

**Knowledge and non-knowledge in the liberalization of  
Belgian network industries: The role of information,  
egocentrism and self-esteem in policy learning**

Moyson, Stéphane  
UCLouvain, Belgium

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# **Knowledge and non-knowledge in the liberalization of Belgian network industries: The role of information, egocentrism and self-esteem in policy learning**

## **Author**

**Dr. Stéphane MOYSON, Assistant Professor**

Institut de Sciences Politiques Louvain-Europe  
Université catholique de Louvain

Chaussée de Binche, 151 box M1.01.01  
7000 Mons (Belgium)

Tel: +32-478/39.60.67

@: [stephane.moyson@uclouvain.be](mailto:stephane.moyson@uclouvain.be)

Web: <http://www.uclouvain.be/stephane.moyson>

## **Bio statement**

**Dr. Stéphane Moyson** is an assistant professor of public administration and public policy at the Institut de Sciences Politiques Louvain-Europe (UCLouvain, Belgium).

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## **Abstract**

Policy learning is the mechanism through which actors involved in a policy subsystem revise their beliefs and preferences toward a policy over time – a crucial dynamic of stability or change of public policies. While the social dimension of this dynamic has been extensively researched, the individual psychology of policy learning remains a black box. Yet, this is a key missing link between policy learning and settings or practices that could model it. This paper addresses this research program by looking at two mental constructs susceptible to encourage policy actors to stick to their own point of view rather than to assimilate new policy information: egocentrism and self-esteem.

The test of the hypotheses is based on regression analyses of a survey conducted in 2012 among 289 Belgian policy actors who had been involved, during the last two decades, in the European liberalization policy process of two network industries: the rail and electricity sectors. The findings are threefold. First, rational knowledge utilization remains a stronger cognitive dynamic of information processing than egocentrism and self-esteem. Second, still, egocentrism is not only a source of biased assimilation of policy information: it also directly induces a less positive alignment of policy actors' preferences toward liberalization over time. Third, the results fail to confirm my theoretical expectations about the relation between self-esteem and policy learning. The theoretical and practical implications of these results are discussed.

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## **Introduction**

Policy processes involve diverse types of policy actors, ranging from politicians and public officials to company and association managers. As a result of a varied set of interactions as well as the gradual accumulation of evidence regarding policy problems and solutions over time, those policy actors acquire, translate and disseminate new knowledge and information. In turn, they maintain, strengthen or revise their beliefs and preferences regarding policies. 'Policy learning' is a concept that captures this cognitive and social dynamic of belief updates (Dunlop et al., 2018; Dunlop & Radaelli, 2013; Heikkila & Gerlak, 2013; Moyson & Scholten, 2018).

One of the most often invoked reasons for scrutinizing policy learning is the role that it plays in policy change (e.g., McBeth et al., 2007). Even if there are doubts about the exact nature of this relation (e.g., Nohrstedt, 2005), it is recognized that human learning is a fundamental intermediate factor in change processes. Eliciting change requires actors to create or to address new information and new experiences, a process that results in the enduring acquisition or modification of cognitive constructs (VandenBos, 2007). These alterations, in turn, transform actors' preferences, behavioral intentions and concrete behaviors (Fishbein & Ajzen, 2010). In addition to its direct influence on policy decisions, policy learning has other potential intermediate outcomes, such as developing shared understandings and mutual agreements or transforming relationships among parties to a conflict (Leach et al., 2014).

This paper focuses on the process of information assimilation by policy actors. The idea that policy learning results from rational acquisition and use of information has been sustained by the theory and practice of evidence-based policymaking for a long time now (e.g., McCaughey & Bruning, 2010). At the same time, existing research has demonstrated that policy actors look at reason (and learn) about policies with a limited rather than perfect rationality (Simon, 1991). For example, policy actors distrust information produced or diffused by other policy actors who do not share similar policy position; they perceive each other as 'evils' (Fischer et al., 2016; Sabatier et al., 1987). They process policy information with cultural filters (Jenkins-Smith, Silva, et al., 2014) and align their policy preferences with their views about the impact of policies on their own material interests (Moyson, 2018), which hampers the consistency of policy learning (Moyson, 2017).

Beyond the effect of these perceptions toward policies and policy subsystems, recent studies have provided indications about the effect of individual psychology on policy learning. For example, the credibility granted to policy information depends on psychological patterns such as risk aversion or confidence (Bédard, 2017). Similarly, 'motivated reasoning' leads policy actors to use new information mainly to substantiate rather than to question their pre-existing beliefs (Montpetit & Lachapelle, 2017; about the symbolic use of expertise, see also Scholten, 2017). Likewise, Dunlop and Radaelli (2017) suggest that emotions could play a key role in policy learning processes. Consistent with Shafir (2013)'s call for a behavioural approach to public policy, Dunlop et al. (2018) call for more cross-fertilization between policy studies and psychology in order to better understand policy learning. How do policy actors acquire policy-relevant information? How do they use this information to model their policy preferences? What are the psychological characteristics of policy actors influencing their

cognitive understanding of policy change processes? This research program is crucial because a better understanding of the psychology of policy learning is the missing link to create settings and practices that model policy learning effectively (Moynson & Scholten, 2018).

This paper addresses this research program on the psychology of policy learning with a focus on two mental constructs: egocentrism and self-esteem. While egocentric people experience more troubles to understand and take others' point of view into account, those with a higher self-esteem have a better image of their own beliefs and positions, according to psychological research. For these reasons, it is hypothesized that these constructs moderate the relation between changes in actors' beliefs about policy outcomes (i.e., information acquisition) and the alignment of their policy preferences with these belief changes (i.e., information assimilation). In other words, egocentrism and self-esteem would induce biased assimilation of policy information. The test of these hypotheses is based on regression analyses of a survey conducted in 2012 among 289 Belgian policy actors who had been involved, during the last two decades, in the European liberalization policy process of two network industries: the rail and electricity sectors. Hence, this research is consistent with Sabatier's (1993) contention that policy processes should be considered 'over a decade or more' to capture the actual nature and effects of policy learning. This article follows a classical structure, which presents the theoretical expectations before the research design, the measures, the analysis and the results. Finally, the findings are discussed.

## **Theoretical insights into the psychology of policy learning**

### *Policy learning and policy change in the advocacy coalition framework*

The advocacy coalition framework (Jenkins-Smith, Nohrstedt, et al., 2014) (ACF: Jenkins-Smith et al., 2014; Sabatier, 1987; Sabatier & Jenkins-Smith, 1993, 1999; Sabatier & Weible, 2007) is a social learning approach to the policy process (Zito & Schout, 2009). According to Hecl (1974), in one of the foundational formulations of social learning approaches, 'politics finds its sources not only in power but also in uncertainty – men collectively wondering what to do ... Governments not only 'power'... they also puzzle. Policymaking is a form of collective puzzlement on society's behalf; it entails both deciding and knowing... Much political interaction has constituted a process of social learning expressed through policy' (pp. 305-306). In the ACF, the policy process is conceptualized as a political struggle among (coalitions of) policy actors involved in a given policy subsystem. A policy subsystem is a set of 'actors from various public and private organizations who are actively concerned with a policy problem or issue such as air pollution control, and who regularly seek to influence public policy in that domain' (Sabatier & Jenkins-Smith 1999, p. 119).

This study relies on two important cognitive constructs of policy actors: their beliefs about policy outcomes and their policy preferences. The ACF assumes that each policy actor holds a belief system composed of three strata. The first stratum contains 'deep core' beliefs, which are personal philosophical precepts that are very broad in scope (e.g., 'I believe that justice is an important value'). The second stratum is represented by 'policy core' beliefs that are precepts specific to one subsystem, such as the proper scope of governmental action or the identification of groups whose welfare is of greatest concern (e.g., poor people, junkies, employees vs. employers, etc.). At this level, actors also hold factual beliefs about the outcomes of policies (e.g., 'I believe that this policy option increases the

degree of justice among population groups'). Those factual beliefs, in turn, determine these actors' policy core policy preferences (e.g., 'I believe that this policy option is better than others'). Policy core policy preferences (or 'policy preferences') are 'normative beliefs that project an image of how the policy subsystem ought to be, provide the vision that guides coalition strategic behavior, and help unite allies and divide opponents' (Sabatier & Weible, 2007, p. 195). Studies looking at the interplay between factual policy beliefs and normative policy preferences are rare. At the third stratum, 'secondary' beliefs are more specific. They concern particular administrative rules, budgetary allocations, program performance, etc. (e.g., 'I believe that this administrative decision facilitates the implementation of my preferred policy option').

One important objective of the ACF is to explain policy change, which is defined as 'fluctuations in the dominant belief systems (i.e., those incorporated into public policy)' (Sabatier, 1987, p. 682). The main objective of policy actors, the ACF assumes, is to transform their policy preferences into concrete policy decisions. Typically, policy actors maintain and defend their policy beliefs and preferences. They use their resources and coordinate their political activity within 'advocacy coalitions' to become 'dominant' and impose their understanding of policy problems and their preferred policy solutions on other coalitions (Sabatier & Jenkins-Smith, 1993).

This being said, policy change can also result from changes in policy actors' beliefs and preferences – a causal mechanism called 'policy learning'. The ACF defines policy learning as 'relatively enduring alterations of thought or behavioral intentions that result from experience and which are concerned with the attainment or revision of the precepts of the belief system of individuals or of collectivities' (Sabatier, 1993, p. 42). Beyond social interactions among policy actors and the accumulation of evidence on a policy issue, major 'shifts in the core attributes of the subsystem' or 'shocks' are typical causes of policy learning (e.g., a legal shock or a shock in the distribution of natural resources: Weible et al., 2009, p. 124). However, after three decades of research, the ACF shares with many other social learning approaches to the policy process a fair amount of scepticism regarding the actual role of policy learning in policy change (Weible et al., 2009).

### *Information use*

In line with the theory of reasoned action (Fishbein & Ajzen, 2010), the ACF considers the belief system of any human being to be composed of various cognitive propositions regarding concrete or abstract objects. These propositions are considered to be true or false and are key drivers of both behavioral intentions and behaviors. Beliefs are consistent if one belief logically follows the other. For example, 'I support this policy' is consistent with 'policies should be efficient' and 'this policy is efficient'. Policy learning, in turn, is consistent when policy actors revise their policy preferences to better align them with belief adaptations. For example, 'my opinion of this policy is more positive than before' is consistent with 'this policy change has had more positive outcomes than I initially expected'. In contrast, learning is inconsistent when policy actors maintain their preferences or modify them the opposite direction.

The ACF model of the individual is based on two assumptions. According to the first assumption, 'there are strong grounds for assuming that most actors will have relatively complex and internally consistent belief systems in the policy area(s) of interest to them' (Sabatier, 1993, p. 30). With this assumption, the ACF recognizes Festinger's (1957) theory of cognitive dissonance. Festinger's (1957) basic

assumption is that human beings are comfortable with cognitive consistency, whereas inconsistency provokes 'dissonance' or a state of arousal. Because dissonances indicate erroneous propositions in one's belief system, this state of arousal functions as a signal that the system should be revised to facilitate context-appropriate action (Harmon-Jones et al., 2009) (Harmon-Jones et al., 2009). In decision-making processes, if policy actors believe that existing solutions are no longer appropriate, this theory suggests that they will revise their preferences in favor of alternative solutions (Gawronski & Strack, 2012). These cognitive efforts deployed by policy actors to adopt attitudes and behaviors that reduce dissonance serve as a core mechanism that confers concrete policy effects on policy learning. Most policy actors are experienced policy 'elites'. In addition, the opportunities to make such cognitive efforts are particularly numerous in long-term policy processes, such as those often scrutinized by ACF-based studies. This leads me to ***hypothesis 1*** of this research: in the long run, policy actors tend to align their policy preferences with the adaptations of their beliefs about policy impacts.

However, the second important assumption of the ACF is recognizing that individual rationality is 'limited rather than perfect' (Sabatier, 1993, p. 30). This assumption results from a 'behavioralist turn' (Zito & Schout, 2009) adopted by the ACF in parallel with many other approaches to the policy process (Dunlop & Radaelli, 2013) and borrowed from organizational research (Simon, 1991). Bounded rationality suggests that policy actors have a limited ability to revise their policy preferences consistent with their beliefs for two main reasons. First, the information available about policies can be of poor quality or low quantity. Second, the inherent ability of individuals to process this information is limited (Birkland, 2006; Moynihan, 2008).

Given the limits to their ability to process information, human beings must rely on heuristic-based modes of reasoning (Kahneman, 2011). Heuristics are cognitive rules that simplify information processing. For example, rather than re-assessing their entire belief system according to every new piece of information, there are strong scientific grounds to believe that human beings 'tend to conform assessments of information to some goal or end extrinsic to accuracy' (Kahan, 2013, p. 408). Existing research has demonstrated that many policy actors tend to systematically prefer standpoint-consistent information to standpoint-inconsistent information – a tendency called 'motivated reasoning' (Kunda, 1990) – and adapt their beliefs about policy outcomes without aligning their policy preferences (Moynihan, 2017). The next step, in this research program on the psychology of policy learning, is to look for psychological patterns susceptible to explain why information assimilation is more or less biased. In the remainder of this section, I explain why starting with egocentrism and self-esteem.

### *Egocentrism*

Egocentrism is a Piagetian (1920) concept initially referring to a stage of infant development, between autistic thinking and logical thinking. Egocentrism shares with autistic thinking the absence of logical sequence and of consciousness as well as a predominance of images on concepts. Similarly, egocentrism is characterized by a lack of differentiation between the ego and the alter ego as well as between the ego and the external world (Kesselring & Müller, 2011). Egocentrism involves that subjective experience of the present is more easily influenced by subjective experience of the past than by efforts to draw lessons from theoretical knowledge (Kelley & Jacoby, 1996). Logical thinking,

in contrast, involves ‘the ability to think about possibilities and the ability to think-about-thinking’ (Lapsley, 2011, p. 73).

Egocentrism is not the preserve of infants and adolescents, however. Adults can also keep believing into the ‘personal fable’ that they are more ‘unique and special than is really the case’ (Rai et al., 2016, p. XXX), with variations related to gender (men scoring higher than women) and age (egocentrism following a curvilinear relations with age). According to Epley et al. (2004, p. 760), differences between children with higher egocentrism and adults with lower egocentrism would be “less a product of where people start in their perspective taking process than where they stop, with lingering egocentric biases among adults produced by insufficient correction of an automatic moment of egocentrism”. In other words, policy actors like other adults can be more or less egocentric in processing policy information and in their social interactions with their colleagues.

The idea that egocentrism can influence political reasoning is not entirely new. For example, S. Rosenberg et al. (1988) notice that Piaget’s main works on children and adolescents were part of a more general attempt to develop a general theory of thinking, which can be applied to political behaviour. Egocentrism does influence (political) reasoning by causing people to rely more heavily on their own point of view. For example, political polarization influences perceived political polarization: ‘individuals with more extreme partisan attitudes perceive greater polarization than individuals with less extreme partisan attitudes’ (Van Boven et al., 2012). Similarly, the belief that ‘one’s own vote matters regardless of its predictive value’ for elections also accounts for egocentric people’s decision to vote (Acevedo & Krueger, 2004).

The effect of egocentrism on policies, in contrast, has virtually not been researched until now. In addition, the scarce policy research relying on this concept looks at the public rather than at policymakers. Based on focus groups, Levasseur and Carlin (2001) suggest that citizens’ egocentric arguments towards policies and policymakers are one of the main issues of the ‘discursive realm’ of deliberative democracy. More recently, Shepherd and Campbell (2019, p. 1) find that “a welfare recipient’s purchase of an item that (an individual) personally values less (vs. more) leads to increased stereotyping of welfare recipients (e.g., irresponsibility, impulsivity) and favourable attitudes toward policy that would restrict that purchase”. It is noteworthy that this study does not measure egocentrism as such but starts from the assumption that participants are to some extent egocentric. Products more or less valued by participants are experimentally presented, hypothesizing that their egocentrism will lead to approbation or disapprobation of welfare recipient purchases as a result of egocentrism.

In this research, theoretically, I suspect that some policymakers are more egocentric than others. In other words, when aligning their preferences towards policies, they rely more heavily on their own point of view than on the information acquired about these policies. Statistically speaking, this means that I expect egocentrism to have a negative moderation effect on the relation between beliefs about policy outcomes and the alignment of policy preferences with those changed beliefs over time. This is the ***hypothesis 2.1*** of the research. Conceptually, three dimensions can be used to operationalize egocentrism: subjective omnipotence (viewing the self as a source of special authority, influence or power), personal uniqueness (‘no one understands me’), and invulnerability (‘I am not afraid to do dangerous things’) (Aalsma et al., 2006; Elkind, 1967).

## Self-esteem

Self-esteem refers to the overall evaluation or appraisal of one's own worth (M. Rosenberg, 1965). Some people see themselves as very intelligent; some others do not. Some people consider that they are successful, some other do not. Etc. Self-esteem is a dimension of self-image, a set of mental constructs that describe how people see themselves. These descriptions may be mostly emotional (e.g., 'I feel happy') or mostly cognitive (e.g., 'I feel that I am generous') – a category in which self-esteem falls.

Self-esteem is scientifically appealing because it has been positively or negatively related to a variety of attitudes (e.g., satisfaction or well-being) and behaviours (e.g., academic achievement or criminal behaviour) in various domains (e.g., professional, familial or personal domains) and at all periods of people's lives (Zeigler-Hill, 2013). The scientific consensus about these theoretical relations should not be exaggerated, however (e.g., Baumeister et al., 2005; Krueger et al., 2008). In addition, there are doubts about the internal consistency of the concept (Marsh et al., 2010: see below).

The main relations between the notion of self-esteem and policy studies concern the so-called 'self-esteem movement'. This expression refers to all scientists and practitioners who believe that psychological, social and educational hindrances will be limited if simple measures are taken to 'boost' self-esteem (Kristjansson, 2007). As such, this movement has not be the central focus of any policy research, but several psychological and education studies looked at the policy implications of this movement (e.g., Kahne, 1996). At a more general level, policy implications resulting from relations between self-esteem and other attitudes or behaviours have been examined (e.g., Covington, 1990).

Self-esteem has never been related to policy learning and making, to the best of my knowledge. Drawing from the notion of self-esteem itself, I suggest that policy actors with a higher self-esteem will not only have a positive image of their own worth but also of the worth of their own positions. In other words, when aligning their preferences towards policies, they should rely more heavily on their own point of view than on the new information acquired about these policies, especially if this information conflicts with their pre-existing beliefs. Statistically speaking, I expect self-esteem to have a negative moderation effect on the relation between beliefs about policy outcomes and the alignment of policy preferences with those changed beliefs over time. This is the **hypothesis 2.2** of the research. Conceptually speaking, self-esteem is considered as a one-dimension construct, in this study.

## Synthesis

- Hypothesis 1:** There is a positive relation between change in beliefs about policy outcomes and the alignment of policy preferences with those changed beliefs over time (information use)
- Hypothesis 2.1:** There is a negative effect of egocentrism on the relation between beliefs about policy outcomes and the alignment of policy preferences with those changed beliefs over time.
- Hypothesis 2.2:** There is a negative effect of self-esteem on the relation between beliefs about policy outcomes and the alignment of policy preferences with those changed beliefs over time.

**Table 1. Hypotheses of the study**

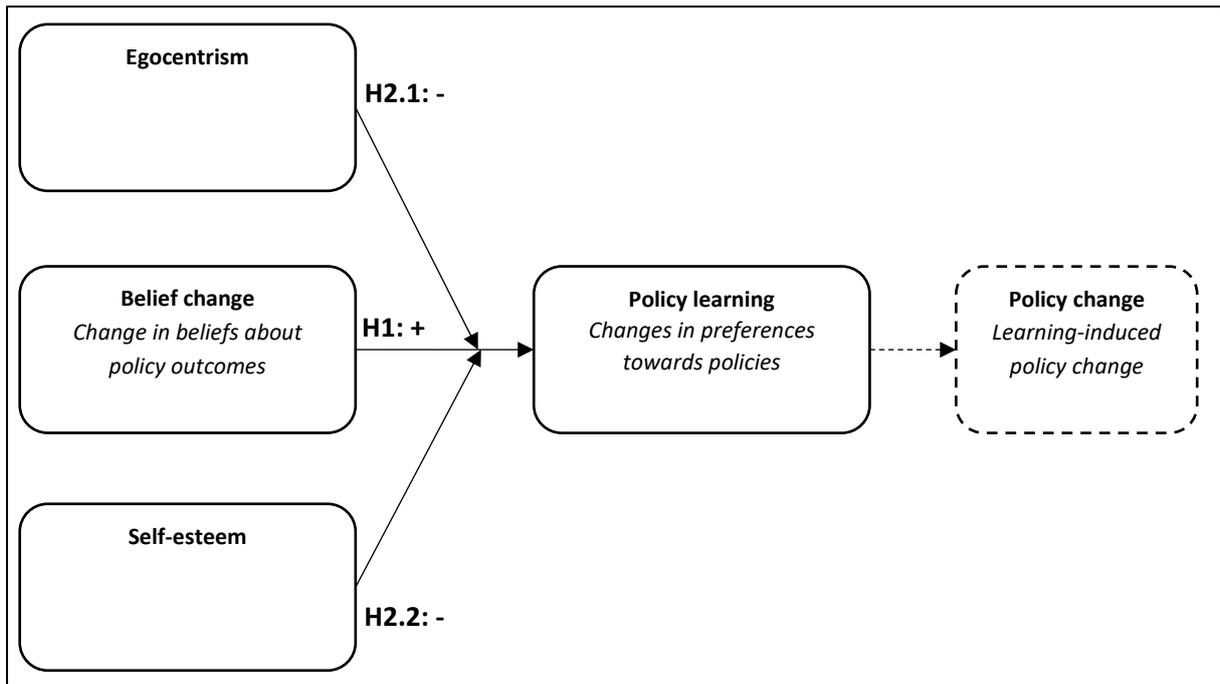


Figure 1. Analytical framework of the study

## Research design

To examine the psychology of policy learning, a web survey was submitted to Belgian policy actors involved in policy changes related to the implementation of the European liberalization policy process for network industries within the rail and electricity sectors. Network industries ‘are characterized by the delivery of products or services to final customers via a ‘network infrastructure’ linking upstream supply with downstream customers’ (European Commission, 1999). Network industries are typical of sectors such as telecommunications, energy, transport or postal services.

Since the 1980s, many network industries have been subject to a liberalization policy process (Genoud, 2004). Gradually, network activities have been unbundled. Previously, a state-owned company (or ‘incumbent’) had a monopoly on the management and commercial exploitation of the network, but currently, a public ‘infrastructure manager’ is responsible for the maintenance and security of the infrastructure, and the incumbent competes with other private companies (or ‘new entrants’) for use of this infrastructure. In addition, various independent regulatory agencies have been created at the European and national levels.

This study focuses on two national subsystems of policy actors: the Belgian rail and electricity policy subsystems. In the railways, the European liberalization process began in 1991, with European directive 91/440/EEC. The implementation of this process in Belgium began with the Royal Decree of 5 February 1997 (see Dehousse & Gadisseur, 2002; Moyson & Aubin, 2011). A similar process of liberalization for the European electricity sector was initiated with Directive 96/92/EC. The implementation of this process in Belgium began with the Federal Law of 29 April 1999 (Declercq, 2000; Declercq & Vincent, 2000a, 2000b; Glachant & Perez, 2011).

The web survey was administered via email between April and November 2012 to 1256 people holding top to middle positions within 51 public and private organizations involved in the liberalization process. Given their position, these people were regularly involved in the process of implementing the European liberalization policy: they form two policy subsystems. The identification of those policy actors was, first, based on a documentary analysis. Then, a snowballing (or 'chain referral') sampling method (Atkinson & Flint, 2001) was applied through a campaign of 33 preliminary semi-structured interviews. In the railways, 12 (75%) out of the 16 organizations participated in the survey, while in the electricity sector, there were 26 (74%) participating organizations out of the 35 that were contacted. Within the participating organizations, in the railways, 199 (35.53%) out of 560 solicited individual policy actors participated in the survey, while in the electricity sector, 214 (30.75%) out of 696 policy actors filled in the questionnaire, which is a fairly similar rate. The response rate of the survey overall was 32.88% (413 policy actors from 38 organizations)<sup>i</sup>.

## Measures

### *Dependent variable: changes in policy preferences*

Policy learning is the cognitive and social dynamic which results in the alignment of policy actors' preferences towards policies. In this research, the evolution of respondents' policy preferences towards the European liberalization process of Belgian network industries was measured with the 'simple gain scores' method (Allison, 1990). Respondents were asked to report their preferences for the liberalization process at the beginning of this process (or when they became involved in the Belgian rail/electricity sector for the first time) based on four Likert-type items ranging from 'Very unfavorable' [-2] to 'Very favorable' [+2]. Then, the respondents were invited to report their 2012 preferences using the same items. To get an idea of how the respondents' preferences evolved over time, the values for initial preferences were subtracted from the values for current preferences. This provided a new list of items or 'gain scores'. For example, a minimum score of [-4] indicates a respondent who had a very positive opinion [+2] about a liberalization principle at the beginning of the policy process and changed to become very negative [-2] about this principle in 2012. Factor analyses were conducted on the list of four gain scores, treating each sector separately. The exploratory factor analysis suggested that all scores should be kept in each sector. The confirmatory factor analysis validated this structure in the rail sector ( $\chi^2 = 0.98$ ,  $p = 0.61$ ; RMSEA = 0.00; SRMR = 0.02; CFI = 1.00) and in the electricity sector ( $\chi^2 = 0.82$ ,  $p = 0.66$ ; RMSEA = 0.00; SRMR = 0.02; CFI = 1.00)<sup>ii</sup>. The scores of the two factors were normalized to obtain one scale that was common to the two sectors. This scale ranges from [-6.79] to [+6.79]. The items of this first intermediate of the study, as well as their statistics, are reported in the Appendix.

This study relies on innovative measurement methods in order to empirically assess policy learning. First, a simple gain scores method (Allison, 1990) is used to measure the evolution of policy actors' beliefs and preferences, which overcomes two possible types of systematic measurement error. On the one hand, respondents could be tempted to provide socially desirable answers, especially if they want to show that they are stable and reliable people or, on the contrary, that they are able to change their minds. On the other hand, as the survey contained professional questions submitted in a professional context, respondents could be tempted to provide professionally desirable answers. In particular, there are good reasons to suspect that respondents could be concerned about appearing

more/less favorable to the liberalization process when they worked in an organization or among colleagues militating for/against this policy.

Studies that directly measured policy learning are relatively scarce and relied, most often, on one set of items on preferences change ('did you change your opinion on...?'). Such an approach does not control for the types of measurement error mentioned above. In the simple gain scores method, in contrast, two sets of items – one about past beliefs/preferences and one about current beliefs/preferences – are used and compared by the researcher. On the one hand, this drastically decreases the ability of respondents to strategize around the social desirability of the reported change in their beliefs/preferences. On the other hand, the simple gain scores approach does not remove systematic error in the measurement of preferences themselves (professionally desirable answers). However, simple gain scores modeling protects regression results from the possible effects of such a measurement error: it provides unbiased results (Allison, 1990).

Second, this study addresses recollection issues. Indeed, it can be difficult to remember past preferences (Janson, 1990). However, a confident attitude toward a memory is a reasonable indicator of its accuracy (Roediger, 2012). In turn, conviction is a reliable indicator of attitude confidence/certainty (Holland et al., 2003). Hence, respondents were also asked to report their degree of conviction about their policy preferences on a five-point Likert scale. The respondents who reported that they were 'completely unconvinced' [-2] or 'rather unconvinced' [-1] about their past or current preferences were removed from the sample (32 respondents were removed).

In addition, this study focuses on policy actors who have been involved in the European liberalization process for a long time. As this process has been a long-term policy change for network industries, there are good reasons to think that policy actors have reliable memories of their past preferences regarding this change. Indeed, research in cognitive psychology suggests that the importance of an event or process, as well as the number of opportunities to hear and discuss it, increases the accuracy of memories about past opinions of it (Kvavilashvili et al., 2003; Neisser et al., 1996).

### *Independent variables*

*Evolution of respondents' beliefs about policy outcomes* – Like the dependent variable, this independent variable was measured with the 'simple gain scores' method (Allison, 1990). Respondents were invited to report their past and current beliefs about policy outcomes considering a set of four items in the rail sector / five items in the electricity sector. To obtain an idea of how respondents' beliefs evolved over time, initial belief values were subtracted from current belief values. This provided a new list of items or 'gain scores' measuring change in the respondents' beliefs about the outcomes of the liberalization policy. Factor analyses were separately conducted on the list of four/five gain scores in the two sectors. The exploratory factor analysis suggested that all scores should be kept in each sector. The confirmatory factor analysis validated this structure in the rail sector ( $\chi^2 = 6.29$ ,  $p = 0.04$ ; RMSEA = 0.12; SRMR = 0.04; CFI = 0.97) and in the electricity sector ( $\chi^2 = 8.25$ ,  $p = 0.14$ ; RMSEA = 0.07; SRMR = 0.04; CFI = 0.98)<sup>iii</sup>. The scores of the two factors were normalized to obtain one scale, common to the two sectors. The items of this second intermediate variable of the study, as well as their statistics, are reported in the Appendix<sup>iv</sup>.

*Egocentrism* – Egocentrism is the tendency to confuse subjective perceptions with objective reality as well as to disqualify all perspectives other than one's own. In this study, two dimensions of egocentrism have been measured, namely, subjective omnipotence and personal uniqueness. Subjective omnipotence, on the one hand, refers to the view that the self is the special source of authority, power or influence. The original 30-items scale taps respondents' sense of having "influence" ("I can influence how people think"), "leadership" ("I'd make a great leader because of my abilities"), and "grandiosity" ("I'm better than other people at just about everything") (Lapsley & Stey, 2011, p. 1842). Due to space limitations, the original scale was reduced to 6 items covering all three of these subdimensions. Personal uniqueness, on the other hand, refers to the view that the self is special and, for this reason, difficult to understand by others. Due to space limitations, the original 8-item scale was reduced to 4 items. Consistent with previous research (e.g., Galanaki, 2012; Lapsley & Stey, 2011), the two variables result from the sum of the items. The items of these variables, as well as their statistics, are reported in the Appendix.

*Self-esteem* – Self-esteem is the feeling that one is good enough (M. Rosenberg, 1965). There is no consensus, in existing research, whether Rosenberg's 10-item scale operationalizes one unitary concept or a factor structure nor there is consensus on which structure (Marsh et al., 2010). Tafarodi and Milne (2002), in particular, argue that self-esteem may be decomposed in self-acceptance (five items referring to the extent to which one is happy with oneself) and self-assessment (five items referring to the evaluation of the objective qualities of the self). To reconcile these views, in reducing the 10-item scale into a 5-item scale, I made sure that each factor of the original scale was represented by two or more item of the original scale. The items of the variable, as well as its statistics, are reported in the Appendix.

*Covariates* – This research also accounts for four covariates: the gender (male = 0; female = 1), the age (from 'less than 20 years old' = 1; to 'more than 70 years old' = 12; by intervals of 5 years), the educational level (secondary education or less = 1; undergraduate = 2; graduate or more = 3), as well as the policy sector (or subsystem: rail sector = 0; electricity sector = 1) of the respondent. Women and younger people are expected to show higher compliance (e.g., to new policies: Petty & Wegener, 1998), which could explain differences in policy learning (young women adapting their policy preferences toward the liberalization process more than older men). In general, educated people benefited from the access to more diverse perspectives in their scholastic life, which can explain the positive correlation between education and tolerance or its negative correlation with racism and authoritarianism (Radloff, 2007). Similarly, education could foster adaptation of policy beliefs/preferences and, in turn, influence policy learning. Finally, we suspected that respondents perceiving more consensus about a policy could show more favorableness toward this policy, especially if they are less egocentric. For this reason, respondents were asked their approximation of the percentage of persons involved in the rail/electricity sector who are in favor to the liberalization policy process' (from '0%' = 1; to '100%' = 5; by intervals of 25%).

## **Analysis and results**

The summary statistics of the dependent variable, in Table 2, show that policy actors' preferences have not evolved very much over time. This is especially true in the rail sector, which has a mean close to 0. On average, with a mean of 1.27, policy actors' opinions regarding the liberalization policy have

evolved more positively in the electricity sector. A possible explanation for this result is that the liberalization process has been deeper and, for this reason, has become more consensual in the electricity sector than in the rail sector, where the monopoly of the incumbent over the national transport of passengers was still applicable in 2012 (but discussed)<sup>v</sup>. Furthermore, in the two sectors, the standard deviation suggests quite substantial inter-individual variation.

Turning to the independent variables, first, the amount of changes in beliefs about policy outcomes is low in the two subsystems: on average, many policy actors maintained their beliefs about policy outcomes over time or revised them only slightly. Surprisingly, however, the average of the variable is close to zero in the rail sector whereas it is negative in the electricity sector. At the collective level, this suggests that, while policy preferences and beliefs about outcomes evolved in fairly similar ways in the rail sector, policy preferences evolved positively whereas beliefs about policy outcomes evolved negatively in the electricity sector. Second, the average levels of egocentrism and self-esteem reported by the respondents are fairly similar in both subsystems. Finally, the covariates have approximately the same means in each subsystem, except that policy actors are older in the rail sector than in the electricity sector. Gender was introduced as a numeric (dummy) variable in the regression analyses. Concretely, there are 16 female respondents in the rail sector and 15 in the electricity sector.

Out of the 413 survey respondents, 32 were removed because they were not sufficiently convinced about their past policy preferences (see above), and 123 others were removed because they did not provide any answer to one or more of the questions used to construct the variables. The missing values of the covariates gender, age, and educational level were replaced by their mean (consistent with Allison, 2002). Hence, the final sample is composed of 258 respondents: 138 in the rail sector and 121 in the electricity sector. They come from 34 different organizations: 12 in the rail sector and 22 in the electricity sector.

Variable	Rail sector					Electricity sector				
	N	Mean	SD	Minimum	Maximum	N	Mean	SD	Minimum	Maximum
<b>POLICY LEARNING</b>										
Evolution of policy preferences towards liberalization	138	0.25	2.20	-6.79	6.79	121	1.27	1.93	-6.79	6.79
<b>INDEPENDENT VARIABLES</b>										
Evolution of beliefs about liberalization outcomes	138	0.07	2.26	-7.26	7.26	121	-0.97	2.57	-7.26	7.26
Self-esteem	138	16.18	1.70	4	20	121	16.04	1.50	4	20
Egocentrism / Personal uniqueness	138	14.09	2.20	5	25	121	14.25	2.33	5	25
<b>COVARIATES</b>										
Perceived consensus about liberalization	138	2.06	0.77	1	5	121	2.48	0.98	1	5
Gender	138	0.12	0.32	0	1	121	0.12	0.33	0	1
Age	136	7.11	2.07	2	12	121	6.84	2.06	2	12
Education level	135	2.59	0.73	1	3	119	2.79	0.48	1	3

**Table 2. Summary statistics**

The data were analyzed using multilevel linear regression models (Hox, 2017) in Table 4. There are several good reasons to believe that the results provided by these analyses are robust. First, despite the correlation between personal uniqueness and self-esteem, in Table 3, the variance inflation factors are never higher than 1.50 nor higher than the model-dependent cutoff values (Craney & Surles, 2002). Second, policy actors are nested within organizations: the multilevel design of regression analyses allow to account for organizational effects on policy learning. Third, restricted maximum likelihood method was used to estimate the models, which generally provides better (unbiased) estimates of the variance components (Hox, 2017). Fourth, variables were measured based on items distributed over multiple batteries and pages of the survey questionnaire, which means that the internal consistency of these constructs tends to be lower than in other questionnaire configurations. Nevertheless, most variables included in this study have Cronbach (1951)'s alphas close to or higher than 0.70 – an ‘acceptable’ level, according to a widely used rule of thumb on social sciences research (George & Mallery, 2003). The two exceptions include the dependent variable in the rail sector and personal uniqueness with a Cronbach alpha equal or higher than 0.60, which are more ‘questionable’ but still usable measures of concepts.

<b>Correlation</b>	<i>Evolution of policy preferences towards liberalization</i>	Evolution of beliefs about liberalization outcomes	Egocentrism / Personal uniqueness	Self-esteem
<i>Evolution of policy preferences towards liberalization</i>	1			
Evolution of beliefs about liberalization outcomes	0.29***	1		
Egocentrism / Personal uniqueness	-0.15*	-0.05	1	
Self-esteem	-0.03	0.01	-0.29***	1

**Table 3. Correlation matrix of the dependent and independent variables**

DEPENDENT VARIABLE	Model 0		Model 1		Model 2		Model 3		Model 4		Model 5	
	<i>Only covariates</i>		<i>H1: Information use</i>		<i>With egocentrism</i>		<i>H2.1: Egocent X info. use</i>		<i>With self-esteem</i>		<i>H2.2: Self-est X info. use</i>	
Evolution of policy preferences towards liberalization	Standardized coefficient	Standard error	Standardized coefficient	Standard error	Standardized coefficient	Standard error	Standardized coefficient	Standard error	Standardized coefficient	Standard error	Standardized coefficient	Standard error
<b>FIXED EFFECTS (IND. VARIABLES)</b>												
Evolution of beliefs about liberalization outcomes (H1)			0.29***	0.05	0.29***	0.05	0.29***	0.05	0.29***	0.05	0.29***	0.06
Egocentrism (pers. uniqueness)					-0.11*	0.05	-0.13*	0.05				
Egocentrism (pers. uniqueness) X Evolution of beliefs... (H2.1)							-0.10*	0.04				
Self-esteem									0.02	0.06	0.01	0.06
Self-esteem X Evolution of beliefs... (H2.2)											0.01	0.05
<i>COVARIATES</i>												
Perc. Consensus on liberalization	0.17**	0.06	0.13*	0.05	0.12*	0.06	0.13*	0.06	0.13*	0.06	0.13*	0.06
Gender	0.11+	0.06	0.11+	0.06	0.08	0.06	0.07	0.06	0.11+	0.06	0.11+	0.06
Age	0.07	0.06	0.07	0.06	0.06	0.06	0.06	0.06	0.07	0.06	0.07	0.06
Educational level	0.14+	0.08	0.16+	0.08	0.17*	0.08	0.17*	0.08	0.16*	0.08	0.16*	0.08
Intercept	0.00	0.08	-0.01	0.09	-0.02	0.08	-0.02	0.08	-0.01	0.09	-0.01	0.09
<b>RANDOM PART</b>												
Organizational level: $\sigma^2_{u0}$	0.27	0.09	0.31	0.09	0.32	0.09	0.30	0.08	0.31	0.09	0.31	0.09
Individual level: $\sigma^2_e$	0.89	0.04	0.84	0.04	0.84	0.04	0.83	0.04	0.84	0.04	0.84	0.04
<b>FIT STATISTICS</b>												
Number of observations	258		258		258		258		258		258	
Pseudo-R <sup>2</sup> at the individual level	0.05		0.12		0.15		0.16		0.12		0.12	
Log restricted-likelihood	-350.95		-339.71		-339.37		-339.24		-341.60		-343.59	
Likeli. ratio chi <sup>2</sup> (null model)			26.67***		4.79*		4.73*		0.06		0.02	
			(M0)		(M1)		(M2)		(M1)		(M4)	

Standard coefficients (b) are computed with a restricted maximum likelihood estimation method. + p < 0.10 \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. The pseudo R<sup>2</sup> is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations.

**Table 4. Multilevel regression models**

Model 0 looks at the effect of covariates. While there is no effect of age on policy learning, there is a slight effect of gender and education level: more educated women's opinions toward the liberalization policy evolved more positively than less educated men's opinions. However, t tests comparing the absolute value of preference change between gender-based or education-based groups suggest that the propensity to revise policy preferences is pretty similar between men and women as well as between more education and less educated policy actors. This is not consistent with the theoretical expectation which suggested that differences in preference changes could be explained by differences in the propensity to revise policy preferences. In contrast, the effect of respondents' perceptions towards the consensus about liberalization on policy learning is clear: the higher those perceptions are, the more favourable respondents themselves have become toward liberalization.

Model 1 looks at the effect of information use. The model clearly demonstrates the relation between belief change and preference change: when the outcomes of the liberalization policy have seem more positive than initially expected by respondents, they also adapted their preferences towards this policy positively. This effect of information use on policy learning is really strong, when considering the increase of the pseud-R<sup>2</sup> at the individual level as well as the significance of the likelihood ratio test.

Model 2 and 3 look at the effect of personal uniqueness, a dimension of egocentrism. Model 2 demonstrates that the direct effect of egocentrism is significant, even when added to the effect of information use: Egocentric respondents' preferences towards the liberalization policy have evolved less favourably than the preferences of their less egocentric colleagues. Model 3, in turn, focuses on the interaction effect between information use and egocentrism, which reveals to be significant too: when policy actors are more egocentric, the relation between their beliefs about the outcomes of the liberalization policy and their preferences towards this policy becomes weaker. It is noteworthy, however, that the effect of egocentrism is weaker than information use, when looking at the fit statistics: the pseudo-R<sup>2</sup> does increases, but slightly, and the likelihood ratio test is just significant. Nevertheless Model 3 remains the best model of the research.

Model 4 and 5 look at the effect of self-esteem. The models clearly disqualify self-esteem as a factor of policy learning: both direct effect and interactive effects of self-esteem are insignificant. This is confirmed by the fit statistics which display the stability of the pseudo-R<sup>2</sup> and the insignificance of the likelihood ratio test.

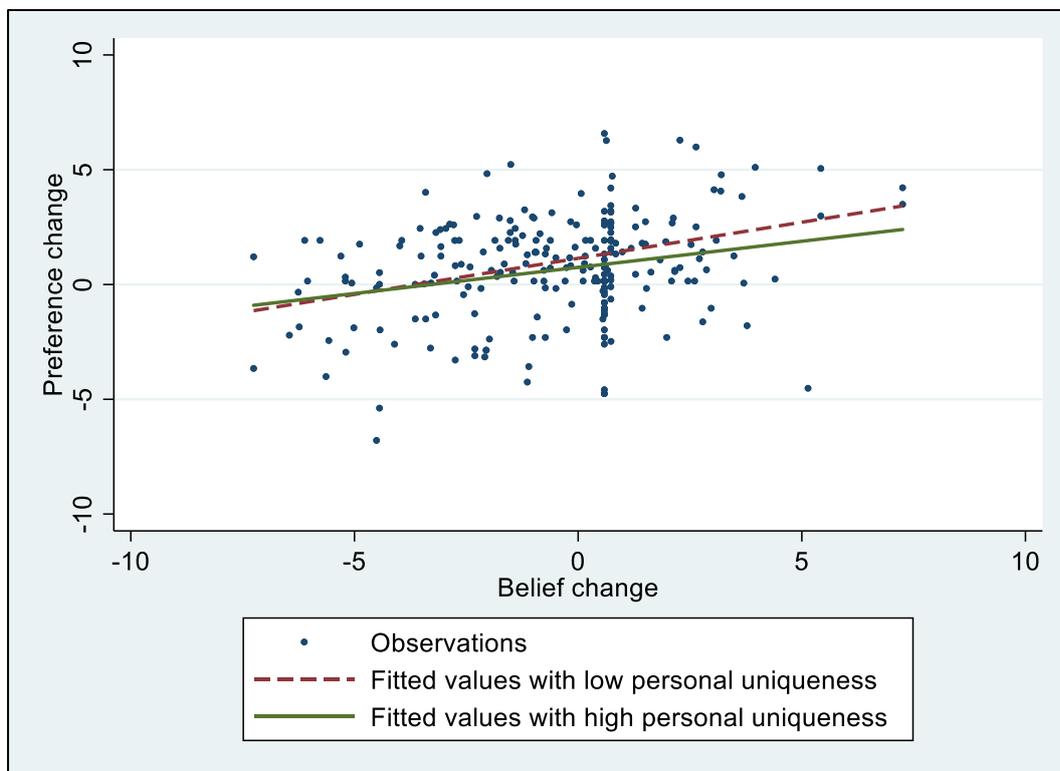
## Findings

***Information use is stronger than individual psychology*** – Clearly, the results of the research bring good news for evidenced-based policymaking: they suggest that policy actors do rely on the information acquired about the outcomes of policies. In doing so, the results also confirm the hypothesis 1 of the research and the ACF's assumption (Sabatier, 1993) that policy actors make actual efforts to reduce cognitive dissonances (Festinger, 1957) between their beliefs about the outcomes of a policy and their preferences towards this policy.

There is a noteworthy discrepancy, however, between the results displayed by the descriptive statistics (Table 2) and the regression models (Table 4). While model 2 does demonstrate the individual-level relation between belief change and preference change (information use, hypothesis

1), descriptive statistics suggest that this does not translate into a collective-level relation between the average belief change and the average preference change, especially in the electricity sector in which the former is negative whereas the latter is positive. While the interpretation of this result would require further research, it is consistent with past research suggesting that, due to group dynamics or organizational and institutional constraints, aggregate-level level learning is not necessarily the sum of individual-level learning, in collective settings (Riche et al., 2017; Witting & Moyson, 2015). This result also reminds us that, while policy actors do acquire information and do tend to align their policy preferences with this information, the assimilation of this information remains partially biased (Moyson, 2017). The added value of the present study is to look at two sources of such biases related to the psychology of policy actors: egocentrism and self-esteem.

***Egocentrism hampers information assimilation*** – the results of the research suggest that at least one dimension of egocentrism – personal uniqueness – influences the cognitive process of information use in policy learning. Egocentrism is the tendency to confuse subjective perceptions with objective reality as well as to disqualify all perspectives other than one’s own. Personal uniqueness refers to the view that the self is special and, for this reason, difficult to understand by others. The results demonstrate that, when policy actors are more egocentric, the relation between their beliefs about the outcomes of the liberalization policy and their preferences towards this policy becomes weaker. In other words, egocentrism hampers information assimilation, which confirms hypothesis 2.1 and is illustrated in Figure 2.



**Figure 2. Moderation effect of egocentrism (personal uniqueness) on the relation between belief change and preference change**

**Egocentrism exerts a direct and negative influence on policy learning** – Egocentrism does not only moderate the relation between changes in policy beliefs and changes in policy preferences: it also exerts a direct and negative influence on changes in the latter – a finding which was not anticipated in the theory of this research. Given this, the interpretation of this result is, at best, speculative. A promising food for thought is to consider the body of literature looking at the effect of knowledge on policy learning. This research consistently demonstrates that people holding negative views about policies are more difficult to convince with new, conflicting information than their fellow holding positive views. If this is true, it makes sense that the weight of negative thoughts about policies will be reinforced among people relying more heavily on their own (negative) point of views than on the (positive) point of view of others. Quite the contrary, people considering the (positive) point of view of others agree to rely less heavily on their own (negative) point of view.

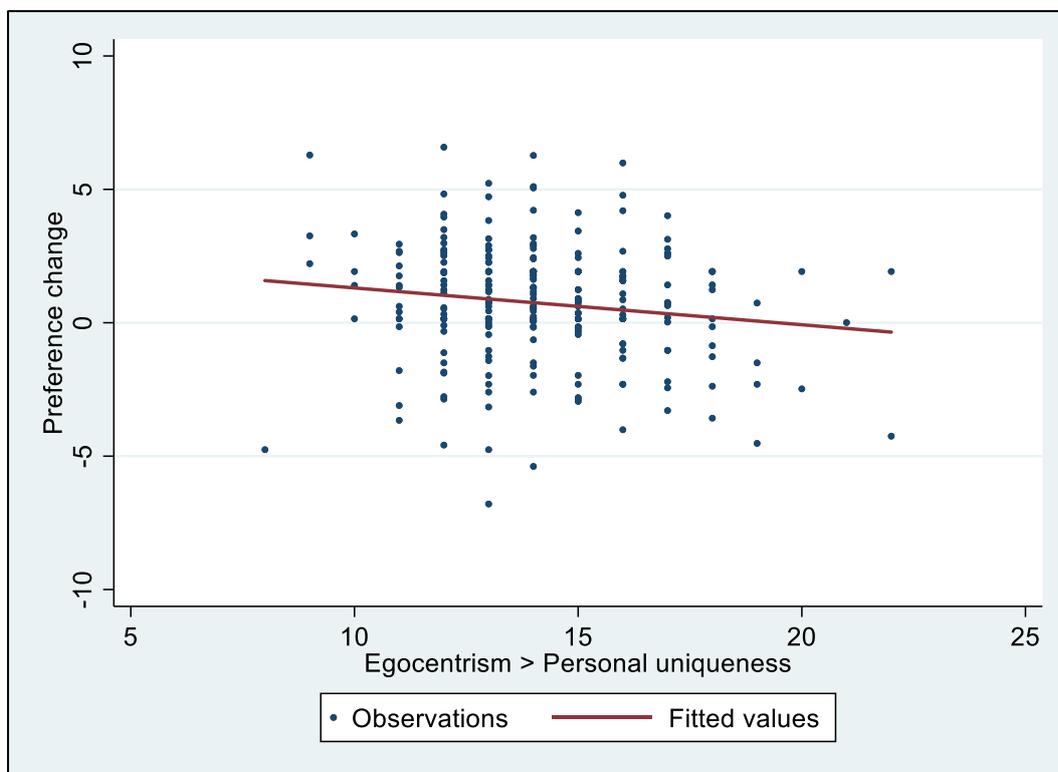


Figure 3. Direct effect of egocentrism (personal uniqueness) on preference change

**No indication about the effect of self-esteem** – The results of the study do not confirm any effect of self-esteem on the relation between belief change and policy learning. In other words, the hypothesis 2.2 that self-esteem hampers the assimilation of policy information is not validated. This is surprising when considering the significant correlation of 0.29 between self-esteem and personal uniqueness – the later being a moderator of the relation between belief change and policy learning and exerting a negative influence on policy learning itself.

**The challenge of measuring the individual psychology of policy actors** – This study raised the methodological challenge of measuring the individual psychology of policy actors. In particular, two

dimensions of egocentrism – personal uniqueness and subjective omnipotence – were measured in this study. Despite efforts to induce a clear concept from the measure of the reduced scale of subjective omnipotence presented in the survey, the Cronbach  $\alpha$  failed to be higher than 0.50. Such failure could be attributed to the organization of the survey: as mentioned above, the items of each scale of the research were separated among multiple batteries and pages of the questionnaire, which provided (too?) conservative measures of each variable. At the same time, it could be the case that the items of egocentrism, initially designed for adolescents, should be adapted to adult policy actors. Beyond this, it could be reminded here that the ‘invulnerability’ dimension was even withdrawn from the measurement of egocentrism, in this study, because of its lack of adaptation to policy actors. The findings of the research are summarized in Figure 4.

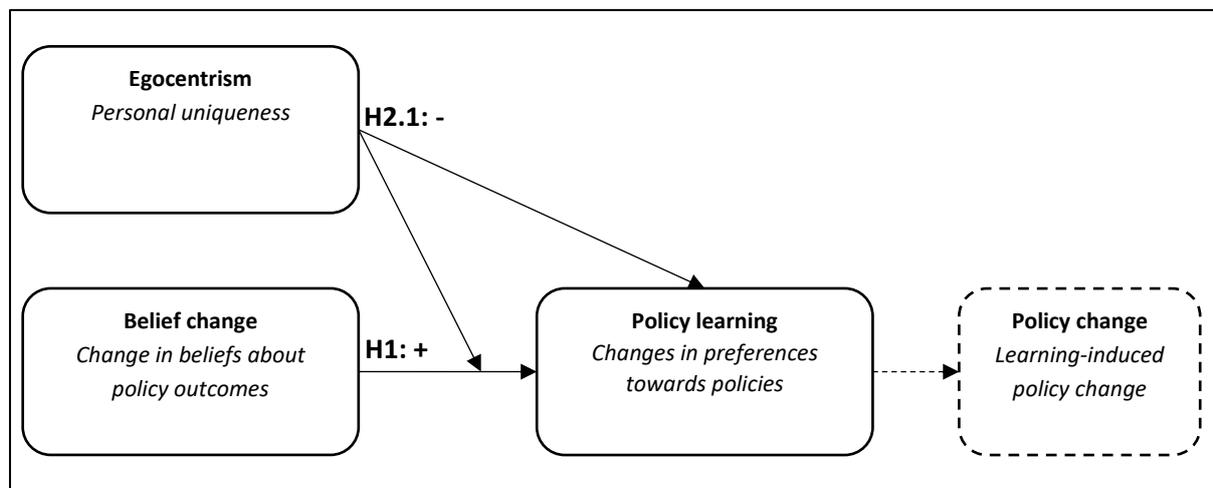


Figure 4. Revised analytical framework of the study

## Conclusion

Policy learning is the cognitive and social dynamic through which actors involved in a policy process revise their beliefs and preferences toward a policy. This dynamic plays a crucial role in policy stability or change as well as in the permanence or transformation of relations between parties to the process. While the social dynamic of policy learning has been extensively researched, recent calls have suggested that the individual psychology of policy learning has been underexplored. Not only individual psychology influences policy learning but it could also be modelled by policy practitioners in order to influence policy learning and change processes. This study has addressed this gap by looking at two mental constructs susceptible to increase the tendency of policy actors to stick to their own point of view when processing new policy information: egocentrism and self-esteem. The test of the hypotheses was based on regression analyses of a survey conducted in 2012 among 289 Belgian policy actors who had been involved, during the last two decades, in the European liberalization policy process of two network industries: the rail and electricity sectors.

The findings of the study are threefold. First, rational knowledge utilization remains a stronger cognitive dynamic of information processing than egocentrism and self-esteem: changes in beliefs about the outcomes of a policy strongly induces the alignment of policy actors' preferences towards

this policy. Second, egocentrism influences policy learning in two respects. On the one hand, egocentrism is a source of biased assimilation: it moderates negatively the relation between adaptations in beliefs about policy outcomes and the subsequent alignment of policy preferences. On the other hand, egocentrism exerts a direct, negative influence on policy learning: the more egocentric policy actors are, the less positive their alignment of policy preferences is over time. Third, the results failed to confirm my theoretical expectations about the relation between self-esteem and policy learning.

At the theoretical level, these findings suggest several paths for future research. First, while they provide a tentative reply to the need for a better understanding of the psychology of policy learning (Dunlop & Radaelli, 2017), they call for future research about institutional settings and social practices to model this psychology (Moyson & Scholten, 2018). At this moment, existing psychological research is mixed on the possibility to 'debias' egocentric policy actors (e.g., Eyal et al., 2018; Thomas & Jacoby, 2013). Second, the results of the research have shown that, while policy preferences and beliefs about outcomes evolved in fairly similar ways in the rail sector, policy preferences evolved positively whereas beliefs about outcomes evolved negatively in the electricity sector. This suggests that collective learning is not necessarily the sum of the individual learning. Future research should look into the organizational and institutional conditions that can constrain the transformation of learning by many individual participants into collective learning that is representative of only a minority of them (Witting & Moyson, 2015). Third, future studies should address the methodological challenge of measuring the individual psychology of policy actors. This involves the creation of effective methodological artefacts to measure mental constructs in such a context, but also the identification of psychological patterns more directly related to the practice of policymaking.

At the practical level, the findings of this research should not be interpreted as a call for the selection of the 'good' versus 'bad' policymakers, which would certainly be questionable, from a democratic point of view. Rather, they suggest to look for settings and practices that foster information assimilation by subsystem members involved in a policy process. This study provides important indications about the missing link between the former and the latter.

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## Appendix – Composite variables of the study

<b>Change scores: change, between 1997 and 2012, in respondents' favourableness to...</b>	<b>Mean</b>	<b>Std Dev</b>	<b>Correlation with Total</b>	<b>Alpha without this variable</b>
The introduction of competition in the railway transport of freight	0.02	0.89	0.48	0.48
The introduction of competition in the international railway transport of passengers	0.06	0.89	0.53	0.45
The unbundling of operations on, and management of, the railway infrastructure	-0.09	0.97	0.26	0.65
The application of regulation by independent regulatory bodies in the railways	0.06	0.89	0.34	0.59
<b>Total Cronbach coefficient alpha: 0.61</b>				

**Table 5. Items of changes in policy preferences in the rail sector (dependent variable)**

<b>Change scores Change, between 1999 and 2012, in respondents' favourableness to...</b>	<b>Mean</b>	<b>Std Dev</b>	<b>Correlation with Total</b>	<b>Alpha without this variable</b>
The introduction of competition in the generation and supply of high-voltage electricity (professional customers)	-0.07	0.97	0.63	0.51
The introduction of competition in the generation and supply of low-voltage electricity (households)	-0.37	1.17	0.55	0.56
The unbundling of generation/supply and transport/distribution of electricity	-0.21	1.02	0.40	0.66
The application of regulation by independent regulatory bodies in the electricity sector	-0.57	1.00	0.31	0.72
<b>Total Cronbach Coefficient Alpha: 0.69</b>				

**Table 6. Items of changes in policy preferences in the electricity sector (dependent variable)**

<b>Change scores Change, between 1997 and 2012, in respondents' opinion about the impacts of the liberalization policy on...</b>	<b>Mean</b>	<b>Std Dev</b>	<b>Correlation with Total</b>	<b>Alpha without this variable</b>
Quality	0.06	0.88	0.59	0.72
Safety (personnel and population)	-0.17	1.06	0.67	0.67
Prices	-0.46	1.00	0.44	0.79
Competition	-0.22	0.99	0.63	0.69
<b>Total Cronbach Coefficient Alpha: 0.78</b>				

**Table 7. Items of changes in beliefs on policy outcomes in the rail sector**

<b>Change scores Change, between 1999 and 2012, in respondents' opinion about the impacts of the liberalization policy on...</b>	<b>Mean</b>	<b>Std Dev</b>	<b>Correlation with Total</b>	<b>Alpha without this variable</b>
Regularity and reliability of supply	-0.15	0.86	0.52	0.78
Safety (personnel and population)	-0.13	0.66	0.64	0.74
Prices for middle and big professional clients	-0.64	1.17	0.78	0.67
Prices for small professional clients and households	-0.98	1.34	0.84	0.64
Competition	-0.42	1.12	0.75	0.69
<b>Total Cronbach Coefficient Alpha: 0.75</b>				

**Table 8. Items of changes in beliefs on policy outcomes in the electricity sector**

Do you agree with the following statements?	Mean	Std Dev	Correlation with Total	Alpha without this variable
The way I view the world is very different from the way others view the world.	2.91	0.92	0.36	0.50
I won't talk about my feelings because no one would understand them.	2.35	0.93	0.27	0.58
I am very different from my friends.	2.59	0.86	0.42	0.45
Most people understand me very well. [reversed item]	-3.69	0.69	0.41	0.48
<b>Total Cronbach Coefficient Alpha: 0.60</b>				

**Table 9. Items of egocentrism > personal uniqueness**

Do you agree with the following statements?	Mean	Std Dev	Correlation with Total	Alpha without this variable
My opinion usually influences others.	3.61	0.61	0.29	0.24
Other people control my life. [reversed item]	-2.20	0.91	0.11	0.37
My opinion is more valued than the opinion of others.	2.44	0.85	-0.01	0.45
Others come to me for advice.	4.02	0.50	0.27	0.27
I'm the one that usually makes things happen.	3.71	0.67	0.27	0.24
I have a great self-control.	3.90	0.70	0.18	0.31
<b>Total Cronbach Coefficient Alpha: 0.35</b>				

**Table 10. Items of egocentrism > subjective omnipotence**

Do you agree with the following statements?	Mean	Std Dev	Correlation with Total	Alpha without this variable
I feel that I am a person of worth, at least on an equal plane with others.	4.17	0.67	0.43	0.69
I feel that I have a number of good qualities.	4.10	0.44	0.54	0.62
I take a positive attitude toward myself.	3.97	0.51	0.54	0.61
On the whole, I am satisfied with myself.	3.88	0.57	0.48	0.64
<b>Total Cronbach Coefficient Alpha: 0.70</b>				

**Table 11. Items of self-esteem**

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<sup>i</sup> Within each participating organization, I included in the survey all members from the highest to the lowest organizational level where, according to the interviewees, at least several actors could be identified as relevant respondents to my survey. I applied this ‘hierarchical correction’ (i.e., including all people at the lowest relevant hierarchical level) to compensate for the tendency of the snowball sampling procedure to over-represent ‘well-connected’ actors and to under-represent ‘unconnected’ actors (Atkinson & Flint, 2001). The following types of organizations were invited to participate in the survey within each sector: all competent public administrations, all competent regulatory agencies, the infrastructure manager, the incumbent, all new entrants, as well as the interest groups representing the workers (e.g., trade unions or associations of train drivers) and the different types of companies (e.g., association of public-sector train companies or associations of green producers). The organizational and individual response rates were fairly similar for each type of organizations. For more details about the liberalization survey, see Moyson (2014).

There are at least three reasons to think that the survey allows long-term policy learning to be examined in a valid way. First, most respondents had professional seniority. Indeed, an additional question of the survey demonstrates that 70.31% of the respondents had worked for more than 10 years in their sector; 12.29% between 5 and 10 years; 13.65% between 2 and 4 years; and only 3.75% had worked one year or less.

Second, the implementation of the European liberalization policy is a long-term process that began much before the first Belgian-level policy decision was made (e.g., European-level consultations with Belgian actors, preparation for the implementation within each national industry, etc.). Since then, this process has progressively unfolded. Still today, there are very important decisions that are being made in each sector to implement the liberalization policy in Belgium (e.g., the introduction of competition to the national railway transport of passengers). This means that not only the most experienced policy actors but also the less experienced ones are able to compare periods before and periods after important policy changes related to the liberalization policy occurred.

Third, the analyses were repeated for the 29.69% of respondents with less than 10 years of seniority. Those respondents, compared to their more experienced counterparts, reported alterations of their policy beliefs and preferences that are not significantly different. In addition, the regression analyses were repeated on this specific set of respondents, and they lead to similar results.

<sup>ii</sup> In the exploratory factor analysis (EFA: Costello & Osborne, 2005), principal axis factoring was used. This method is appropriate when items are not normally distributed (Shapiro-Wilk tests were conducted on each change score and rejected the normality hypothesis in nearly all cases). Factors with eigenvalues higher than 1.0 were retained: factors 1 and 2 had eigenvalues of 1.34 and 0.02 in the rail sector; they had eigenvalues of 1.47 and -0.01 in the electricity sector. After rotation, all items had loadings equal to or higher than 0.33. Most researchers consider 0.30 to be a reasonable cut-off value to decide whether an item should or should not be retained in a factor (e.g., Costello & Osborne, 2005; Whitley & Kite, 2013, p. 345). Hence, the four items were retained for each of the two sectors. Confirmatory factor analysis (CFA: Kline, 2005) was performed with a maximum likelihood procedure. The starting values of the parameters were set to one, except for the covariance parameters, which were set to 0.5. This strategy is appropriate when working on standardized variables with positive covariances (Kolenikov, 2009). Factor scores were computed with the Bartlett method because this method provides unbiased scores (Hershberger, 2005). In general, good model fit is indicated by values of the root mean square error of approximation (RMSEA) lower than 0.60, values of the comparative fit index (CFI) higher than 0.90, values of the standardized root mean square residual (SRMR) lower than 0.08, as well as p-values of the chi square test higher than 0.05 (i.e., failure to reject the null hypothesis of good fit). Note, however, that RMSEA = 0.00 and CFI = 1.00 can indicate that  $\chi^2 < df$  rather than a perfect fit.

<sup>iii</sup> In the exploratory factor analysis, factors 1 and 2 had eigenvalues of 1.84 and 0.05 in the rail sector; they had eigenvalues of 2.02 and 0.12 in the electricity sector. After rotation, all items had loadings equal or higher to 0.40.

<sup>iv</sup> In each sector, the two intermediate variables have Cronbach’s alpha ( $\alpha$ ) coefficients equal to or higher than 0.71 except for the evolution of respondents’ beliefs about policy outcomes in the railways ( $\alpha = 0.62$ ). Deleting change score 3 (‘The unbundling of operations on, and management of, railway infrastructure’) would slightly increase the  $\alpha$  of this variable to 0.66. There are, however, two reasons to keep the four-item structure. First,  $\alpha$ ’s are not weighted, whereas factor scores depend on the loading of each item that comprises the factor structure. In this research, the fit statistics of the CFA indicate a very good fit. This suggests that change score 3 may be kept. Second, the four-item structure is grounded in the literature on the European liberalization process of network industries, which suggests that this structure is more representative of this policy than shorter structures (Genoud, 2004; Geradin, 2006).

<sup>v</sup> The European Parliament and the European Council adopted the fourth railway package introducing competition to the national railway transport of passengers in December 2016 (directive 2016/2370/EU).