QUESTION-ORDER EFFECTS AND TRUST IN POLITICIANS IN PLURINATIONAL CONTEXTS

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Abstract

The order of questions in surveys can affect the answers obtained. Questions formulated earlier provide a particular context that might influence questions asked later in a questionnaire. This research studies the effects of changing the order of questions about trust in Spanish and Catalan politicians. Split-ballot experiments were embedded in two representative surveys held in the Spanish region of Catalonia. Significant assimilation effects were spotted in both samples. Respondents who first evaluated the relatively less trusted leaders assessed less favorably the relatively better rated politicians. Evidence of the reverse effect was limited to one of the experiments. In addition, heterogeneous question-order effects emerged among the two distinct national communities coexisting in Catalonia.

Keywords: Question-order effects; split-ballot experiment; trust in politicians; subjective national identification.

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Introduction

Survey questions are not asked in a vacuum but embedded in the conversational flow of an interview, which involves several additional surrounding items. The order in which questions are asked in surveys can have important effects on the results. In survey methodology, “order effects” are a form of bias produced by the order in which questions (or response options) are presented to the respondents (Schwarz, 1999; Schuman & Presser, 1996; Schuman, 1992). Questions that are asked first provide a particular context that can alter the way in which subsequent questions are responded. This phenomenon has the potential to threat the substantive interpretation of survey results. Either if the interest is in studying a single moment in time or changes over time, inferences from survey data would be biased were they subject to unexpected order effects due to how questions are placed on the questionnaire.

Question-order effects tend to arise because questions similar in content influence one another (Schuman & Presser, 1996). This research addresses question-order effects on two similar questions: trust in Spanish and Catalan politicians, using an experiment embedded in two different surveys held in the Spanish region of Catalonia. The order in which politicians of each of these two political contexts are presented to respondents has an impact on the response obtained. When the relatively worst rated politicians are evaluated first, the relatively more trusted leaders receive worst ratings. This negative assimilation effect could stem from the negative prime of the preceding question combined with the need some respondents have to appear consistent in their answers. It could also be that asking first for the less trusted politicians establishes a stricter reference point for the evaluation of the subsequent group in a kind of initial frame of reference effect. Additionally, the order effects could eventually work in the

reverse direction: when relatively more trusted politicians are rated first, comparatively less trusted ones might see their evaluations improve, rendering a positive assimilation effect. Furthermore, as Catalan citizens can identify with two different national communities of reference –the Catalan or the Spanish one, the experiment could have heterogeneous effects. The impact of changing the question order can be different depending on the national identity of the respondent.

The article is structured as follows. The first section reviews the literature on question-order effects and refers to the psychological mechanisms underlying this sort of measurement error. The next section presents the data, research design and hypotheses. The following section introduces the main results of the first experiment and the heterogeneous effects across groups. The verification section explores the adequacy of the randomization process. The next section presents the results of the replication of the experiment on a second sample. The last section resumes and concludes.

Question-Order Effects

Scientific awareness of order effects was present even in the early days of survey research (e.g. Cantril, 1944). In spite of the important risks order effects can pose to generalization from survey results, not enough substantial literature has dealt with this phenomenon (see Schuman & Presser, 1996, p.24). Order effects can either refer to the order of questions (question-order effects) or to the order of response options within questions (response-order effects[i]). There is specific literature related to these two avenues of research. The focus of this investigation, however, is on question-order

effects. Question-order effects usually involve questions about similar issues in which a "transfer of meaning" between them takes place. These situations are usually named after the label of context effects (Schuman 1992). Nevertheless, not all order effects follow this pattern; some are more related to automatic type of mechanisms, like sequence effects (for instance, those involved in "fatigue" effects).

Question-order effects can be further classified according to the types of relations between questions, yielding to two main types: the part-whole, and the part-part combinations. Part-whole combinations involve two or more questions where one question is more general and comprises the other one. Part-part combinations include questions that are at the same level of specificity. Question-order effects are also classified by the types of effects they produce. The two main types are assimilation effects, also known as consistency effects, and contrast effects. Assimilation effects happen when answers to the later question are more similar to the earlier one than would have been if the order of questions would have been different. The rationale for this situation is the need the respondent has to appear consistent when answering. Conversely, contrast effects produce the opposite situation: greater differences between questions as a result of the ordering. Both part-whole and part-part combinations can be subject to either assimilation or contrast effects (see Schuman and Presser, 1996 for a detailed list of experimental examples).

Strack (1992) digs into the psychological mechanism of question-order effects that lead to either assimilation or contrast effects. The influence of the preceding question can be conceptualized as a prime which has the functions of activation and information. The function of activation refers to the fact that the prime automatically activates certain concepts that can be brought to mind more easily later on. If the respondent is not aware of the prime, it would mechanically lead to an assimilation

effect. Conversely, if the respondent becomes aware of the prime, and perceives the relationship between the two questions, they can use this information to intentionally act on it. The preceding question then would have an additional function of information in the sense that it provides information on the intended meaning of the question (Strack 1992). The results could then be either assimilation or contrast depending on whether respondents perceive the two questions as meant to belong together or not. For instance, it would lead to contrast if the respondent recognizes a part-whole combination and deliberately subtracts the part when evaluating the whole.

Schuman and Presser (1996) also refer to additional sorts of question-order effects such as salience, rapport, fatigue, and initial frame of reference effects. Potentially relevant to this research are the initial frame of reference effects. This type of effects occur when respondents are requested to rate a series of items on numerical scales. In such situations, a problem establishing an initial reference point arises. They are classified as question-order effects and not as response-order effects, because respondents have to answer different questions. But they share similarities with response-order effects, since the source of influence is not the contextual meaning, but the place of the item in a sequence. Different experiments reviewed by Schuman and Presser (1996) indicate that rating a series of objects can create sequence effects because of shifting frames of references. In particular, the first item in a series tends to obtain more extreme responses than posterior items, due to the lack of a reference point[ii].

This research investigates question-order effects in two questions about trust in politicians that belong to two different levels of government: Spanish and Catalan politicians, within the context of the Spanish region of Catalonia. Not much research has specifically dealt with question-order affecting trust in politicians. A previous

investigation analyzing explicitly this issue was the experiment by Schwarz and Bless (1992) priming scandals before general and specific questions on trust in politicians. Making respondents think about a politician who was involved in a scandal decreased the trust of politicians in general through an assimilation effect, but increased the trust in other individual politicians by means of a contrast effect. In a similar vein, Erikson, Luttberg, and Tedin (1988) showed how American citizens distrust Congress, but trusted their own representative in this institution. Schwarz (1999) offers a possible reason for this effect. The media presents extreme cases of untrustworthiness and corruption to the public, which become highly accessible to memory. These extreme examples can strongly influence the representation of the general trust, but they can be used as a standard of comparison and contrast in evaluating individual instances.

In any case, to the best of my knowledge no research has specifically dealt with trust in politicians in a plurinational context. In such a setting the two different levels of government (regional and state) also represent two potentially different national communities of reference, as citizens have a repertoire of nations to identify with (Hierro, 2013).

Other researchers have dealt with relatively related topics such as presidential popularity (Sigelman, 1981; Darcy and Schramm, 1979), and candidate preferences for governor and senator (Crespi & Morris, 1984). Darcy and Schramm (1979) in a rebuttal of Kernell (1978) indicate how the presidential popularity question in Gallup surveys was affected by question-order effects, making the time-series analysis risky. Since 1956 the question on presidential approval was moved from the very beginning towards the end of the questionnaire. After that year, previous questions that could prime negative events (such as the Vietnam War) were placed before presidential approval, potentially biasing responses. Sigelman (1981) translates Darcy and Schramm's

analysis into a proper experiment, and finds no question-order effects on presidential popularity whatsoever. He concluded that unless the potential bias of previous items was very extreme, evaluations of presidential performance would tend to remain unaffected.

Crespi and Morris (1984) studied question-order effects on preferences for candidates to two different US races, the senatorial and the gubernatorial, using a split-ballot experiment. Preferences for candidates to the Senate became affected by the order in which preferences for Governor were asked. They concluded that asking first about the race in which a party's candidate is stronger has a coattail effect among the party's followers when preference in the other race is measured first. Another important implication from this research was that order effects were not homogeneous across the sample, but associated with specific political attitudes (such as party identification, candidate preference, or education).

The Current Study

Considering what is known in the literature, I want to test if asking first for trust in Spanish politicians influences the trust expressed in Catalan politicians later on, and vice versa. This research first employs the Survey on the Political Situation from 2015 (REO 806, 2015) from the CEO[iii]. This is a CATI survey with a stratified proportional sample of 1,050 individuals, representative of the population above 17 years of age living in Catalonia and with Spanish citizenship (3.02% margin of error for P=Q=50). The questionnaire lasted for an average of 15 minutes, and it basically revolved around political topics. The questions on trust in Spanish and Catalan politicians where placed at about the middle of the questionnaire. They had the following format:

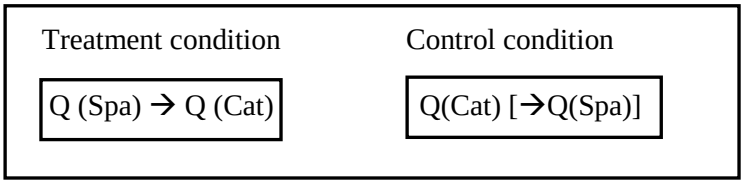
P20a. All in all, please rate the degree of trust you have in the Catalan politicians in a scale from 0 to 10, where 0 is no trust at all and 10 is a lot of trust.

P20b. All in all, please rate the degree of trust you have in the Spanish politicians in a scale from 0 to 10, where 0 is no trust at all and 10 is a lot of trust.

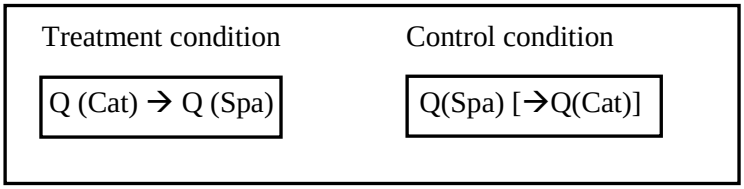
In the administration of the questionnaire, the order of appearance of these two questions was randomized in the context of a split-ballot (or split-sample) experiment (Tourangeau, 2004). Half of the sample was exposed to a questionnaire in which trust in Catalan politicians was asked first, and trust in Spanish politicians just after. The other half of the sample was first faced to the rating of Spanish politicians, and right after they had to rate Catalan politicians. The treatment of the experiment was, therefore, the order in which both questions on trust in Spanish and Catalan politicians were formulated.

Figure 1. Experimental conditions to test question-order effects

Structure 1: Negative assimilation effect



Structure 2: Positive assimilation effect



Strictly speaking, it is not the order that affects the answers but the preceding question that may have an effect on the subsequent one (Strack 1992). The question-order effect is actually a question effect: an effect of a question that is previously asked versus not asked. In this vein, my single split-ballot experiment with two groups could

be essentially understood as containing two pairs of treatment and control conditions (see Figure 1). One pair (structure 1) would tackle whether the question on trust in Spanish politicians (Q(Spa)) has an effect on trust in Catalan politicians (Q(Cat)). The other one (structure 2) would seek whether the question on trust in Catalan politicians (Q(Cat)) has an impact on trust in Spanish politicians (Q(Spa)).

The prime implied by the preceding question can be qualified in terms of the direction of its valence, and then speak of a positive or a negative prime. The valence of the dominant response to the preceding question may be used as a criterion for assimilation or contrast in the subsequent question (Strack 1992). If the influence is in the same direction as the first question, it produces assimilation; if it is in the opposite direction, the result is contrast. We know from previous surveys (e.g. REO 804, 2015) that Spanish politicians in Catalonia are overall less trusted than Catalan politicians. Therefore, I can anticipate that the dominant valence associated to Spanish politicians would be negative. In Catalonia, their image might be associated with issues repeatedly appearing in the media such as corruption scandals, inability to deal with the crisis, inadequate decisions taken before and during the crisis, problems of representation, or their responsibility on the current bad state of relations between Spain and Catalonia. The valence associated with Catalan politicians is less negative – still not good though. Their image might share some negative elements with the Spanish one, but it could also be associated with positive issues, at least for some, such as a certain sense of differentness with respect to politicians of the rest of Spain, as well as the projected hope and expectations for an eventual secession and the building of a new state. In view of these elements, we can derive that trust in Spanish politicians as a preceding question might play the role of a negative prime, whereas trust in Catalan politicians may be a positive prime in relative terms, or at least a less negative one.

A relevant element when considering the psychological mechanisms leading to question-order effects is whether the respondent is aware of the priming episode or not. Previous experiments (e.g. Lombardi et al., 1987) indicate that subjects able to recall the prime were more likely to show contrast effects, while subjects unable to recall it were prone to assimilation effects. The influence of the prime of the preceding question may only be counterbalanced in the form of contrast if subjects are conscious of it and react upon this information. If they are not aware, a mechanical process of assimilation would likely apply. In this experiment, I do not have the means to verify respondent's awareness of the prime. However, my assumption is that the prime is so subtle and apparently inadvertent that it would be improbable for respondents to be aware of it or infer intentionality. As a result, the most likely sort of effects that may appear would be assimilation effects.

Another consideration is whether the experiment is dealing with a part-whole combination of questions or with a part-part. It is not clear which of these two combinations is perceived by the respondent. In principle, it may seem a part-whole combination, given that formally Catalan politicians belong to the larger set of Spanish politicians. However, in practice respondents may not relate to this scheme depending on their national identification. Citizens in Catalonia have a repertoire of nations to identify with (Hierro 2013; Tormos, Muñoz & Hierro 2015). To people who feel predominantly Catalan (the largest share) the question pair might appear more like a part-part than a part-whole combination. In any case, there are no means here to verify the perception of respondents on this issue.

All these considerations help me in the elaboration of the hypotheses. I sustain that the main type of question-order effects that will appear as a result of the experiment would be assimilation effects. However, assimilation effects can potentially operate in

two directions: positive or negative, depending on the valence of the prime (the preceding question). On the one hand, I expect that asking first for the less trusted politicians (negative prime) would undermine the ratings of the relatively more trusted ones, and therefore produce a negative assimilation effect. On the other hand, asking first for the more trusted politicians (positive prime) could better the ratings of the less trusted ones, generating positive assimilation effects. This would translate into the following hypotheses:

Hypothesis 1: *Negative assimilation effects.* When trust in Spanish politicians is asked on the first place, it will negatively influence the trust in Catalan politicians that would be asked on the second place.

Hypothesis 2: *Positive assimilation effects*. When trust in Catalan politicians is asked first, it will positively affect the trust in Spanish politicians asked right after.

In the literature, experimental effects of this kind are both tested at the marginal level, and in terms of item intercorrelations (Schuman & Presser, 1996). Therefore, apart from exploring the marginal data, I will also study the correlations among the questions involved in the experiment, as well as with other related factors.

Question-order effects are not necessarily an across-the-board phenomenon. As in the Crespi and Morris (1984) experiment, effects might differ quite markedly across subgroups of the sample. I can anticipate a clear source of heterogeneity in the current question-order experiment related to the national identification of the respondent. In Catalonia, the subjective national identification of individuals is a powerful filter through which the socio-political reality is evaluated (Muñoz & Tormos 2015; Guinjoan & Rodon 2016). With some confidence, we can forestall that feeling Catalan vis-à-vis Spanish will influence the trust the respondent has in either Catalan or Spanish politicians.

The third hypothesis takes into consideration this heterogeneity in trust among the Catalan public, and the consequences it can have for the experiment. The positive and negative primes would be different according to the national identification of respondents. However, in general terms, it will still be valid that a negative prime would potentially produce negative assimilation effects, and a positive prime would generate positive assimilation effects. More specifically, this translates into the following propositions:

Hypotheses 3. *Heterogeneous effects by subjective national identification.* For those who feel predominantly Catalan, (H3.1) being first exposed to the question on trust in Spanish politicians would negatively affect their trust in Catalan politicians. And (H3.2) being first faced with the question on trust in Catalan politicians would positively affect their trust in Spanish politicians. For those who feel predominantly Spanish, however, (H3.3) being first exposed to the question on trust in Catalan politicians would negatively affect their trust in Spanish politicians. And subsequently (H3.4) being first exposed to the question on trust in Spanish politicians would positively affect their trust in Catalan politicians.

I will further explore additional heterogeneous effects mentioned in the literature of question-order effects, especially those linked to education (Crespi & Morris, 1984; Narayan & Krosnick, 1996).

Results

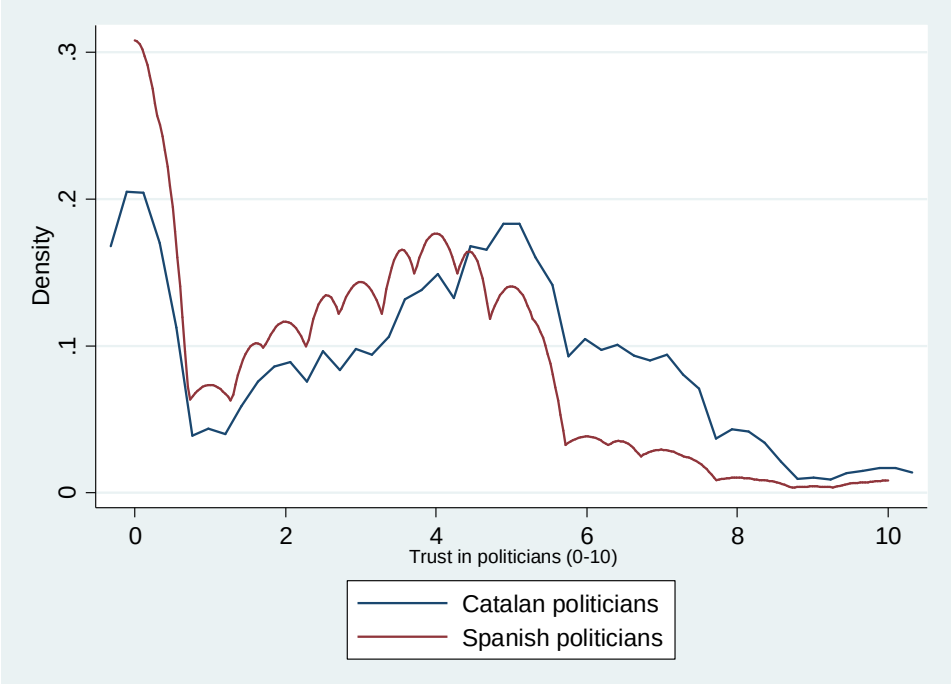
If we take the whole sample, without distinguishing among experimental groups, Catalan politicians are more trusted than Spanish leaders (see table 1). In both cases, the

average is below the middle point, but Catalan politicians obtain a mean of 3.77, while Spanish politicians get a 2.65. This difference of 1.12 is statistically significant (t = 11.21; df. = 1,038; sig. = 0.000). Figure 2 shows the Kernel density distributions for the trust in these two kinds of politicians. The two distributions are somewhat different. Trust in Spanish politicians, in comparison with trust in Catalan politicians, has more cases concentrated on the value of zero, a higher density of cases below the mid-point of the scale, and fewer above.

Table 1. Descriptive statistics

	Catalan politicians	**Spanish politicians**
Mean	3.77	2.65
Median	4	3
Mode	0	0
SD	2.62	2.27
Variance	6.85	5.15
N	1040	1044
Missing	10	6

Figure 2. Kernel density distributions for trust in Catalan and Spanish politicians



Does the trust in the better rated politicians become affected by first asking about the less trusted politicians? In other words, is trust in Catalan political leaders downgraded when trust in Spanish ones is asked on the first place? Table 1 answers this question. It presents the average trust in Catalan and Spanish politicians across the two experimental groups. The group that assesses their trust in Catalan politicians first gives them an average of 4, higher than the mean obtained when the question came after the rating of Spanish politicians (3.55). It is a statistically significant difference of 0.45 among the two groups. Hypothesis 1 becomes then confirmed: a negative assimilation effect takes place affecting the trust in Catalan politicians as a result of the impact of the negative prime established by the preceding question on trust in Spanish politicians.

Table 1. Main effects of the first experiment

		Trust in politicians...		*Difference*	*T test*
		Catalans	*Spaniards*	*Cat.-Spa.*	*rel. samples*
Treatment (Question order)					
a) Catalan politicians first	$\bar{x}_1$	**4.00**	**2.63**	**1.37** **	**9.69** **
	S_1	2.62	2.16	3.21	
	n_1	517	520	517	
b) Spanish politicians first	$\bar{x}_2$	**3.55**	**2.66**	**0.89** **	**6.24** **
	S_2	3.77	2.38	3.26	
	n_2	523	524	522	
Difference among groups		**0.45** **	**-0.03**	**0.48** **	
Levene's Test					
Equality of variance	F	0.13	**7.80** **	0.95	
T test					
Equality of variance	t	**2.75** **		**2.39** **	
No equality of variance	t		-0.22		

** Sig. < 0.01; * Sig. < 0.05.

Changing the order, however, does not affect the evaluation of the Spanish politicians. Both the group in which the question on Catalan politicians is asked first and the group in which it is asked second assess Spanish politicians in the same way (an average of 2.63 and 2.66, respectively). Therefore, Hypothesis 2 stating a potential positive assimilation effect is not confirmed. The positive prime of the preceding question –trust in Catalan politicians– does not have the capacity to influence the assessment of Spanish politicians. It could either be because the prime is not really powerful or positive enough (Catalan politicians are only slightly more trusted than Spanish ones), or because the actual assessment of Spanish politicians is so negative that it is difficult to change it by any means.

As a result of the experiment, the average difference among the Catalan and Spanish leaders is reduced from 1.37, in the group in which Catalans leaders are asked first, to 0.89 in which they are asked second. The distance between these two differences is 0.48, and it is statistically significant. This is in fact another way of assessing the assimilation effect: by means of observing a higher resemblance between the two groups of politicians after the treatment.

Table 3 goes beyond marginal analysis to study correlations among items. The correlation between trust in Spanish (SPAPOL) and Catalan politicians (CATPOL) in the experimental group in which Spanish politicians were asked first is slightly higher than that of the other experimental group, in tune with what we would expect after negative assimilation effects. Nevertheless, the difference between the correlations among the two groups is not statistically significant.

The correlations between trust in Catalan politicians and the scale of nationalism (NATION: max. Catalanism vs max. Spanish*ism*, 0-10) are different across the two experimental groups. In the group in which trust in Spanish politicians is asked first, the

correlation between trust in Catalan politicians and the level of nationalism is lower. This is in tune with negative assimilation effects. Respondents in this treatment group would have rated Catalan politicians better, given their level of nationalism, were they exposed to the reverse question-order.

Table 3. Pearson correlations across experimental groups

		CATPOL		SPAPOL		NATION	
SPAPOL	Cat. 1st	0.10	*				
	Spa. 1st	0.15	**				
	Z-scores of the diff.	*-0.78*					
NATION	Cat. 1st	0.55	**	-0.23	**		
	Spa. 1st	0.42	**	-0,26	**		
	Z-scores of the diff.	*2.81*	**	*0.39*			
IDEOL	Cat. 1st	-0.07		0.28	**	-0.20	**
	Spa. 1st	0.02		0.30	**	-0.16	**
	Z-scores of the diff.	*-1.38*	*	*0.30*		*-0.67*	

** Sig. < 0.01; * Sig. < 0.05; † Sig. < 0.1.

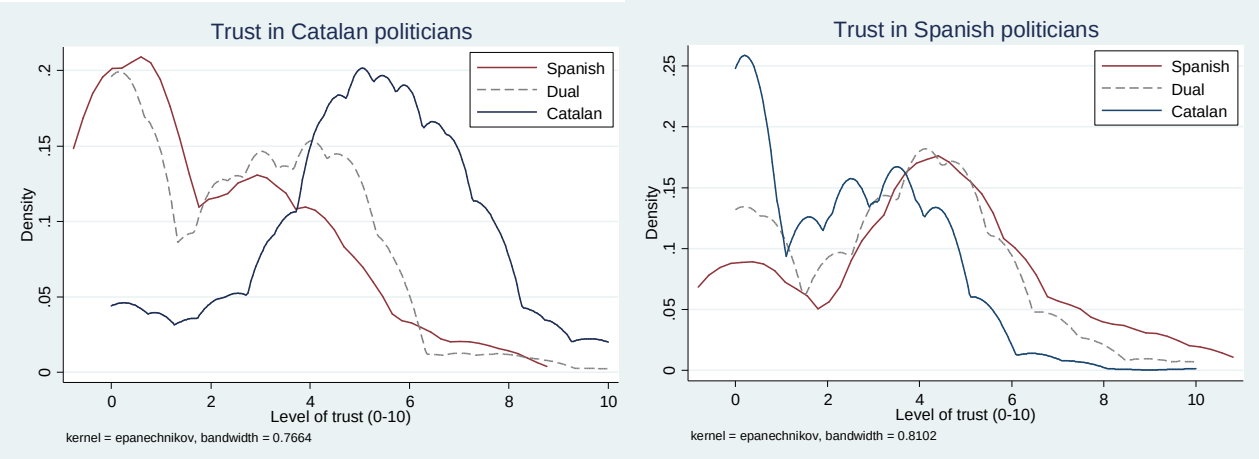
Table 4 divides respondents into three groups according to their national identification in response to the Linz-Moreno question: 1) those who feel predominantly Catalan ("only Catalan" and "more Catalan than Spanish"); 2) the dual identifies ("as Catalan as Spanish"); and 3) the predominantly Spanish ("only Spanish" and "more Spanish than Catalans").

Table 4. Descriptive statistics by the subjective national identification of the respondent

	Subjective national identification					
	Catalans		**Duals**		**Spaniards**	
	Trust in politicians...		Trust in politicians...		Trust in politicians...	
	Catalan	Spanish	Catalan	Spanish	Catalan	Spanish
Mean	**5.06**	**2.07**	**2.44**	**3.22**	**1.95**	**3.92**
SD	2.27	1.93	2.16	2.37	2.10	2.68
N	544	547	367	368	92	92

Those who feel predominantly Catalan evaluate positively the Catalan leaders (5.06) and negatively the Spanish leaders (2.07). Conversely, respondents who feel mainly Spanish value better the Spanish politicians (3.92) than the Catalan politicians (1.95) –although not really well. The response pattern of dual identifiers is more similar to that of the predominantly Spanish, as seen in Figure 3 of the Kernel estimates. They trust Spanish (3.22) more than Catalan (2.44) politicians, even though the differences are attenuated. On the whole, the national identification of the respondent clearly influences trust in both groups of politicians. Respondents tend to look favorably to the political leaders of their own national community of reference, and with a side-glance the leaders of the other national community.

Figure 3. Kernel density estimates of trust in politicians by subjective national identification



This evidence points to a potential heterogeneous effect of the treatment conditional on the national identification of the respondent. If respondents who feel mainly Spanish are first exposed to the question on trust in Catalan politicians, they could rate Spanish politicians worst; the reverse to what would happen in the group of those who feel predominantly Catalan. The reason for it would be that the more trusted politicians for those who feel Spanish are Spanish politicians; the group of politicians

which is their positive reference point. In contrast, Catalan politicians would be their negative reference point. Table 5 presents the results of the experiment across national identity groups.

Table 5. Results of the first experiment by subjective national identification

		Subjective national identification					
		Catalans		*Duals*		*Spaniards*	
		Trust in politicians...		Trust in politicians...		Trust in politicians...	
		Catalan	Spanish	Catalan	Spanish	Catalan	Spanish
Treatment (Question order)							
a) Catalan politicians first	$\bar{x}_1$	**5.28**	**2.18**	**2.53**	**3.06**	**1.69**	**3.6**
	S_1	2.20	1.95	2.11	2.17	2.01	2.60
	n_1	284	286	165	165	52	53
b) Spanish politicians first	$\bar{x}_2$	**4.82**	**1.95**	**2.37**	**3.35**	**2.28**	**4.36**
	S_2	2.32	1.89	2.21	2.51	2.21	2.76
	n_2	260	261	202	203	40	39
Difference among groups		**0.46** *	**0.23**	**0.16**	**-0.29**	**-0.59**	**-0.76**
Levene's Test							
Equality of variance	F	0.58	0.01	0.40	4.60 *	0.26	0.09
T test							
Equality of variance	t	2.38 *	1.36	0.71		-1.32	-1.34
No equality of variance	t				-1.20		

** Sig. < 0.01; * Sig. < 0.05.

Results indicate that the experiment only has statistically significant effects in the group that feels predominantly Catalan (that with a larger subsample). In this segment, when trust in Catalan politicians is asked first, the resulting level is as high as 5.28; well above the mid-point of the scale. Whereas, when this group of respondents is first exposed to the rating of Spanish politicians, their trust in Catalan politicians falls to 4.82. This is a 0.46 statistically significant difference. In the other groups (Duals and Spaniards), the effects of the experiment do not reach the threshold of statistical significance. However, as it was expected, question-order effects have the inverse

impact. In the segment of Spanish identifiers, asking first for their trust in Catalan politicians reduces their trust in Spanish politicians, although the difference is not statistically significant given the small size of the subsample. In this same group, asking first for the Spanish politicians increases their trust in Catalan ones: a positive assimilation effect. However, the differences do not reach the level of statistical significance.

Apart from subjective national identification, no other variable usually mentioned in the literature of question-order effects (such as education, age, sex, or interest in politics) interacts with this particular treatment. Results are not shown for the sake of simplicity.

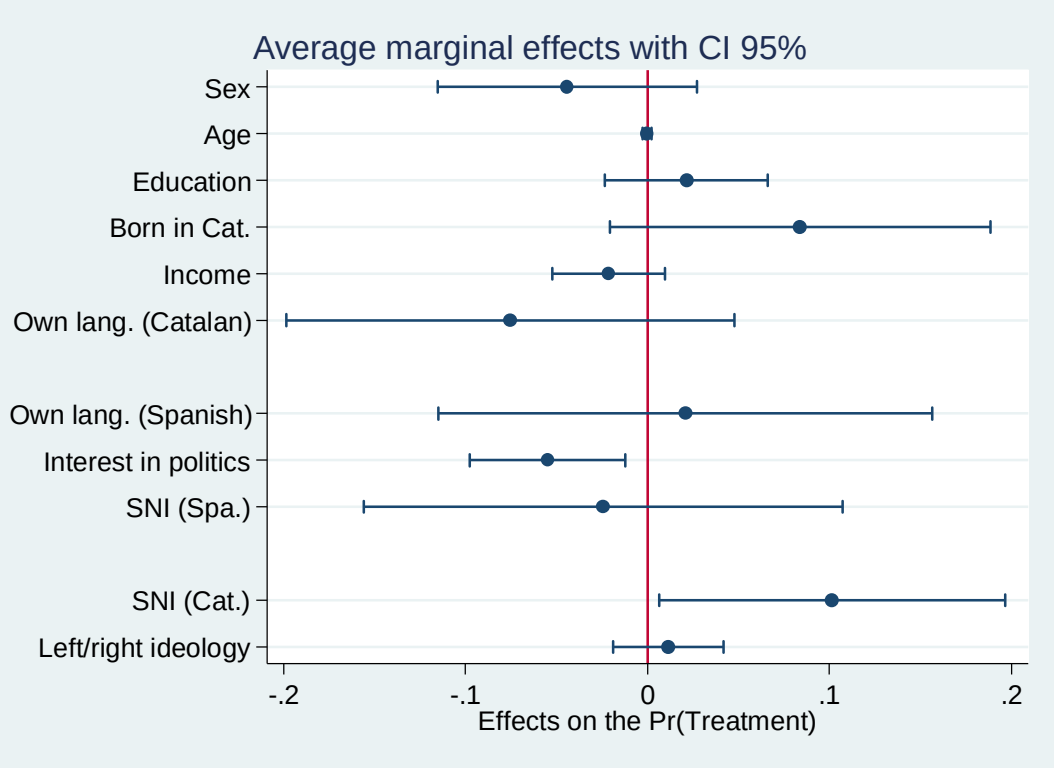
Verification

In an experimental design, if the random assignment of respondents to treatment groups has been successful, those groups will only differ due to the treatment condition. To verify this principle I perform a set of randomization checks. I test the equivalence of the two groups by means of a logistic regression in which the dependent variable is the experimental group and the independent variables are the relevant characteristics that might distinguish them. Figure 4 (and table A1 in the appendix) shows the results from the analysis.

There are statistically significant differences between the two groups by subjective national identification and interest in politics. The group that rates Spanish politicians first contains more dual identifiers and less who feel only Catalan, as well as respondents with a little less interest in politics. These differences are unlikely attributable to an effect of the experiment. In the sequence of the questionnaire, the

question on subjective national identification is asked much later than the treatment, near the end of the interview. Besides that, the treatment itself, a question-order change, is a so mild and subtle a prime that it is highly unlikely it would have had the power to influence the national identification of the respondent. This leads me to think that the difference between the two groups is due to mere chance, and not to an unexpected consequence of the experiment.

Figure 4. Randomization test. Logistic regression to explain experimental group membership



Additional randomization checks have been performed to rule out the possibility that an interviewer effect or an effect of the way in which the fieldwork was carried out could eventually be the reason of the differences in interest in politics and subjective national identification across the two experimental groups. I explored differences between the two groups by the identity of the interviewer that performed the fieldwork. There is a theoretical possibility that specific interviewers were assigned to one group

and not to the other. If this hypothetical uneven assignment of interviewers would have been combined with the fact that some of them were more prone to introduce an involuntary bias in the process of interview, respondents of one of the groups could have expressed more interest in politics or a particular national identity due to an interviewer effect. However, table 6 indicates that there are no differences with respect to the interviewers assigned across the two groups. There is only a difference due to the sex of the interviewer, but this trait has no effect on the experiment (I have tested it through a regression analysis that I do not present here to simplify the presentation). There are no differences with respect to the length of the interview, the day in which it was performed, and the language employed during the interview. These additional tests reinforce the idea that differences between the two groups might be due to mere chance, and not to a fieldwork problem that might have biased the random assignment process.

Table 6. Bivariate randomization tests across experimental groups

	Anova F	**Chi²**	**df**	**Sig.**
Interviewer code	-	27.13	28	0.511
Age of the interviewer	0.24	-	1049	0.625
Sex of the interviewer	-	7.51	1	0.006
Education of the interviewer	-	1.50	3	0.683
Length of the interview	1.34	-	1049	0.247
Day of the interview	-	6.31	7	0.504
Language of the interview	-	1.04	2	0.594

Next, I measure the impact of the treatment on the trust in Catalan politicians controlling by the differences in interest in politics between the two groups, as well as by the differences in subjective national identification. Table 7 shows the results of four linear regressions that have trust in Catalan politicians as the dependent variable.

Table 7. Linear regression of the effect of the treatment on trust in Catalan politicians controlling by interest in politics and subjective national identity in the first experiment

	Model 1	**Model 2**	**Model 3**	**Model 4**
Constant	3.355 **	4.768 **	2.328 **	2.371
	(0.114)	(0.240)	(0.131)	(0.155)
Treatment	0.445 **	0.408 *	0.258 †	0.162
	(0.162)	(0.159)	(0.140)	(0.226)
Interest in politics		-0.542 **		
		(0.093)		
Subjective national identification (SNI)				
Spanish			-0.528 *	-0.096
			(0.249)	(0.379)
Catalan			2.598 **	2.448 **
			(0.149)	(0.212)
Dual (ref.)				
Interaction				
Treatment * SNI Spanish				-0.745
				(0.497)
Treatment * SNI Catalan				0.300
				(0.298)
Dual (ref.)				
R^2	0.007	0.043	0.277	0.280
N	1040	1035	1003	1003

** Sig. < 0.01; * Sig. < 0.05; † Sig. < 0.1.

Model 1 in table 7 only includes the treatment as a predictor (the change in question-order). The coefficient obtained is statistically significant (sig.<0.01), indicating that the change in the order of questions implies a 0.445 change in the trust in Catalan politicians. When interest in politics is included as a control, the effect of the treatment continues to be significant (now at the level of sig.<0.05), even though the coefficient shrinks a little. Model 3 includes subjective national identification together with the treatment. Once controlled by national identification, the effect of the treatment ceases to be statistically significant at the conventional level of 0.05. In this model, the

level of significance associated to the Student's t test of the regression coefficient of the treatment is 0.066. If we follow the usual convention in social sciences, we could not reject the null hypothesis of no effects of the treatment (the coefficient would not be different than zero). However, Tourangeau (2004) considers that in certain occasions it is advisable to raise the conventional significance level from 0.05 to 0.1 in survey experiments[iv]. If we accept Tourangeau's advice, under a level of 0.1, the effects of the treatment would be significant. Therefore, we could conclude that the differences that we observe between the two experimental groups are due to the effect of the treatment and not to previous differences in the composition by national identity. The magnitude of treatment effects will be smaller once controlled by national identity (the coefficient is 0.445 in model 1 and 0.258 in model 3), but it will continue to exist. In the next section I analyze a repetition of this experiment performed on a posterior survey which provides further credence to what we observe in this concrete sample.

As an illustration of the heterogeneous effects of the treatment by national identity, figure 5 shows the coefficients of the interaction (model 4 in table 7). Although they are not statistically significant, we can clearly observe that treatment effects are opposed, according to respondent's national identity. Asking first for the Spanish politicians to those who have a Catalan identity makes them assess Catalan politicians worse, while for those with Spanish identity asking first for the Spanish politicians makes them rate Catalan leaders better. Figure 6 shows the interaction of the treatment with national identification on trust in Spanish politicians (the regression model is not shown in tables for the sake of simplicity). Again, the effects are not statistically significant; however it is possible to see the reverse pattern of effects. Asking first for the trust in Catalan politicians tends to reduce the trust in Spanish politicians, in the group of those who feel predominantly Spanish. In contrast, asking first for the trust in

Catalan leaders tends to improve the trust in Spanish leaders in the group of those who consider themselves mainly Catalans.

Figure 5. Linear regression to explain trust in Catalan politicians (regr. coeff.)

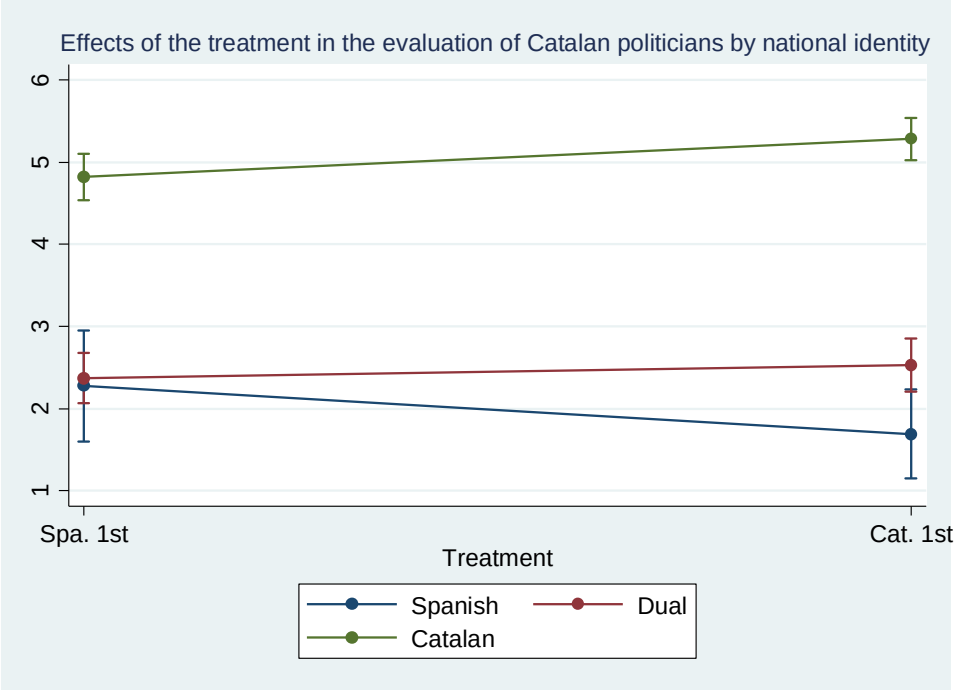
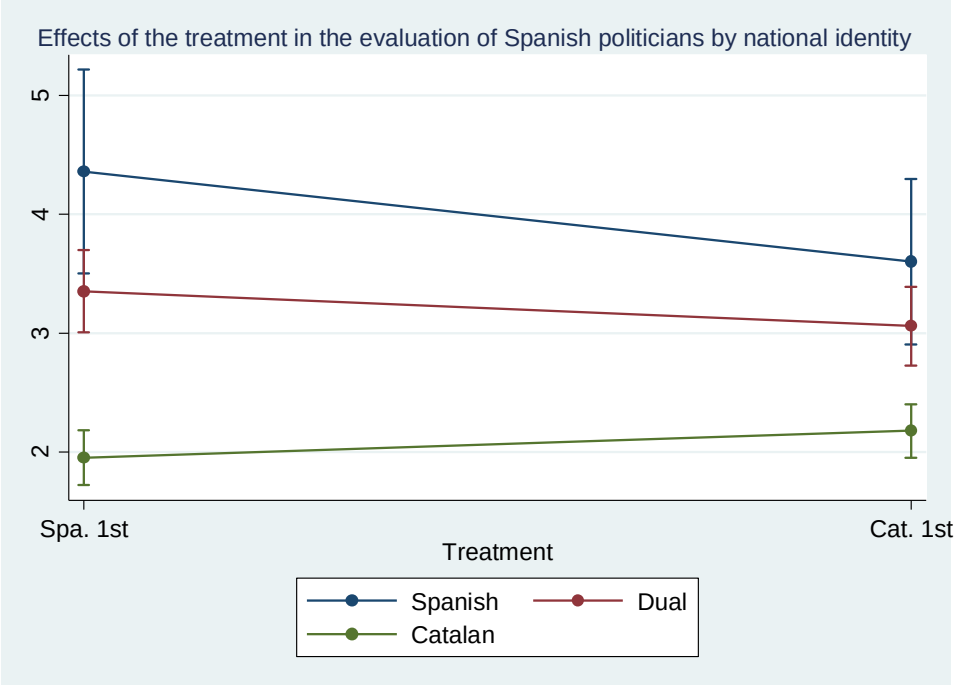


Figure 6. Linear regression to explain trust in Spanish politicians (regr. coeff.)



Replication

To be able to safely generalize the presence of question-order effects, it is convenient to repeat the current experiment on different samples of the same population. Descriptive as well as causal inference relate to the idea of repeated samples and experiments. Replication reduces variability in experimental results, and increases the confidence on the effects of the treatment. If a treatment has a truly causal impact, the average effect of different replications would show it. A replication of the first experiment was embedded on a very similar survey performed by the same institution just four months after the first one (REO 816, 2016). On this occasion, it was a CAPI survey representative of the same population and with a larger sample size (N=1,500). Table 8 presents the main effects of the experiment.

Table 8. Main effects of the second experiment

		Trust in politicians...		*Difference*	*T test*
		Catalans	*Spaniards*	*Cat.-Spa.*	*rel. samples*
Treatment (Question order)					
a) Catalan politicians first	$\bar{x}_1$	**3.86**	**2.44**	**1.41**	**13.87** **
	S_1	2.57	2.11	2.77	
	n_1	753	752	749	
b) Spanish politicians first	$\bar{x}_2$	**3.54**	**2.17**	**1.38**	**14.08** **
	S_2	2.55	2.11	2.65	
	n_2	730	735	730	
Difference among groups		**0.32** *	**0.27** *	0.03	
Levene's Test					
Equality of variance	F	0.04	0.11	0.45	
T test					
Equality of variance	t	**2.38** *	**2.50** *	0.19	
No equality of variance	t				

** Sig. < 0.01; * Sig. < 0.05.

Again, those who assess the Spanish politicians first, give a worst rating to the Catalan politicians afterwards. The magnitude of this negative assimilation effect is similar to that of the first experiment, though slightly smaller. Additionally, in this new experiment positive assimilation effects are also spotted, unlike in the first probe. When respondents have to rate Catalan politicians initially, they assess Spanish politicians better later on. Table 9 contains different regression models to predict treatment effects on trust in Catalan and Spanish politicians controlling by subjective national identification and its interaction with the treatment.

Table 9. Linear regression of the effect of the treatment on trust in Catalan and Spanish politicians in the second experiment

	Trust in Catalan politicians			**Trust in Spanish politicians**		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	3.358 **	2.572 **	2.444 **	2.166 **	2.501 **	2.462 **
	(0.133)	(0.118)	(0.141)	(0.078)	(0.114)	(0.141)
Treatment	0.317 *	0.348 **	0.595 **	0.273 *	0.244 *	0.317
	(0.162)	(0.123)	(0.207)	(0.109)	(0.111)	(0.204)
Subj. national identification (SNI)						
Spanish		-0.712 **	-0.362		0.240	0.208
		(0.198)	(0.303)		(0.214)	(0.330)
Catalan		2.053 **	2.219 **		-0.603 **	-0.527 **
		(0.134)	(0.186)		(0.123)	(0.172)
Dual (ref.)						
Interaction						
Treatment * SNI Spanish			-0.665 †			0.059
			(0.398)			(0.431)
Treatment * SNI Catalan			-0.323			-0.150
			(0.268)			(0.245)
Dual (ref.)						
R^2	0.004	0.197	0.198	0.004	0.029	0.030
N	1483	1410	1410	1487	1414	1414

** Sig. < 0.01; * Sig. < 0.05; † Sig. < 0.1.

When national identification is controlled for, both the negative and the positive main assimilation effects persist (models 2 and 5). However, heterogeneous question-order effects do not reach the level of statistical significance in this occasion (models 3 and 6).

Conclusions

This research has analyzed question-order effects in trust in Spanish and Catalan politicians using split-ballot experiments embedded in two representative surveys fielded in the Catalan region of Spain. Results indicate that when respondents are first exposed to the assessment of the less trusted politicians, the ratings of the relatively more trusted ones become affected by means of a negative assimilation effect. In the two samples, the Catalan politicians are on average more trusted than the Spanish politicians. The two experiments show how the trust in Catalan politicians diminishes when trust in Spanish politicians is asked first. Evidence of the reverse effect, a positive assimilation from the trust in Catalan politicians to that of the Spanish ones, is limited: it is only statistically significant on the main effects of the second experiment.

The subjective national identification of the respondent is highly associated to their trust in Catalan and Spanish politicians. Catalan citizens can either identify with Spain or with Catalonia in national terms (they can also express dual identifications). Respondents who feel Catalan trust Catalan politicians more than Spanish ones, while interviewees who feel Spanish trust Spanish politicians more than Catalan ones. The results of the first experiment are consistent with this state of affairs. Respondents with a Catalan national identification end up trusting Catalan politicians a little less if they are first exposed to the question about trust in Spanish politicians. Likewise,

respondents with Spanish national identity express a little less trust in Spanish politicians when they have to rate their trust in Catalan politician on the first place (although in this case results are not statistically significant due to the small size of the subsample of Spanish identifiers). Results also indicate positive assimilation effects across subgroups on national identification. However, the reduced sample sizes of those subgroups do not allow for a safe generalization of the relationships.

The randomization checks performed point to the presence of differences in the composition of the first two experimental groups in terms of national identification and interest in politics. When differences due to national identification are controlled for, the effect of the experiment becomes attenuated. It continues to be statistically significant only if a more generous level of significance is accepted, inferior to 0.1. In any case, the replication of the first experiment on a second sample of individuals helps me at inferring the existence of question-order effects more robustly and safely.

To summarize, evidence from the main effects of these experiments confirm the hypothesis on the negative assimilation effects (H1), but provide only partial support to the positive assimilation effects (H2). Results from the interaction of the experiment with subjective national identification speaks favorably of each statement of the third hypotheses (H3) on the heterogeneous effects of the treatment, had we larger subsamples.

The implications of these results are twofold. On the one hand, they add to the literature on question-order effects in trust in a plurinational context, and on the other hand they have practical consequences for survey design. A question-order effect influencing trust in Catalan and Spanish politicians has been demonstrated to exist. Therefore, an advice for future surveys would be to separate both items over the questionnaire, at least using some “buffer” questions (Lasorsa, 2003). If they are put

together, randomization of the order of appearance would only reduce the bias to a certain extent, but bias will continue to exist. However, separating the questions will quite likely de-activate the priming effect that otherwise takes place when they are next to each other in the questionnaire.

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Table A1. Randomization test. Logistic regression to explain experimental group membership

	Coeff. (Rob. EE)		**dy/dx (EE)**	
Constant	0.149			
	(0.656)			
Sex	-0.181		-0.044	
	(0.150)		(0.036)	
Age	-0.001		-0.000	
	(0.005)		(0.001)	
Education	0.088		0.021	
	(0.094)		(0.023)	
Born in Cat.	0.345		0.084	
	(0.221)		(0.053)	
Income	-0.088		-0.021	
	0.065		(0.016)	
Own language				
Catalan	-0.310		-0.075	
	(0.261)		(0.063)	
Spanish	0.086		0.021	
	(0.287)		(0.069)	
Both (ref.)				
Interest in politics	**-0.226**	*	**-0.055**	*
	(0.091)		(0.022)	
Subjective national identity				
Spanish	-0.102		-0.024	
	(0.282)		(0.067)	
Catalan	**0.421**	*	**0.102**	*
	(0.206)		(0.049)	
Dual (ref.)				
Ideology left/right	0.047		0.011	
	(0.064)		(0.016)	
R^2	0.019			
N	773			

** Sig. < 0.01; * Sig. < 0.05; † Sig. < 0.1.

Table A2. Results of the second experiment by subjective national identification

		Subjective national identification					
		Catalans		*Duals*		*Spaniards*	
		Trust in politicians...		Trust in politicians...		Trust in politicians...	
		Catalan	Spanish	Catalan	Spanish	Catalan	Spanish
Treatment (Question order)							
a) Catalan politicians first	$\bar{x}_1$	**4.93**	**2.10**	**3.04**	**2.44**	**2.01**	**3.05**
	S_1	2.33	1.80	2.42	2.20	1.92	2.16
	n_1	381	378	258	241	83	84
b) Spanish politicians first	$\bar{x}_2$	**4.66**	**1.94**	**2.78**	**2.46**	**2.08**	**2.67**
	S_2	2.34	1.92	2.38	2.19	2.30	2.61
	n_2	374	375	259	242	73	76
Difference among groups		**0.27**	**0.16**	**0.26**	**-0.02**	**-0.07**	**0.38**
Levene's Test							
Equality of variance	F	0.07	2.17	1.36	1.98	5.62 **	11.75 **
T test							
Equality of variance	t			**2.87** **	1.55		
No equality of variance	t	1,60	1,23			-0.21	0.99

** Sig. < 0.01; * Sig. < 0.05.

[i] Response-order effects usually arise from the difficulty the respondent has in keeping in mind all the alternatives presented, yielding to primacy or recency effects.

[ii] Ferber (1952) show that when higher status occupations came first, they were rated "good" less often than when they came later. Respondents also set stricter standards when occupations believed to be more creditworthy were listed first.

[iii] The *Centre d'Estudis d'Opinió* (Center for Opinion Studies) is the official institute for public opinion studies of the regional government of Catalonia in Spain.

[iv] Tourangeau warns that it is equally dangerous to commit a Type II error (to believe that the treatment does not have an effect when it does), related to the statistical power, that a Type I error (to believe that there is indeed and effect of the treatment when in fact there is not), related to the level of significance of the test. When the samples are not large enough and the treatment is subtle, it is easier to commit a Type II error if we pay attention to conventional significance levels of 0.05. This is why the author claims for rising the significance level to 0.1 in such situations, what would imply a reduction in the probability of committing a Type II error.