

# Scrolling to wisdom: A fragmented news environment and the illusion impact of social media news exposure on knowledge perception

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## **Abstract**

The present study aims to test the effect of exposure to news in a social media environment on people's perceived knowledge ~~and, possibly, on the psychological effect named illusion of knowledge of selected topics and on the "illusion of knowledge" effect, i.e., the overestimation of one's perceived knowledge relative to one's actual knowledge.~~ We furthermore investigate how the effect of exposure varies depending on the level of self-involvement in the topics covered by the news.

~~This~~The research protocol consists of ~~a simple~~an online study composed of pre-test assessment, stimuli presentation, and brief post-exposure questionnaires. The study ~~is organized as~~employs a between-subjects design, and it is divided into two sessions, scheduled two weeks apart. Participants will be randomly assigned to one of ~~four~~three experimental groups, characterized by the content of the newsfeed they will scroll through. Participants will be asked to assess their perceived knowledge of several topics, before (T<sub>1</sub>) and after (T<sub>2</sub>) having scrolled through a mock ~~-social media~~ website news feed resembling ~~Facebook~~Facebook's, where they will find news articles about two of those topics. In addition, perceived knowledge will be compared to a standardised test of factual knowledge to measure the possible presence of the illusion of knowledge.

We hypothesize that social media exposure will increase participants' perceived knowledge and that such an increase will be ~~steeper~~greater for participants exposed to topics perceived as more involving ~~topics~~. We further expect participants' perceived knowledge to be unmatched by their actual knowledge, ~~thus observing illusion of knowledge, and that this phenomenon will be similarly affected by exposure and perceived involvement in the topic.~~ This discrepancy, ~~an effect of knowledge illusion,~~ will be tested across groups to check whether it is enhanced by news exposure.

## **Subjects**

Psychology, Cognitive & Behavioral Sciences

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## 1 Introduction

2 The present study analyses [perceived knowledge and](#) the “illusion of knowledge” effect —~~basically,~~ the  
3 overestimation of one’s perceived knowledge relative to one’s actual knowledge – in social media  
4 environments, focusing on how ~~the effect is~~[these phenomena are](#) modulated by [news exposure](#) ~~to~~  
5 ~~information about highly salient.~~ [We also examine how the effect of exposure varies with the level of](#)  
6 [self-involvement in the](#) topics [covered by the news.](#)

### 7 *Perceived knowledge and the “illusion of knowledge” effect*

8 The research in metacognition over the past decades has highlighted a distinction between what is  
9 knowledge and what is the mere feeling of knowledge ~~-(Koriat & Lieblich, 1974).~~ The familiarity with  
10 an object or a topic, and the accessibility that follows, is often used as a heuristic to evaluate our own  
11 knowledge; in other words, when asked to evaluate our knowledge about something, instead of  
12 meticulously going through the information stored in our memory, we are more likely to rely on a  
13 subjective feeling of knowing, activated by cues of familiarity ~~-(Koriat, 2000).~~ Usually, this  
14 metacognitive process of knowledge assessment results in an overestimation of one’s perceived  
15 knowledge relative to one’s actual knowledge, leading to a false sense of understanding known in the  
16 literature as the illusion of knowledge ~~-(Glenberg et al., 1982).~~

17 Such a psychological effect has been first operationalized by Glenberg and colleagues ~~-(1982).~~ In an  
18 empirical study about text understanding, these researchers observed that many of the participants  
19 overrated their comprehension whilst failing to detect the contradictions in the text, even when  
20 explicitly instructed to search for them. Similar findings have been obtained by further empirical  
21 studies. In a series of experiments, for example, Rozenblit & Keil (2002) asked participants to rate their  
22 own knowledge of several topics used as stimuli (devices, natural phenomena, geography) at different  
23 times. The comparison of the ratings between time stops revealed that participants’ perceived  
24 knowledge had a significant decrease after they were instructed to provide a detailed explanation of the  
25 topic and after being asked to answer a closed-ended question about it. The result was particularly strong  
26 for familiar topics, like devices and objects commonly used by participants.

27 The differences in the ratings were explained by the researchers in terms of availability effects: when  
28 faced with a cue, in this case, a label for a topic or a phenomenon, people tend to build a mental  
29 representation of it. This mental image can thus be easily accessed through a perception-like rather than  
30 an inferential process ~~-(Rozenblit & Keil, 2002);~~ the ease with which people access information, either  
31 due to familiarity or ease of interpretation (fluency), is thought to trigger heuristic processes and biases  
32 ~~-(Kahneman & Tversky, 1982).~~ However, when asked to provide a detailed explanation, individuals  
33 must engage in inference and reasoning to process the relevant information. This interpretation has also  
34 been corroborated by the evidence that participants with a more analytical reasoning style, who are  
35 more likely to engage in inferential processes, are less susceptible to the illusion of knowledge: the  
36 higher their score in the cognitive reflection task ~~-(Frederick, 2005),~~ a task measuring analytical  
37 reasoning, the more accurate their assessment of perceived knowledge ~~-(Fernbach, Sloman, et al., 2013).~~  
38 Low scores in Need for Cognition (Cacioppo & Petty, 1982) were also found to be correlated with  
39 greater and unjustified overconfidence ~~-(Weber & Koehler, 2017).~~

40 The illusion of knowledge effect has been consistently found in several domains, concerning, for  
41 instance, scientific topics ~~-(Rozenblit & Keil, 2002),~~ policy understanding ~~-(Rabb et al., 2021),~~ political  
42 competence ~~-(Leonhard et al., 2020; Weber & Koehler, 2017),~~ mental disorders ~~-(Zeveney & Marsh,~~  
43 ~~2016),~~ action performance ~~-(Kardas & O’Brien, 2018),~~ GM foods ~~-(Fernbach et al., 2019),~~ consumer  
44 preferences ~~-(Fernbach, Sloman, et al., 2013),~~ and also COVID-19 ~~-(Granderath et al., 2021).~~

### 45 *Illusion of knowledge and news exposure*

46 The illusion of knowledge effect becomes particularly relevant in the context of political discourse and  
47 media studies in order to assess the ability of news media to influence public opinion and convey

1 knowledge. The relationship between news exposure and perceived versus actual knowledge was at the  
2 centre of a correlational study about a gubernatorial election campaign in Michigan [\(Park, 2001\)](#). As  
3 well as confirming the effect and detecting a discrepancy between factual and perceived knowledge,  
4 the author found a correlation between news consumption and the illusion of knowledge, suggesting  
5 that news consumption per se does not increase political knowledge, but it is likely to increase the  
6 misperception of being well-informed. A further interesting result from this analysis is that participants  
7 who felt more involved in the issues covered by the media had a stronger overestimation of their  
8 knowledge.

9 [More](#) recently, research has focused on testing whether the effect of traditional news exposure on the  
10 illusion of knowledge also translates in social media environments. It is reasonable to expect that in  
11 environments such as social media, where attention is constantly challenged by a large amount of  
12 information, people are cognitively impoverished [\(Simon, 1971\)](#) and, therefore, more likely to use  
13 mental shortcuts in their reasoning. Social media are thought to represent a unique environment for  
14 users' reasoning and judgment [\(Lorenz-Spreen et al., 2020\)](#); the overabundance of information on the  
15 web is an amount of data impossible to handle for human attention, challenging the quality of users'  
16 decisions [\(Hills, 2019\)](#). For example, it has been shown that the increase in the information flow  
17 corresponds to a rapid and steep rise and downfall of collective attention, resulting in a shortening of  
18 the attention span [\(Lorenz-Spreen et al., 2019\)](#).

19 For these reasons, social media environments may increase the susceptibility to cognitive biases in  
20 general and to the illusions of knowledge in particular. Indeed, there is robust evidence of such a link  
21 in the form of an inconsistent relationship between online news exposure and increased political  
22 knowledge that should follow. Gil de Zúñiga and colleagues [\(2017\)](#), for example, hypothesized that  
23 many individuals might have a perception of being well-informed by the mere passive exposure to the  
24 news shared by their connections on social media. They also proposed that this perception (labeled  
25 "News-Finds-Me") prevents people from actively seeking for news from other sources of information,  
26 e.g., traditional media. The results of their study confirmed the hypothesis, showing that participants  
27 who had the perception of being well-informed were actually less knowledgeable than those who did  
28 not hold such belief.

29 This finding has been further explored and validated by survey data that examined the correlation  
30 between social media use and political knowledge and whose results convert towards the evidence that  
31 social media use hinders, rather than enhances, users' learning while, at the same time, fostering a  
32 misperception of their knowledge [\(Cacciatore et al., 2018; Lee, 2020; Leonhard et al., 2020\)](#).

### 33 *Experimental evidence linking news exposure and illusion of knowledge*

34 While the above-mentioned studies suggest a correlation between news exposure on social media and  
35 the illusion of knowledge effect, there have been only a few attempts to investigate this link using an  
36 experimental design. A first study aimed to explore whether people could learn through social media  
37 by comparing participants' recall of political versus non-political news after scrolling through a  
38 Facebook newsfeed. The results indicated that participants were able to remember the type of video  
39 they watched, but they struggled to recall the details of the content [\(Bode, 2016\)](#). Similar results of lack  
40 of political learning were obtained by Feezell & Ortiz [\(2019\)](#) in an experiment that measured pre- and  
41 post-measures of factual knowledge after news scrolling. In their work, the authors also proposed the  
42 exploratory hypothesis that exposure to political news on social media might increase confidence in  
43 one's knowledge without increasing their actual understanding, as Park [\(2001\)](#) found for the  
44 consumption of traditional media. Their study, however, did not include measures of perceived  
45 knowledge.

46 As far as we are aware, only two experimental studies have been carried out to examine the relationship  
47 between news media exposure, perceived knowledge, and its discrepancy with actual knowledge

1 ~~(Anspach et al., 2019; Schäfer, 2020).~~ Both experiments were implemented as between-subjects  
2 designs where participants were first exposed to a newsfeed or a news article and then asked about their  
3 perceived and factual knowledge. The topics of investigation were artificial sweeteners in one case and  
4 GM foods in the other. The results indicated that participants who scrolled through many article  
5 previews had a significantly higher perceived knowledge that did not match their actual knowledge,  
6 compared to ~~---~~subjects who scrolled through only two headlines (Schäfer, 2020) or no news at all  
7 (~~Anspach et al., 2019; Schäfer, 2020).~~

8 A crucial limitation of the experimental protocol of Anspach and colleagues was that the measure of  
9 ~~(over)confidence~~ perceived knowledge was only included subsequent to the actual knowledge  
10 assessment, and not before it. From the protocol described by Schäfer it is not possible to infer the  
11 sequence of these passages. Studies on the illusion of knowledge indicate that responding to questions  
12 related to the target topic results in a ~~decreased~~decreased confidence, that is in the expressed confidence  
13 perception of one's knowledge (Rozenblit, 2002). Consequently, ~~without~~the absence of a pre-test,  
14 makes the estimation of perceived knowledge obtained after ~~at~~the actual knowledge test may be  
15 manipulatedsusceptible to manipulation and influenced by this intervention ~~direzione dell'effetto.~~  
16 posizione della domanda in schäfer, potentially causing individuals to express lower confidence  
17 compared to an assessment conducted prior to any questioning about the topic.

18 Another gap that we identified in the literature ~~(per esempio, as suggested by Schäfer (2020) in~~  
19 ~~Schäfer?)~~the discussion, is the ~~absence~~limited variety of ~~control over the experimental~~empirically  
20 tested topics employed as stimuli. Many of the studies mentioned above focused on political versus  
21 non-political information conveyed through social media ~~(Bode, 2016; Feezell & Ortiz, 2019; Weber~~  
22 ~~& Koehler, 2017).~~ Moreover, the research on the illusion of knowledge has drawn a relationship  
23 between this psychological effect and extreme attitudes ~~(Fernbach et al., 2019; Fernbach, Rogers, et~~  
24 ~~al., 2013),~~ suggesting that controversial and non-controversial topics might lead to different magnitudes  
25 of the effect. Following Park's intuition (2001) we believe that the key characteristic that might inflate  
26 perceived knowledge is the perceived personal involvement of the responding individual, regardless of  
27 the topic being assessed: whether it is political, scientific, health-related, and so on.

### 28 *Testing the illusion of knowledge effect on Social media and self-involvement: the present study*

29 In this study, we build on the existing literature connecting social media, perceived knowledge and the  
30 illusion of knowledge by directly testing the effect of news exposure ~~and self-involvement on perceived~~  
31 knowledge. We assess the illusion of knowledge effect by measuring the discrepancy between  
32 participants' perceived knowledge and actual knowledge as elicited through questionnaires on selected  
33 topics. Two elements of novelty of the present study ~~should be noted here~~are worth-noting. The first  
34 is the introduction of a within-subject design where participants' assessments are recorded before and  
35 after exposure to a Facebook-like news feed implemented on a mock-social media website. Secondly,  
36 in order to shed light on the effect of personal involvement, we introduce a classification of topics based  
37 on this variable: as many political topics may be, indeed, quite controversial for the general public (e.g.,  
38 GM foods), not all political topics are equally involving (e.g., election procedures), and not all the  
39 controversial topics are strictly political (e.g., evolution, vaccination).

40 To validate our ~~proposed~~classification, we collected preliminary data to determine the experimental  
41 topics. We asked a sample of participants about their perceived knowledge and self-involvement in a  
42 selection of thirty topics, from which we selected six that covered the whole spectrum of both  
43 dimensions (the stimuli selection is thoroughly discussed in Appendix A). The variable self-  
44 involvement was computed as the average of two answerthe answers to two questions ~~we asked~~  
45 each topic: a first about a general involvement ("How much do you feel emotionally involved by the  
46 topic?"), and a second about the willingness to engage a discussion about it ("How much would you be  
47 willing to participate in a discussion about this topic?"). This procedure allowed us to

1 ~~implement~~ classify the six topics into three different ~~experimental groups~~ characterized by the  
2 ~~involving nature of the stimuli~~ categories: low, medium, and high self-involving topics. This  
3 classification then served to design three experimental groups, each associated to one of the three  
4 categories.

## 7 **Hypothesis**

8 The hypothesis at the ground of all the experimental ones is therefore the reliability of the data collected  
9 in the pre-test to categorize the experimental groups.

10 H0: For each topic, there is no significant difference between the pre-test self-involvement ratings and  
11 the ratings before exposure.

12 We will compute an equivalence test H0. In case of non-significance, we will re-arrange the groups in  
13 low, medium, and high involvement groups based on the newly collected data.

14 H1: ~~Perceived knowledge of exposed topics will increase more than perceived~~  
15 ~~knowledge of non-exposed topics.~~

16 We will furthermore perform a post-hoc analysis to confirm that perceived knowledge for each topic at  
17 T0 will be similar across groups. If H0 controlled the coherence of the groups with the pre-test data,  
18 H1bis controls the coherence of the groups within participants. This check will allow us to identify  
19 possible biases in the sample, as we should avoid having, for the same topic before exposure, extremely  
20 high ratings in one group and extremely low in another one.

21 H1bis: ~~Perceived knowledge at T0 will not differ significantly between exposed and non-exposed~~  
22 ~~topics.~~

23 Moreover, we predict that not all the topics will affect subjects' knowledge assessments to the same  
24 extent. We predict a difference in perceived knowledge across the experimental groups who have been  
25 exposed to low, medium, or high involving topics in their newsfeed. In other words, perceived  
26 knowledge will increase differently across groups.

27 H2: ~~The increase of perceived knowledge from T1 to T2 will be different across~~  
28 ~~groups. High self-involvement group will experience a greater increase in perceived~~  
29 ~~knowledge than low and medium self-involvement group, and medium self-~~  
30 ~~involvement group will experience a greater increase in perceived knowledge than~~  
31 ~~low self-involvement group.~~

32 Finally, we predict that the perceived knowledge will not correspond to factual knowledge, and  
33 therefore we expect to detect an illusion of knowledge effect (ki). In particular, we expect that the  
34 discrepancy between actual and perceived knowledge, as a measure of the illusion of knowledge,  
35 follows the same pattern of the perceived knowledge, that is an increase in the measured effect due to  
36 exposure and experimental group. These hypotheses will be tested between subjects.

37 H3: ~~The illusion of knowledge will be greater in participants exposed to the topics,~~  
38 ~~compared to participants who did not.~~

39 H4:

40 ~~High self-involvement group will experience a greater illusion of knowledge than low~~  
41 ~~and medium self-involvement group, and medium self-involvement group will~~  
42 ~~experience a greater illusion of knowledge than low self-involvement group.~~

## Design plan

### Study type

Online experiment. We will randomly assign participants to three different experimental groups, characterized by the stimuli they will be exposed to.

### Study design

This research protocol consists of a simple onlinemixed design (between- and within-subjects), two-stage study composed by stimuli presentation and brief post-exposure questionnaires. The study is organized as a between-subjects design, and it is divided into two sessions (see fig. 1). Participants will be randomly assigned to one of three experimental groups, characterized by the content of the newsfeed they will scroll through.

### Experimental protocol

The experiment is organized into two sessions- (figure 1). The first session will collect self-reports and questionnaires, and it will be the same for all participants. They will be asked to estimate their knowledge about eightsix topics varying in terms of average self-involvement. Topics vary by how personally involving they are perceived to be, as measured inresulting from a preliminarypre-screen study –(see appendix A<sub>7</sub>). In addition, participants will be asked to assess how much they feel involved by each oænetopic, and to express their attitude towards them. Afterwards, a psychometric assessment will follow-; scales will be administrated to measure participants' cognitive style, political orientation, and social media use (see Appendix D). Finally, demographics information will be collected.

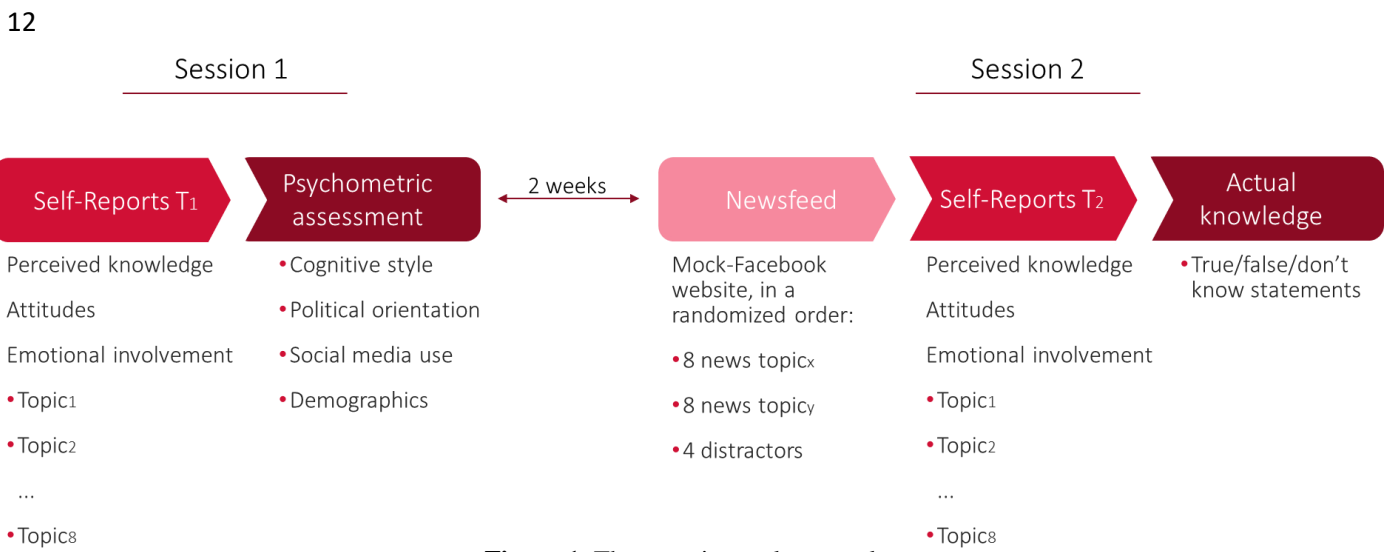
The second session will be scheduled two weeks after the first one. First, participants will be randomly assigned to one of fourthree experimental groups, characterized by the different content of the news headlines- they will be exposed to: low, medium, or highly self-involving group. We will stratify the randomization to ensure that each group is balanced in terms of gender, age, and education. We will furthermore control whether randomization leads to unbalanced distributions of the psychometric variables (cognitive style, political position), and correct for potential distortions.



Figure 1. An example of newsfeed with three articles

1 Participants will be ~~directed~~ redirected towards a ~~page programmed with a~~ mock -social media tool  
 2 ~~to~~ news feed (Jagayat et al., 2021) that resemble ~~thes~~ that of Facebook feed. There, they will scroll a  
 3 series of news posts about the two topics assigned to their experimental group ~~and a series of unrelated~~  
 4 ~~posts~~ (see ~~table~~ Table 1). The news headlines will be composed by a title, an image, and a short  
 5 description of the content, ~~and~~. Users will be able to react or comment under the news posts but they  
 6 will not be ~~clickable by the users~~. ~~All~~ allowed to open the ~~stimuli~~ original articles. Posts in the news feed  
 7 will be displayed in random order ~~across participants~~.

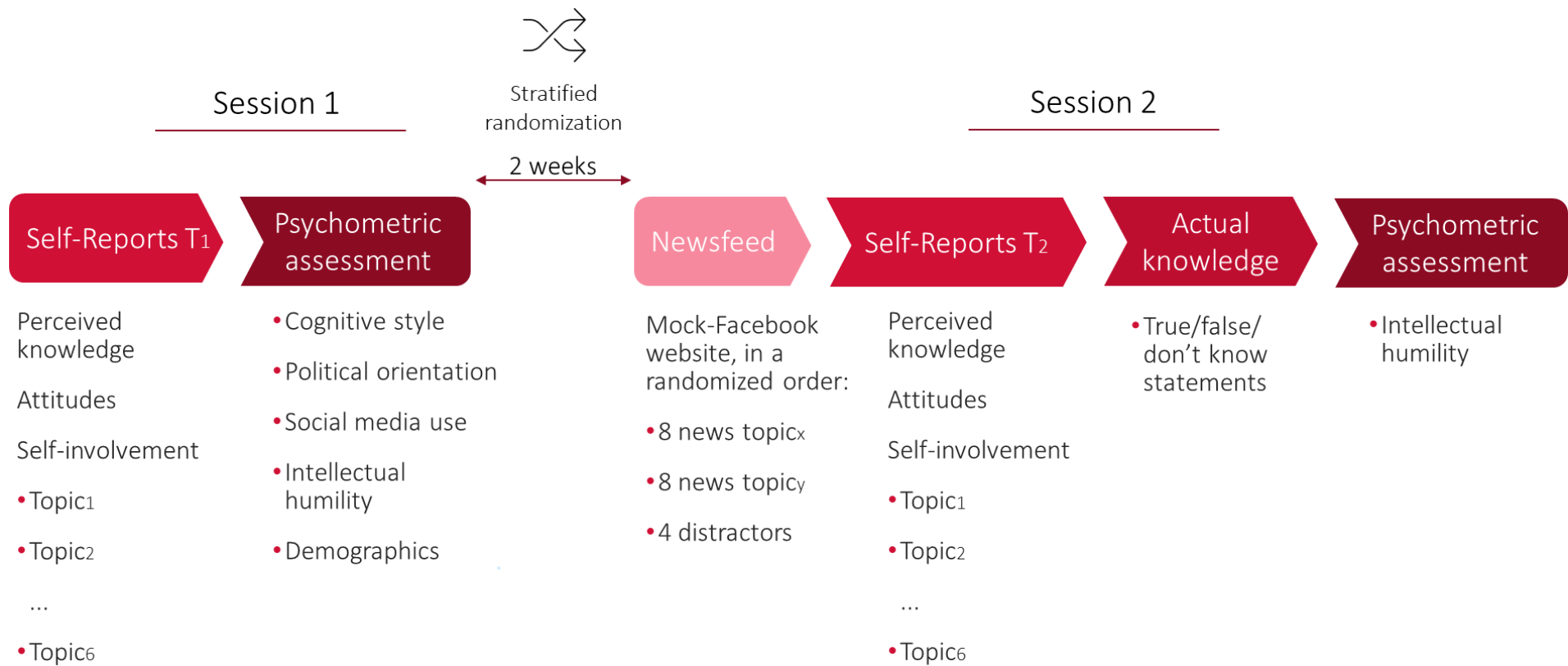
8 ~~Afterwards, they~~ After the exposure to the news feed, participants will be asked again to fill up self-  
 9 reports of perceived knowledge, self-involvement, and attitudes ~~about all the six topics, not only those~~  
 10 ~~they were exposed to~~. Finally, their factual knowledge will be measured with 10 True/False/Don't know  
 11 statements for every subject. ~~to compute the illusion of knowledge~~.



**Figure 1.** The experimental protocol.

13

14



**Figure 2.** The experimental protocol.



# 1 Variables

## 2 Manipulated variables

3 The manipulated variables will be the content of the experimental stimuli for each group.

**Table 1.** The experimental groups and the assigned topics.

Low self-involvement	Medium self-involvement	High self-involvement
Feline immunodeficiency	Anxiolytics	Abortion
<i>I Promessi Sposi</i>	Evolutionism	Climate change

4

## 5 Measured variables and indices

- 6 - **Perceived knowledge (pk).** We will measure perceived knowledge with one item for each of  
7 the six topics, asking participants “How much do you think you know about [this?“, topic]?”,  
8 and they will answer using a 10 – 100 VAS, going from 10 = Nothing to 100 = Everything.  
9 The score of perceived knowledge will be computed as the participants’ evaluation/100,  
10 resulting in an index with a 0 – 1 range.
- 11 - **Factual knowledge (fk).** Participants’ actual knowledge will be computed as the proportion of  
12 correct answers in the knowledge assessment at T2. For each topic, they will read 10  
13 statements, and for each statement they will provide an answer among the options: True; False;  
14 I don’t know. Such assessment is thoroughly discussed in Appendix B. The score of factual  
15 knowledge will be computed as the proportion of correct answers: number of correct  
16 answers/10, resulting in an index with a 0 – 1 range.
- 17 - **Illusion of knowledge (ki).** The perceived and the actual knowledge will be standardized and  
18 combined to compute an index of illusion of knowledge ~~(ki)~~. The index will be calculated as  
19 the difference between the perceived knowledge at T<sub>2</sub> and actual knowledge, that is the  
20 proportion of correct answers:  $ki = pk_{T_2} - \text{score of factual knowledge } fk$ . For example,  
21 participants who scored 50 on perceived knowledge will receive a score of 0.5. If they had 5  
22 correct answers, their actual knowledge score would be 0.5, resulting in an illusion of  
23 knowledge score of 0, as they accurately assessed their level of knowledge. This means that  
24 the ki values range from 1 (i.e., the person reports maximum knowledge, but scores 0 on the  
25 knowledge test) to -1 (i.e., the person reports not having any knowledge on the topic but gives  
26 only correct answers on the knowledge test).

27 Some

## 28 Hypotheses

29 In order for our manipulation to work, the original categorisation of topics by self-involvement should  
30 match that of participants. For this reason, our first hypothesis is that self-involvement as measured in  
31 the pre-test matches self-involvement ratings at T<sub>1</sub>:

32 H<sub>0</sub>: For each topic, there is no significant difference between the pre-screen self-  
33 involvement ratings and the ratings before exposure.

34 To test for H<sub>0</sub>, we will run an equivalence test (TOST) for each topic. In case of non-significance, we  
35 will rearrange the groups in low-, medium-, and high-involvement groups based on the newly collected  
36 data.

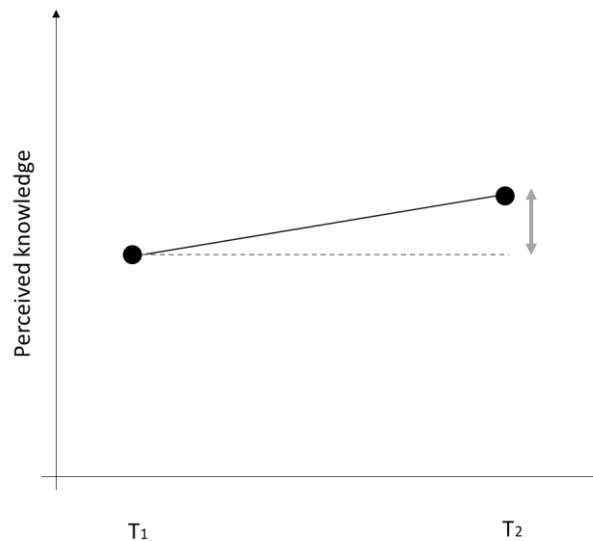
37

1 Hypotheses regarding perceived knowledge

2 This group of hypotheses concern the dependent variable perceived knowledge. For a sample of the  
3 analysis pipeline, please refer to the R script the simulates the analyses for computing a power analysis  
4 (Script PA).

5 The first experimental hypothesis predicts the effect of exposure on perceived knowledge:

6 H<sub>1</sub>: Perceived knowledge of topics in the news feed will increase more than perceived  
7 knowledge of topics not in the news feed.



**Figure 3.** The solid line follows the expected trend of the variable perceived knowledge for exposed topics, whereas the dashed line represents the expected trend of non-exposed topics. The black dots indicate the average of perceived knowledge for exposed topics. We predict no change in non-exposed topics between T<sub>1</sub> and T<sub>2</sub>.

8  
9 To test for H<sub>1</sub>, we will compute a difference in differences contrast between perceived knowledge  
10 ratings of topics inside/outside the news feed, at T<sub>1</sub> and at T<sub>2</sub>:

11 
$$\beta_{feed \times T2} - \beta_{feed \times T1} > \beta_{no\ feed \times T2} - \beta_{no\ feed \times T1}$$

12 We will then perform six post-hoc equivalence tests, one for each topic, to confirm that the perceived  
13 knowledge of participants at T<sub>1</sub> did not differ between the three experimental groups (e.g., one group  
14 displaying higher perceived knowledge about one topic than the other variablestwo groups). This will  
15 ensure that any effects of exposure did not load on pre-existing differences among groups.

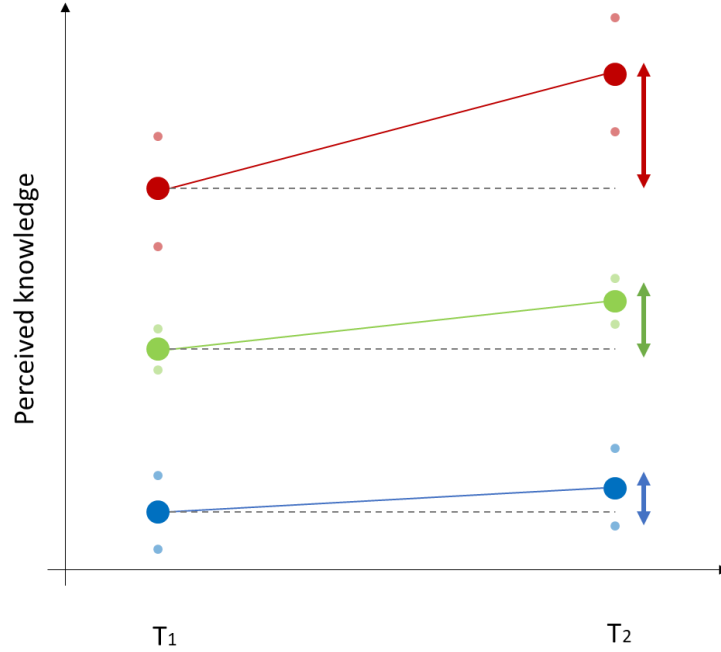
16 H<sub>1bis</sub>: Perceived knowledge at T<sub>0</sub> will not differ significantly between exposed and  
17 non-exposed topics.

18 Moreover, we predict that not all the topics will affect subjects' knowledge assessments to the same  
19 extent. We predict a difference in perceived knowledge across the experimental groups who have been  
20 exposed to low, medium, or high involving topics in their newsfeed. In other words, perceived  
21 knowledge will increase differently across groups.

22 H<sub>2</sub>: The effect of the news feed on perceived knowledge will be greater in the high  
23 self-involvement group compared to the low and medium self-involvement groups.

1 and in the medium self-involvement group compared to the low self-involvement  
 2 group.

4 To test for H<sub>2</sub>, we will compute a third-level contrast, testing for differences in the H<sub>1</sub> contrast between



**Figure 4.** The three colours indicate the three groups, respectively: red indicates the high involving group, green the medium involving group, and blue the low-involving group. The big dots represent the whole group averages, whereas the smaller dots indicate the group averages for each of their topic. We did not include any representation of non-exposed topics besides the dashed line, as we expect the average to be consistent between T<sub>1</sub> and T<sub>2</sub>.

5 topics of different levels of self-involvement, namely:

$$6 \quad \underline{H_{2A}}: [(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no \text{ feed} \times T2} - \beta_{no \text{ feed} \times T1})]_{high} >$$

$$7 \quad [(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no \text{ feed} \times T2} - \beta_{no \text{ feed} \times T1})]_{med}$$

$$8 \quad \underline{H_{2B}}: [(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no \text{ feed} \times T2} - \beta_{no \text{ feed} \times T1})]_{high} >$$

$$9 \quad [(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no \text{ feed} \times T2} - \beta_{no \text{ feed} \times T1})]_{low}$$

$$10 \quad \underline{H_{2C}}: [(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no \text{ feed} \times T2} - \beta_{no \text{ feed} \times T1})]_{med} >$$

$$11 \quad [(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no \text{ feed} \times T2} - \beta_{no \text{ feed} \times T1})]_{low}$$

12 Tests of H<sub>1</sub> and H<sub>2</sub> we will employ a mixed-effects linear regression with self-reported perceived  
 13 knowledge as dependent variable, and the following independent variables:

- 14 • Topic (6 levels: FIV, PP, ANS, DAR, GW, IVG). Given that the topics selected differed in  
 15 terms of perceived knowledge in the pre-test, it is likely that this variable will significantly  
 16 predict perceived knowledge on its own, but we do not propose a specific hypothesis on this  
 17 relation.

- 1 ● Time of reporting (0 if T<sub>1</sub>, 1 if T<sub>2</sub>). Time should not be a significant predictor of perceived  
2 knowledge if not in interaction with the news feed. In other words, if a topic is not covered in  
3 the news feed, we do not expect any systematic change in perceived knowledge between T<sub>1</sub> and  
4 T<sub>2</sub>.
- 5 ● Presence of the topic in the news feed (0 if present, 1 if absent). Topic exposure should not be  
6 a significant predictor of perceived knowledge at T<sub>1</sub> (since exposure did not happen yet, in line  
7 with H<sub>1bis</sub>), but only at T<sub>2</sub>. Thus, the effect of exposure should be significant only in interaction  
8 with time.
- 9 ● Interaction between time and news feed exposure, required for the second-level contrasts  
10 (difference in differences) that test for H<sub>1</sub>.
- 11 ● Interaction between time and topic, which we expect to be non-significant, unless a topic is  
12 covered in the news cycles occurring between T<sub>1</sub> and T<sub>2</sub>.
- 13 ● Interaction between news feed exposure and topic, which we expect to be non-significant.
- 14 ● Interaction between time, news feed exposure, and topic, required for the third-level contrasts  
15 that test for H<sub>2</sub>.

16 The regression will include by-participant random intercepts and random slopes for time, news feed  
17 and topic.

#### 19 Hypotheses regarding the Illusion of Knowledge

20 A second group of hypotheses refers to the Illusion of Knowledge. We predict that the perceived  
21 knowledge will not correspond to factual knowledge, and therefore we expect to detect an illusion of  
22 knowledge effect:

23 H<sub>3</sub>: The discrepancy between the reported perceived knowledge and the measured  
24 actual knowledge will be positive and significantly different from zero.

25 Secondly, following the H<sub>1</sub> and H<sub>2</sub> hypotheses for perceived knowledge, we expect that the illusion of  
26 knowledge will be greater for topics present in the news feed, and that the effect of the news feed will  
27 differ depending on the level of self-involvement of the topic:

28 H<sub>4</sub>: The illusion of knowledge will be greater for topics present in the news feed  
29 compared to topics not present in the news feed.

30 H<sub>5</sub>: The effect of the news feed on the illusion of knowledge will be greater in the  
31 high self-involvement group compared to the low and medium self-involvement  
32 groups, and in the medium self-involvement group compared to the low self-  
33 involvement group.

34 Hypotheses H<sub>3</sub>, H<sub>4</sub> and H<sub>5</sub> will be tested using a mixed-effects linear regression with illusion of  
35 knowledge as predicted variable with independent variables topic, news feed and their interaction (time  
36 is not included as ~~covariates and control variables~~ the illusion of knowledge is measured only at time  
37 T<sub>2</sub>), and with by-participant random intercepts and slopes for time and news feed exposure. H<sub>3</sub> will be  
38 tested with the contrast  $\beta_{no\ feed} > 0$ , where  $\beta_{no\ feed}$  is the aggregated coefficient of all topics in the  
39 absence of the news feed. H<sub>4</sub> will be tested with the contrast  $\beta_{feed} > \beta_{no\ feed}$ , and H<sub>5</sub> will be tested  
40 with the second-level contrasts:

$$41 \quad H_{5A}: (\beta_{feed} - \beta_{no\ feed})_{high} > (\beta_{feed} - \beta_{no\ feed})_{med}$$

$$H_{5B}: (\beta_{feed} - \beta_{no\ feed})_{high} > (\beta_{feed} - \beta_{no\ feed})_{low}$$

$$H_{5C}: (\beta_{feed} - \beta_{no\ feed})_{med} > (\beta_{feed} - \beta_{no\ feed})_{low}$$

### Attitudes and psychometric assessments

Secondary variables will be included to test exploratory hypotheses/analyses listed below. Each item of the selected scales will be framed as follows: “How much do you agree with the following statements?”, and participants will be asked to answer using a 10 – 100 VAS going from 10 = *Totally disagree* to 100 = *Totally agree*. All the items are available in appendix D at the end of the document, and the assessment within the experimental protocol is described in figure 1.

- **Cognitive style.** To capture participants’ cognitive style, we will use the Rational-Experiential Inventory short (REI-10), a combination of 5 items taken from the Need for Cognition (Cacioppo & Petty, 1982) and 5 items from the Faith in Intuition (Epstein et al., 1996). This scale was designed to assess preferences for information processing, and to distinguish between an analytical versus affective approaches.
- **Cultural worldview.** To assess the political view of the participants, we will use the short version of the Cultural Cognition Worldview Scale (CCWS) (Kahan, 2012), that will allow us to measure the predispositions onto two sub-scales: 6 items to identify the position on the individualism/communitarianism axis, and 6 items for hierarchy/egalitarianism.
- **Social media use.** To estimate how intense is participants’ use of social media, we will adapt The Multidimensional Facebook Intensity Scale (Orosz et al., 2016). The scale captures four main facets of Facebook use: boredom, self-expression, over-use, and persistence. We first will ask participants’ which is their most used social media, and then use their answer to articulate the questions.
- **Strength of attitude.** For each topic, participants will be requested to express their attitude. We will ask them to answer to two items per theme: one framed in a positive valence, e.g. “I think we should spread more information about Evolutionism”, and one framed with the opposite valence, e.g. “I think that schools are spending too much time teaching Evolutionism”, computed with a reverse score. All the items were formulated taking inspiration from the common formulas used to measure explicit attitudes in health and social psychology (Eldredge et al., 2016). The strength of the attitude will be calculated as the distance of the result from 50, the centre of the scale.
- ~~Self-involvement.~~ To record participant’s emotional-self-involvement, they will answer to ~~a single item: “How much do you feel emotionally involved by two items regarding their perceived involvement and their willingness to discuss the topic?”. In this case, the VAS will be set from 1 = Not involved at all, to 100 = Extremely involved.~~ The formulation of this question will be the same as the one used in the pre-test (see Appendix A). ~~To distinguish~~ The self-involvement score will be computed as the average between the two ~~tests, items.~~
- ~~Intellectual humility.~~ We will ~~call “Emotional intensity” the measure from the pre-screen that was used to categorise topics, and, therefore, the experimental groups participants’~~ intellectual humility using the General Intellectual Humility Scale (Leary et al., 2017).

### Attention and manipulation checks

Some ~~extra~~ additional control questions will be administrated to check whether subjects had paid attention to the experimental stimuli and environment. As a robustness check, we will repeat all the pre-registered analyses excluding those participants who failed all the attention and manipulation checks.

- **Attention check.** Within the administered questionnaire for psychometric assessment, we will include items aimed to test whether the participant is actually reading the questions or not, like:

1 “Please answer “Totally disagree” to this question”. ~~E nel quiz finale (almeno un paio)~~ Similar  
2 checks will be included in the knowledge tests.

- 3 - **Manipulation check.** After scrolling through the social media feed, participants will be asked  
4 to recall the ~~topics they remember~~ news posts present in the news feed. This helps ensure that  
5 participants have been actively processing and retaining information. In particular, we will ask  
6 them if they remember to have seen news about two topics, one actually belonging to their  
7 experimental group, and one randomly taken from the other groups.

### 8 **Exploratory research questions ~~and control variables~~**

9 In the following section, we list and briefly describe the effects that we aim to ~~test~~ explore with  
10 combinations of the ~~measured~~ main and secondary variables, even if they are not part of the experimental  
11 hypotheses.

12 ~~Check con e senza: chi fallisce manipulation, chi fallisce attention, chi fallisce entrambi.~~

13 ~~▪—Informed by the preliminary study pre-screen survey that we conducted (see appendix A), we can~~  
14 ~~expect to confirm the observation that participants are prone to estimate their knowledge as higher~~  
15 ~~when they are asked to judge an highly self-involving topic:~~

16 ○ ~~The estimate of perceived knowledge will correlate with the~~ explore at T<sub>1</sub> whether assessments  
17 of perceived knowledge and self-involvement reported by the subjects are correlated. We will  
18 run 6 correlation tests, one for each topic.

19 ○ We ~~predict that the evaluations on the dimensions of self-involvement and~~ will conduct six  
20 equivalence tests, one for each topic, to compare perceived knowledge ~~will be comparable of~~  
21 participants at T<sub>1</sub> with the evaluations obtained from the ~~preliminary pre-screen~~ study (see  
22 appendix A):).

23 ○ ~~The estimate of~~ For each topic, we will measure whether strength of attitude towards the topic  
24 correlates with self-involvement at T<sub>1</sub>.

25 ○ We will examine potential gender differences in the magnitude of the illusion of knowledge by  
26 adding gender and its interactions with the other variables as covariates to test H<sub>1</sub>.

27 ~~Although participants will not be able to open the news articles, we will record their~~  
28 ~~attempts to click on the links. We will investigate possible correlations between click~~  
29 ~~rates on the article and both~~ perceived knowledge and ~~self-involvement of the~~  
30 ~~preliminary sample will not be significantly different from the estimates measured in~~  
31 ~~the present study.~~

32 ~~▪—We expect to detect the effect of illusion of knowledge regardless of exposure (generalized H3bis):~~

33 ~~On average, the estimate of perceived knowledge at T<sub>1</sub> will be higher than the~~  
34 ~~proportion of correct answers.~~

35 ~~▪—Given the emotional component of attitudes in general, we might find a correlation between the~~  
36 ~~strength of attitudes and the self-involvement.~~

37 ○ ~~For each topic, the strength of attitudes will hold a positive correlation with the assessment of~~  
38 ~~self-involvement as measured at the end of the first session at T<sub>2</sub>.~~

39 ○ The literature about confirmation bias, the propensity to seek and interpret information to  
40 confirm rather than dis-confirm our prior beliefs, suggests that an attitude towards a topic can  
41 be strengthened after being exposed to arguments and statements about that matter (Lord et al.,  
42 1979). Following ~~the pattern of~~ H<sub>1</sub>, we ~~can~~ will then ~~predict~~ test an effect of news feed exposure  
43 on the strength of attitudes ~~as well~~.

1           ~~The shift of attitude strength for exposed topics will be greater than the shift of~~  
2           ~~attitude strength for non-exposed topics (or, in other words, greater than zero).~~

- 3     ~~•—Toplak and colleagues (2014) found that a reflective cognitive style has often been found to be~~  
4     ~~associated with reduced biases and more accurate judgement (Toplak et al., 2014). We can~~  
5     ~~therefore predict that participants with high will test whether the score of reflective thinking will~~  
6     ~~have a more precise judgment about their knowledge and, therefore, reduced score of predicts the~~  
7     ~~illusion of knowledge by adding cognitive style as a covariate in the linear regression testing the~~  
8     ~~effect of news feed exposure and self-involvement on the illusion of knowledge.~~

9           ~~The score of reflective thinking will be negatively correlated with the score of~~  
10          ~~knowledge illusion.~~

- 11          ~~○ Statistical tests will also be performed to investigate the relationships between We will~~  
12          ~~similarly add social media use and the scores as an additional covariate of illusion of knowledge.~~  
13          ~~However, given the lack of research in this field, we do not make predictions about the~~  
14          ~~direction of any effect.~~

15          ~~—Attention check e manipulation~~

## 16 **Sampling plan**

### 17 **Data collection procedures**

18 To be eligible to participate in this study, subjects must be Italian native speakers and above 18 years  
19 old. No further restrictions are required for this study. Subject will be recruited through Prolific, an  
20 online labour market platform (<https://www.prolific.co>). Once the experiment is ready to run, Prolific  
21 will send an invitation email to all potential participants-i.e., people who meet the aforementioned  
22 eligibility criteria.

### 23 **Sample size and rationale**

24 ~~Sample size is computed over the main and interaction effects of an ANOVA with 2 factors (exposure~~  
25 ~~and emotional intensity). We aim for power (95%, alpha level 5%) to detect an effect size as small as  $f$~~   
26  ~~$= 0.150$ . The effect size was adjusted based on the results obtained by Schäfer in a similar experimental~~  
27 ~~protocol (Schäfer, 2020). We used the software program G\*Power to conduct the power analysis, that~~  
28 ~~resulted in  $n = 768$ , rounded to  $n = 800$ .~~

1 ~~Since~~ Our aim is to obtain 800 complete submissions for the whole experiment. Given that the  
2 experiment is conducted at two time points, we also considering an attrition rate of 15% based on  
3 conservative estimates from a previous longitudinal study conducted on the same recruiting platform,  
4 with the same subject pool and a similar gap between sessions (Ronzani et al., 2022). Based on this  
5 estimate, we plan to recruit roughly 950 participants, ~~considering an attrition rate of 15%. In this way~~  
6 ~~we will assure which should ensure~~ the minimum sample size of  $N = 800$ . The estimation of the sample  
7 size was based on budget constraints. This notwithstanding, we performed a series of power analyses  
8 for the perceived knowledge hypotheses ( $H_1$  and  $H_2$ ) based on a series of simulations of the experiment  
9 (see Script PA attached). The simulations build on the sample size, an  $\alpha$  of 5% (unidirectional), and a  
10 series of plausible values of the main variables, including the effect size (the increase in  $pk$ ) and the  
11 standard deviation of the effect size. Results of the simulations are summarised in the Table 2:  
12

13 **Table 2.**

$H_1$		ES <i>pk increase on a [0-1] scale</i>				
		0.01	0.02	0.03	0.04	0.05
$\frac{1}{2} ES$		51%	98%	$\approx 100\%$	$\approx 100\%$	$\approx 100\%$
$\sigma_{ES}$	1 ES	55%	96%	$\approx 100\%$	$\approx 100\%$	$\approx 100\%$
	2 ES	48%	96%	99%	$\approx 100\%$	$\approx 100\%$

$H_{2A}$		ES <i>pk increase on a [0-1] scale</i>				
		0.01	0.02	0.03	0.04	0.05
$\frac{1}{2} ES$		18%	71%	91%	$\approx 100\%$	$\approx 100\%$
$\sigma_{ES}$	1 ES	16%	67%	82%	96%	$\approx 100\%$
	2 ES	26%	55%	62%	61%	55%

$H_{2B}$		ES <i>pk increase on a [0-1] scale</i>				
		0.01	0.02	0.03	0.04	0.05
$\frac{1}{2} ES$		17%	31%	47%	62%	72%
$\sigma_{ES}$	1 ES	14%	33%	36%	43%	39%
	2 ES	20%	19%	15%	19%	29%



$H_{2C}$	ES <i>pk increase on a [0-1] scale</i>				
	0.01	0.02	0.03	0.04	0.05
$\frac{1}{2} ES$	19%	27%	39%	67%	88%
$\sigma_{ES}$ 1 ES	17%	30%	42%	64%	83%
2 ES	14%	23%	42%	66%	75%

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**Exclusion criteria**

~~We will introduce an exclusion criteria to control the coherence of the within-subject measures.~~ Demographics mismatch: we will compare the demographics provided by the participant and match them with the ones provided by prolific. We will collect this information twice, at T<sub>1</sub> and T<sub>2</sub>. Mismatched submissions will be deleted and thus excluded from the analyses. The case of a mismatch might suggest that someone is participating ~~borrowing by using~~ someone else's account, ~~which is in contrast.~~ This criterion will reduce the likelihood that we will receive responses from two different respondents associated with our aim of the same participant id. Moreover, accurate demographics will help stratifying the sample for randomisation after T<sub>1</sub>. ~~For this reason, mismatched submissions will be deleted and thus excluded from the analyses.~~

- 1 ~~[Titolo tabella?]~~Incomplete responses: according to the consent form, participants who leave the study
- 2 are considered to have withdrawn their consent for the use of their data. For this reason, we will exclude
- 3 participants who leave the study before completion.

1 **Table 3. Summary of hypothesis and research questions**

2

3 All the data will be shared on OSF together with the code for preprocessing and analysis. We will use R statistics to conduct the analysis and Python to

4 preprocess them.

Question	Hypothesis	Sampling plan	Analysis Plan	Interpretation given different outcomes
Does social media exposure to news affect people's perceived knowledge?	<p>H1: Perceived knowledge of exposed topics in the news feed will increase more than perceived knowledge of non-exposed topics not in the news feed.</p> $\beta_{feed \times T2} - \beta_{feed \times T1} > \beta_{no\ feed \times T2} - \beta_{no\ feed \times T1}$	All analyses will be conducted on an estimated sample of 800 respondents for a total of 9600 unique data points (6 responses per participant, per time point).	Mixed-effects linear regression. R formula: $pk \sim \text{time} * \text{feed} * \text{topic} + (\text{time} + \text{feed} + \text{topic}   \text{participant})$	If the contrast is significant, we will test hypothesis H1b (see main text) to make sure that any increase is not due to differences in baseline. Conditional on this test being significant, we will interpret the results as evidence that news exposure increases the perception of knowledge. We will not draw conclusions based on a null finding given the multiple explanations that could be attributed to it.
Do people experience an increase in perceived knowledge depending on their involvement in the topic?	<p>H2: The effect of the news feed on perceived knowledge will be greater in the high self-involvement group compared to the low and medium self-involvement groups, and in the medium self-involvement group compared to the low self-involvement group.</p> <p>A: <math display="block">[(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no\ feed \times T2} - \beta_{no\ feed \times T1})]_{high} &gt; [(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no\ feed \times T2} - \beta_{no\ feed \times T1})]_{med}</math></p> <p>B: <math display="block">[(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no\ feed \times T2} - \beta_{no\ feed \times T1})]_{high} &gt; [(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no\ feed \times T2} - \beta_{no\ feed \times T1})]_{low}</math></p> <p>C: <math display="block">[(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no\ feed \times T2} - \beta_{no\ feed \times T1})]_{med} &gt; [(\beta_{feed \times T2} - \beta_{feed \times T1}) - (\beta_{no\ feed \times T2} - \beta_{no\ feed \times T1})]_{low}</math></p>	Power analyses for the given sample size and various parametrizations of the effect size and other variables are presented in <a href="#">Script PA</a> .	All tests and contrasts are unidirectional. Multiple comparisons are corrected using the false discovery rate method.	If the contrasts turn out to be significant, we will conclude that there is a differential effect of news feed exposure based on the personal involvement attached to topics. In case of a null finding, we will not draw any conclusions due to the multiple explanations possible.

<p>Do people overestimate their knowledge?</p>	<p>H3: The discrepancy between the reported perceived knowledge and the measured actual knowledge will be positive and significantly different from zero.  <math>\beta_{no\ feed} &gt; 0</math> (equivalent to a one-sample t-test against constant)</p>		<p>Mixed-effects linear regression. R formula:  <math>k_i \sim \text{feed} * \text{topic} + (\text{feed} + \text{topic}   \text{participant})</math></p> <p>All tests and contrasts are unidirectional. Multiple comparisons are corrected using the false discovery rate method.</p>	<p>If our test fails to detect a significant illusion of knowledge effect, we will proceed as it follows:</p> <ol style="list-style-type: none"> <li>1. First, we will check whether it is possible to identify the effect for individual topics. As the literature shows, different topics can lead to different degrees of illusion of knowledge.</li> <li>2. In case none of the analyses will go in the expected direction, it might be possible that our selected topics are not subject to the illusion of knowledge effect.</li> </ol>
<p>Does social media exposure to news elicit an illusion of knowledge?</p>	<p>H4: The illusion of knowledge will be greater for topics present in the news feed compared to topics not present in the news feed.  <math>\beta_{feed} &gt; \beta_{no\ feed}</math> (equivalent to a two-sample t-test)</p>			<p>In case of a significant contrast, and if H3 is supported, we will interpret this finding as evidence that news exposure accentuates the illusion of knowledge phenomenon. If either results are not significant or H3 is not supported, we will abstain to draw any definitive conclusion on the results.</p>
<p>Does the emotional intensity of the topics people see in a social media affect their illusion of knowledge?</p>	<p>H5: The effect of the news feed on the illusion of knowledge will be greater in the high self-involvement group compared to the low and medium self-involvement groups, and in the medium self-involvement group compared to the low self-involvement group.  A: <math>(\beta_{feed} - \beta_{no\ feed})_{high} &gt; (\beta_{feed} - \beta_{no\ feed})_{med}</math>  B: <math>(\beta_{feed} - \beta_{no\ feed})_{high} &gt; (\beta_{feed} - \beta_{no\ feed})_{low}</math>  C: <math>(\beta_{feed} - \beta_{no\ feed})_{med} &gt; (\beta_{feed} - \beta_{no\ feed})_{low}</math></p>			<p>If the results are significant, we will conclude that there is a differential effect of news feed exposure on the illusion of knowledge based on the personal involvement attached to topics. In case of a null finding, we will not draw any conclusions due to the multiple explanations possible.</p>

1 **Missing data**

2 All the questions will be administered via Qualtrics, and each page will have a force-answer setting;  
3 this means that participants will not be allowed to skip questions. The submissions by participants that  
4 will abandon the study before the end will be considered incomplete. These submissions will be deleted  
5 and not included in the analysis. Abandoning the study before the completion of it will count as a  
6 removal of the consent, as specified in the informed consent module showed at the beginning of the  
7 study.

8

9 **Funding and ethical approval**

10 The study proposed under this research protocol has already obtained funding from the research  
11 activities of the Neuroscience LAB of Intesa Sanpaolo Innovation Center. The proposed research  
12 protocol has furthermore received the ethical approval on August 5, 2022 by the Joint Ethical  
13 Committee for Research of Scuola Normale Superiore and Scuola Superiore Sant'Anna, with the  
14 notification code n.25/2022.

15

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3 [feed on perceived knowledge, attitude strength, and willingness for discussions. \*Computers in\*](https://doi.org/10.1016/j.chb.2019.08.031)  
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12

13



## Appendix A – Pre-test for stimuli selection screening of topics

A preliminary study has been conducted to select the content of the experimental stimuli. A total of 100 participants has been recruited through Prolific and asked to participate in a survey. The sample was balanced for gender.

The survey requested them to evaluate a selection of thirty subject topics on the dimensions of: emotional involvement and, willingness to discuss the topic, and perceived knowledge. The topics were taken from many different domains, like science, politics, literature, health, law, ethics. All the themes were selected to be tested as objectively as possible in a knowledge test, with little room for partial or ideological interpretations.

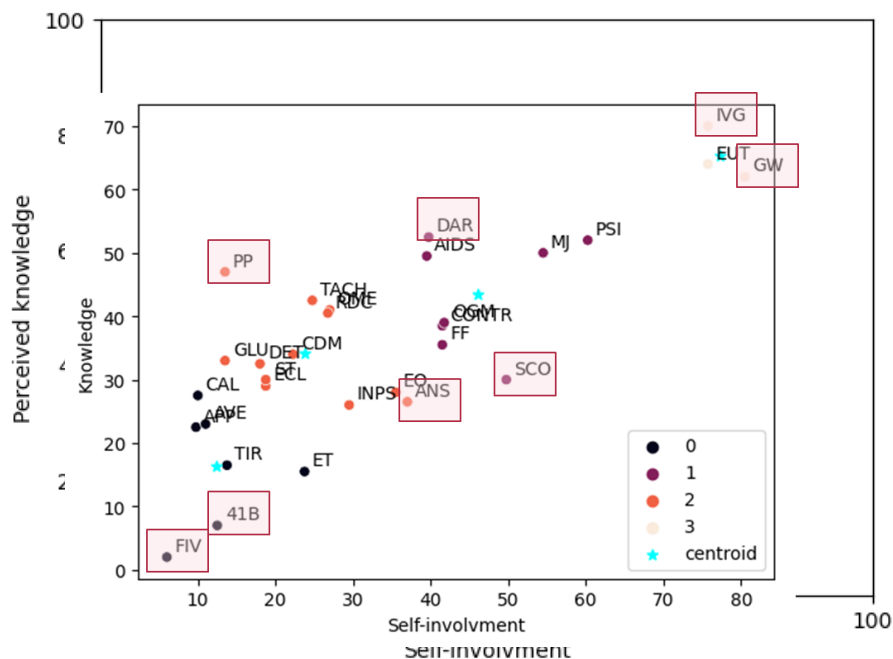


Figure 5. The scatter plot showing the medians of perceived knowledge and self-involvement.

For

Given the purpose of the proposed study, strong correlation between emotional involvement and willingness to discuss (Cronbach's  $\alpha = 0.88$ ), we decided to combine and average the self-referred estimations in the two measures into the variable self-involvement, which informed our decision for the stimuli selection: the medians of perceived knowledge and self-involvement were used to classify the topics (fig 5).

Eight subjects were thus selected, six topics, two with the goal of capturing the psychological effect across different degrees of perceived knowledge and low, two with medium, and two with high self-involvement. The two topics for each level were selected to differ as much as possible on the dimension of perceived knowledge, in order to de-correlate as much as possible the two variables. The selection process resulted in the following topics:

- Global warming (GW) and abortion (IVG), labelled high involvement;
- Feline immunodeficiency (FIV) and I Promessi Sposi (PP) classified as having low involvings self-involvement;

- 1 • Evolutionism (DAR) and , selected as the extreme top-left elements, characterized by a
- 2 relatively high perceived knowledge and medium self-involvement;
- 3 • Psychiatric drugsAnxyiolitics (ANS) and radioactive waste (SCO), selected as the extreme
- 4 bottom-right elements, categorized as as medium self-involvement and low perceived
- 5 knowledge-involvement;
- 6 • Global warming (GW) and abortion (IVG), as high self-involvement;

7 The ~~listed themes~~selected topics will be included in the ~~newsfeed~~different news feeds in the form of

8 ~~headlines of~~ news articles ~~that will work as experimental stimuli~~ (see Appendix C).

## Appendix B – Standardisation of knowledge assessment

For all the ~~eight~~six selected topics, we created a scale of ten questions to test participants' knowledge of each topic. ~~At first, a selection~~The set of ten questions derived from an original list of about 20 questions per topic ~~has been compiled: the questions were either~~ taken and adapted from the literature or ~~wrote down after an~~based on online ~~investigation~~scientific and news materials.

~~Afterwards, these statements were~~The original list of questions was administered to a sample (n = 100) of participants recruited on the online platform Prolific. The sample ~~consisted of Italian respondents and~~ was balanced for gender. For each statement, participants could select an option among True / False / I don't know.

The ~~analysis~~ability of ~~respondents to answer~~ the ~~results~~questions informed the final selection of items. For each topic, we first identified the questions with a high discrimination index, that is those items that were often correctly answered by the best-performing participants (the top 27%), and, at the same time, often missed by the worse-performing participants (the bottom 27%). When the discrimination index was comparable among items, qualitative considerations guided the final choice, for example: proportion of true and false statements, similarities among items, proportions of correct answers, and so on.

The final scales are the following:

	Cambiamenti climatici	Climate change (GW)
1	L'anidride carbonica (CO <sub>2</sub> ) è un gas a effetto serra	Carbon dioxide (CO <sub>2</sub> ) is a greenhouse gas
2	Il buco dell'ozono è la causa principale dell'effetto serra	The hole in the ozone layer is the main cause of the greenhouse effect
3	Nelle stesse quantità, la CO <sub>2</sub> è più dannosa per il clima del metano	In the same quantities, CO <sub>2</sub> is more harmful to the climate than methane
4	Per i prossimi decenni, la maggior parte della comunità scientifica si aspetta che il clima cambi in modo uniforme in tutto il mondo	For the next few decades, most of the scientific community expects the climate to change uniformly across the world
5	L'accordo di Parigi del 2015 segna l'impegno di 195 nazioni a mantenere l'aumento della temperatura media mondiale al di sotto di 2 °C rispetto ai livelli preindustriali	The 2015 Paris Agreement marks commitment by 195 nations to keep global average temperature increase below 2°C above pre-industrial levels
6	I cambiamenti climatici provocheranno un aumento dei casi di cancro	Climate change will cause an increase in cancer cases
7	Più del 10% della comunità scientifica nega la responsabilità umana nel riscaldamento globale	More than 10% of the scientific community denies human responsibility for global warming

8	Più della metà degli scienziati che sono scettici sul cambiamento climatico sono specializzati in climatologia	More than half of the scientists who are climate change skeptics specialize in climatology
9	Gli scienziati ritengono che i cambiamenti climatici aumenteranno il rischio di epidemie di infezioni virali	Scientists believe that climate change will increase the risk of an epidemic of viral infections
10	Il trasporto aereo è uno tra i settori più inquinanti in termini di emissioni di gas serra	Air transport is one of the most polluting sectors in terms of greenhouse gas emissions

1

	Aborto	Abortion (IVG)
1	L'assunzione del farmaco per l'aborto farmacologico avviene tramite iniezione	The drug for medical abortion is taken by injection
2	I farmaci utilizzati per l'aborto farmacologico possono essere utilizzati anche per coadiuvare il completamento di un aborto spontaneo	Drugs used for medical abortion can also be used to help complete a miscarriage
3	In Italia è ammessa l'interruzione volontaria di gravidanza entro 90 giorni dal concepimento	In Italy, voluntary termination of pregnancy is permitted within 90 days of conception
4	L'attuale legge che regola l'interruzione volontaria di gravidanza è stata approvata alla fine degli anni '70	The current law regulating the voluntary termination of pregnancy was approved in the late 1970s
5	Aborto farmacologico e aborto chirurgico hanno lo stesso limite temporale, ovvero si può ricorrere all'uno o all'altro con le stesse tempistiche	Pharmacological abortion and surgical abortion have the same time limit, i.e. one or the other can be used with the same timing
6	Prima dell'approvazione dell'attuale legge sull'aborto, una donna che interrompeva volontariamente la gravidanza poteva essere punita con la reclusione in carcere.	Before the current abortion law was passed, a woman who voluntarily terminated her pregnancy could be punished with imprisonment
7	Agli inizi degli anni '80 un referendum proposto dal Partito Radicale propose di facilitare le procedure di accesso all'aborto	In the early 1980s, a referendum proposed by the Radical Party proposed facilitating the procedures for access to abortion
8	L'aborto si definisce terapeutico quando viene eseguito al fine di preservare la salute della madre	Abortion is defined as therapeutic when it is performed in order to preserve the health of the mother
9	La fertilità risulta compromessa per un certo periodo successivo all'aborto chirurgico	Fertility is impaired for a certain period following the surgical abortion

10	Nella fase di espulsione dell'embrione a seguito dell'intervento di aborto, il personale medico è obbligato a fornire assistenza sanitaria, anche se obiettore di coscienza	In the phase of expulsion of the embryo following the abortion, medical personnel are obliged to provide health care, even if they are conscientious objectors
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2

I Promessi Sposi (PP)		
1	I bravi sono due fedeli servitori dell'Innominato	The <i>bravi</i> are two faithful servants of the Unnamed
2	Don Abbondio è un personaggio contraddistinto da una spiccata devozione religiosa	Don Abbondio is a character characterized by a marked religious devotion
3	Il primo personaggio a comparire nel romanzo è Padre Cristoforo	The first character to appear in the novel is Father Cristoforo
4	Perpetua è la domestica di Don Rodrigo	Perpetua is Don Rodrigo's maid
5	Manzoni dice di aver tratto le vicende raccontate nel romanzo da un manoscritto di autore anonimo	Manzoni says he took the events told in the novel from a manuscript by an anonymous author
6	Sebbene il tema della peste domini gran parte della narrazione, nessuno tra i personaggi principali decede a causa della malattia	Although the theme of the plague dominates much of the narrative, none of the main characters die of the disease
7	Gertrude, la Monaca di Monza, scelse di prendere i voti per la sua grande vocazione religiosa	Gertrude, the Nun of Monza, chose to take her vows for her great religious vocation
8	L'Innominato si pente delle proprie malefatte e si converte in seguito al suo incontro con la Monaca di Monza	The Unnamed repents of his misdeeds and converts following his meeting with the Nun of Monza
9	Padre Cristoforo scelse di diventare frate per espiare il proprio passato di violenze	Father Cristoforo chose to become a friar to atone for his past of violence
10	Dal romanzo traspare la fede di Alessandro Manzoni nella Provvidenza divina	The novel reveals Alessandro Manzoni's faith in Divine Providence

3

	Ansiolitici	Anxiolytics (ANS)
1	Le benzodiazepine, al contrario di altri farmaci ansiolitici, non provocano dipendenza o assuefazione	Benzodiazepines, unlike other anti-anxiety drugs, are not addictive or habit-forming
2	La sigla SSRI è un acronimo che significa Selective Serotonin Reuptake Inhibitors.	The abbreviation SSRI is an acronym which stands for Selective Serotonin Reuptake Inhibitors
3	Non è necessario interrompere l'assunzione di benzodiazepine in modo graduale, poiché si tratta di farmaci che non comportano scompensi fisiologici.	It is not necessary to discontinue the intake of benzodiazepines gradually, since these are drugs that do not cause physiological derangements.
4	Le benzodiazepine possono restare in circolo nel sangue per giorni	Benzodiazepines can stay in the bloodstream for days
5	I farmaci ansiolitici possono essere prescritti dal medico di base	Anti-anxiety medications can be prescribed by your primary care physician
6	L'assunzione di benzodiazepine è sicura anche in compresenza di altre sostanze sedative, come ad esempio l'alcol	Taking benzodiazepines is safe even in the presence of other sedative substances, such as alcohol
7	I farmaci ansiolitici sono l'unico rimedio efficace contro il disturbo d'ansia	Anti-anxiety drugs are the only effective remedy for anxiety disorder
8	I barbiturici sono spesso utilizzati nell'eutanasia animale, umana, e per eseguire condanne a morte tramite iniezione letale.	Barbiturates are often used in animal and human euthanasia, and to carry out death sentences by lethal injection.
9	Il Prozac è un farmaco consigliato anche per le donne in gravidanza	Prozac is a drug recommended for pregnant women as well
10	Gli ansiolitici sono utilizzati anche nel trattamento dell'insonnia	Anxiolytics are also used in the treatment of insomnia

	Evolutionismo	Evolution (DAR)
1	Le fessure branchiali e un accenno di coda sono presenti nell'embrione di tutti i vertebrati	The gill slits and a hint of a tail are present in the embryo of all vertebrates
2	L'homo di Neanderthal è una specie di homo più antica dell'homo erectus	Neanderthal homo is a species of homo older than homo erectus
3	Facendo accoppiare tra loro individui che casualmente mostrano una caratteristica fisica (ad esempio una forma speciale delle piume di un colombo) un allevatore può ottenere animali con le caratteristiche desiderate	By mating individuals that randomly show a physical characteristic (for example a special shape of a pigeon's feathers) a breeder can obtain animals with the desired characteristics
4	L'homo sapiens discende dall'uomo di Neanderthal	Homo sapiens descends from Neanderthal man
5	Il creazionismo è l'interpretazione per cui le specie viventi sono rimaste inalterate dal momento della loro apparizione.	Creationism is the interpretation that living species have remained unchanged since their appearance.
6	Il primo naturalista a proporre l'idea di una graduale modificazione delle specie fu Lamarck	The first naturalist to propose the idea of a gradual modification of species was Lamarck
7	Più gli embrioni di due specie diverse si somigliano, più è stretta è la loro vicinanza in termini evolutivisti	The more similar the embryos of two different species are, the closer their proximity is in evolutionary terms
8	È grazie al contributo del naturalista Linneo e al suo studio delle piante di pisello che si è iniziato a capire come le caratteristiche ereditarie si trasmettono dai genitori alla prole.	It is thanks to the contribution of the naturalist Linnaeus and his study of pea plants that we have begun to understand how hereditary characteristics are transmitted from parents to offspring.
9	Il fenotipo è l'espressione visibile del genotipo, ovvero l'insieme delle caratteristiche visibili che si manifestano nell'individuo	The phenotype is the visible expression of the genotype, i.e. the set of visible characteristics that manifest themselves in the individual
10	A un animale che nuota molto potrebbero venire le zampe palmate; la sua prole erediterebbe allora le zampe palmate	An animal that swims a lot might develop webbed feet; her offspring would then inherit webbed feet

	Immunodeficienza felina	Feline Immunodeficiency (FIV)
1	Il virus che causa l'AIDS felina può trasmettersi anche all'uomo	The virus that causes feline AIDS can also be transmitted to humans
2	Dopo la diagnosi di immunodeficienza felina, al gatto restano pochi mesi di vita	After the diagnosis of feline immunodeficiency, the cat has a few months left to live
3	Il virus che causa l'AIDS felina si trasmette con lo scambio di fluidi organici, come il sangue	The virus that causes feline AIDS is transmitted by the exchange of body fluids, such as blood
4	Il virus che causa l'AIDS felina resiste nell'ambiente: ci si può quindi contagiare entrando a contatto con un ambiente contaminato	The virus that causes feline AIDS resists in the environment: one can therefore become infected by coming into contact with a contaminated environment
5	Tutti i gatti con immunodeficienza felina mostrano sintomi legati alla malattia	All cats with feline immunodeficiency show symptoms related to the disease
6	L'AIDS felina è più frequente nei gatti interi rispetto ai gatti castrati	Feline AIDS is more common in intact cats than in neutered cats
7	Per diagnosticare l'immunodeficienza felina è necessario un esame delle urine	A urine test is needed to diagnose feline immunodeficiency
8	I gatti con immunodeficienza felina possono contagiare i cani con cui vivono	Cats with feline immunodeficiency can infect the dogs they live with
9	Una gatta potrebbe risultare sieropositiva per aver sviluppato gli anticorpi, pur senza avere più il virus in circolo	A cat could be FIV positive for having developed the antibodies, even though she no longer has the virus in her circulation
10	Il virus della FIV si trasmette frequentemente durante le zuffe territoriali	The FIV virus is frequently transmitted during territorial fights



## Appendix C – Stimuli

Participants will be exposed to two of the [three](#) following blocks of news articles. [If by the time of data collection a post has become outdated, it will be replaced with a news post with similar content but more recent.](#) Furthermore, they will see four extra Facebook posts, consisting of pictures of animals, working as distractors. All the posts will be presented in a randomized order.

### **High self-involvement.**

#### **Climate change (GW)**

<https://www.liberoquotidiano.it/news/commenti-e-opinioni/28857250/greta-thunberg-se-stai-con-lei-stai-con-rincari-danni-collaterali-lotta-ambiente.html>

<https://www.fanpage.it/esteri/clima-polizia-vieta-le-proteste-di-extinction-rebellion-a-londra-gia-1-400-arresti/>

<https://www.ilfattoquotidiano.it/2022/05/20/perquisizioni-ai-giovani-di-fridays-for-future-a-milano-dopo-denuncia-gazprom-fatto-spogliare-e-obbligato-a-fare-anche-piegamenti-durante-blitz-dei-carabinieri/6598678/>

[https://palermo.repubblica.it/cronaca/2021/08/11/news/a\\_siracusa\\_48\\_8\\_gradi\\_mai\\_una\\_temperatura\\_cosi\\_alta\\_in\\_europa-313709104/](https://palermo.repubblica.it/cronaca/2021/08/11/news/a_siracusa_48_8_gradi_mai_una_temperatura_cosi_alta_in_europa-313709104/)

[https://www.repubblica.it/green-and-blue/2021/08/04/news/siberia\\_serbatorio\\_di\\_metano\\_il\\_caldo\\_aumenta\\_le\\_fuoriuscite\\_dal\\_permafrost-312843405/](https://www.repubblica.it/green-and-blue/2021/08/04/news/siberia_serbatorio_di_metano_il_caldo_aumenta_le_fuoriuscite_dal_permafrost-312843405/)

[https://www.repubblica.it/green-and-blue/2022/03/03/news/clima\\_australia\\_alluvione\\_inondazioni\\_eventi\\_meteo\\_estremi-340097347/](https://www.repubblica.it/green-and-blue/2022/03/03/news/clima_australia_alluvione_inondazioni_eventi_meteo_estremi-340097347/)

<https://www.nationalgeographic.it/ambiente/2021/04/26-modi-per-ridurre-il-nostro-impatto-sul-pianeta>

#### **Abortion (IVG)**

[El Salvador, condannata a 30 anni per un aborto spontaneo \(nextquotidiano.it\)](#)

[Giorgia Soleri, fidanzata di Damiano dei Maneskin: «Ho abortito a 21 anni», chi era il padre del bambino? - DonnaPOP](#)

[In Italia ci sono almeno 31 strutture con il 100% di medici obiettori - Il Post](#)

[https://www.ilmessaggero.it/mondo/amazon\\_stati\\_uniti\\_aborto\\_rimborso-6668091.html](https://www.ilmessaggero.it/mondo/amazon_stati_uniti_aborto_rimborso-6668091.html)

[Il potere delle multinazionali: Amazon pagherà le donne che abortiscono \(provitaefamiglia.it\)](#)

[Diritto all'aborto. L'arcivescovo di San Francisco attacca Nancy Pelosi e le nega la comunione \(rainews.it\)](#)

["L'aborto non è un contraccettivo ma rimane un diritto delle donne" - La Ragione](#)

<https://www.wired.it/attualita/politica/2020/10/01/cimitero-feti-roma/>

1 **Medium Self-Involvement.**

2  
3 **Evolutionism (DAR)**

4 <https://www.corriere.it/tecnologia/22-febbraio-11/darwin-day-2022-12-febbraio-213-anni-fa-nasceva-padre-evoluzionismo-6b6c2408-89d9-11ec-ab70-14f9e3dc0d34.shtml>

6 <https://www.rivieraoggi.it/2011/02/01/112597/sempre-meno-evoluzionismo-nelle-scuole-usa-e-in-italia/>

8 <https://pikaia.eu/ci-risiamo-il-ministro-delleducazione-indiano-rinnega-la-teoria-dellevoluzione/>

9 <https://www.lastampa.it/cronaca/2019/11/07/news/1-anello-mancante-tra-scimmie-e-uomini-e-stato-scoperto-in-germania-1.37872096/>

11 <https://www.nationalgeographic.it/scienza/2021/06/trovati-in-cina-i-fossili-di-un-rinoceronte-gigante>

12 [https://www.lescienze.it/mind/2022/03/15/news/recettori\\_odore\\_corpo\\_muschio\\_ridotta\\_sensibilita\\_o\\_lfatto\\_evoluzione\\_geni-8958374/](https://www.lescienze.it/mind/2022/03/15/news/recettori_odore_corpo_muschio_ridotta_sensibilita_o_lfatto_evoluzione_geni-8958374/)

14 [https://www.lescienze.it/news/2015/07/18/news/evoluzione\\_confutazione obiezioni creazioniste creazionismo-2694916/](https://www.lescienze.it/news/2015/07/18/news/evoluzione_confutazione obiezioni creazioniste creazionismo-2694916/)

16  
17 **Anxylitics (ANS)**

18 [https://www.federfarma.it/Edicola/Filodiretto/VediNotizia.aspx?id=22353#:~:text=A%20causa%20de lla%20pandemia%20da,e%20Umbria%20\(%2B73%25\)](https://www.federfarma.it/Edicola/Filodiretto/VediNotizia.aspx?id=22353#:~:text=A%20causa%20de lla%20pandemia%20da,e%20Umbria%20(%2B73%25))

20 <https://www.fanpage.it/attualita/lacquisto-online-di-farmaci-per-ansia-insonnia-e-stress-e-raddoppiato-con-la-pandemia-di-covid/>

22 <https://www.fanpage.it/attualita/ansiolitici-nel-cappuccino-alla-collega-rivale-temeva-tagli-del-personale-condannata/>

24  
25 **41-bis-prison regime**

26  
27  
28  
29  
30  
31  
32  
33 **Cat's diseases**

34  
35 <https://www.corriere.it/salute/neuroscienze/14-settembre-29/rischio-alzheimer-aumenta-se-si-prendono-troppi-ansiolitici-0c3f3316-47d4-11e4-85be-0d55da56f.shtml>

- 1 [https://www.aboutpharma.com/scienza-ricerca/benzodiazepine-ad-alte-dosi-labuso-si-diffonde-tra-](https://www.aboutpharma.com/scienza-ricerca/benzodiazepine-ad-alte-dosi-labuso-si-diffonde-tra-medici-e-professionisti/)
- 2 [medici-e-professionisti/](https://www.aboutpharma.com/scienza-ricerca/benzodiazepine-ad-alte-dosi-labuso-si-diffonde-tra-medici-e-professionisti/)
- 3 [https://www.repubblica.it/salute/2021/12/13/news/prigionieri\\_degli\\_ansiolitici\\_la\\_dipendenza\\_da\\_benzodiazepine-329689036/](https://www.repubblica.it/salute/2021/12/13/news/prigionieri_degli_ansiolitici_la_dipendenza_da_benzodiazepine-329689036/)
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- 9
- 10

1 **Low Self-Involvement**

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13 <https://www.raicultura.it/letteratura/articoli/2018/12/Affinati-e-Innominato-de-I-Promessi-Sposi-51f560c0-900d-4360-b8aa-b06f959a3b7c.html>

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17 <https://www.leccotoday.it/notizie/costumi-promessi-sposi.html>

18 **Feline Immunodeficiency (FIV)**

19 [Accudire un gatto con la FIV, tutti i consigli \(ilmiogattoeleggenda.it\)](#)

20 [Il parassita della Toxoplasmosi ci rende più belli? | Wired Italia](#)

21 [https://www.corriere.it/animali/18\\_luglio\\_18/io-milo-casetta-gatti-4fe2c03c-8a11-11e8-8bbc-b107b233a106.shtml](https://www.corriere.it/animali/18_luglio_18/io-milo-casetta-gatti-4fe2c03c-8a11-11e8-8bbc-b107b233a106.shtml)

23 [https://www.corriere.it/tecnologia/22\\_febbraio\\_18/morta-pot-roast-gatta-piu-amata-tiktok-8fd28646-90bb-11ec-9e8a-badec6e7adb8.shtml](https://www.corriere.it/tecnologia/22_febbraio_18/morta-pot-roast-gatta-piu-amata-tiktok-8fd28646-90bb-11ec-9e8a-badec6e7adb8.shtml)

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28 <https://www.amoreaquattrozampe.it/gatti/convivenza-gatto-fiv-gatto-sano-strategie/118268/>

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33 **Global warming**

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**Evolutionism**

**I Promessi Sposi**

**Psychiatric drugs**

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## Appendix D – Questionnaires and assessments

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3 Participants will be asked to fill up the following questionnaires, administrated in a faithful Italian  
4 translation.

5 Each item of the selected scales will be framed as follows: “How much do you agree with the following  
6 statements?”, and participants will be asked to answer using a 40 – 100 VAS going from 40 = *Totally*  
7 *disagree* to 100 = *Totally agree*.

8

9 **Cognitive style** (Cacioppo & Petty, 1982; Epstein et al., 1996)

I don't like to have to do a lot of thinking.	Non mi piace dover pensare molto
I try to avoid situations that require thinking in depth about something.	Cerco di evitare situazioni che richiedono riflessioni approfondite
I prefer to do something that challenges my thinking abilities rather than something that requires little thought.	Preferisco fare qualcosa che sfida le mie capacità di ragionamento piuttosto che qualcosa che richiede poca riflessione
I prefer complex to simple problems.	Preferisco i problemi complessi a quelli semplici
Thinking hard and for a long time about something gives me little satisfaction.	Pensare intensamente e a lungo a qualcosa mi dà poca soddisfazione
I trust my initial feelings about people.	Mi fido delle mie impressioni iniziali sulle persone
I believe in trusting my hunches.	Credo molto nel mio intuito.
My initial impressions of people are almost always right.	Le mie prime impressioni sulle persone sono quasi sempre giuste
When it comes to trusting people, I can usually rely on my "gut feelings."	Se devo fidarmi delle persone, di solito posso affidarmi alle mie sensazioni di pancia.
I can usually feel when a person is right or wrong even if I can't explain how I know	Di solito riesco a intuire quando una persona ha ragione o torto, anche se non riesco a spiegare come lo so

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- 1     • ~~I don't like to have to do a lot of thinking.~~
- 2     • ~~I try to avoid situations that require thinking in depth about something.~~
- 3     • ~~I prefer to do something that challenges my thinking abilities rather than something that requires~~
- 4       ~~little thought.~~
- 5     • ~~I prefer complex to simple problems.~~
- 6     • ~~Thinking hard and for a long time about something gives me little satisfaction.~~
- 7     • ~~I trust my initial feelings about people.~~
- 8     • ~~I believe in trusting my hunches.~~
- 9     • ~~My initial impressions of people are almost always right.~~
- 10    • ~~When it comes to trusting people, I can usually rely on my "gut feelings."~~
- 11    • ~~I can usually feel when a person is right or wrong even if I can't explain how I know~~

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13 **Political view** (Kahan, 2012)

Il governo interferisce troppo nella nostra vita quotidiana.	The government interferes far too much in our everyday lives.
A volte il governo ha bisogno di fare leggi che impediscano alle persone di farsi del male.	Sometimes government needs to make laws that keep people from hurting themselves.
Il governo dovrebbe smettere di dire alla gente come vivere la propria vita.	It's not the government's business to try to protect people from themselves.
Il governo dovrebbe fare di più per portare avanti gli obiettivi della società, anche se questo significa limitare la libertà e le scelte degli individui.	The government should do more to advance society's goals, even if that means limiting the freedom and choices of individuals.
Per il bene della società, il governo dovrebbe porre dei limiti alle scelte che gli individui possono compiere.	Government should put limits on the choices individuals can make so they don't get in the way of what's good for society.
Siamo andati troppo oltre nel promuovere uguali diritti in questo Paese.	We have gone too far in pushing equal rights in this country.
La nostra società sarebbe migliore se la distribuzione della ricchezza fosse più equa.	Our society would be better off if the distribution of wealth was more equal.

Dobbiamo ridurre drasticamente le disuguaglianze tra ricchi e poveri, bianchi e persone di colore, uomini e donne.	We need to dramatically reduce inequalities between the rich and the poor, whites and people of color, and men and women.
La discriminazione contro le minoranze è ancora un problema molto serio nella nostra società.	Discrimination against minorities is still a very serious problem in our society.
Sembra che le persone di colore, le donne, gli omosessuali e altri gruppi non vogliano diritti uguali, ma vogliano diritti speciali solo per loro.	It seems like blacks, women, homosexuals and other groups don't want equal rights, they want special rights just for them.
La società nel suo complesso è diventata troppo morbida e accomodante.	Society as a whole has become too soft and feminine.

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- 1       •—~~The government interferes far too much in our everyday lives.~~
- 2       •—~~Sometimes government needs to make laws that keep people from hurting themselves.~~
- 3       •—~~It's not the government's business to try to protect people from themselves.~~
- 4       •—~~The government should stop telling people how to live their lives.~~
- 5       •—~~The government should do more to advance society's goals, even if that means limiting the~~  
6       ~~freedom and choices of individuals.~~
- 7       •—~~Government should put limits on the choices individuals can make so they don't get in the way~~  
8       ~~of what's good for society.~~
- 9       •—~~Too many people today expect society to do things for them that they should be doing for~~  
10      ~~themselves.~~
- 11      •—~~It's society's responsibility to make sure everyone's basic needs are met.~~
- 12      •—~~It's a mistake to ask society to help every person in need.~~
- 13      •—~~People should be able to rely on the government for help when they need it.~~
- 14      •—~~Society works best when it lets individuals take responsibility for their own lives without telling~~  
15      ~~them what to do.~~
- 16      •—~~Our government tries to do too many things for too many people. We should just let people~~  
17      ~~take care of themselves.~~
- 18      •—~~If the government spent less time trying to fix everyone's problems, we'd all be a lot better off.~~
- 19      •—~~People who are successful in business have a right to enjoy their wealth as they see fit.~~
- 20      •—~~Free markets—not government programs—are the best way to supply people with the things they~~  
21      ~~need.~~
- 22      •—~~Private profit is the main motive for hard work.~~
- 23      •—~~Government regulations are almost always a waste of everyone's time and money.~~
- 24      •—~~We have gone too far in pushing equal rights in this country.~~
- 25      •—~~Nowadays it seems like there is just as much discrimination against whites as there is against~~  
26      ~~blacks.~~
- 27      •—~~Our society would be better off if the distribution of wealth was more equal.~~
- 28      •—~~We need to dramatically reduce inequalities between the rich and the poor, whites and people~~  
29      ~~of color, and men and women.~~
- 30      •—~~Discrimination against minorities is still a very serious problem in our society.~~
- 31      •—~~It seems like blacks, women, homosexuals and other groups don't want equal rights, they want~~  
32      ~~special rights just for them.~~
- 33      •—~~It seems like the criminals and welfare cheats get all the breaks, while the average citizen picks~~  
34      ~~up the tab.~~

- 1 ~~• It's old-fashioned and wrong to think that one culture's set of values is better than any other~~
- 2 ~~culture's way of seeing the world.~~
- 3 ~~• The women's rights movement has gone too far.~~
- 4 ~~• We live in a sexist society that that is fundamentally set up to discriminate against women.~~
- 5 ~~• A lot of problems in our society today come from the decline in the traditional family, where~~
- 6 ~~the man works and the woman stays home.~~
- 7 ~~• Society as a whole has become too soft and feminine.~~
- 8 ~~• Parents should encourage young boys to be more sensitive and less rough and tough.~~

10 **Social media use** (Orosz et al., 2016)

If I could visit only one site on the Internet, it would be Facebook.	Se potessi visitare un solo sito su internet, quel sito sarebbe Facebook.
I feel bad if I don't check my Facebook daily.	Mi sento a disagio se non controllo il mio Facebook ogni giorno.
Before going to sleep, I check Facebook once more.	Controllo Facebook prima di andare a dormire.
I spent time on Facebook at the expense of my obligations.	Passo il mio tempo su Facebook al posto di fare quello che devo.
I spend more time on Facebook than I would like to.	Passo su Facebook più tempo di quanto vorrei.
It happens that I use Facebook instead of sleeping.	Mi capita di stare su Facebook invece di dormire.

- 11 ~~• If I could visit only one site on the Internet, it would be Facebook.~~
- 12 ~~• I feel bad if I don't check my Facebook daily.~~
- 13 ~~• I often search for Internet connection in order to visit Facebook.~~
- 14 ~~• Before going to sleep, I check Facebook once more.~~
- 15 ~~• I spent time on Facebook at the expense of my obligations.~~
- 16 ~~• I spend more time on Facebook than I would like to.~~
- 17 ~~• It happens that I use Facebook instead of sleeping.~~

19 **Intellectual humility** (Leary et al., 2017)

I question my own opinions, positions, and viewpoints because they could be wrong	Metto in dubbio le mie opinioni, posizioni e punti di vista perché potrebbero essere sbagliati
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I reconsider my opinions when presented with new evidence	Riconsidero le mie opinioni quando mi vengono presentate nuove prove
I recognize the value in opinions that are different from my own	Riconosco il valore delle opinioni diverse dalle mie
I accept that my beliefs and attitudes may be wrong	Accetto che le mie convinzioni e i miei atteggiamenti possano essere sbagliati
In the face of conflicting evidence, I am open to changing my opinions	Di fronte a prove contrastanti, sono disposto a cambiare le mie opinioni
I like finding out new information that differs from what I already think is true.	Mi piace scoprire nuove informazioni che differiscono da ciò che già penso sia vero.

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## 2 Attitudes

Penso sia fondamentale controllare i propri gatti per ogni possibile malattia felina	I think it is essential to check your cats for any possible feline diseases
L'immunodeficienza felina è meno grave di quello che sembra	Feline immunodeficiency is less serious than it seems
Penso che I Promessi Sposi siano una delle opere più importanti della storia della letteratura italiana	I think that The Betrothed is one of the most important works in the history of Italian literature
Penso che lo studio (insegnamento) de I Promessi Sposi andrebbe sostituito con lo studio di altre opere più interessanti	I think that the study (teaching) of The Betrothed should be replaced with the study of other more interesting works
A scuola c'è troppa insistenza sulle teorie evuzionistiche	At school there is too much insistence on evolutionary theories
Penso che la conoscenza dell'evoluzionismo andrebbe diffusa di più	I think that knowledge of evolutionism should be spread more
Penso che gli ansiolitici siano da usare con molta attenzione	I think anxiolytics should be used very carefully
Penso che gli ansiolitici rendano molto più facile la vita delle persone	I think anti-anxiety medications make people's lives a lot easier
Penso che si debba compiere ogni sforzo possibile per contrastare i cambiamenti climatici	I think every possible effort should be made to combat climate change
Penso che la situazione climatica sia meno grave di quel che si dice	I think the climate situation is less serious than people say
L'aborto è una pratica eticamente sbagliata	Abortion is an ethically wrong practice
Penso sia necessario facilitare l'accesso all'aborto	I think it is necessary to facilitate access to abortion

3 **Emotional**

4 **Self-involvement**

1 • Quanto ti senti emotivamente coinvolto/a dall'argomento? ([How much do you feel involved](#)  
2 [by the topic?](#))

3 Per nulla coinvolto/a – Estremamente coinvolto/a

4 • [Quanto ti impegneresti in una discussione online sull'argomento? \(How much would you be](#)  
5 [willing to discuss the topic in an online conversation?\)](#)

6 [Per nulla - Totalmente](#)

7 **Perceived knowledge**

8 • Quanto pensi di saperne sull'argomento? ([How much do you think you know about the](#)  
9 [topic?](#))

10 Nulla – Tutto