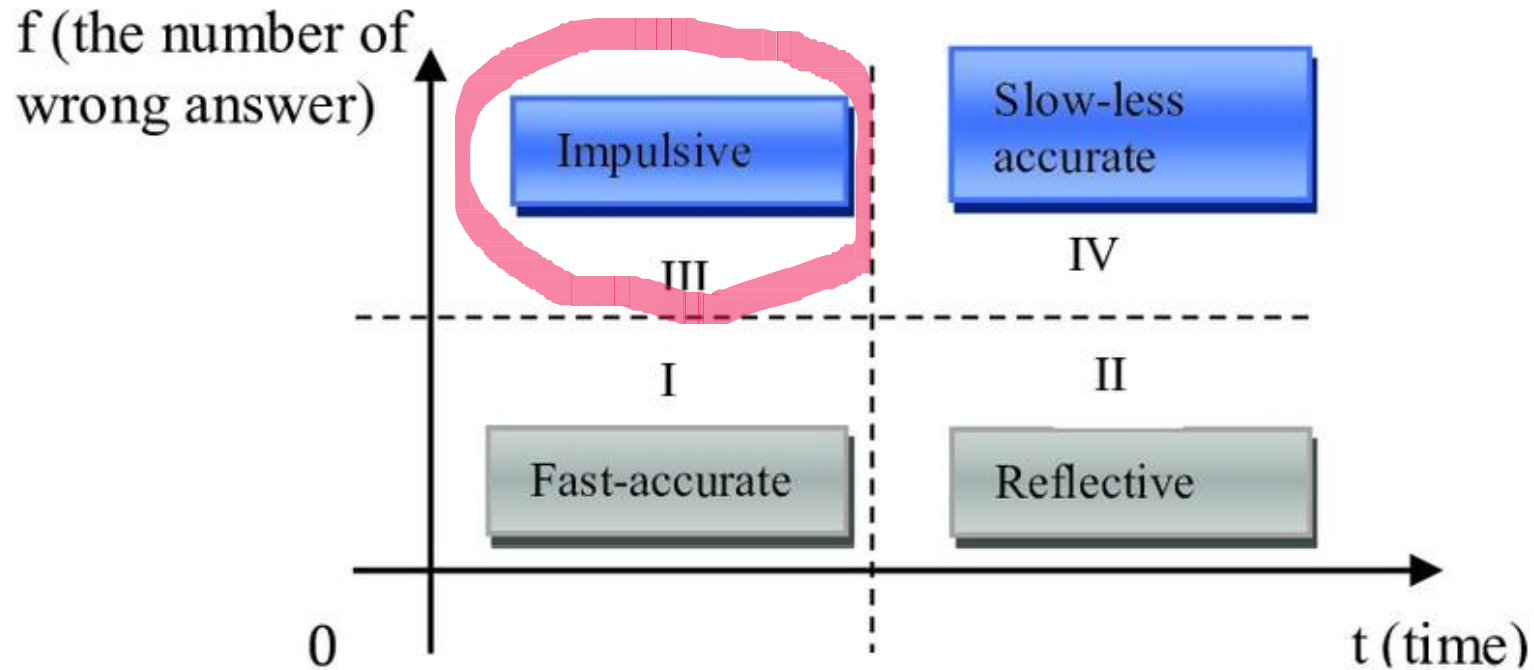
Impulsive

- Makes immature decision
- Unfocused
- Restless
- Never thinks about the pros and cons in their actions
- Do not concerned about errors
- Learn faster
- Focused on overall – pictures
- Answer questions fast / without taking times
- Jumps to conclusion easily
- Children

SELF-INSTRUCTIONS

What interests us about self-instructions lies in the ability of language to control behavior through its capacity to activate conscious forms of knowledge

Self-instructions will be that technique that will allow us to inhibit this type of thinking that is triggered automatically causing errors.



SELF INSTRUCTIONS TRAINING PROGRAM

Our proposal would be as follows:

consequences	high	"Known" Stimuli control	Reading Aloud	Reading Aloud
	medium	not required	"Known" Stimuli control	Reading Aloud
	low	not required	not required	"Known" Stimuli control
		low	medium	high
	Human intervention level			

high priority
medium priority
low priority

- Detection of critical situations for which it is mandatory that the system 2 of thinking be activated. We can use the critical task matrix.
- Evaluate the situations in which we should use self-verbalizations or stimuli control technique.
- The goal of self-control techniques: make rational decisions under critical situations.
- Determine the message what should be said out aloud and how to do it: Steps of the operation will need to be read out aloud and which steps will only need to be confirmed.
- Reinforcement correct behavior and retraining wrong behavior

Seriousness consequences	high	S2	S2 blocked track delivery	S2 shunting operations
	medium		S2 Temporary speed restriction	S2 authorisation To pass signal
	low			S2
		low	medium	high
level of human intervention				

1.- CRITICAL SITUATION REQUIRE SYSTEM TWO OF THINKING CONNECTED OR NOT

2.- WHAT SELF-CONTROL TECHNIQUE REQUIRE THE CRITICAL SITUATION ACCORDING MATRIX: SELF INTRUCTIONS

3.- SELF INTRUCTIONS MUST BE ORIENTED TO PERFORMANCE THE CRITICAL TASK WITH SYSTEM TWO

- a) 1.- Request of Blocked Track Delivery.
- b) 2.- Guarantee itinerary/ track section requested is free of trains.
- c) 3.- Entry and Exit signals will remain shut at all times during the BTd.
- d) 4.- BTd Granting

THIS STEPS MUST BE READ OUT ALOUD

4.- REINFORCEMENT RIGHT BEHAVIORS AND RETRAINING WRONG DECISIONS

SELF INSTRUCTIONS TRAINING PROGRAM EXAMPLE:

BLOCKED TRACK DELIVERED



SELF INSTRUCTIONS TRAINING PROGRAM EXAMPLE: BLOCKED TRACK DELIVERED

1.- CRITICAL SITUATION REQUIRE SYSTEM TWO OF THINKING CONNECTED OR NOT

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