

The Test of Context Independence: an alternative to the Attribute- Challenge technique



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2016, April 19th

The Test of Context Independence (TCI)



- Developed by Lo Monaco, Lheureux & Halimi-Falkowicz (2008)
- Based on the context-insensitivity property of central elements (Abric, 1993, 2001; Flament, 1995; Wagner, Valencia & Elejabarrieta, 1996).

The Central Core Theory (Abric, 1976, 1994)



CENTRAL CORE	PERIPHERAL SYSTEM
Linked to collective memory and group's history	Allows the integration of individual experiences
Consensual → define the homogeneity of the group	Tolerates heterogeneity of the group
Stable Coherent Rigid	Flexible Tolerate contradictions
Change-resistant	Evolutionary
Insensitive to immediate context	Sensitive to immediate context

See Rateau, Moliner, Guimelli and Abric (2011) for a review and Rateau and Lo Monaco (forthcoming)

The Test of Context Independence (TCI)

- The TCI **is not** based on a double-negative principle.
- It consists in asking participants if whatever the context an element can or cannot be characteristics of the objet
 - if the element allows **always, in all cases** to characterize the object, it means that this element is a core element.
 - On the contrary, if such a **trans-situational** link appears as impossible for the participants, it will mean that the element is part of the periphery.

The Test of Context Independence (TCI)

Examples of items for two social representations according to ACT and TCI techniques:

ACT – Social representation of energy savings

In your opinion, can we say that a behavior correspond with energy savings if this behavior do not allow to preserve the environment ?

TCI – Social representation of energy savings

In your opinion, does a behavior correspond with energy savings if this behavior allows always, in all cases to preserve the environment ?

The Test of Context Independence (TCI)

Examples of items for according to both the Attribute-Challenge Technique (ACT) and the Test of Context independence (TCI)

ACT– Social representation of the ideal group

According to you, can we call as "ideal group" a group of people:

Who does not often get together?

Who does not share the same opinions?

Who does not come from the same social background?

TCI – Social representation of the ideal group

According to you, is an "ideal group" always, in all cases, a group of people:

Who often gets together?

Who shares the same opinions?

Who comes from the same social background?

The Test of Context Independence (TCI)

Examples of items for according to both the Attribute-Challenge Technique (ACT) and the Test of Context independence (TCI)

ACT – Social representation of "getting an education"

According to you, can we call "getting an education", an activity:

Which does not allow to be culturally enriched?

Which does not require hard work?

Which does not allow to prepare the future?

TCI – Social representation of "getting an education"

According to you, is "getting an education", always, in all cases, an activity:

Which allows to be culturally enriched?

Which requires hard work?

Which allows to prepare the future?

The Test of Context Independence (TCI)

Similarly to ACT:

Thresholds of decision

There are four informations.

1. Threshold of 75% of refutations
2. Equipfrequency (chi-square test): an element is central if its % of refutation significantly differs from 50%
3. Comparison of the frequency of refutations to norm of 75%.
4. Kolmogorov-Smirnov D_{\max} Test in order to identify a threshold beyond which the proportion of frequencies does not significantly differ from 100%

The Test of Context Independence (TCI)

Thresholds of decision

Critical analysis:

The more the sample size increases, the more lax the equi-frequency test becomes and the more severe the KS test becomes.

Simulation of the threshold of the KS : for $N = 400$; threshold equal to 0.93.

Thus the sample size becomes a new constraint directly imposed by the use of these methods and the application of these statistical indices.

*As a reminder:
Methodological
questions are not
unrelated to theoretical
ones*

Di Giacomo (1980)

The Test of Context Independence (TCI)

Thresholds of decision

Critical analysis:

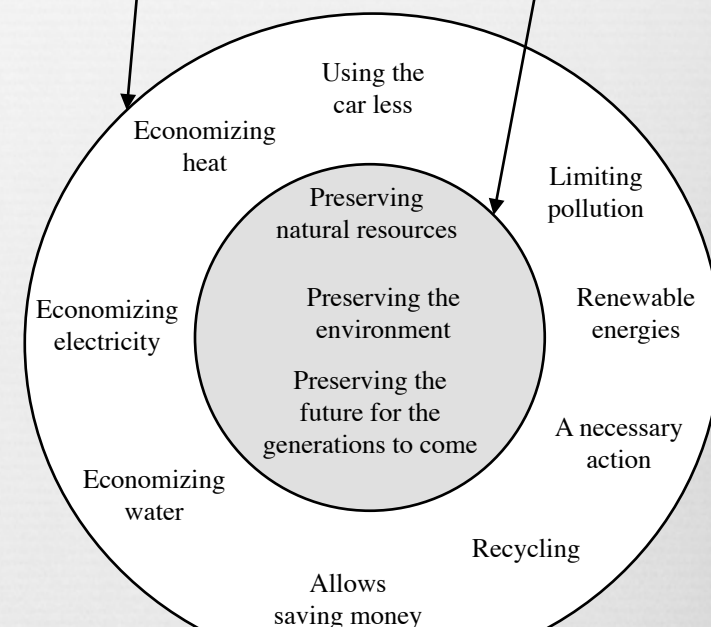
We have to wonder about the meaning of the term “group” and its borders.

It is necessary to think about the boundaries of the groups under study and what a “group” means in the framework of SR studies (Potter & Litton, 1985; Hogg & Abrams, 1990).

ACT : In your opinion, can an activity be considered as energy savings if it does not give rise to: TCI : In your opinion, is “energy savings” an activity that always involves, in all cases:	Examining the frequencies of “No” responses (ACT) or “Yes” responses (TCI)	
	ACT (“No” frequencies)	TCI (“Yes” frequencies)
Preserving natural resources	.80	.80
Preserving the environment	.79	.79
Economizing electricity	.65	.65
Recycling	.54	.54
Limiting pollution	.46	.46
Economizing heat	.72	.72
Renewable energies	.46	.46
A necessary action	.70	.70
Allows saving money	.50	.50
Using the car less	.67	.67
Economizing water	.65	.65
Preserving the future for the generations to come	.86	.86

Periphery (freq. < .78)

Core (freq. > .78)



Calculation of the D_{max}
Kolmogorov-Smirnov*

For $N = 40$
 $D_{max} (p < .05) = .78$

$$D_{max} = 1 - \left(\frac{1.36}{\sqrt{N}} \right)$$

The Test of Context Independence (TCI)

Comparison between ACT and TCI and cross-validation

Experimental illustration :

Lo Monaco, Lheureux and Halimi-Falkowicz (2008)

Hypotheses:

1. TCI will be perceived as less cognitively costly than ACT:

- H1: Concerning the reading of the first question
- H2: Concerning the perceived facility of the questions
- H3: Concerning the reformulation of the questions

2. TCI and ACT will converge concerning the centrality diagnosis (H4)

The Test of Context Independence (TCI)

Perceived cognitive cost (H1, H2, H3):

- Participants in TCI condition needed less to read the first question ($M = 1.65$) than those in ACT condition ($M = 2.15$), $F(1,38) = 8.56, p < .001$.
 - **H1 confirmed**
- In TCI condition, participants declared more facility (100%) to answer the questions than those in ACT condition (50%), $X^2(1) = 13.33, p < .001$
 - **H2 confirmed**
- In TCI condition, participants needed less to reformulate the question (5%) than those in ACT condition (40%), $X^2(1) = 7.03, p < .01$
 - **H3 confirmed**

Diagnosis of centrality: comparison between ACT and TCI

ITEMS	ACT	TCI	$\chi^2(1)$
Requires hard work	100%	96.9%	<i>ns</i>
Requires investement	98.1%	96.9%	<i>ns</i>
Helps acquire knowledge	94.2%	93.8%	<i>ns</i>
Prepares future	80.8%	87.5%	<i>ns</i>
Taking exams	76.9%	68.8%	<i>ns</i>
Leads to diploma	73.1%	68.8%	<i>ns</i>
be culturally enriched	71.2%	78.1%	<i>ns</i>
Long-term activity	17.3%	37.5%	$p < .05$
Takes place at the university	3.9%	3.1%	<i>ns</i>

There is a convergence between the diagnoses of centrality:

H4 confirmed

Diagnosis of centrality: comparison between ACT and TCI

ITEMS	ACT	TCI	$\chi^2(1)$
Absence of hierarchy	96,15%*	87,10%*	ns
Positive relationships	94,23%*	93,55%*	ns
Often get together	84,62%*	90,32%*	ns
Share the same interests	59,62%	58,06%	ns
Share the same activities	34,62%	9,68%	$p < .01$
Live nearby	30,77%	19,35%	ns
Share the same opinions	25,00%	22,58%	ns
Come from the same social background	19,23%	9,68%	ns

There is a convergence between the diagnoses of centrality:

H4 confirmed



Locating the structure of social representation and the consequences on sociocognitive processes

Piermattéo, Lo Monaco and Girandola (2015, pre-pub on-line, *Environment and Behavior*).

Structure of SR and commitment theory

Waste sorting practices are at stake in environmental issues.

What can explain commitment and withdrawal concerning waste sorting practices?

- Event that threaten or confirm the representation
- Inter-connection between social representation and social cognition
- "SR-Structure Effect" (Skandrani-Marzouki, Lo Monaco, & Marzouki, 2015)

Commitment theory

"commitment corresponds, in a given situation, to the conditions in which the completion of an act can only be charged to the individual who completed the act" (Joule & Beauvois, 2002, p.60)

- Commitment is an effective way to promote pro-environmental behaviors (see Ambramse & Steg, 2014).
- Commitment produces behavior change in the short and long term (see Girandola & Roussiau, 2003).

SR and commitment

By taking into account the structural approach to social representations:

- Researchers managed to improve the behavioral effects of commitment.
- Existing previous work on the inter-connection between SR and commitment (see Lo Monaco, Girandola & Guimelli, in press for a review).
 - Mainly focused on the foot-in-the-door procedure (i.e., ask less to obtain more) (Eyssartier, Joule, & Guimelli, 2007)
 - And on the double foot-in-the-door (Souchet & Girandola, 2013).
- Yet, other procedures such as the low-ball can be considered.

The Low-Ball technique

The low-ball procedure is a way to increase the probability to obtain an expected behavior (Joule et al., 2007)

It consists in:

1. To Bring a person to take a decision
2. To inform her of fictitious advantages or hidden disadvantages

As a result:

Once the decision taken, people generally maintain their first decision despite the announcement of the truth concerning the fictitious advantages or hidden disadvantages.

Structure of SR and Low-Ball procedure

Can we really consider that individuals could stay committed despite any fictitious advantage or any hidden disadvantage?

Hypotheses:

A hidden disadvantage that invalidates a central element will bring participants to give up their decision

Conversely, a hidden disadvantage that invalidates a peripheral element will bring participants to maintain their decision

Structure of SR and Low-Ball procedure

Study 1: Identification of the structure of the social representation of waste sorting : Test of Context Independence

Different cognitions identified by Dupré (2013) were used in the framework of the Test of Context Independence.

Forty participants (31 women, $M_{age} = 22.05$; $SD = 1.91$) from a Aix-Marseille University

The questionnaire was composed of 10 questions, each one evaluating one of the 10 cognitions gathered by Dupré (2013).

“In your opinion, is ‘waste sorting’ a practice that is linked always, in all cases to recycling”.

For each question, participants were asked to choose between four possible answers: certainly no, probably no, probably yes or certainly yes.

Structure of SR and Low-Ball procedure

Results:

Cognition	Acceptance (%)	Structural status
Useful	95	Central
Nature	90	Central
Environment	90	Central
Recycling	87.5	Central
Ecology	80	Central
Energy savings	75	Peripheral
Cleanliness	75	Peripheral
Trash can	67.5	Peripheral
Money savings	42.5	Peripheral
Glass	35	Peripheral

The cognitions characterized by a percentage of acceptance above the threshold calculated on the basis of the Kolmogorov-Smirnov test (i.e., 78%) are considered as central.

Structure of SR and Low-Ball procedure

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Money savings	42.5	Peripheral
Glass	35	Peripheral

Structure of SR and Low-Ball procedure

Study 2: the low-ball procedure and the social representation of waste sorting

Ninety participants (52 women, $M_{age} = 22.90$; $SD = 2.23$) from a Aix-Marseille University

The participants were randomly divided into 3 groups:

1. Invalidation of a central cognition ($N = 30$)
2. Invalidation of a peripheral cognition ($N = 30$)
3. No invalidation (i.e., control condition, $N = 30$).

Structure of SR and Low-Ball procedure

Procedure

- Participate in a new program of waste sorting during 3 weeks
- An experimental program that consisted in delivering 3 set of trash bags each one characterized by a specific color

Participants that accepted:

- Had then to sign a form
- Had to indicate their name, surname, phone number and to sign under a sentence that indicated that they engage themselves in the program.
- The participants that accepted to join the program were then contacted again during the following day in order to confirm their participation.
 - **Experimental manipulation**

- **Experimental manipulation**
 - **Control condition:**
 - Participants who accepted: request of their address to send the bags
 - Participants who chose not to continue: they were thanked and the phone conversation was ended.
 - **Invalidation of peripheral cognition condition:**
 - *Recent program which **would not really allow to save money***
 - Participants who chose to continue: request of their address to send the bags
 - Participants who chose not to continue: they were thanked and the phone conversation was ended.
 - **Invalidation of central cognition condition:**
 - *Recent program and **it will not be possible to recycle the garbage sorted by the participants***
 - Participants who chose to continue: request of their address to send the bags
 - Participants who chose not to continue: they were thanked and the phone conversation was ended.

- **Results**

Condition	<i>N</i>	Desertion
Control	30	16.67%
Peripheral invalidation	29	36.67%
Central invalidation	29	80.00%

- Peripheral vs. control:
 - $B = 0.97$, $Wald = 2.38$, $p < 1$
- Central vs. control:
 - $B = -2.76$, $Wald = 17.72$, $p < .001$
- Central vs. peripheral:
 - $B = -1.79$, $Wald = 9.37$, $p < .01$

The Test of Context Independence (TCI)

The advantages...

- Gives consistent results with the ACT
- Perceived as easier by the participants than the ACT
- Like the ACT: requires a reduced number of participants
- Is adaptable to numerous situations because of its ease in terms of understanding

The Test of Context Independence (TCI)

The disadvantages...

- May be the problem concerning the number of modalities observed for the ACT is present for TCI.
 - Except if this aspect is caused by the misunderstanding linked to ACT.

Agenda for future research

Adequacy between the question and the modalities of response

As a reminder, in the TCI, participants have to answer a question for each item such as:

“In your opinion, is 'studying in higher education', an activity that always allows, in all cases, the acquisition of knowledge?”.

→ 1 = “definitely not”; 2 = “rather not”; 3 = “rather yes”; 4 = “definitely yes”

The problem:

“Always, in all cases” is quite inconsistent with the modalities 2 = “rather not” and 3 = “rather yes”

Agenda for future research

Adequacy between the question and the modalities of response

A solution?

“In your opinion, does an activity that corresponds to studying in higher education allow the acquisition of knowledge?”

→ a 7-point scale from 1 = “Never” to 7 = “Always”

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