*Note to the discussants: this version of our paper is a draft version (as you will see). The theoretical part has not been worked out in order to concentrate on a quite exhaustive description of our experimental test (method and results). Some formulations might still sound awkward, but we hope that it can give you a more precise idea of what we have been doing.*

# The "Belgian Tetris": assessing the political impact of metaphors on citizens' perception of Belgian federalism

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## 1. Introduction

The fact that "We live by metaphors" has now been widely accepted by the scholarly community of linguists around the world after the seminal work of Lakoff and Johnson (1980). Metaphors are not only figures of speech serving mere rhetorical purposes but also and above all powerful conceptual tools to depict abstract and complex realities through familiar domains. Metaphors can thus be found in our daily life, including our political life. Yet in this domain, the political impact of metaphors is often taken for granted. Therefore a more global understanding of what this political impact could consist of is needed to further the current research agenda. As Koller (2009, 121) puts it: "metaphor helps construct particular aspects of reality and reproduce (or subvert) dominant schemas." To be able to account for how metaphors, through discourses, actively shape the political reality, it is important to look at the relationships between metaphorical discourses and their environment.

Based on the idea that metaphors do not only reflect the perceived reality, but also function as cues through which citizens come to understand complex political processes and through which they shape political behaviours, the aim of this study is precisely to look at how specific metaphors might impact on the citizens. Too often such political impact is assumed. Yet the identification of metaphors in political discourses does not necessarily implies that these metaphors matter and matter politically. While on the production side the use of the metaphors is probably meaningful – should it be deliberate, and this is a hotly debated issue (see works by Steen and by Gibbs) – on the reception side the question remains open whether a given metaphor has an impact on individuals and how.

Comparing the various experimental conditions will make it possible (i) to measure the impact of the Tetris metaphor on the citizens' perceptions and representations of Belgian federalism, (ii) to assess to what extent the different metaphorical media differently contribute to this impact and (iii) to measure the long-term impact of this metaphor on the citizens' political representations and attitudes. In answering these questions, this study will contribute to a better understanding of the role and functions metaphors play in political discourse, and more globally in our everyday political interactions.

## 2. The political impact of metaphors (this section needs to be expanded and refined)

Numerous are the scholars who have performed metaphor analysis on political discourse, be it elite discourses or media discourses. To be sure metaphors are widely widespread in this genre. Identifying metaphors is not an easy task but it has now been pretty efficiently mastered, even if there is no agreement on the best technique. Nevertheless identifying

metaphors is only one step in our search of the political impact of metaphors. Often such impact is simply assumed.

There are good reasons however to assume the impact of metaphors as it has been demonstrated that metaphor is a central component of human cognition; it is "a central cognitive process for abstract conceptualization and reasoning" (Johnson 2010, 412). Bowdle and Gentner have showed that individuals can process conventional metaphors as quickly as they can process literal meanings (2005), yet they add that individuals need more time to comprehend novel metaphors. Therefore, while an impact of metaphors may be assumed for conventional metaphors, this is a different story for novel metaphors. As these novel metaphors are typically the ones of interest in the study of political discourse, their impact should be assessed. Bougher points in this direction when he notes (2012, 145):

> Research has not fully explored metaphor's capacity as a reasoning tool for citizens. Instead, this capacity has been understated by a disproportionate focus on metaphors found in elite discourse. (…) (T)he study of metaphor in political cognition offers the opportunity to better understand how citizens view and interpret the political world. This study requires a move away from elite discourse as the primary source of data. and the implicit nature of metaphorical reasoning requires methods that extend beyond citizen discourse.

In this study we therefore endeavour to understand the possible political impact of metaphors. As this impact can vary a lot in its nature and in time, we have set up an experiment that takes into account several dimensions of the possible political impact of an existing metaphor, used in the media.

## 3. Data and Method

### *3.1 Experimental material*

To measure the possible impact of metaphors on the citizens' political representations and attitudes, we developed an experimental set-up based on an article published in the Belgian newspaper *Le Soir* (13-14 July 2013) in which Belgian federalism was deliberately compared to a Tetris game. The original article included a picture and a text (208 words), which were used as authentic experimental material. The authentic nature of our experimental text is an advantage considering it has been produced by a journalist in a natural setting to present the state reform as clearly as possible to its readers.

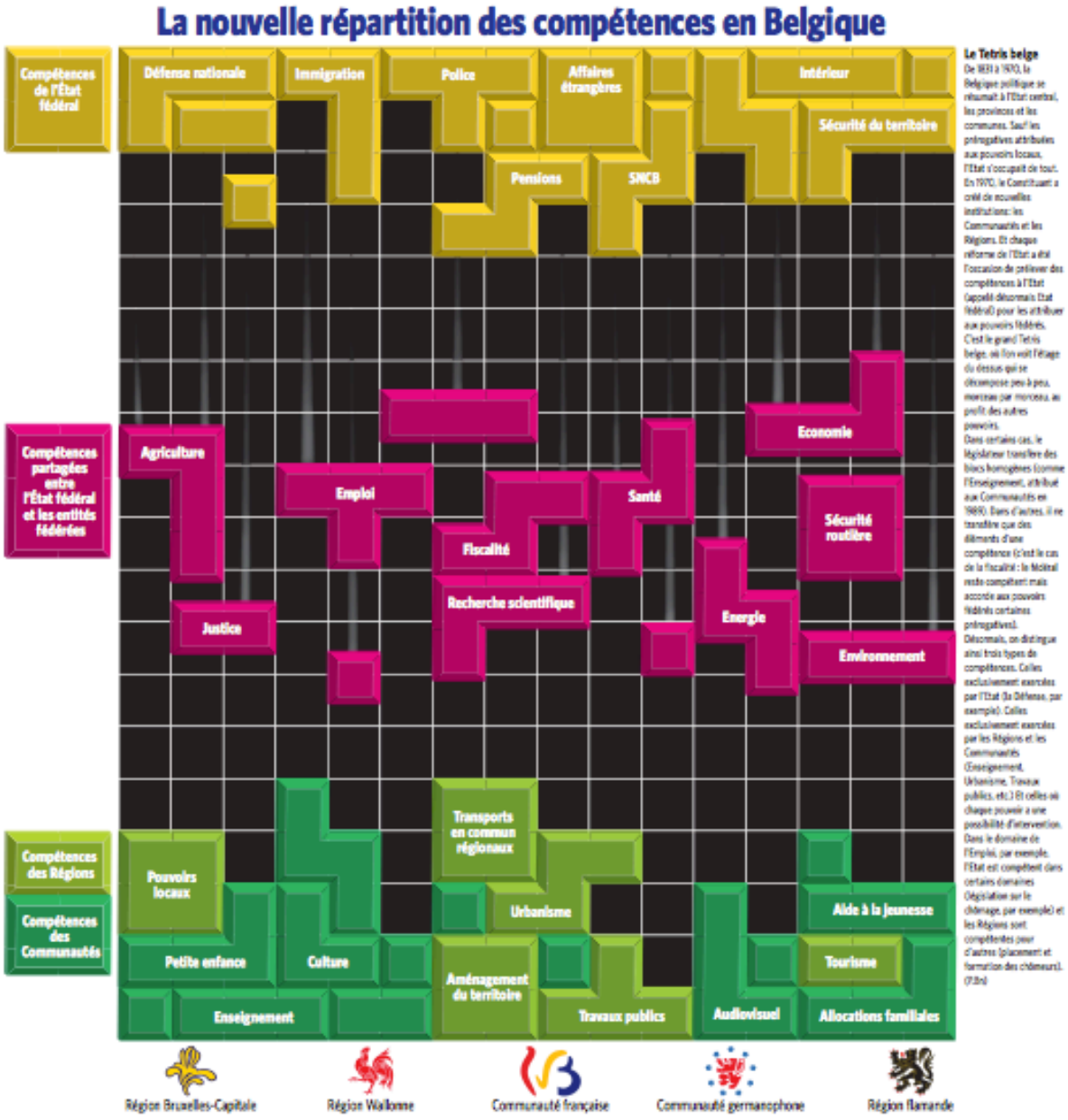



Image 1: The original article

# Le Tetris belge

**De 1831 à 1970, la Belgique politique se résumait à l'Etat central, les provinces et les communes. Sauf les prérogatives attribuées aux pouvoirs locaux, l'Etat s'occupait de tout. En 1970, le Constituant a créé de nouvelles institutions : les Communautés et les Régions. Et chaque réforme de l'Etat a été l'occasion de prélever des compétences à l'Etat (appelé désormais Etat fédéral) pour les attribuer aux pouvoirs fédérés. C'est le grand Tetris belge, où l'on voit l'étage du dessus qui se décompose peu à peu, morceau par morceau, au profit des autres pouvoirs. Dans certains cas, le législateur transfère des blocs homogènes (comme l'Enseignement, attribué aux Communautés en 1989). Dans d'autres, il ne transfère que des éléments d'une compétence (c'est le cas de la fiscalité : le fédéral reste compétent mais accorde aux pouvoirs fédérés certaines prérogatives). Désormais, on distingue ainsi trois types de compétences. Celles exclusivement exercées par l'Etat (la Défense, par exemple). Celles exclusivement exercées par les Régions et les Communautés (Enseignement, Urbanisme, Travaux publics, etc.). Et celles où chaque pouvoir a une possibilité d'intervention. Dans le domaine de l'Emploi, par exemple, l'Etat est compétent dans certains domaines (législation sur le chômage, par exemple) et les Régions sont compétentes pour d'autres (placement et formation des chômeurs). ***

Image 2: experimental text

*3.2 Experimental set-up*

In order to assess to what extent such a metaphor might have an influence on the citizens' perception and comprehension towards, we designed a test consisting of three experimental conditions and one control condition. In the first experimental condition (full condition), the participants were exposed to the original article (including the text and the picture). In the second and third experimental conditions, the participants were respectively exposed either to the text (text condition) or the picture (picture condition). In the control condition, the participants weren't exposed to any material at all. In the second stage of the experiment, the participants were asked to achieve three interrelated tasks: (i) a free description task, based on a free description of their own perception of Belgian federalism, (ii) an association task, in which they had to select a picture which they found the most appropriate to describe Belgian federalism, and finally (iii) a questionnaire measuring the participants' political knowledge of Belgian federalism and attitudes towards its future development.

Four weeks after this first experimental session, a post-test was held in which the three tasks of the second stage were replicated. In this second experimental stage, the participants were not exposed to any experimental input.

*3.3 Participants*

The participants were 1st year bachelor students from the University of Liege and the University of Louvain, respectively enrolled in a Modern Languages program and social and political sciences programs. They took part to the experiment as part of an assignment for the courses of *Introduction to Linguistics* and of *Introduction to Political Science*. In total 623 participants took part to the first stage of the experiment (pre-test) and 320 to the second stage of the experiment (post-test). Some of them however produced incomplete answers and were left out of the analysis. The analysis of our data is based on a sample of 493 students for the pre-test and 300 for the post-test. The students who participated to the post-

test had all taken part to the pre-test. The participants are equally distributed across the different experimental conditions (see table 1 below).

| | Pre-test | | Post-test | |
|---|---|---|---|---|
| | N | % | N | % |
| Control condition | 126 | 25.6 | 82 | 27.4 |
| Full condition | 125 | 25.4 | 79 | 26.4 |
| Image condition | 114 | 23.1 | 65 | 21.7 |
| Text condition | 128 | 26.0 | 73 | 24.4 |
| Total | 493 | 100.0 | 300 | 100.0 |

Table 1: distribution of the participants

*3.4 Procedure*

The whole experiment (including the pre-test and the post-test) has been conducted online using the LimeSurvey protocol. For the pre-test, the experimental protocol consisted of 6 to 8 different stages (depending on the experimental condition), each including different kinds of material or tackling different kinds of information. These different stages can be summarized as follows:

- Stage 1 presented the experimental stimulus, either being the Tetris illustration (image condition and full condition) or the experimental text (text condition).
- Stage 2 included the experimental text (only for the full condition).
- In stage 3, the participants were asked to freely describe their own perception of Belgian federalism (description task. all conditions).
- In stage 4, the participants had to choose an image from a list which they associated with Belgian federalism.
- In stage 5, the participants were confronted with 5 multiple-choice questions tackling their general political knowledge about Belgian federalism (e.g. *"Which political function can you fulfil without being directly elected?"*).
- In stage 6, the participants had to answer 13 questions aiming at measuring their attitudes towards Belgian federalism (e.g. *"To what extent should Flemish people and Walloon people live together in the same country?"*). These questions were either multiple-choice questions either choices on a Likert-scale. It should be specified that 4 of these questions were directed towards the participant's perception of explicit metaphors regarding Belgian federalism (e.g. *"Belgium is like a couple. a better communication will pacify the relations between Flemish and Walloon people"*)
- In stage 7, the participants were asked to fill in personal information.
- In stage 8, the participants were asked to describe their perception of their own identity(ies) on a 10 point-Likert-scale.

The participants could go through each stage at his/her own pace. Once one stage had been validated, they could not get back to it.

In the post-test, the stages 1, 2, 5, 7 and 8 were left out, the stages 3 and 4 were fully replicated and stage 6 had been reduced to 6 questions (including the 4 metaphorical statements). Additionally, the participants were asked to freely describe their perception of the future of Belgian federalism.

**4. Results**

This section is divided into three main parts. Before we go deeper into the analysis of the impact of the Tetris metaphor, we will firstly give an overview of some general tendencies

regarding our data (see section 4.1). Secondly, we will discuss the results of the picture association task (see section 4.2), and finally we will concentrate on the analysis of the free description task (see section 4.3).

### *4.1 General harvest*

#### *4.1.1 LEVEL OF POLITICAL KNOWLEDGE*

To ensure the different experimental groups were homogenous, we controlled their level of political knowledge of our participants by asking them 5 general questions about Belgian politics. A one-way ANOVA with the score of political knowledge as dependent variable and the experimental condition as independent variable confirms, as could be expected, that there are not any significant differences between the different group as far as their knowledge about Belgian politics is concerned ($F_{(3.479)}$= .411. p=.745). Further post-hoc analyses do not reveal any more specific differences between the groups.

| | **Level of political knowledge** | | | |
|---|---|---|---|---|
| | Mean score | SD | Min | Max |
| Control condition | 2.92 | 1.24 | .00 | 5.00 |
| Full condition | 2.95 | 1.22 | .00 | 5.00 |
| Image condition | 2.99 | 1.31 | .00 | 5.00 |
| Text condition | 2.81 | 1.21 | .00 | 5.00 |
| Total | 2.92 | 1.24 | .00 | 5.00 |

Table 2: Level of political knowledge across the experimental conditions

#### *4.1.2 FREE DESCRIPTION TASK*

In a second stage of our general results we tested to what extent the experimental condition had an impact on the description task by measuring the mean length (in terms of number of words) of the descriptions of the participants from the different groups. The results are presented in Table 3.

| | **Mean length of the descriptions (N words) Pre-test** | | | |
|---|---|---|---|---|
| | Mean score | SD | Min | Max |
| Control condition | 41.7 | 22.9 | 3 | 120 |
| Full condition | 50.2 | 21.3 | 3 | 128 |
| Image condition | 43.4 | 23.6 | 5 | 126 |
| Text condition | 47.7 | 23.9 | 3 | 127 |
| Total | 45.8 | 23.1 | 3 | 128 |

Table 3: Mean length of the free descriptions across the experimental conditions (pre-test)

These results point to a linear trend suggesting that the participants who have been exposed to more visual and textual material tend to produce longer descriptions (no input < visual input < textual input < visual and textual input). A one-way ANOVA with the description length as dependent variable and the experimental condition as independent variable confirms that the experimental conditions have a significant impact on the length of the descriptions by the citizens from the different groups ($F_{(3.489)}$=3.652. $p < .05$). Further post-hoc analyses however suggest that the only the difference between the control condition and the full condition is significant ($p < .05$).

| | **Mean length of the descriptions (N words) Post-test** | | | |
|---|---|---|---|---|
| | Mean score | SD | Min | Max |
| Control condition | 37.4 | 18.7 | 3 | 80 |

| | | | | |
|---|---|---|---|---|
| Full condition | 39.4 | 20.0 | 3 | 85 |
| Image condition | 36.1 | 20.6 | 3 | 98 |
| Text condition | 37.1 | 22.1 | 3 | 126 |
| Total | 37.6 | 20.3 | 3 | 126 |

Table 4: Mean length of the free descriptions across the experimental conditions (post-test)

Interestingly, this effect disappears in the post-test, where no significant differences in description length can be observed between the different experimental groups $F_{(3.295)}$=.346. p=.792.

It can further be observed that the mean length of the descriptions decreases in the post-test, suggesting the influence of the input material does not last in time. This effect is globally significant ($t_{(1,299)}$=7.833, p < .0001). Further paired t-test analyses indicate this decreasing tendency is significant for all the conditions as well (control condition: $t_{(1,81)}$=3.316, p < .001, full condition: $t_{(1,78)}$=4.087, p < .0001, image condition: $t_{(1,64)}$= 3.125, p < .005, text condition: $t_{(1,72)}$=5.082, p < .0001). Though this tendencies can be explained by the absence of input material, it is somehow surprising that the mean length of the post-test productions (for each experimental condition) remains lower than the mean length of the productions of the control group in the pre-test stage.

*4.1.3 LEXICAL INFLUENCE OF THE EXPERIMENTAL TEXT*

A last general observation concerns the degree of lexical influence of the input text on the descriptions of the participants. To measure this influence, we derived the degree lexical overlap between the experimental text and the free descriptions of the participants by calculating the number of similar lexical items divided by the total number of words of the participants' answers on the free description task. Though each experimental group shows a minimal degree of lexical overlap with the input text (even the groups that did not view it at all), the results suggest that the answers of the participants who were exposed to the input text (full condition and text condition) show a higher degree of lexical overlap with the input text.

| | **Lexical influence of the input text on the free description task (Pre-test)** | | | |
|---|---|---|---|---|
| | Mean score | SD | Min | Max |
| Control condition | .19 | .14 | .0 | .78 |
| Full condition | .23 | .12 | .3 | .67 |
| Image condition | .20 | .13 | .0 | .71 |
| Text condition | .25 | .12 | .0 | .75 |
| Total | .22 | .13 | .0 | .78 |

Table 5: lexical influence of the input text on the free description task (pre-test)

A one-way ANOVA with the degree of lexical overlap as dependent variable and the experimental conditions as independent variable confirms that this lexical impact of the input text on the answers of the participants is significant ($F_{(3,489)}$= 6.502, p < .001). Further post-hoc comparisons show that only the differences between the control condition and the text condition on the one hand and the image condition and the text condition on the other are significant (respectively p < .001 and p < .01).

| | **Lexical influence of the input text on the free description task (Pre-test)** | | | |
|---|---|---|---|---|
| | Mean score | SD | Min | Max |

| | | | | |
|---|---|---|---|---|
| Control condition | .21 | .15 | .0 | .78 |
| Full condition | .24 | .14 | .0 | .86 |
| Image condition | .25 | .19 | .0 | .85 |
| Text condition | .25 | .16 | .0 | .88 |
| Total | .24 | .16 | .0 | .88 |

Table 6: lexical influence of the input text on the free description task (post-test)

This lexical influence of the text seems however to disappear in the post-test, as suggested by table 6. This tendency is confirmed by a one-way ANOVA with the degree of lexical overlap as dependent variable and the experimental conditions as independent variable ($F_{(3,295)}$= .922, p=.430.).

*4.2 Picture association task*

After the open question about the description of Belgian federalism, the respondents were asked to choose one image that they would spontaneously associate with Belgian federalism both in the pre-test and in the post-test. No other guidelines were given. Fifteen images were presented to them in a random order to avoid any primacy effect (Figure 1). One of them was an “open” one (the number 15 below but it was randomized in both tests).

**Figure 1: The fifteen images shown to the respondents (pre-test and post-test)**

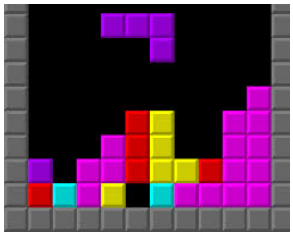
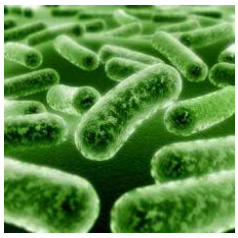
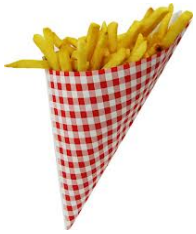
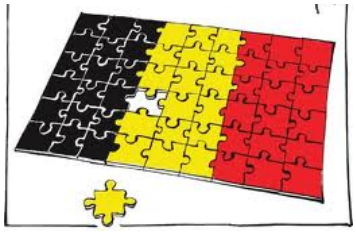
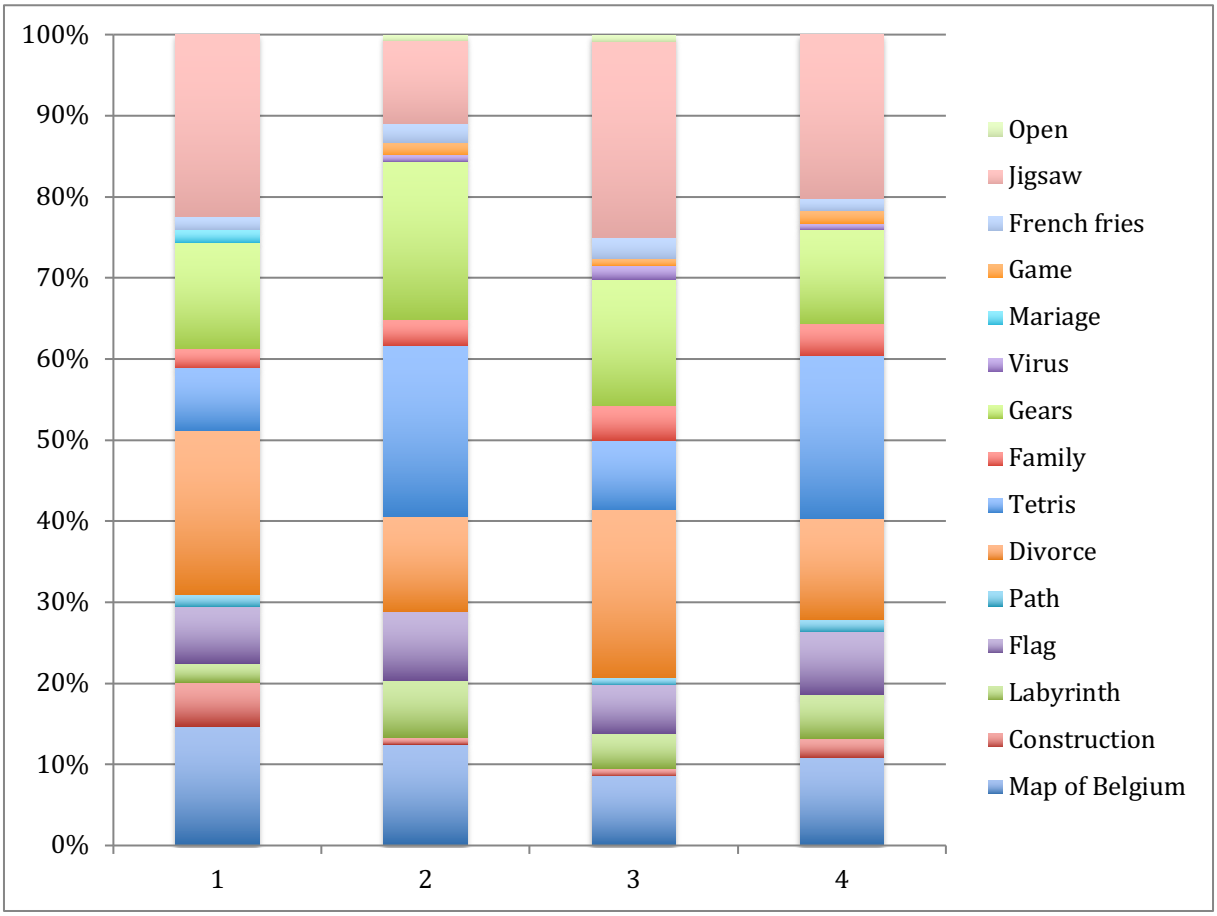
| | | |
|---|---|---|
| ☐1  | ☐2  | ☐3  |
| ☐4  | ☐5  | ☐6   |
| ☐7  | ☐8  | ☐9  |
| ☐10  | ☐11  | ☐12   |
| ☐13  | ☐14  | ☐15 |

Figure 2 shows the results for the pre-test. Some interesting findings come out quite strikingly. First of all, the two images – map and flag – related to Belgium are not the most

frequently chosen images. Respectively they account for 11,8% and 7,4% of the grand total, which ranks them at the fifth and the sixth position. This means that other images are more spontaneously associated to Belgian federalism than typical symbols of Belgium. Among these other images, the image of the Tetris stands an interesting position. It is indeed the most frequently chosen image by the full condition respondents (Q2) that is those who read the text and the image (21,1%) and by the text condition respondents (Q4) that is who just read the text (20,2%).

**Figure 2: Image (pre-test)**



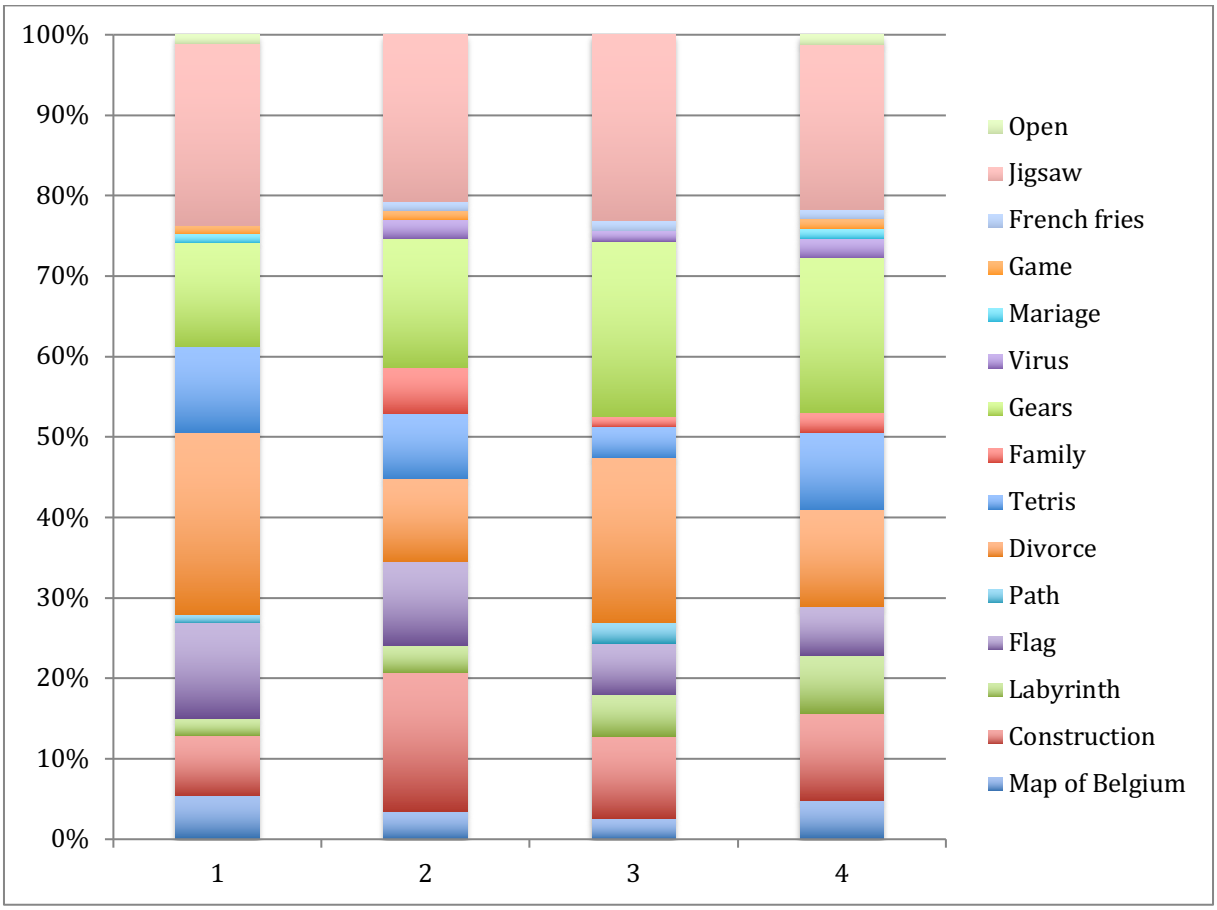

In the control condition (Q1) and in the image condition (Q3), less than 1 out 10 respondents chose the Tetris. By contrast, the image of the divorce gets the reverse distribution: 1 out of 5 respondents of the control group and of the group who saw only the image chose the image of the divorce, whereas 1 out of 10 for the two treatment groups with the text. The Tetris image had therefore a strong appeal for those who read the text, but much less for those who did not read it, or just saw the image but without the text. One of the reasons might the title of the text itself “The Belgian Tetris”. What’s more, to explain why the image only had no impact (in comparison with the control group), it might also be a matter of generation, as the students who were surveyed are unlikely to have ever played with Tetris, which was one of the first games on the first generation of portable computer devices. Thus the mere fact of seeing a Tetris (but without seeing the name Tetris) was not sufficient to link it to Belgian federalism.

Beside the images of Tetris and divorce, an image that was also often chosen is the image of the jigsaw. Interestingly, this image is chosen by over 20% of the respondents in three groups: control condition, image condition and text condition but not in the full condition where only 10% of the respondents chose it. This difference is significant and seems to

demonstrate that those who had the strongest treatment moved to other visual representations of Belgian federalism. The image of the Tetris is one of them (but then similarly to the text condition), but also the image of gears. Almost 20% of the full condition chose the gears, whereas it decreased to 15% for the group image only, 13% for the control group and 11% for the group text only. Thus reading the text and seeing the image moved the respondents into an understanding of Belgian federalism in terms of its mechanics, i.e. its internal and intricate functioning with a complex distribution of powers, rather than in an image of personal relations. This complexity is also suggested, even though in a lesser extent, in the choice of the labyrinth by 7% of the group text + image, 5% text only, 4% image only, and 2% control group.

This impact of the text (and the image in combination with the text) on the representation, through association, of Belgian federalism in terms of institutional matters is also confirmed by the fact already mentioned that respondents of the group text + image and the group text only chose significantly less the image of the divorce, which is however the archetypical image of Belgian federalism. It is therefore interesting to note that the treatment had an impact at least on the short term. We now have to turn to the post-test results to assess its potential influence over time.

**Figure 3: Images (post-test)**




The Figure 3 offers a quite different overall distribution. First of all the Tetris lost much of its appeal for the respondents who had in the pre-test the full condition and the text condition, it went down respectively from 21,1% to 8,0% and from 20,2% to 9,6%. Meanwhile in the control condition, the Tetris got slightly more support: from 7,8% to 10,8%. Thus the strong impact of the Tetris treatment was short-lived on the association of Belgian federalism with a

Tetris. What's more, while in the pre-test the full condition was not so much associated with the jigsaw, in the post-test this image comes first for all the groups.

Nonetheless, we can still find some interesting differences between the groups. The most striking one is about the divorce image. We find basically the same distribution in the pre- and in the post-test: strong impact in the control condition and in the image condition (both over 20%), weaker impact in the full condition and in the text condition (both around 10%). The construction image, which was hardly present in the pre-test, with only 2,4% in total, is now ranked fourth, and even second in the full condition with 17,2%. In combination with the results for the gears image, we find a significant difference the control condition and the treatment conditions: whereas the former has only 20% who chose the construction or the gears, the latter have over 30% who chose these two images. This points out that the treatment, while it had a short-lived impact on the Tetris specifically, has an underlying influence on the visual representation of Belgian federalism. Two dynamics can be captured here: in the control condition, respondents are more likely to put forward a representation of Belgian federalism in an identity-oriented approach (including typical symbols of Belgium), whereas the treatment groups (and in particular those including the text condition) are more likely to opt for a representation in a system-oriented approach. This finding needs to be further refined trough the analysis of the free description task.

*4.3 Free description task*

In the analysis of the free description task, we adopted two different protocols, respectively a linguistic protocol and political science one. These two protocols are described respectively in the sections 4.3.1 and 4.3.2.

4.3.1 LINGUISTIC ANALYSIS

The main objective of the linguistic analysis is to determine to what extent the participants from the different experimental conditions talk differently about Belgian federalism when having been exposed to the Tetris metaphor. To sort this out, the descriptions of the participants from the four experimental conditions were concatenated into 8 different subcorpora, 4 for the pre-test stage and 4 for the post-test stage.

| | **Pre-test** | **Post-test** |
|---|---|---|
| Control condition | 5.406 words | 3.247 words |
| Full condition | 6.469 words | 3.282 words |
| Image condition | 4.972 words | 2.678 words |
| Text condition | 6.199 words | 2.919 words |

Table 7: size of the subcorpora (N words)

To measure the impact of the Tetris metaphor, two different kinds of analyses have been performed, a keyword analysis on the one hand and a domain analysis on the other. The results of these analyses are presented in the sections. 4.3.1.2 and 4.3.1.3. But before we can turn to the discussion of these results, it is important to interpret the possible entailments of the Tetris metaphors in order to determine to what extent possible differences between the ways in which the participants from the different experimental conditions talk about Belgian federalism can be related to the Tetris metaphor.

**4.3.1.1 Deconstructing the Tetris**

In this section, we discuss the relevant entailments of the Tetris metaphor when applied to the domain Belgian federalism. To put it another way, what are the conceptual reasons that motivate the use of this metaphor by a journalist in a natural context and what might be its

conceptual consequences on the citizens' understanding of the state reform and on Belgian federalism. What are the conceptual domains this metaphor echoes back to?

1) Firstly, Tetris is a **game**, and more specifically a **puzzle game**. Applied to the domain of politics, this mapping highlights to notion of complexity of the system. More specifically, it is complicated to get the right blocks (in this case the different state competences) at the right place (in this case the different federal entities).
2) When concentrating on the game's scenario, we can identify different **levels**, referring to the different federal entities, and different **blocks**, e.g. the competences, moving down from the higher level (federal government) to the lower level (the regional governments). These notions of blocks and levels relates to the domain of **construction,** which is reinforced by the fact the combination of the blocks at the lower level visually leads to the construction of a building. When applying this idea of construction to Belgian federalism, some more specific entailments can be derived:
    a. The construction process only concerns the lower level. When transposed to Belgian federalism, this would mean that the construction process is limited to the regional state entities;
    b. This, in turn, suggests that the construction of the regional state entities occurs at the expense of the central federal state, which is falling apart (or losing blocks);
3) Besides these two main interpretations, some more specific entailments could be indirectly derived, such as:
    a. The fact that it is impossible to win this game. This could suggest that the further federalization of the state is somehow an inevitable process;
    b. The fact this process is unidirectional (from the higher level to the lower level), whereas in the framework of the Belgian federal system, the reverse movement is possible, e.g. moving competences from the lower level to the higher level (refederelisation process in Belgian terms)

To verify the salience of these implications, we conducted a small-scale control experiment among 86 citizens (M:60, W: 26), distributed across different age categories (age 19-25: 27; age 25-40: 39; age 40-65: 39; age > 65: 16), and region categories (Wallonia: 65; Flanders: 6; Brussels: 15). For this experiment, the subjects had to express their opinion on a ten point Likert-scale (1 = total disagreement; 10 = total agreement) about 8 statements related to the possible implications of the Tetris metaphor exposed above. Among these 8 statements, 5 were related to the construction domain (see the examples 1 to 5), 2 to the game domain (see the examples 6 and 7) and one focused on the idea of complexity of the system (see (8)).

(1) Belgian federalism is like a Tetris game, it's a building including different levels (=different state entities) ;
(2) Belgian federalism is like a Tetris game, the federal entities are constructed step by step.
(3) Belgian federalism is like a Tetris game, it's constructed by moving blocks (=competences) from one level to the other.
(4) Belgian federalism is like a Tetris game, each block has to find its right place.
(5) Belgian federalism is like a Tetris game, the construction of the lower level implies the deconstruction of the higher level.
(6) Belgian federalism is like a Tetris game, it's a competition between different players (=state entities)
(7) Belgian federalism is like a Tetris game, it's a game you can't win.
(8) Belgian federalism is like a Tetris game, it's a complex system requesting a lot of thinking to work properly.

The consistency of the participants' answers was derived by calculating the Cronbach's alpha. The results point to an acceptable level of consistency (Cronbach's alpha = .747) and suggest the participants evaluated these different statements in a reliable way.

Table 8 summarizes the reactions of the citizens on the different statements. It turns out that the complexity statement reaches the highest level of agreement, followed by the statements related to the construction domain. On the contrary, the two statements related to the game domain appear to be negatively evaluated by the participants.

| | **Mean score** | **SD** |
|---|---|---|
| Statement 1 ('bulding including different levels') | 6.95 | 2.75 |
| Statement 2 ('the federal entities are constructed step by step') | 7.05 | 2.3 |
| Statement 3 ('moving blocks (=competences) from one level to the other') | 6.93 | 2.49 |
| Statement 4 ('each block has to find its right place') | 6.61 | 2.75 |
| Statement 5 ('the construction of the lower level implies the deconstruction of the higher level') | 6.3 | 2.99 |
| Statement 6 ('competition between different players') | 4.8 | 2.82 |
| Statement 7 ('a game you can't win') | 4.71 | 2.97 |
| Statement 8 ('complex system') | 7.92 | 2.33 |

Table 8: evaluation scores of the different statements

A series of paired t-tests performed among the different statements confirms these tendencies. While the complexity statement is significantly different from all other statements (except for statement 5), the different construction statements do not differ from each other, but do significantly differ from the statements related to the game domain (see table 9 for a summary of the p-values of the t-tests). These results suggest that when prompted to think about the mapping between the Tetris metaphor and Belgian federalism, the citizens tend to make sense of it in terms of complexity of the system and of an on-going construction process of the federal entities.

| | **Stat. 1** | **Stat.2** | **Stat.3** | **Stat.4** | **Stat.5** | **Stat.6** | **Stat.7** | **Stat.8** | *Mean* |
|---|---|---|---|---|---|---|---|---|---|
| **Stat. 1** | - | .796 | .934 | .334 | .080 | .000 | .000 | .000 | *6,95* |
| **Stat.2** | .796 | - | .702 | .104 | .030 | .000 | .000 | .007 | *7,05* |
| **Stat.3** | .934 | .702 | - | .416 | .054 | .000 | .000 | .001 | *6,93* |
| **Stat.4** | .334 | .104 | .416 | - | .572 | .000 | .000 | .000 | *6,61* |
| **Stat.5** | .080 | .030 | .054 | .572 | - | .000 | .000 | .000 | *6,3* |
| **Stat.6** | .000 | .000 | .000 | .000 | .000 | - | .784 | .000 | *4,8* |
| **Stat.7** | .000 | .000 | .000 | .000 | .000 | .784 | - | .000 | *4,71* |
| **Stat.8** | .000 | .007 | .001 | .000 | .000 | .000 | .000 | - | *7,92* |
| ***Mean*** | *6,95* | *7,05* | *6,93* | *6,61* | *6,3* | *4,8* | *4,71* | *7,92* | - |

Table 9: p-values of paired t-test

These findings are important for the analysis of the description data. Indeed, when wondering what the impact of the Tetris metaphor might be on the description task, it would probably be quite ungrounded to expect that the citizens begin to talk about Belgian federalism by explicitly using the Tetris metaphor in their descriptions. But these results suggest, that the influence of the Tetris metaphor might lead the citizens to refer more often to these notions of complexity of the system and of construction processes in their descriptions.

Keeping these premises in mind, we will now turn to the linguistic analysis of the free description task, based on a keyword analysis on the one hand and (see 4.3.1.2) on a domain analysis on the other (see 4.3.1.3).

#### 4.3.1.2 Keyword analysis

Keyword analysis is a standard function of the software Wordsmith Tools 6 (Scott 2012), aiming at comparing two text corpora and extracting the lexical items that are prominently present in one of the corpus in comparison to the other. In order to determine to what extent the participants that had been exposed to input material talked differently about Belgian federalism, various keyword analyses have been performed using the control condition corpus as reference corpus. The results of these analyses are summarized in the tables 10 to 12 for the pre-test descriptions and tables 13 to 15 for the post-test descriptions.

The blue-printed words are the words that are significantly more frequent in the reference corpus (control condition corpus). The red-printed words are the words that are significantly more frequent in the corpora that were compared to it (respectively the full condition corpus in table 10, the image condition corpus in table 11 and the text condition corpus in table 12). The level of significance has been calculated on the basis of log-likelihood ratio and has been set at 0.05.

**Table 10 - Comparison of the full condition corpus to the control condition corpus (PRE-TEST)**

| Key word | Freq. PRQ2 | % PRQ2 | Freq. PRQ1 | % PRQ1 | Keyness | P |
|---|---|---|---|---|---|---|
| ETAT | 116 | 1.68 | 39 | 0.68 | 27.30 | *** |
| DOMAINES | 12 | 0.17 | 0 | 0.00 | 14.51 | *** |
| COMPÉTENCES | 117 | 1.70 | 53 | 0.93 | 14.42 | *** |
| POUVOIRS | 65 | 0.94 | 25 | 0.44 | 11.81 | *** |
| FÉDÉRÉS | 14 | 0.20 | 1 | 0.02 | 11.16 | *** |
| NOUVELLES | 9 | 0.13 | 0 | 0.00 | 10.88 | *** |
| FONCTIONS | 9 | 0.13 | 0 | 0.00 | 10.88 | *** |
| EXERCÉES | 7 | 0.10 | 0 | 0.00 | 8.46 | ** |
| ÉTAT | 71 | 1.03 | 34 | 0.59 | 7.39 | ** |
| EMPLOI | 6 | 0.09 | 0 | 0.00 | 7.25 | ** |
| SNCB | 6 | 0.09 | 0 | 0.00 | 7.25 | ** |
| CERTAINS | 18 | 0.26 | 4 | 0.07 | 7.23 | ** |
| EXEMPLE | 13 | 0.19 | 2 | 0.03 | 7.10 | ** |
| AUTRES | 22 | 0.32 | 6 | 0.10 | 6.99 | ** |
| OCCUPE | 10 | 0.15 | 1 | 0.02 | 6.97 | ** |
| PARTAGÉES | 10 | 0.15 | 1 | 0.02 | 6.97 | ** |
| FLAMANDE | 4 | 0.06 | 13 | 0.23 | -6.85 | ** |
| PAYS | 31 | 0.45 | 47 | 0.82 | -7.01 | ** |
| BELGIQUE | 42 | 0.61 | 61 | 1.07 | -8.03 | ** |
| SYSTÈME | 26 | 0.38 | 43 | 0.75 | -8.05 | ** |
| NOUS | 3 | 0.04 | 13 | 0.23 | -8.75 | ** |
| EST | 147 | 2.13 | 180 | 3.15 | -12.67 | *** |

* p<0.05; ** p<0.01; *** p<0.001

**Table 11 - Comparison of the image condition corpus to the control condition corpus (PRE-TEST)**

| Key word | Freq. PRQ3 | % PRQ3 | Freq. PRQ1 | % PRQ1 | Keyness | P |
|---|---|---|---|---|---|---|
| DOMAINES | 14 | 0.27 | 0 | 0.00 | 20.67 | *** |
| OCCUPE | 12 | 0.23 | 1 | 0.02 | 11.96 | *** |
| IMMIGRATION | 7 | 0.13 | 0 | 0.00 | 10.33 | ** |
| FÉDÉRÉ | 6 | 0.11 | 0 | 0.00 | 8.85 | ** |
| SÉCURITÉ | 6 | 0.11 | 0 | 0.00 | 8.85 | ** |
| CHARGE | 6 | 0.11 | 0 | 0.00 | 8.85 | ** |
| FÉDÉRAL | 74 | 1.41 | 49 | 0.86 | 7.61 | ** |
| POLICE | 5 | 0.10 | 0 | 0.00 | 7.38 | ** |
| IMPORTANCE | 5 | 0.10 | 0 | 0.00 | 7.38 | ** |

| | | | | | | |
|---|---|---|---|---|---|---|
| COMPÉTENCE | 8 | 0.15 | 1 | 0.02 | 6.83 | ** |
| EN | 72 | 1.37 | 121 | 2.12 | -8.83 | ** |
| BELGIQUE | 29 | 0.55 | 61 | 1.07 | -9.09 | ** |
| POUVOIR | 22 | 0.42 | 53 | 0.93 | -10.72 | ** |

* p<0.05; ** p<0.01; *** p<0.001

**Table 12 - Comparison of the text condition corpus to the control condition corpus (PRE-TEST)**

| Key word | Freq. PRQ4 | % PRQ4 | Freq. PRQ1 | % PRQ1 | Keyness | P |
|---|---|---|---|---|---|---|
| ETAT | 106 | 1.62 | 39 | 0.68 | 23.97 | *** |
| DOMAINES | 13 | 0.20 | 0 | 0.00 | 16.32 | *** |
| RÉGIONS | 133 | 2.03 | 68 | 1.19 | 13.69 | *** |
| COMMUNAUTÉS | 122 | 1.86 | 64 | 1.12 | 11.52 | *** |
| ENSEIGNEMENT | 19 | 0.29 | 3 | 0.05 | 10.91 | *** |
| TETRIS | 8 | 0.12 | 0 | 0.00 | 10.04 | ** |
| PROFIT | 8 | 0.12 | 0 | 0.00 | 10.04 | ** |
| PEU | 22 | 0.34 | 5 | 0.09 | 9.38 | ** |
| ÉTAT | 72 | 1.10 | 34 | 0.59 | 9.32 | ** |
| ÉTÉ | 30 | 0.46 | 9 | 0.16 | 9.27 | ** |
| DÉSORMAIS | 7 | 0.11 | 0 | 0.00 | 8.79 | ** |
| CRÉÉ | 7 | 0.11 | 0 | 0.00 | 8.79 | ** |
| EXEMPLE | 13 | 0.20 | 2 | 0.03 | 7.59 | ** |
| CHÔMAGE | 6 | 0.09 | 0 | 0.00 | 7.53 | ** |
| ÉTAIT | 10 | 0.15 | 1 | 0.02 | 7.38 | ** |
| PLUS | 67 | 1.02 | 34 | 0.59 | 7.01 | ** |
| PARTIE | 17 | 0.26 | 4 | 0.07 | 7.00 | ** |
| SYSTÈME | 26 | 0.40 | 43 | 0.75 | -6.91 | ** |
| BELGIQUE | 41 | 0.63 | 61 | 1.07 | -7.21 | ** |
| GOUVERNEMENT | 4 | 0.06 | 14 | 0.24 | -7.34 | ** |
| POLITIQUE | 9 | 0.14 | 25 | 0.44 | -10.20 | ** |
| NIVEAU | 3 | 0.05 | 16 | 0.28 | -11.64 | *** |
| PAYS | 19 | 0.29 | 47 | 0.82 | -16.48 | *** |
| EST | 121 | 1.85 | 180 | 3.15 | -21.62 | *** |

* p<0.05; ** p<0.01; *** p<0.001

When globally looking at the lexical differences between the control corpus and the other corpora, it is interesting to notice that the words that emerge from the control corpus are general words such as system, Belgium, country or government. On the contrary, the participants who have been exposed to a stimulus, be it a visual one, textual one or both tend to mention the words “competences” (‘comptences’) or “domains” and to explicitly mention some of these state competences (‘SNCB’ and ‘Emploi’ in the full condition corpus; ‘immigration, ‘sécurité’ and ‘police’ in the image condition corpus and ‘enseignement’ of ‘chômage’ in the text condition corpus). When focusing on the partcipants who have been exposed to the textual stimulus, some other words significantly emerge such as “état” (state), as well in the full as in the text condition, or “régions”, communautés and Tetris in the text condition.

The results of the keyword analyses suggest that the exposure to the input material, be it the textual material, the visual material or both, tend to significantly use different words in their own descriptions of Belgian federalism. However, more fine-grained analysis might suggest that the diverging nature of their descriptions is directly related to the type of material they have been exposed to (furhter work).

**Table 13 - Comparison of the full condition corpus to the control condition corpus (POST-TEST)**

| Key word | Freq. | % | Freq. | % | Keyness | P |
|---|---|---|---|---|---|---|

| | PRQ2 | PRQ2 | PRQ1 | PRQ1 | | |
|---|---|---|---|---|---|---|
| PROVINCES | 11 | 0.32 | 0 | 0.00 | 15.20 | *** |
| DIVISÉ | 9 | 0.26 | 1 | 0.03 | 7.32 | ** |

*<0.05; ** p<0.01; *** p<0.001

**Table 14 - Comparison of the iamge condition corpus to the control condition corpus (POST-TEST)**

| Key word | Freq. PRQ3 | % PRQ3 | Freq. PRQ1 | % PRQ1 | Keyness | P |
|---|---|---|---|---|---|---|
| OCCUPENT | 7 | 0.25 | 0 | 0.00 | 11.14 | *** |
| PROVINCES | 5 | 0.18 | 0 | 0.00 | 7.96 | ** |
| RÉSULTAT | 5 | 0.18 | 0 | 0.00 | 7.96 | ** |
| PROPRE | 8 | 0.28 | 1 | 0.03 | 7.66 | ** |
| PARTAGENT | 13 | 0.46 | 4 | 0.12 | 6.95 | ** |

* p<0.05; ** p<0.01; *** p<0.001

**Table 15 - Comparison of the text condition corpus to the control condition corpus (PRE-TEST)**

| Key word | Freq. PRQ4 | % PRQ4 | Freq. PRQ1 | % PRQ1 | Keyness | P |
|---|---|---|---|---|---|---|
| DÉFENSE | 5 | 0.16 | 0 | 0.00 | 7.46 | ** |

* p<0.05; ** p<0.01; *** p<0.001

When focusing on the post-test one observes that most of the differences have disappeared (except for some isolated words such as 'provinces') suggesting that descriptions of the participants that do not fundamentally differ from each other in the post-test and consequently that any form of influence of the input material on the perceptions of Belgian federalism is not a long-lasting influence.

#### 4.3.1.3 Domain analyses

The results of the keyword analyses suggest that the exposure to the input material, be it the textual material, the visual material or both, tend to significantly use different words in their own descriptions of Belgian federalism. However, to try and determine the more specific influence of the Tetris metaphor, we wanted to assess to what extent exposure to this metaphor might lead the participants to differently frame their description of Belgian federalism. To this end, we performed a so-called domain analysis. For this domain analysis, we identified 5 domains related to the Tetris metaphor that correspond to the domains identified in section 4.3.1.1 (Deconstructing the Tetris). The five domains are the game domain, the complexity domain, the construction domain, the deconstruction domain and the transfer domain. We subsequently built an onomasiological profile of each domain, consisting a list of lemmas and constructions related to that domain. The figures 3, 4, 5, 6 and 7 illustrate these onomasiological profiles.

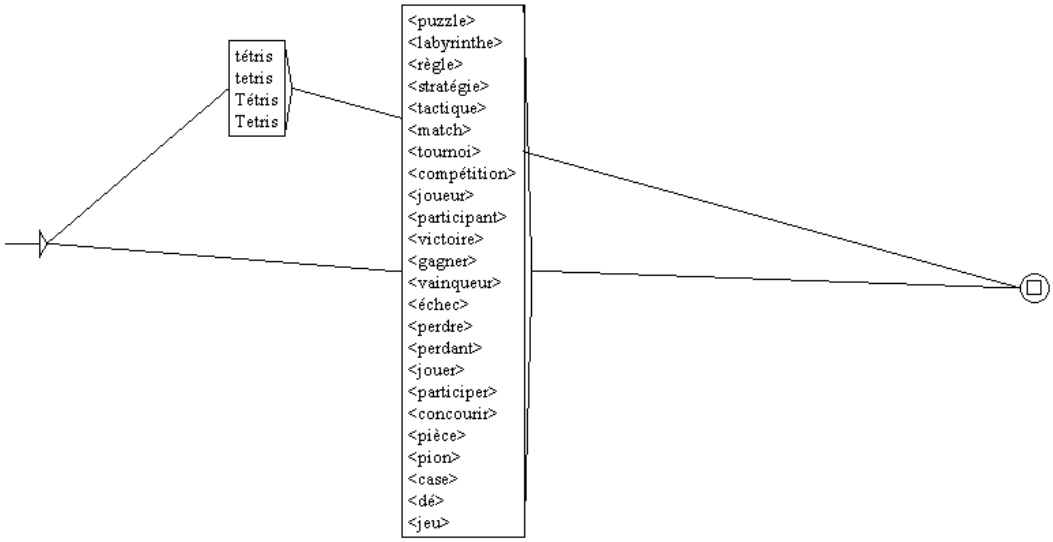



Fig. 3: onomasiological profile of the game domain

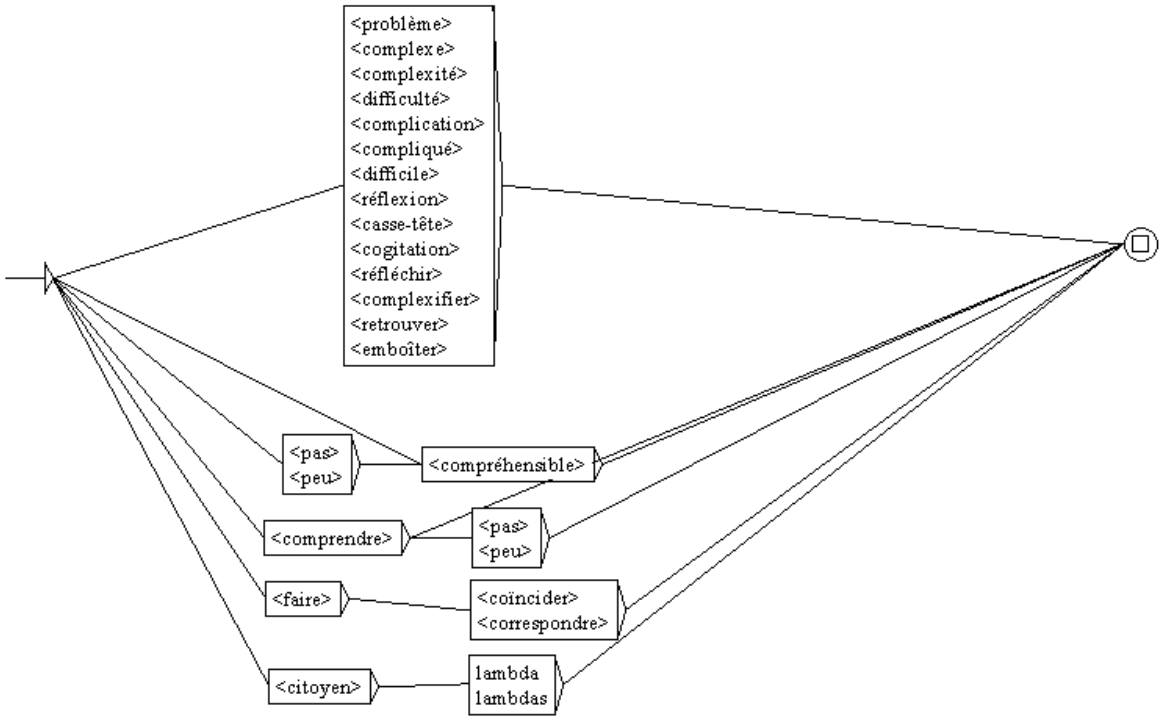



Fig. 4: onomasiological profile of the complexity domain

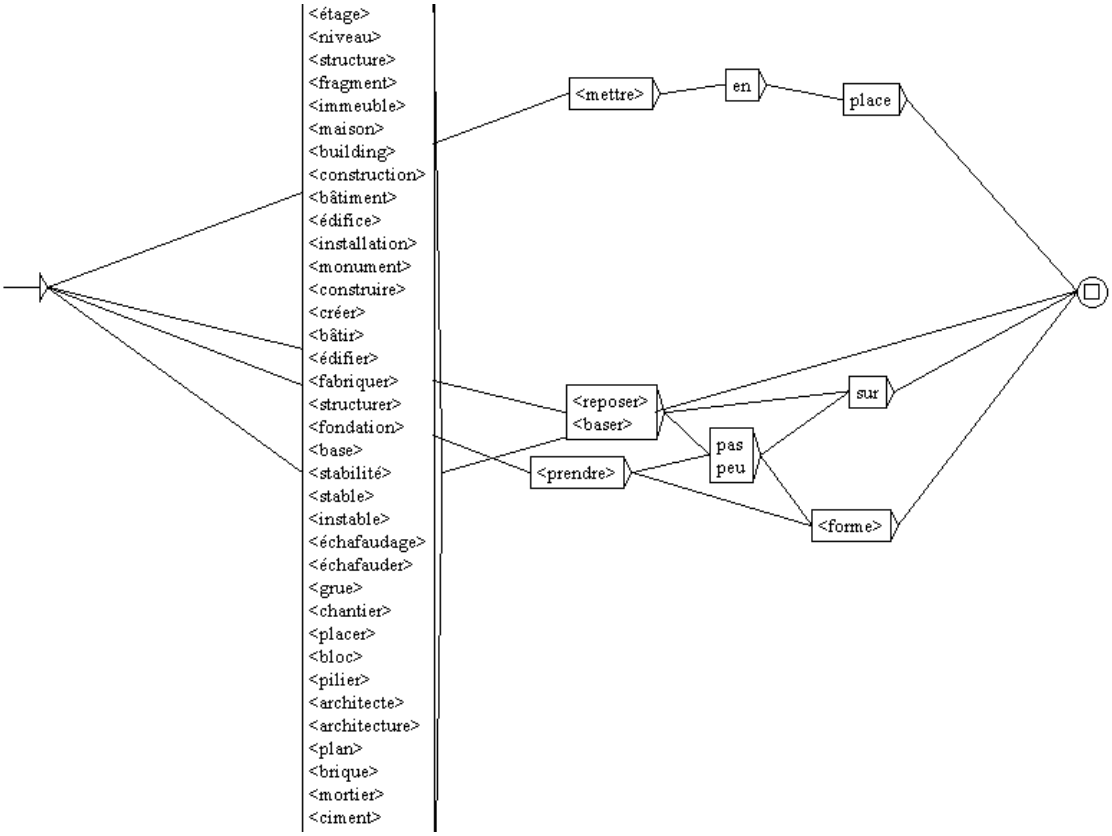



Fig. 5: onomasiological profile of the construction domain

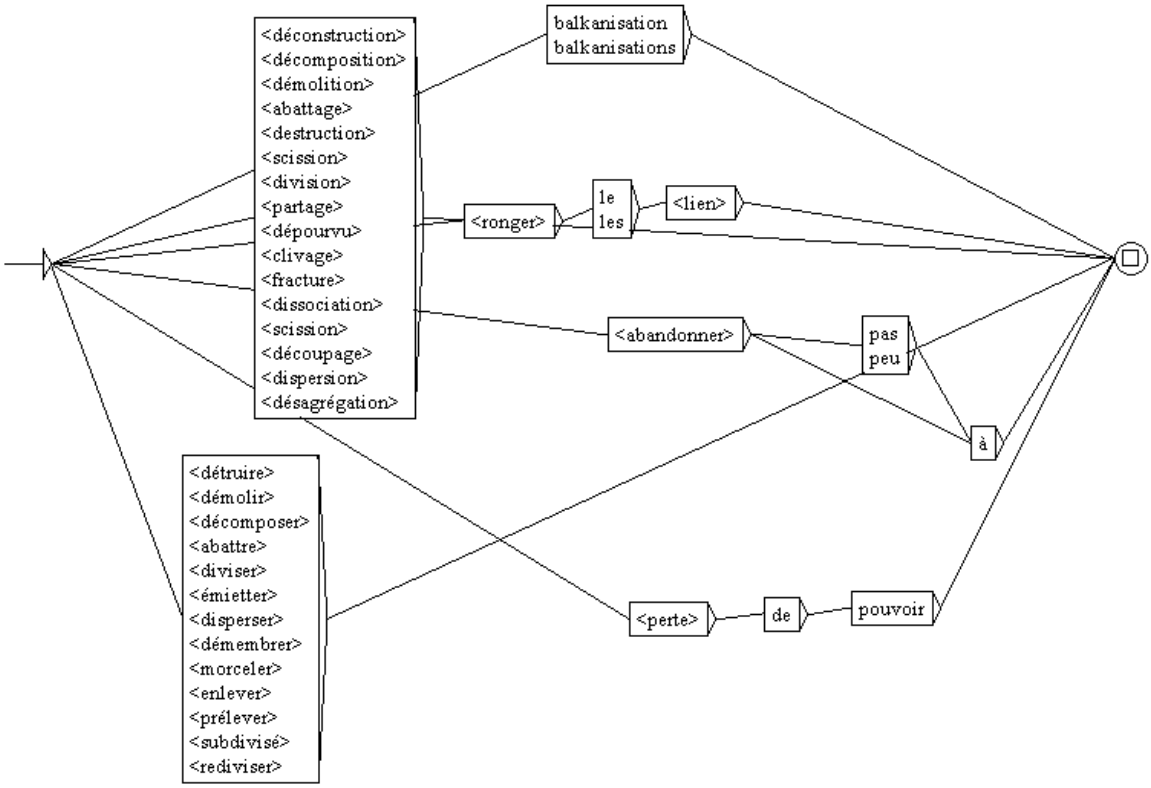



Fig. 6: onomasiological profile of the deconstruction domain

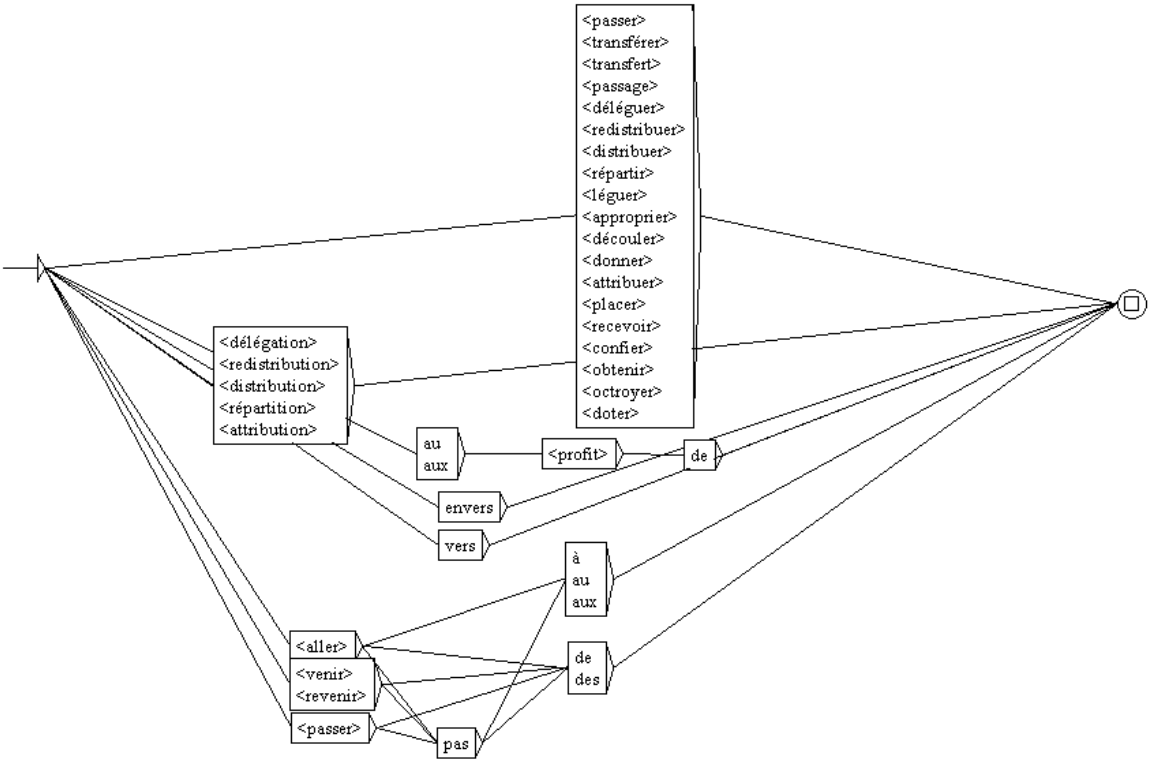



Fig. 7: onomasiological profile of the transfer domain

Using the corpus processor Unitex, we subsequently calculated the frequency of each profile by running concordance analyses. The results of these analyses are summarized in Table 16 and Figure 8 for the pre-test and Table 17 and Figure 9 for the post-test.

| | Control | Full | Image | Text | *Chi-square* | *df* | *p-value* |
|---|---|---|---|---|---|---|---|
| Dom1_Game | 4 | 12 | 3 | 18 | *16.297* | *3* | *0.00098* |
| Dom2_Complexity | 22 | 15 | 26 | 5 | *14.941* | *3* | *0.00186* |
| Dom3_Construction | 41 | 37 | 33 | 55 | *6.627* | *3* | *0.08478* |
| Dom4_Deconstruction | 47 | 35 | 48 | 63 | *8.181* | *3* | *0.04241* |
| Dom5_Transfer | 31 | 89 | 33 | 78 | *47.009* | *3* | *0.0001* |

Table 16: Frequency of the different onomasiological profiles in the different subcorpora (pre-test)

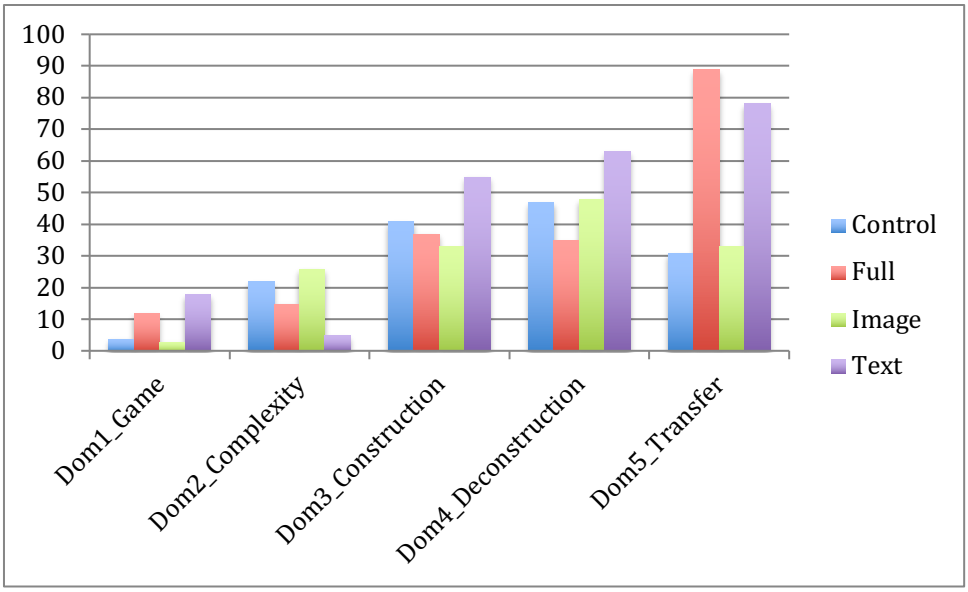


Figure 8: Frequency of the different onomasiological profiles in the different subcorpora (pre-test)

These results suggest that the participants from the different experimental conditions do indeed use different frames of reference to describe their own perceptions of Belgian federalism. These differences are briefly discussed below:

- The subjects who were exposed to the textual material (full condition and text condition) tend to behave similarly. They tend to significantly frame their descriptions around the notion of transfer of competence from one state entity to the other. To a lesser extent, both groups more frequently refer to the game domain. This is probably due to the explicit references to the notion of Tetris in the productions of the subjects from the full and text conditions. Interestingly these references to the game domain do not emerge in de the descriptions of the subjects from the picture condition.
- The subjects who were not exposed to the textual stimulus tend to more frequently refer to the notion of complexity. This appears to be more frequently the case in the descriptions of the subjects from the picture condition. Interestingly, this reference to the complexity of the system is significantly less prominent in the productions of the subjects who have been exposed to the textual material. Comparing this observation to the high frequency of the notion of transfer of competence suggests that reading the text helps the subjects understand how Belgian federalism is working.
- All the subjects frequently refer to the construction domain in their productions. This tendency appears to be more prominent in the descriptions of the subjects from the text condition, but this difference is not significant.
- Finally, the subjects in the text condition also tend to emphasize the notion of deconstruction of the central federal state at the expense of the federal entities.

| | Control | Full | Image | Text | *Chi-square* | *df* | *p-value* |
|---|---|---|---|---|---|---|---|
| Dom1_Game | 4 | 6 | 1 | 6 | *3.941* | *3* | *0.26790* |
| Dom2_Complexity | 8 | 12 | 9 | 4 | *3.97* | *3* | *0.26472* |
| Dom3_Construction | 12 | 33 | 17 | 16 | *13.179* | *3* | *0.00426* |
| Dom4_Deconstruction | 26 | 29 | 18 | 25 | *2.653* | *3* | *0.44827* |
| Dom5_Transfer | 30 | 38 | 25 | 36 | *3.248* | *3* | *0.35494* |

Table 17: Frequency of the different onomasiological profiles in the different subcorpora (post-test)

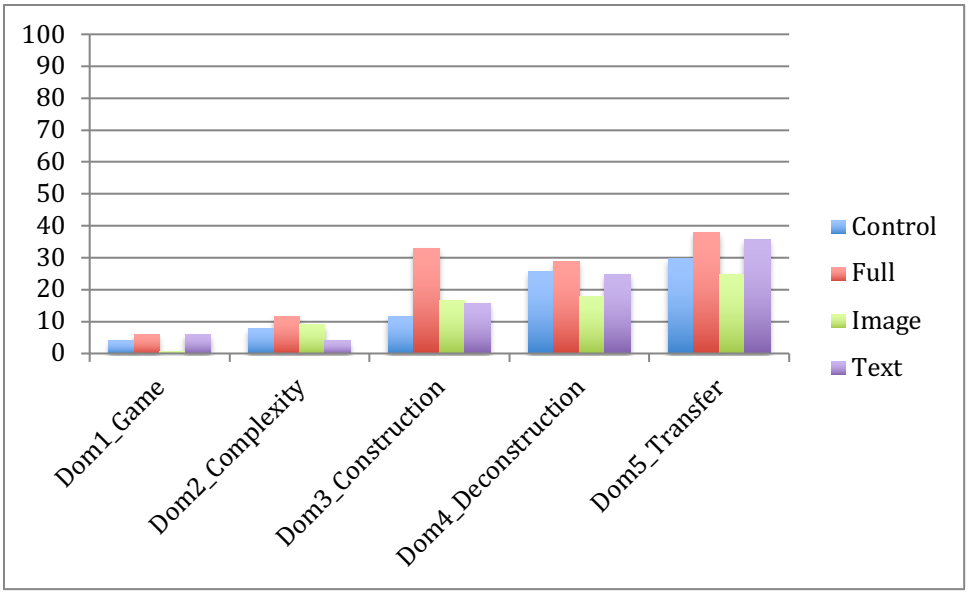


Figure 9: Frequency of the different onomasiological profiles in the different subcorpora (post-test)

Again, as has been observed earlier, the tendencies observed in the pre-test have disappeared in the post-test, suggesting that the Tetris metaphor has a direct influence on the citizens representations, but that this influence is fading away as time passes on (impact on textbase level and not on situation-model level?).

#### 4.3.2 POLITICAL SCIENCE ANALYSIS

In Belgium, federalism is mainly framed as a tension – or the result of this tension – between two language groups: Dutch-speakers and French-speakers. This linguistic dynamics is intrinsically linked to the question of identities both national and sub-national: Belgian, Flemish and Walloon, to name but the three main ones. Federalism in Belgium is indeed the response to the language- and identity-loaded conflicts that date back to the creation of Belgium (Deschouwer 2012). This therefore comes as no surprise that the perception of federalism in Belgium is mainly framed around linguistic and identity elements. In citizens' discourses the metaphor of a love relationship – between Flemings and Walloons – is the most frequent metaphor, along with the metaphor of Belgian federalism as a – malfunctioning – machine (Reuchamps and Perrez 2012).

Federalism in Belgium is thus often portrayed in terms of inter-community relations between the Flemings and the Francophones. The issue of the distribution of powers between the substate governments, that is the Regions and the Communities, comes always as a consequence of the tensions between the language groups. We therefore need to check whether our treatment, which puts the emphasis on the distribution of powers rather than on the identity dynamics, has an impact of the perception of Belgian federalism.

To this end, we asked the respondents an open question: "In ten lines and in your own words, we invite you to describe the Belgian federalism". Each response was coded according to 32 variables, grouped along six dimensions. The first two variables were not included in any specific dimension: the first one is the presence of a text and the second one is whether there is plagiarism (from the Internet or elsewhere). The third and fourth variables tackle the historical dimension: whether there is a reference to 1830-1831 (creation of Belgium) or not and to 1970 (starting point of the federalization of Belgium). The second dimension refers to the institutions: federal (but not federalism), unitary, central/national, substate, community, region, province/commune. The identity dimension follows with

references to Belgium and its related adjectives, Flanders, Wallonia, Brussels, Wallonia-Brussels and Europe. Next to the identity dimension, we have coded the references to the linguistic dimension: Dutch-speaking, French-speaking and German-speaking. The fifth dimension relates to the organizational matters: distribution of competences/powers, autonomy, centripetal nature, centrifugal nature and the number of specific competences mentioned in the response. The last dimension seeks to grasp the nature of the federal dynamics in Belgium as expressed by the respondents: federalism is perceived positively, federalism is perceived negatively, complexity, conflicts, linguistic/cultural nature, community nature and territorial nature.

The construction of specific response-variables implies, to some extent, a subjective interpretation of the response. In order to ensure the consistency of the variables, two independent coders were asked to code all the responses. They had to use the common coding sheet to evaluate each single response. If our codes are reliable, anyone should be able to code each response and come to the same results (Cohen 1960, Dunn 2004, Stemler 2004, Gwet 2010). This is confirmed by the extremely high inter-coder reliability coefficients for the two independent coders (in most cases the inter-rater Cohen's Kappa equals 1). The used variables are of course simple and thus consistent enough to minimize subjective interpretations.

A first way to assess the impact of the treatment is to check for the differences between the four different groups both in pre- and post-test. Table XXX shows the statistically significant differences for the pre-test and there are some striking ones. First of all, out of the 32 variables, only 19 have frequency that is statistically significantly different between the groups. When we dig into these differences, the main difference occurs between, on the one hand, the variables that capture the institutional dimension and, on the other hand, the variables that capture the identity dimension. The former – reference to FEDERAL*, reference to COMMUNITY*, reference to REGION* – are much more present in the responses of the students who have seen both the image and the text or the text only, while the latter – notably reference to BELG*, reference to FLA*, reference to WALLON* – is to be found significantly more in the responses of the control group. The group made of those who saw only the image shows a contrasting profile. Unlike the two other treatment groups, it does not score as high on the historical dimension and more specifically the date of 1970, the institutional dimension and the organizational dimension notably federalism as power-sharing and its centrifugal nature. Yet, it also differs from the control group on the identity dimension and the number of specific competences mentioned where this group "Image only" is very similar to the two other treatment groups.

**Table X**

| PRE-TEST | Q1 (Control group) | Q2 (Image+Text) | Q3 (Image only) | Q4 (Text only) |
|---|---|---|---|---|
| Reference to 1830-1831 | *0,0%* | 2,4% | *0,0%* | **6,3%** |
| Reference to 1970 | 5,6% | 15,2% | *,9%* | **30,5%** |
| Reference to FEDERAL* | *28,6%* | **45,6%** | **45,6%** | 37,5% |
| Reference to COMMUNITY* | *42,1%* | 64,0% | 52,6% | **71,1%** |
| Reference to REGION* | *49,2%* | 72,8% | 52,6% | **78,1%** |

| | | | | |
|---|---|---|---|---|
| Reference to BELG* | **46,8%** | 35,2% | 30,7% | *26,6%* |
| Reference to FLA* | **19,0%** | *6,4%* | 8,8% | 7,0% |
| Reference to WALLON* | **15,1%** | *5,6%* | 8,8% | 6,3% |
| Reference to BRUXELL* | **8,7%** | 3,2% | 3,5% | *1,6%* |
| Reference to Wallonia-Brussels | **2,4%** | *0,0%* | *0,0%* | *0,0%* |
| Federalism = power-sharing | *54,8%* | **76,0%** | 59,6% | 74,2% |
| Federalism = autonomy | **18,3%** | 12,0% | *5,3%* | 15,6% |
| Centrifugal nature | *10,3%* | 39,2% | 10,5% | **47,7%** |
| Centripetal nature | **7,1%** | 2,4% | 1,8% | *,8%* |
| Reference to one or more competence(s) | *6,3%* | **20,8%** | 19,3% | 20,3% |
| Negative perception of federalism | 12,7% | *4,8%* | **15,8%** | 13,3% |
| Federalism = complexity | **13,5%** | 7,2% | 12,3% | *4,7%* |
| Conflicts | 8,7% | 2,4% | **8,8%** | *1,6%* |
| Linguistic/cultural nature | **15,9%** | 4,0% | 4,4% | *1,6%* |

N = 493; results shown are signicant at a level of 0,05

These results confirm our initial expectation: without any treatment, respondents will tend to refer to Belgian federalism more in terms of identity than in terms of institutions. Previous analyses of metaphors in citizens' discourses showed two main metaphors in citizens' discourses: love relationship and – malfunctioning – machine (Reuchamps and Perrez 2012). The findings from the pre-test confirm that federalism in Belgium is mainly thought through identity lenses: it is a story of Belgians, Flemings and Walloons. The identity dimension is much more present in the responses of the control group than of the other groups. But in fact it is the contrast with these groups that is the most striking: the respondents of the treatment groups moved the focus of their definition of Belgian federalism to the institutions. Almost four respondents out of five under the text condition refer to the Regions whereas it is only one out of two under the control condition. The text had definitely an impact on the description of the Belgian federalism on the respondents who read it. Another clear impact is the reference to 1970, the starting point of the federalization of the country, which is six times more present in responses of the group that saw the text than the control group. The image in association with the text has also an impact. The results show that the full condition (Q2) and the text condition (Q4) display quite similar patterns in the way their members respond to the question how they describe Belgian federalism in their own words. More specifically, these two groups score very high on the institutional dimension as well as on the description of federalism as power-sharing and on the emphasis of its centrifugal nature.

When we turn to the analysis of the post-test responses the results are quite different. Only four variables show statistically significant differences between the groups. The effect of the

treatment was thus short-lived. Nonetheless there remains a difference between the control group and the treatment groups even if it is smaller in the post-test. The main difference is in the reference to Flanders and Flemings (14,8%) and to Wallonia and Walloons (12,3%) in the control group, which is almost inexistent in the three other groups, confirming the expectation that speaking of identities is the most intuitive way to describe Belgian federalism. The two other differences are somewhat more difficult to explain. The reference to the provinces and the local, i.e. the local level, especially in the responses of those who saw in the pre-test both the image and the text (12,6%) would suggest that federalism may be – wrongly – associated with the local level. Finally, the centrifugal nature is to be found more in the control group and the group who saw the text only. To be sure, this is an often-voiced feature of the Belgian federalism and it is not a surprise to see it present in some post-test responses. In the control group, there are more respondents in the post-test than in the pre-test who mention this dynamics; in the text condition, it was the inverse trend with more respondents taping on the centrifugal nature before than after.

**Table X**

| POST-TEST | Q1 (Control group) | Q2 (Image+Text) | Q3 (Image only) | Q4 (Text only) |
|---|---|---|---|---|
| Reference to PROVINCE*/COMMUNE* | *2,5%* | **12,6%** | 9,2% | 8,0% |
| Reference to FLA* | **14,8%** | 6,7% | 3,7% | *4,0%* |
| Reference to WALLON* | **12,3%** | 5,0% | 3,7% | *3,2%* |
| Centrifugal nature | 16,4% | 7,6% | *11,0%* | **21,6%** |

N = 475; results shown are significant at a level of 0,05

This preliminary analysis of the political impact of the treatment demonstrates a real impact on the three conditions in the short-term. This impact seems to have disappeared a few weeks later, but nonetheless we can still see the presence of the identity dimension. This finding emphasizes the main conclusion that we draw from a political science perspective of this experiment: the text and/or the image of the Tetris moved the main approach of Belgian federalism from an identity-loaded perspective to an institutions-based account. Whereas the respondents of the control group described federalism in terms of Belgians, Flemings and Walloons and of something complex, the respondents who received the treatment described the same object in terms of its institutions: Regions, Communities and their competences. To confirm this interesting finding, we need to develop a fairly more sophisticated analysis in order to make sure this difference between the two approaches is not a pattern found in general, regardless of the group differences.

We proceed in two steps on the pre-test dataset. The first step is to run a factor analysis on the 32 variables (31 in fact, as one variable – reference to Europe – had no occurrence) drawn from the open question, leaving out the group composition at this stage. The aim of this analysis is to identify the variables that load on the same factors, i.e. the variables that tap on the same reality. The factor analysis yields two main factors (Table XX). The first one brings together the identity dimension and the linguistic dimension, while the second show the links between the reference to the institutions (in particular Communities and Regions) and federalism as power-sharing. The factor analysis confirms the relevance of our distinction between an approach of Belgian federalism in terms of identities and language dynamics, on the one hand, and an approach of Belgian federalism in terms of institutions and power-sharing dynamics, on the other hand.

**Table XX - Factor analysis (pre-test)**

| | Factor 1 | Factor 2 |
|---|---|---|
| Reference to 1830-1831 | | |
| Reference to 1970 | | |
| Reference to FEDERAL* | | |
| Reference to UNITARY* | | |
| Reference to CENTRAL/NATIONAL* | | |
| Reference to SUBSTATE* | | |
| Reference to COMMUNITY* | | 0,742 |
| Reference to REGION* | | 0,759 |
| Reference to PROVINCE/COMMUNE | | |
| Reference to BELG* | | |
| Reference to FLA* | 0,83 | |
| Reference to WALLON* | 0,817 | |
| Reference to BRUSSELS* | 0,732 | |
| Reference to Wallonia-Brussels | | |
| Reference to DUTCH-SPEAKING* | 0,498 | |
| Reference to FRENCH-SPEAKING* | 0,681 | |
| Reference to GERMAN-SPEAKING* | 0,743 | |
| Federalism = power-sharing | | 0,51 |
| Federalism = autonomy | | |
| Centrifugal nature | | |
| Centripetal nature | | |
| Reference to one or more competence(s) | | |
| Positive perception of federalism | | |
| Negative perception of federalism | | |
| Federalism = complexity | | |
| Conflicts | | |
| Linguistic/cultural nature | | |
| Community nature | | |
| Territorial nature | | |
| Union is good | | |
| Separation is good | | |

Extraction Method: Principal Factor Analysis.

Rotation Method: Varimax with Kaiser Normalization - Rotation converged in 5 iterations.

What is interesting with this analysis is that it treats all the responses, regardless of the condition. Yet, our hypothesis is that there is a relationship between these factors and the conditions. To test this relationship, we treat each factor as a new continuous variable that serve as a dependent variable in a linear regression with each treatment group as independent variable (the control group is the reference group of the regression). In addition to the groups, we add gender and the level of political knowledge as two other independent variables. The latter was computed as an index of five basic political knowledge questions.

**Table XX - Linear regression predicting Factor 1 (pre-test)**

| | A | Std Err. | Bêta | t | Sig. |
|---|---|---|---|---|---|
| Constant | -0,054 | 0,157 | | -0,345 | 0,730 |
| Man | -0,055 | 0,091 | -0,029 | -0,606 | 0,545 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Political knowledge | 0,038 | 0,038 | 0,049 | 0,991 | 0,322 | |
| Political interest | 0,032 | 0,020 | 0,079 | 1,576 | 0,116 | |
| Q2 | -0,315 | 0,121 | -0,144 | -2,601 | 0,010 | ** |
| Q3 | -0,204 | 0,126 | -0,089 | -1,614 | 0,107 | |
| Q4 | -0,313 | 0,122 | -0,142 | -2,560 | 0,011 | * |

Note: N = 493; *<0,05; ** p<0,01; *** p<0,001

**Table XX - Linear regression predicting Factor 2 (pre-test)**

| | A | Std Err. | Bêta | t | Sig. | |
|---|---|---|---|---|---|---|
| Constant | -0,663 | 0,134 | | -4,956 | 0,000 | *** |
| Man | -0,346 | 0,078 | -0,195 | -4,443 | 0,000 | *** |
| Political knowledge | 0,102 | 0,032 | 0,145 | 3,163 | 0,002 | ** |
| Political interest | 0,025 | 0,017 | 0,065 | 1,417 | 0,157 | |
| Q2 | 0,618 | 0,103 | 0,306 | 5,974 | 0,000 | *** |
| Q3 | 0,146 | 0,108 | 0,069 | 1,352 | 0,177 | |
| Q4 | 0,731 | 0,104 | 0,360 | 7,022 | 0,000 | *** |

Note: N = 493; *<0,05; ** p<0,01; *** p<0,001

The regression with the first factor – bringing together the identity and the linguistic dimensions – as dependent variable shows quite clearly that respondents under the full condition (Q2) and under the text condition (Q4) are less likely to give a description of federalism with references to identities and language groups. These results, which are statistically significant, confirm that without treatment a respondent is more likely to describe Belgian federalism through identity lenses. The following question becomes therefore whether the treatment has an effect in itself. The answer is yes. The regression predicting the second factor – linking institutions and power-sharing – demonstrate strikingly that the text (Q4) and the image and the text (Q2) have a positive effect, which is highly statistically significant, in predicting the presence of references to institutions and power-sharing in the responses. This regression also shows that political knowledge and gender have an impact. The former has unsurprisingly a positive effect, but not as strong as the group; the latter has a negative effect, i.e. women tend to describe Belgian federalism without references to institutions and power-sharing. As political knowledge and gender are often correlated (Mondak and Anderson 2004), it is likely that they capture the same reality. Beside political interest, which is not significant for both models, the other independent variable of the regression that is not significant is the group that saw the image only (Q3). Here, as for the regression for the first factor, the direction of the effect is the same as of the two other treatments groups but it is not significant. The impact of the image is therefore less important than the impact of the text (with or without the image). This is an interesting finding that we will have to discuss as we proceed with the analysis.

Before going further into the political impact, we need to check with the same analysis the post-test data in order to assess a possible diachronic effect. Nonetheless the factor analysis does not identify the two factors found in the pre-test data anymore. As we show with the visual data based on the frequencies, the impact of the treatment was thus strong albeit short-lived. If there is a strong short-term impact, the final question of the political science approach should therefore be whether the treatment has an impact on political opinion towards Belgian federalism. In other words, while we have shown the treatment has an impact on the description of Belgian federalism, it remains to be tested whether there is an impact beside this description. The main political question about Belgian federalism is not the issue of separation or not – less than 10% of the population support it (Reuchamps 2013) – but the extent of the autonomy of the Regions and Communities. In the pre-test we asked this question on a scale from 0 to 10, where '0' meant all powers to the Regions and Communities and '10' meant all powers to the federal Authority. As we have done for the open responses, we develop a linear regression model predicting the preferred distribution of

powers. We use again the treatment groups as independent variables as well as gender, political knowledge and political interest.

**Table XX - Linear regression predicting the preferred distribution of powers (pre-test)**

| | A | Std Err. | Bêta | t | Sig. | |
|---|---|---|---|---|---|---|
| Constant | 5,945 | 0,356 | | 16,685 | 0,000 | *** |
| Man | 0,167 | 0,201 | 0,040 | 0,831 | 0,407 | |
| Political knowledge | -0,128 | 0,083 | -0,076 | -1,544 | 0,123 | |
| Political interest | 0,157 | 0,046 | 0,171 | 3,440 | 0,001 | ** |
| Q2 | -0,395 | 0,266 | -0,083 | -1,484 | 0,139 | |
| Q3 | 0,001 | 0,276 | 0,000 | 0,004 | 0,996 | |
| Q4 | -0,613 | 0,269 | -0,127 | -2,280 | 0,023 | * |

Note: N = 623; *<0,05; ** p<0,01; *** p<0,001

Two variables show a statistically significant effect. Political interest has a positive effect; that is the more interested in politics you are, the more likely you are to opt for less autonomy for Regions and Communities. But the negative effect of the text condition is slightly stronger. The model reveals an interesting impact of the treatment: those who read the text about Belgian federalism are afterwards more prone to opt for more autonomy for Regions and Communities. This is, needless to say, an interesting finding for political science. The way one presents federalism does therefore really matters. The combined analysis of the open response and the results of the autonomy question bring forward two key findings. On the one hand, without treatment our respondents were more likely to speak about Belgian federalism in terms of identity and language dynamics. On the other hand, the Tetris image and text moved the respondents who saw it in another direction and made them adopt more institutional lenses where power-sharing is a central dimension and more specifically, as the regression model have shown it, where less power for the federal Authority is preferred. To sum up, a political science approach was useful to yield this twofold finding. The question is now whether they are going to be confirmed by other approaches

## 6. Conclusion

Metaphors matter and they matter politically. Not only are they produced *en masse* in political discourses and in media discourses, but also they have political impact on individuals. Our experimental setting relying on a real media production made of both a text and an image demonstrated quite clearly that the way one presents federalism in general and the metaphor of Tetris in particular do impact the way we understand federalism, at least in the short term.

Where to go from here? Avenues for future work point in, at least, two directions. On the one hand, the nature of metaphors needs to be further investigated. When looking at political discourses, an important distinction has to be made between pedagogical metaphors, that is a metaphor that tries to simplify a complex reality, and strategic metaphors, that is a metaphor that tries to sell a given reality. While the distinction between these two types might be somewhat theoretical and should not exclude the possibility that a metaphor could be of both types, future research has to be devoted to the understanding of the metaphor's production and its underlying objective if we want to understand more finely its possible reception by the individuals. On the other hand, the study of the impact of metaphors should go further than the study of the impact but seek to grasp the nature of this impact. Thus the different kinds of impact should be theorized. For political scientists, it means disentangling between impacts on political opinions and on political attitudes but also between short-term, mid-term and long-term. For linguists, the comparison between two or more metaphors, different in their nature and in their framing, is a promising path of research, especially when trying to understand their interaction and their circulation between individuals.

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