Memory for Serial Order in Social Cognition

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'WHO DID WHAT TO WHOM, AND WHO DID IT FIRST?'

-

Does order matter when we are forming impressions about strangers?

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Imagine that we have two persons, *person A* and *person B*.

Now, lets try to make sense of an episode involving this two guys.

We know that *person A* is avoiding *person B*.

Then, imagine that we also know that *person B* had mistook a Malévitch's masterwork with the museum background wall.

Does it help to know that this mistaken happened **before** *person A* started avoiding *person B*?

Or it would be the same if the misjudgment had happened **after** the avoidance?

'WHO DID WHAT TO WHOM, AND WHO DID IT FIRST?'

Person Memory

Impression Formation

- Processes of information organization:

1) What is an ***IMPRESSION***? A definition (Hamilton, Katz & Leirer, 1980a)

- information is better organized under impression formation (**IF**) goal conditions than in memory (**M**) - better performance (in a free recall task) in **IF**

2) ***ASSOCIATIVE NETWORK MODELS*** (Smith, 2004; Wyer & Srull, 1989)

Human Memory

Memory for Serial Order

- Chaining Theory

- *Theory of Distributed Associative Memory* (Lewandowsky & Murdock, 1989; Murdock, 1993, 1995, 1997)

- Item Information ≠ Order Information ≠ Source Information

Person Memory

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Human Memory

Memory for Serial Order

MEMORY FOR SERIAL ORDER IN SOCIAL COGNITION

- Chaining Theory

- *Theory of Distributed Associative Memory* (Lewandowsky & Murdock, 1989; Murdock, 1993, 1995, 1997)

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IMPRESSION

An impression is a cognitive representation of a person.

1) it is a ***coherent*** cognitive representation;

2) during the acquisition of information ***each new item will be integrated with the items previously encoded in the emergent impression***;

3) the resultant cognitive representation is characterized as a ***network of associative links*** between the items available (inter-item associations). These associations should facilitate the recall (free recall) of information about the target person.

> One implication of this process should be that participants instructed to form impressions, compared to participants instructed to perform a task without this organizational process (e.g. memory task), would recall more information (hypothesis 1 of Hamilton, Katz & Leirer, 1980)

+ organization → + recall

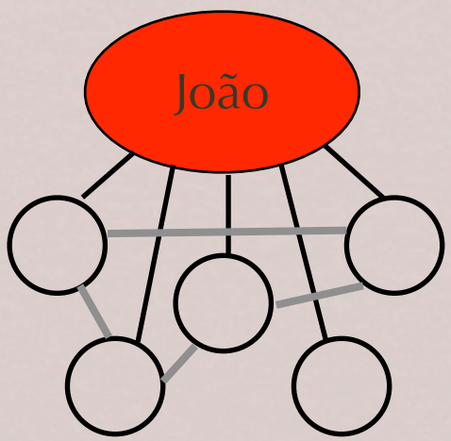
ASSOCIATIVE NETWORK MODELS

IF

impression formation task

> information organization

> recall

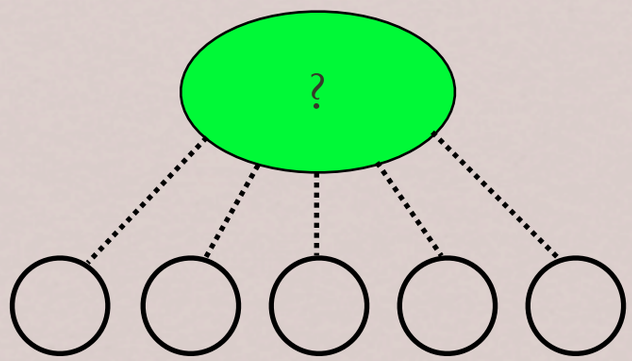


M

memory task

< information organization

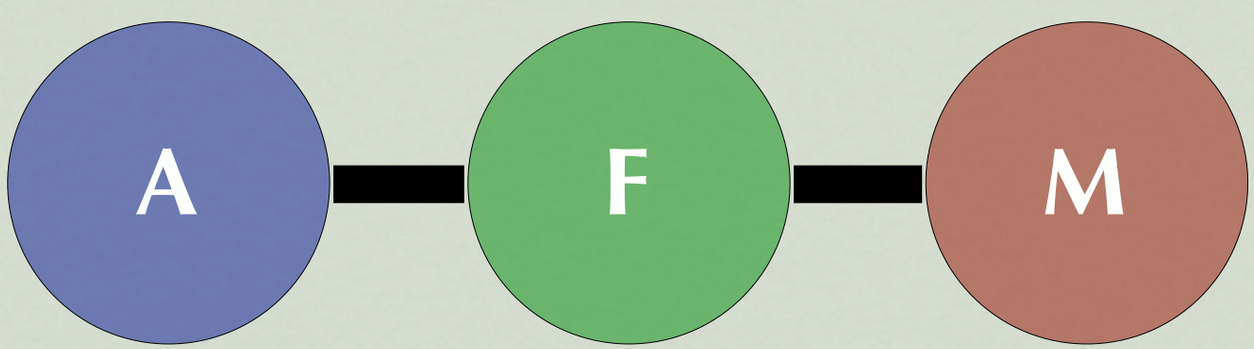
< recall



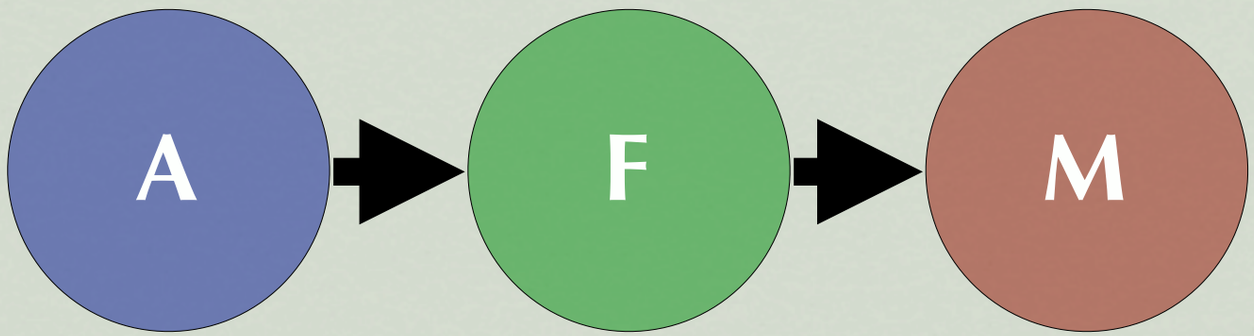
Chaining Theory

inter-item associations

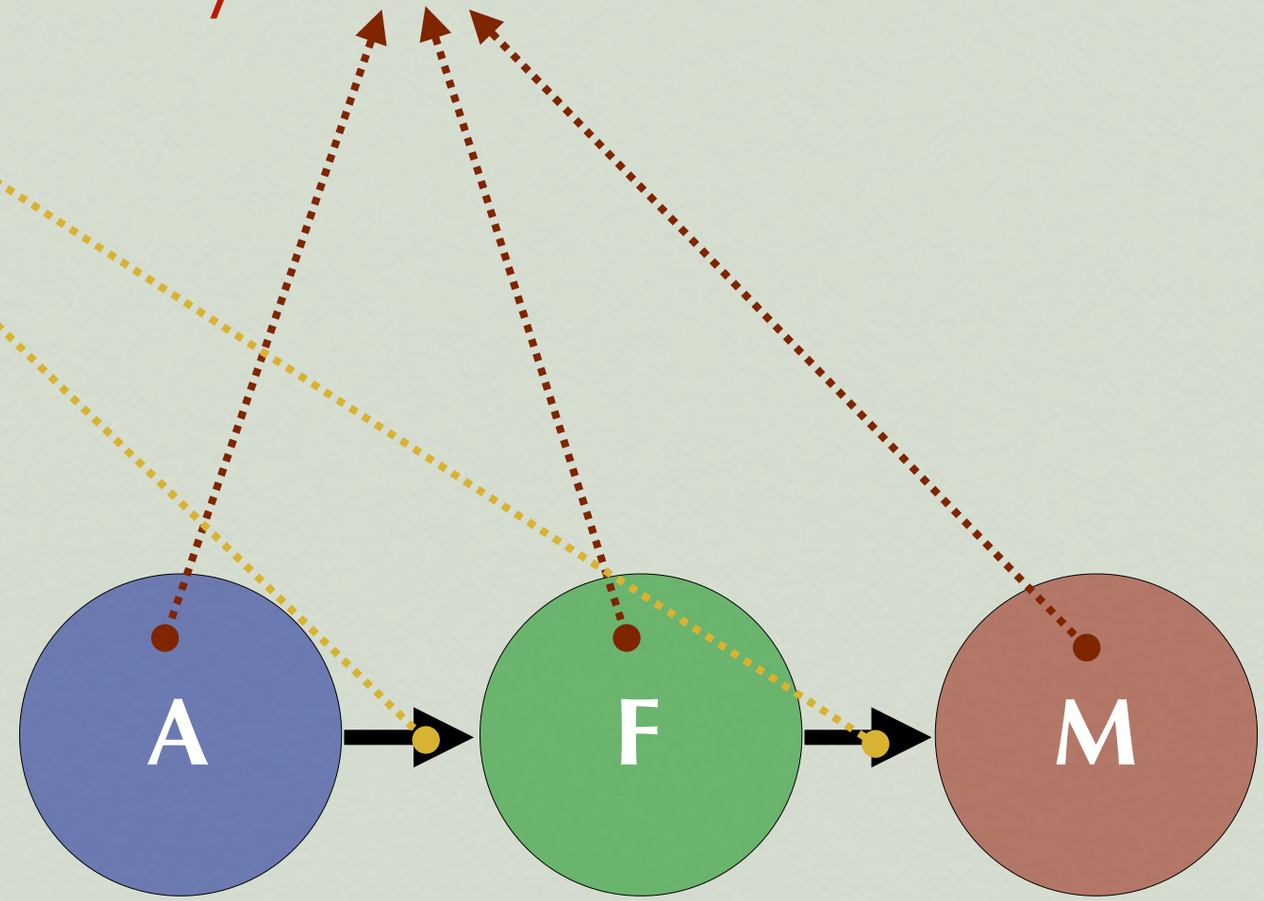
Order is **encoded** by the creation or strengthening of associations between successive elements in a sequence:



Order is **retrieved** in a ***chaining*** process using each element as a cue to reach the next item to be recovered:



ORDER information ≠ **ITEM** information



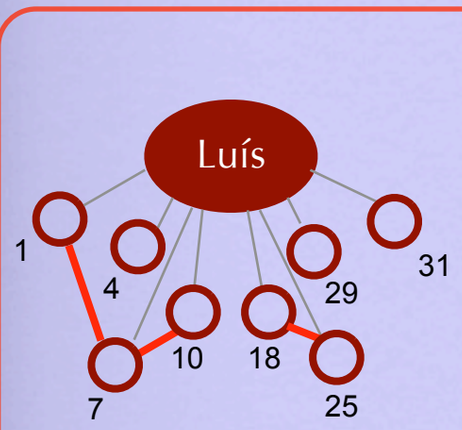
ORDER information ≠ **ITEM** information ≠ **SOURCE** information

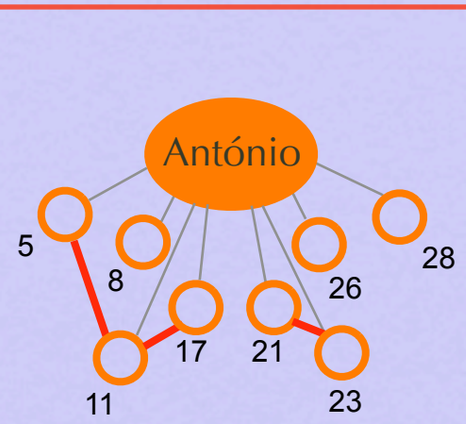
(Garcia-Marques & Hamilton, 1996)

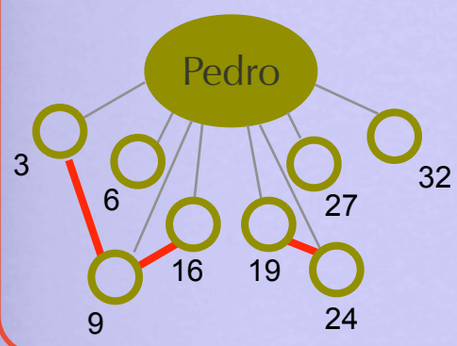
MEMORY FOR SERIAL ORDER IN SOCIAL COGNITION

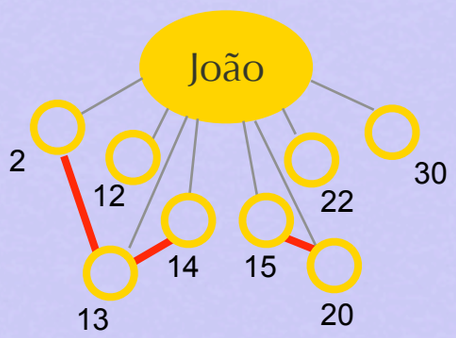
IF

impression formation task



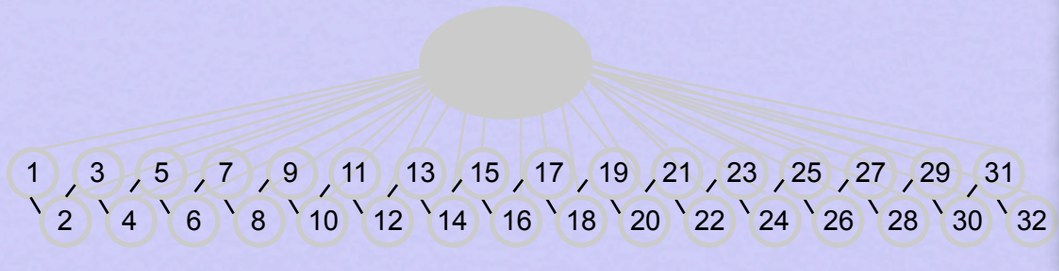






M

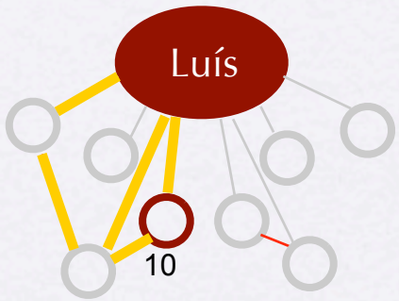
memory task

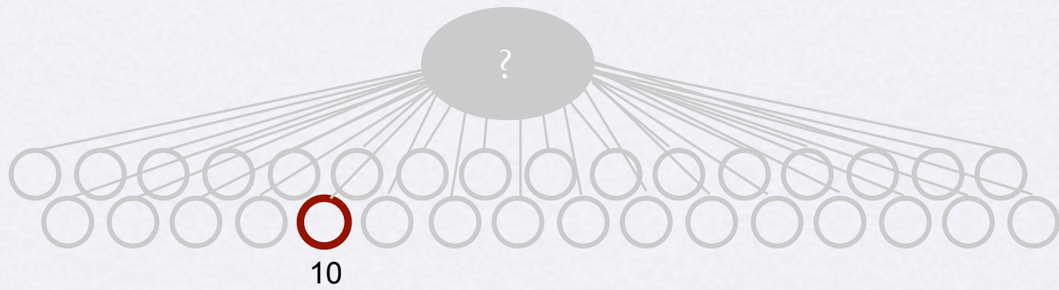


Study 1

SOURCE memory

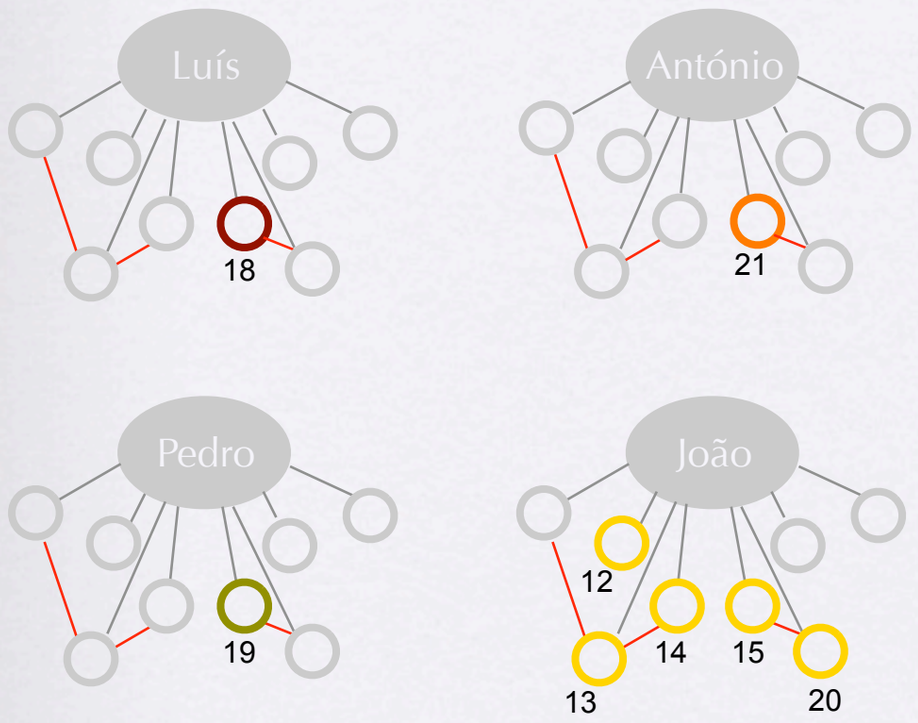
Impression Formation > Memory



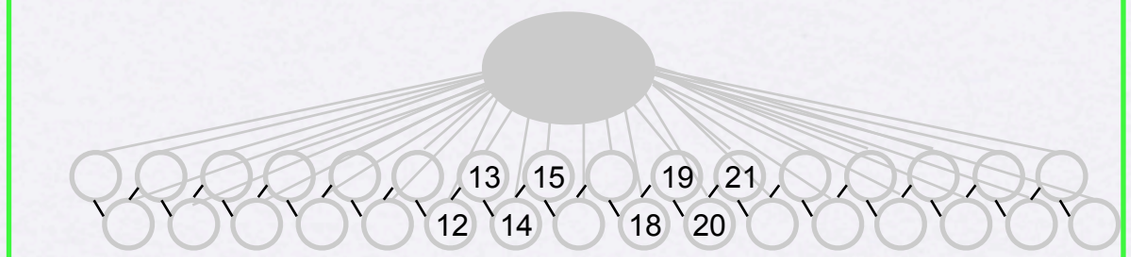


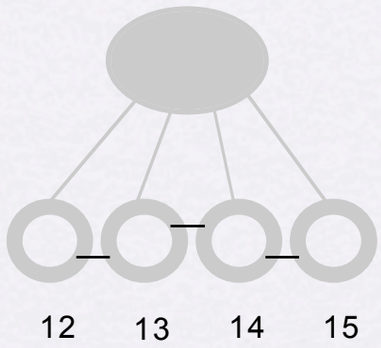
memory for *SERIAL ORDER*
***SUCCESSIVE* behaviours**

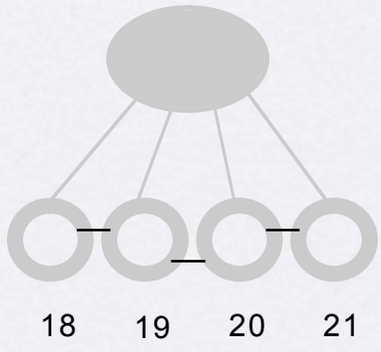
Impression Formation



Memory



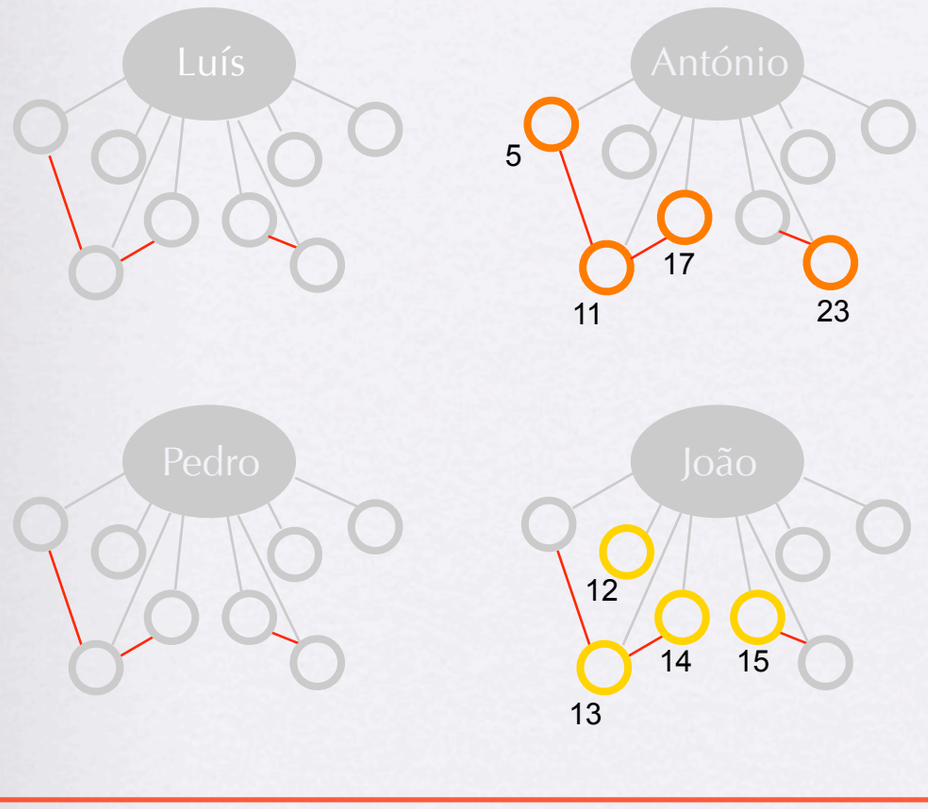


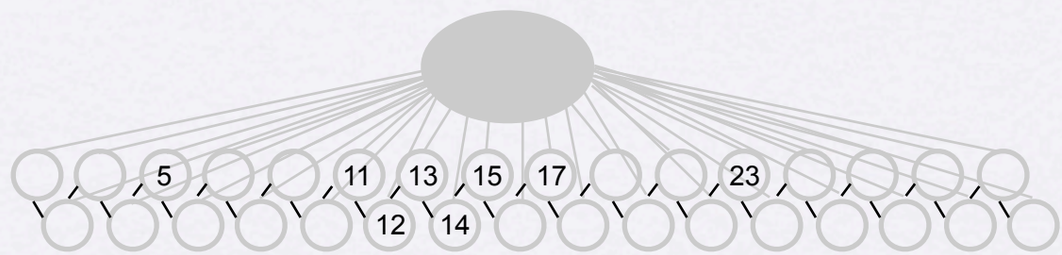


memory for *SERIAL ORDER*

INTRA-TARGET behaviours

Impression Formation > Memory





a) *SOURCE* memory

Impression Formation > Memory

b) memory for *SERIAL ORDER*

- *SUCCESSIVE*

Impression Formation < **Memory**

- *INTRA-TARGET*

Impression Formation > Memory

Method

Participants

109 undergraduate students

Design

2 Processing goals: Impression Formation - ***IF*** | Memory - ***M***

4 Versions of the stimulus list: *version 1* | *version 2* | *version 3* | *version 4*

2 Nature of the target: *Intra-target* | *Between-target*

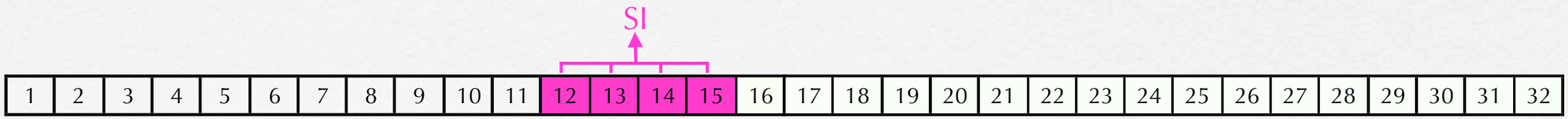
2 Succession of behaviours: *Successive* | *Non-successive*

	version 1		*version 2*		*version 3*		*version 4*	
IF	SB	SI	SB	SI	SB	SI	SB	SI
	NSB	NSI	NSB	NSI	NSB	NSI	NSB	NSI
M	SB	SI	SB	SI	SB	SI	SB	SI
	NSB	NSI	NSB	NSI	NSB	NSI	NSB	NSI

Material *(Garrido, Garcia-Marques & Jerónimo, 2004)*

16 *Critical* behaviours - from the combination of the variables *Succession of behaviours* and *Nature of the target* (2X2):

- 1 block of 4 behaviours SUCCESSIVE e INTRA-TARGET - SI



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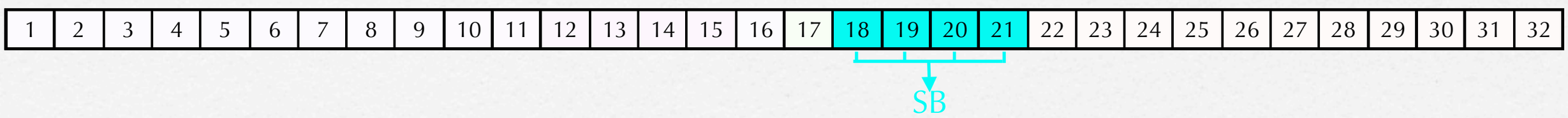

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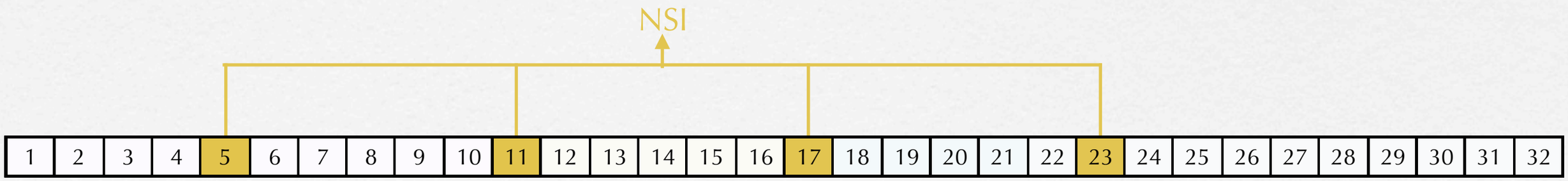

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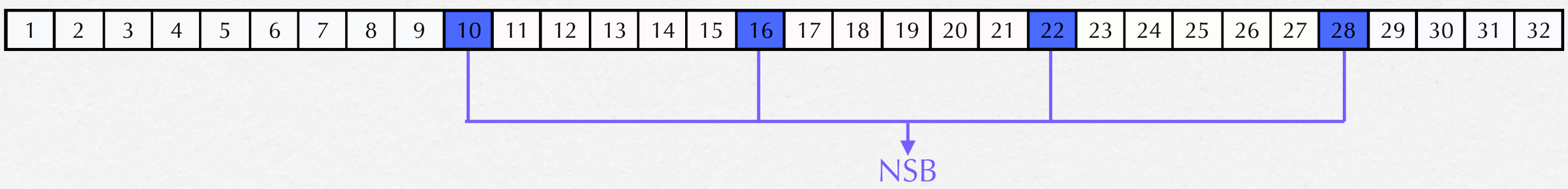

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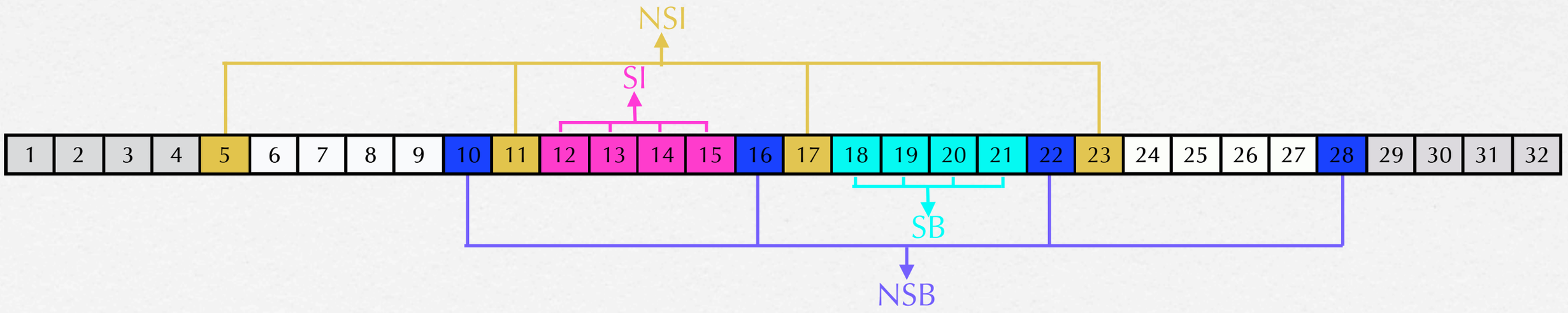

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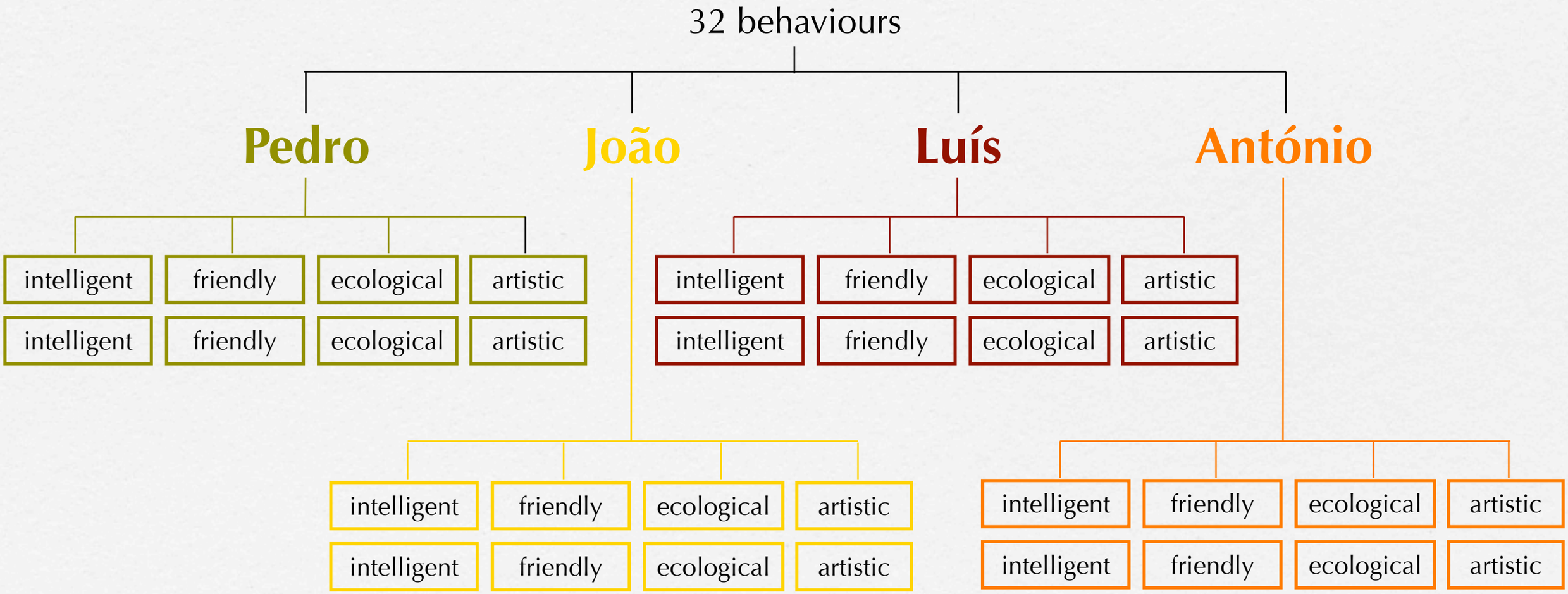


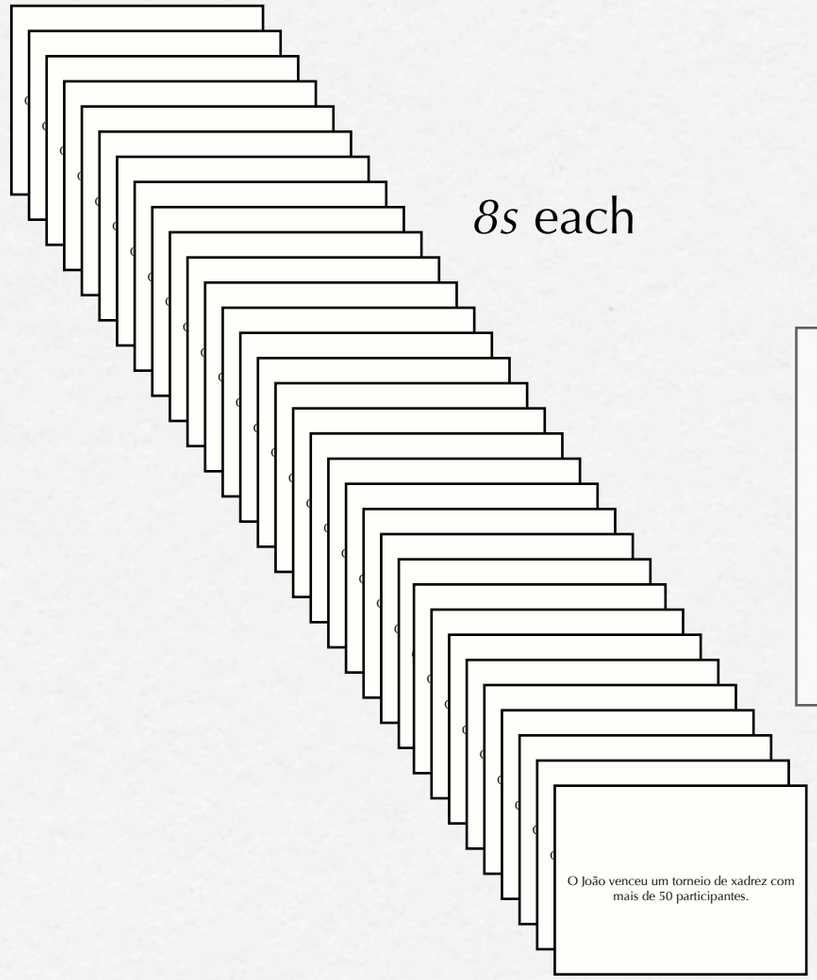
Procedure

32 behaviours (1 of the 4 versions of the stimulus list)

IF instructions

or

M instructions



8s each

Filler Task

(*6 m*)

Dependent Measures

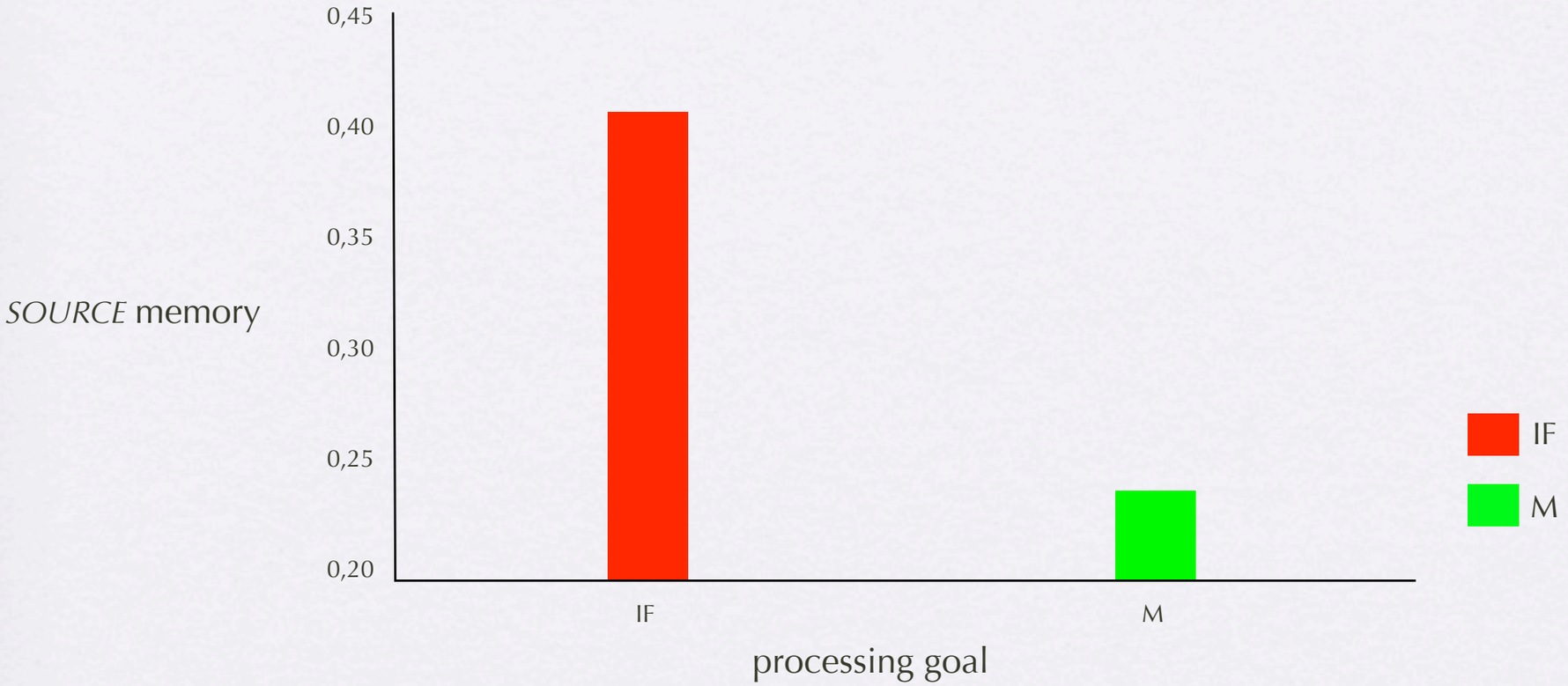
- **SOURCE** memory
- memory for **SERIAL ORDER**

TIME

Results
&
Discussion

SOURCE memory

$t\,(101) = 1{,}91,\ p < 0{,}03$



SOURCE memory

1) These data replicate the findings obtained by Hamilton et al. (1980a) and Garcia-Marques & Hamilton (1996), with a different measure: *source memory instead of free recall*.

2) Further evidence to the organizational process underlying impression formation, that is characterized by development of inter-item associations.

- participants recall the source of a particular behaviour because behaviours are encoded together in the representation of the target (*item-target associations + inter-item associations*).

memory for *SERIAL ORDER*
SUCCESSIVE behaviours

Preliminar analyses have showed that participants performance in the successive behaviours was not different from random (0).

$$\boldsymbol{M = 0{,}02}$$

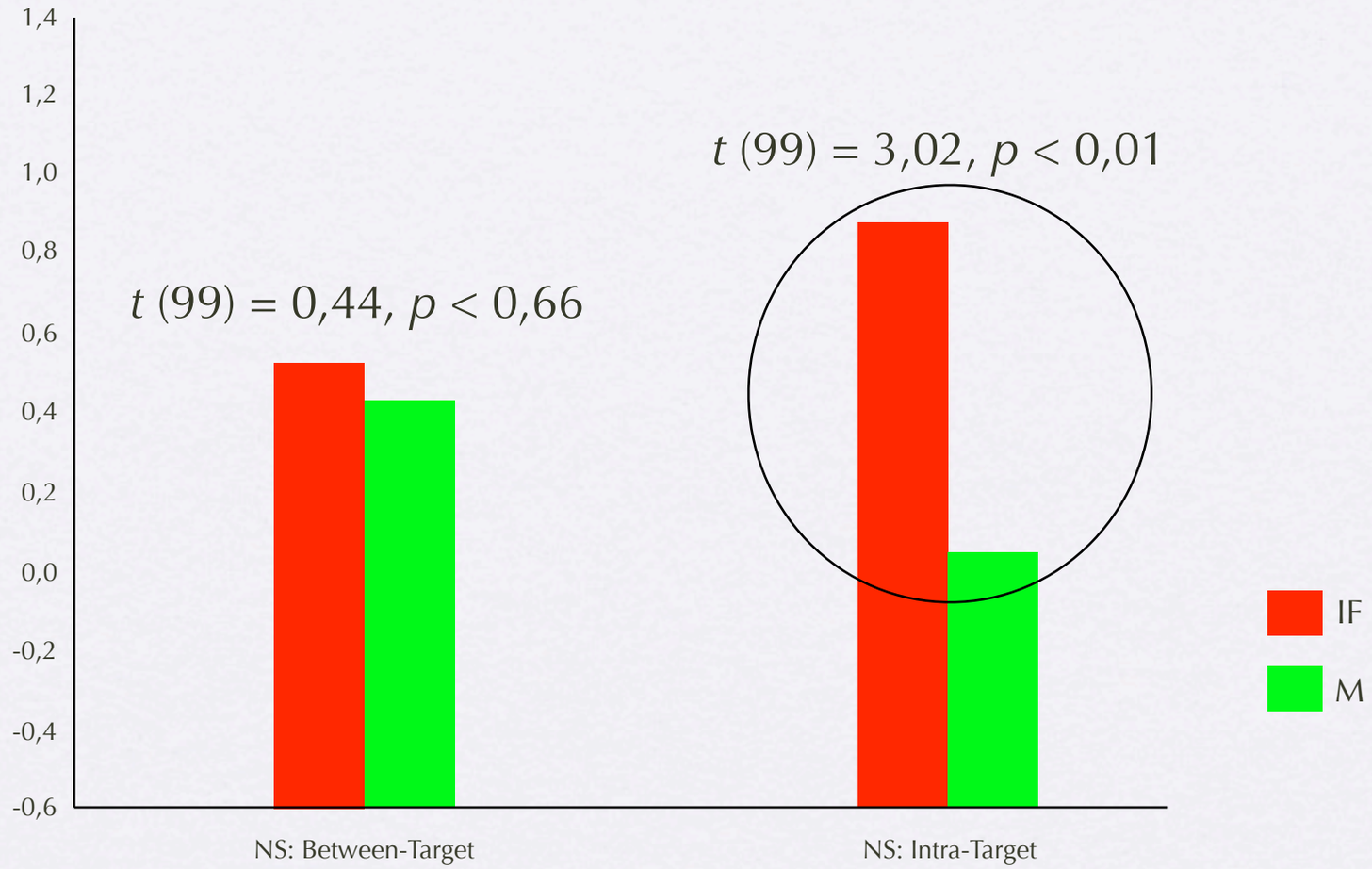
$$F\,(1{,}97) = 0{,}05,\ p = 0{,}82$$

memory for *SERIAL ORDER*
NON-SUCCESSIVE behaviours

$t\,(99) = 1{,}92,\ p < 0{,}03$

$t\,(99) = 3{,}02,\ p < 0{,}01$

$t\,(99) = 0{,}44,\ p < 0{,}66$



memory for *SERIAL ORDER*
NON-SUCCESSIVE behaviours

1) The process of forming an impression preserves the relative order of the behaviours in the stimulus list.

- further evidence for the development of associative links between encoded items when forming impressions

memory for *SERIAL ORDER*
SUCCESSIVE behaviours

1) These data don't seem to suport the *chainning* process proposed by the associative models of memory for serial order (TODAM, Murdock, 1997). We found no evidence of the existence of associations between items in successive positions in the stimulus list.

- *items were not encoded by the development of associations between contiguous items*

  - alternative information organization (target) - it may have been impossible to develop inter-item associations

- *when participants retrieved information they didn't use items as cues to reach the subsequent item*

  - even if we had a chaining representation, participants may have pursued a different way to recover information (the fact that the targert is concealed may activate the target information)

a) *SOURCE* memory

Impression Formation > Memory

b) memory for *SERIAL ORDER*

- *SUCCESSIVE*

Impression Formation < **Memory**

- *INTRA-TARGET*

Impression Formation > Memory

Study 2

SOURCE memory

Impression Formation > **Memory for Order**

memory for _SERIAL ORDER_
SUCCESSIVE behaviours

Impression Formation < **Memory for Order**

memory for _SERIAL ORDER_
INTRA-TARGET behaviours

Impression Formation > **Memory for Order**

Method

Participants

75 undergraduate students

Design

3 Processing goals: ***IF*** ***M*** ***Memory for Ordem - MO***

4 Versions of the stimulus list: *version 1* *version 2* *version 3* *version 4*

2 Nature of the target: *Intra-target* *Between-target*

2 Sucession of behaviours: *Successive* *Non-successive*

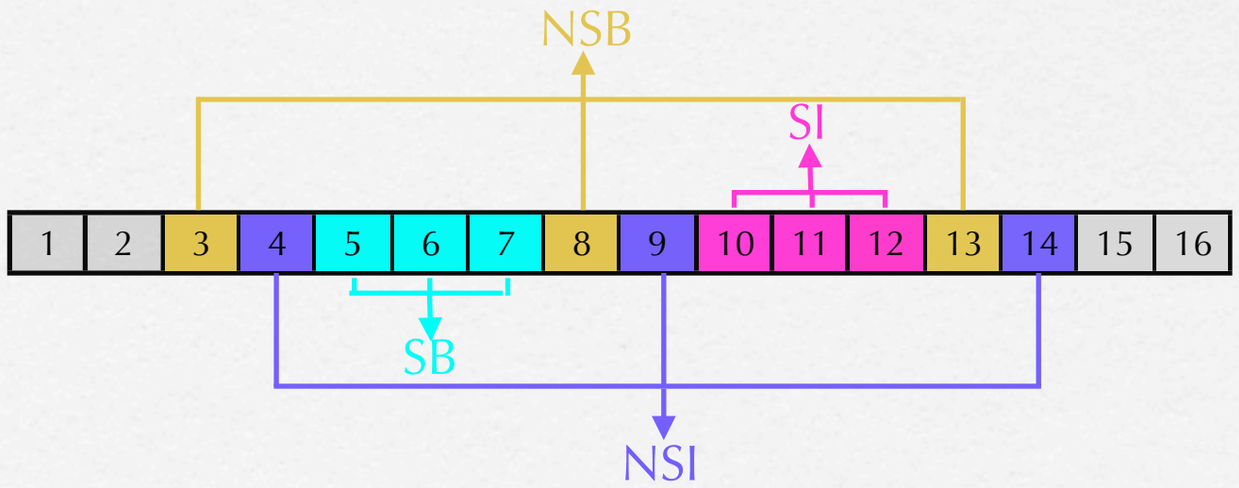
version 1 *version 2* *version 3* *versão 4*

IF	SB NSB	SI NSI	SB NSB	SI NSI	SB NSE	SI NSI	SB NSB	SI NSI
M	SB NSB	SI NSI	SB NSB	SI NSI	SB NSB	SI NSI	SB NSB	SI NSI
MO	SB NSB	SI NSI	SB NSB	SI NSI	SB NSB	SI NSI	SB NSB	SI NSI

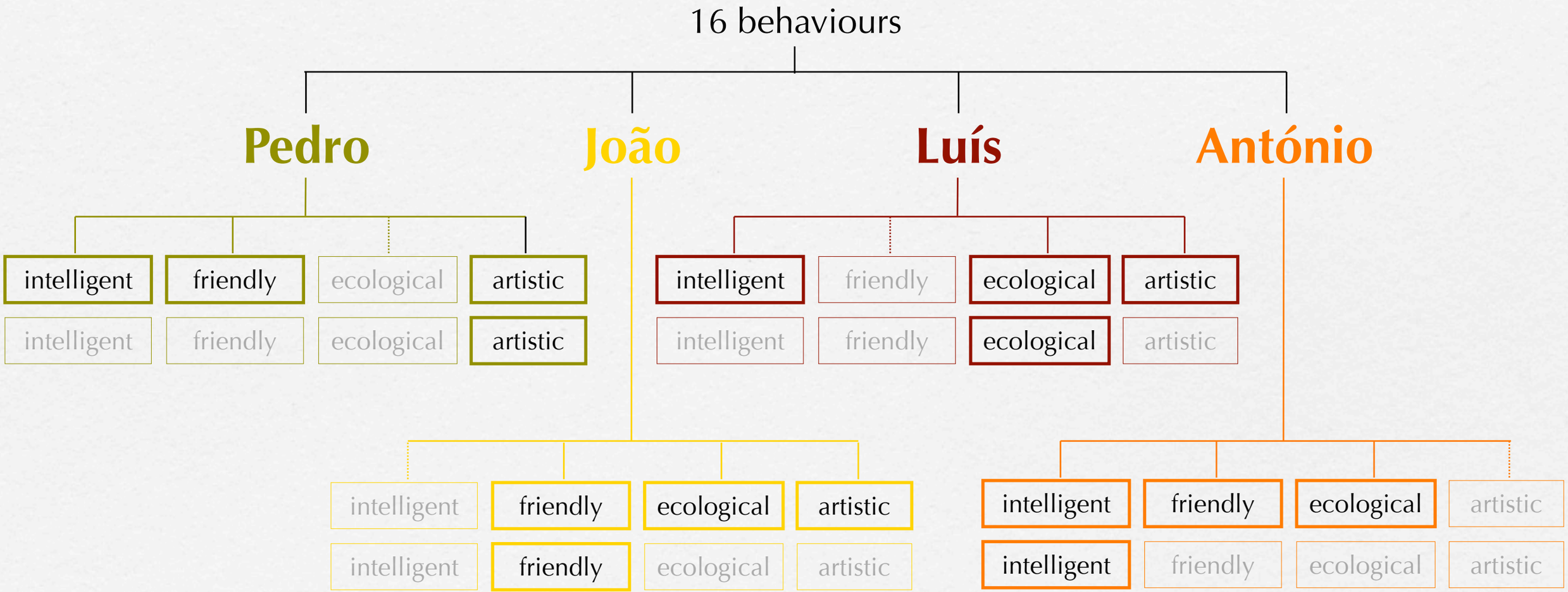
Material *(Garrido, Garcia-Marques & Jerónimo, 2004)*

12 *Critical* behaviours - from the combination of the variables *Succession of behaviours* and *Nature of the target* (2X2):

- 1 block of 3 behaviours SUCCESSIVE e INTRA-TARGET - SI
- 1 block of 3 behaviours SUCCESSIVE e BETWEEN-TARGET - SB
- 1 block of 3 behaviours NON-SUCCESSIVE e INTRA-TARGET - NSI
- 1 block of 3 behaviours NON-SUCCESSIVE e BETWEEN-TARGET - NSB



Material *(Garrido, Garcia-Marques & Jerónimo, 2004)*



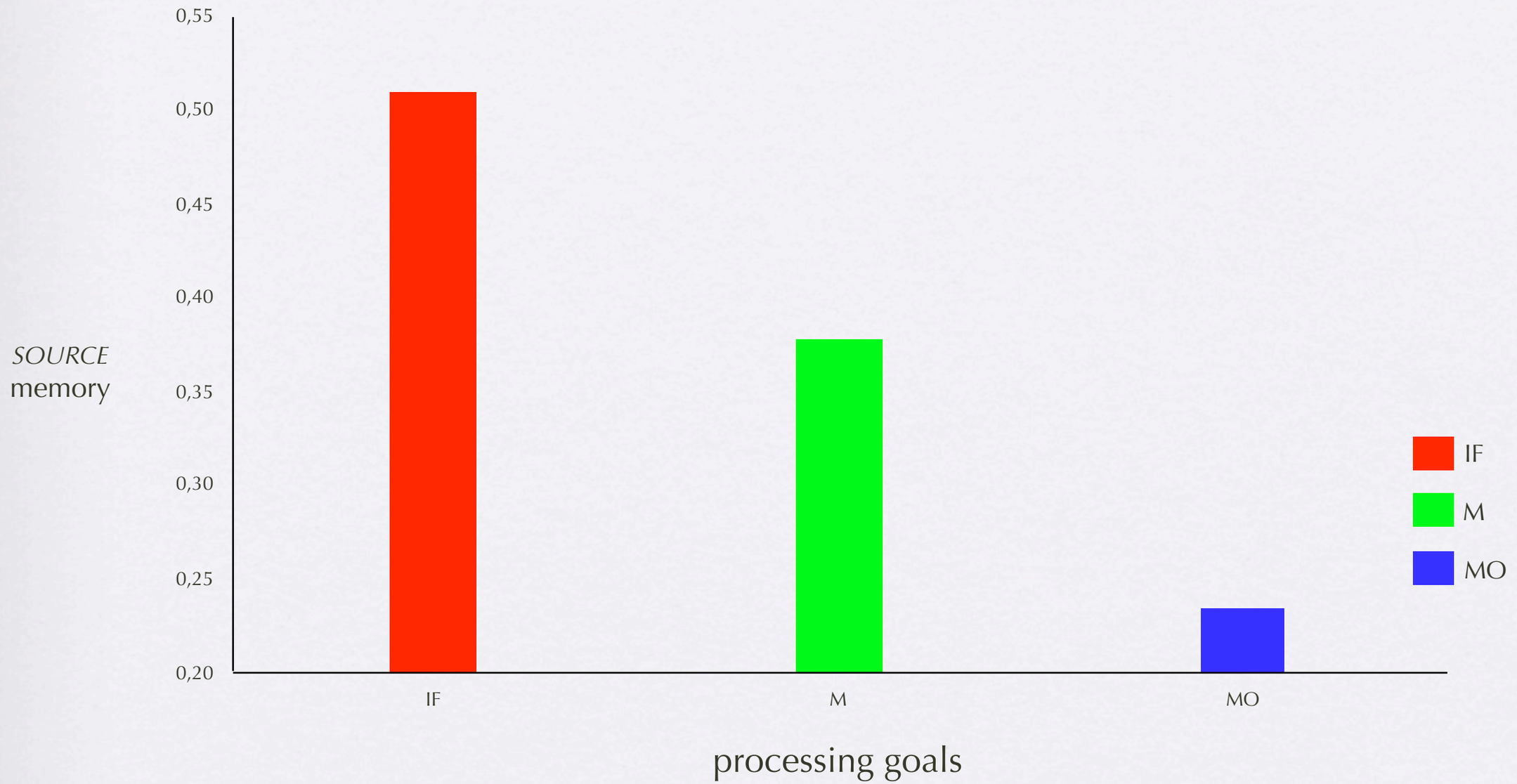
Procedure

Same as study 1.

Results
&
Discussion

SOURCE memory

$t(63)=1,59$; $p<,06$



SOURCE memory

1) These data replicate the findings obtained in study 1.

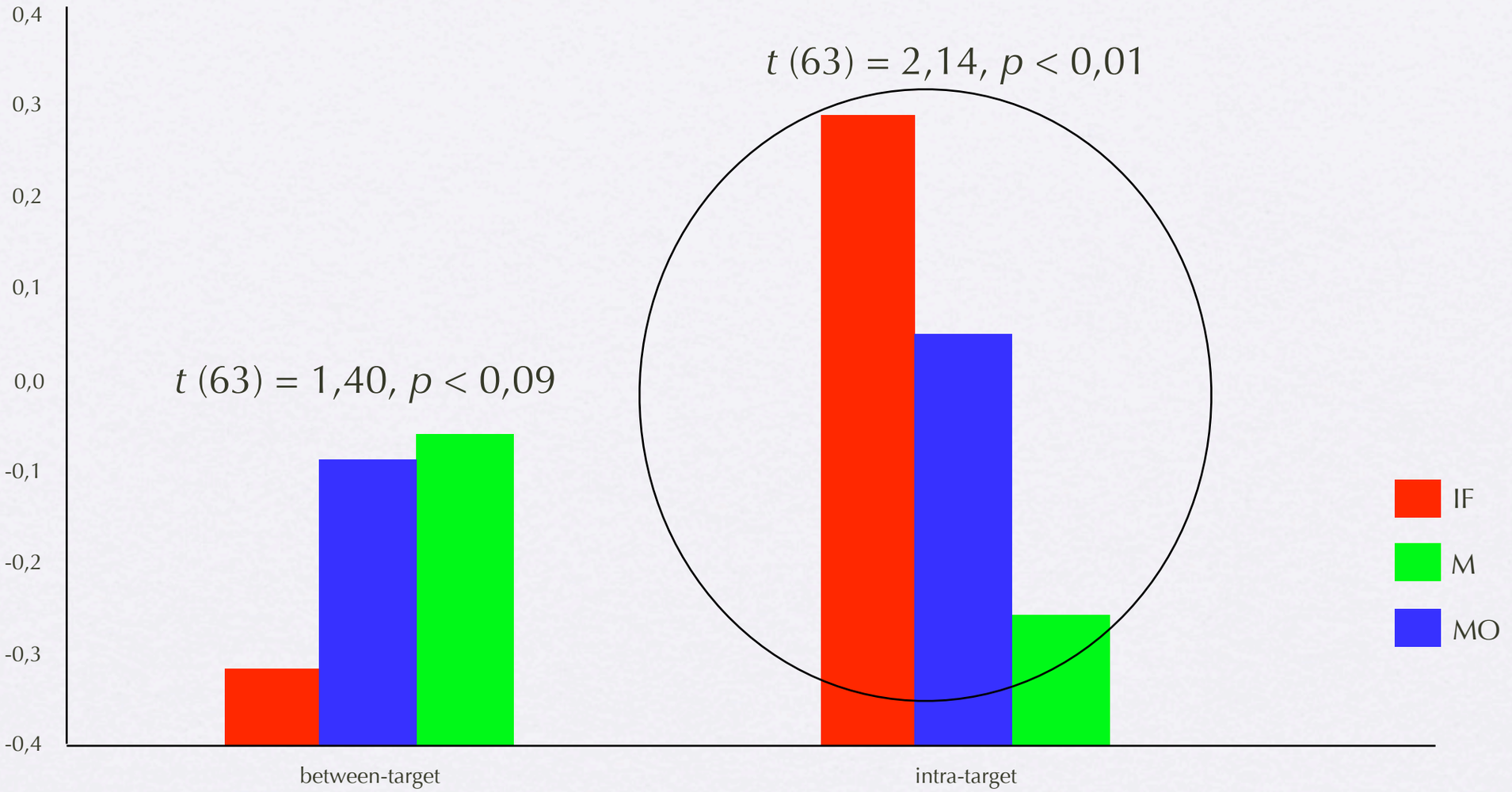
- participants recall the source of a particular behaviour because behaviours are encoded together in the representation of a target (*item-target associations* + *inter-item associations*).

memory for *SERIAL ORDER*

$F(2,63)=4,60;\ p<,0136$

$t\ (63) = 2,14,\ p < 0,01$

$t\ (63) = 1,40,\ p < 0,09$



memory for *SERIAL ORDER*

1) The process of forming an impression preserves the relative order of the behaviours in the stimulus list.

- further evidence for the development of associative links between encoded items when forming impressions

2) These data don't seem to suport the *chainning* process proposed by the associative models of memory for serial order (TODAM, Murdock, 1997). We found no evidence of the existence of associations between items in successive positions in the stimulus list.

a) *SOURCE* memory

Impression Formation > Memory for Order ✓

b) memory for *SERIAL ORDER*

- *SUCCESSIVE*

Impression Formation < **Memory for Order** ✗

- *INTRA-TARGET*

Impression Formation > Memory for Order ✓

THE END

THANKS FOR YOUR ATTENTION!