Security through Numbers?

Experimentally Assessing the Impact of Numerical Arguments in Security Communication

Abstract: Numerical arguments are increasingly present in security communication and are widely assumed to possess a distinct capacity to make an argument convincing, thereby contributing to the dynamics of securitization. Yet, does the inclusion of numbers really enhance the strength of rhetorical attempts to convince an audience that something or someone is a security problem? We examine this question by developing an experimental design that connects cognitive theories of information processing with theories of security and risk communication. Contrary to a widely shared view, our results suggest that numbers do not have a direct, unambiguous, or unconditional impact on the strength of security rhetoric. Quantitative information only enhances direct attempts to securitize issues under very specific circumstances and, even in these cases, has ambiguous effects. Factors such as the legitimacy of the individual who makes the argument may play an important role in determining the impact of numbers in security communication.

Keywords: Numbers, Security, Framing, Persuasion, Securitization, Rhetoric, Argumentation, Experimental methods.

Introduction:

Challenging "Numerical Determinacy" in Security Communication

Numbers enjoy a privileged status in contemporary society. Quantitative data, indicators, rankings and charts not only saturate our environment, but are also ubiquitous in politics, where numbers drive negotiations, evidence-based policy-making, and regulation. Following this trend, numbers now feature prominently in politics in general (e.g. benchmarking practices, numbers-based regulation), and more specifically in political leaders' communication to the public and peers on potential security problems (e.g. migration, pandemics). Quantitative rhetoric is regularly employed to convince an audience that a security problem is important, that a new threat is emerging, or that an issue or group constitutes a potential security problem and therefore must be monitored more closely or addressed more vigorously. For instance, consider the following quotes on drugs, migration and HIV/AIDS respectively:

> *"90% of the heroin in Europe comes from poppies grown in Afghanistan – where the drugs trade pays for private armies. Most of it is distributed through Balkan criminal networks which are also responsible for some 200,000 of the 700,000 women victims of the sex trade worldwide"* (EU Security Strategy 2013)

> *"Let me recall what is currently being done: foreigners' naturalizations are maximized (plus 14 %), regularizations are encouraged (plus 51% due to the Valls bill), and expulsions are diminished (minus 26,6%) – altogether, this produces a 7% increase in legal immigration, which means in concrete terms that every year more than 300.000 people arrive, an amount equivalent of the population of the city of Nantes"* (French MEP Brice Hortefeux, quoted in Le Monde 2014)[1]

> *"Every hour of the day, almost 600 people are infected by HIV/AIDS"* (UN Secretary General Kofi Annan, in his 2001 World AIDS Day speech)

We focus on this argumentative use of numbers in security communication, examining the commonly held assumption of political actors and defended by many scholars in the "quantification of politics" literature[2] that political arguments today are less convincing absent numbers. However, by chiefly focusing on the causes (historical, sociological, organizational) and effects (e.g. compliance, gaming, resistance, standardized behaviors) of the increasing use of numbers in politics, this literature has largely taken for granted the power of numbers in argumentation and communication, assuming that numbers are de facto more persuasive or have "distinctive properties" (Hansen and Porter 2012: 421), and that as a consequence, powerful political arguments are now required to contain numbers, as qualitative arguments progressively become discounted. For example, documenting the pressure on UN officials to

[1] Translated from the French *"Je vous rappelle ce qui est fait aujourd'hui : élargir au maximum les naturalisations, plus de 14 %, encourager les régularisations, plus de 51 % du fait de la circulaire Valls, et diminuer le nombre des reconduites, moins 26,6 %, tout ceci aboutit à une augmentation de l'immigration légale qui est de 7 %. Ça signifie que concrètement dans notre pays arrivent chaque année près de 300 000 personnes, c'est-à-dire l'équivalent de la ville de Nantes."*

[2] See for example Alonso and Starr 1989; Desrosieres 2002; Andreas and Greenhill 2010; Bacot, Desmarchelier and Remi-Giraud 2012; Hansen and Muhlen-Schulte 2012; Hansen and Porter 2012; Kelley and Simmons 2015; Baele, Balzacq and Bourbeau 2017.

quantify their arguments on international migration governance, Bréant emphatically calls numbers the most important "rhetorical weapons" of our times (Bréant 2012: 156). Similarly, in her analysis of UE expertise, Boswell argues that statistics are now an increasingly "important rhetorical device" (Boswell 2009: 89), while Conley (2004) claims that quantitative reports and communication on globalization were instrumental in successfully promoting 1990s liberal economic policies amongst Australians. Baele, Balzacq and Bourbeau (2017) explain the initial success of the human security agenda by its promoters' massive use of numbers in communication, and Molle and Mollinga (2003:537) claim that providing a "gloss of scientificity" to a political message has become crucial in its success, especially when the issue at stake has a nonconsensual character. Broome and Quirk concur, arguing that numbers convert "what might otherwise be highly contentious normative agendas […] into formats that gain credibility through rhetorical claims to neutral and technocratic assessment" (Broome and Quirk 2015: 813). Taking for granted the power of numbers in political argumentation seems to be a deeply entrenched reflex: as Saulnier (2012: 22) observes, Diderot already warned in his Encyclopedia against the seducing power of "political arithmetics". However, to our knowledge, no one has yet rigorously assessed the validity of assuming that numbers are indeed powerful "rhetorical weapons" when it comes to communicating security problems, especially in attempts to convince an audience that an issue or a group constitutes a security threat. Our aim here is to empirically investigate this "numerical determinism" in a manner which echoes Domke, Perlmutter and Spratt's (2003) challenge to "visual determinism"—i.e. the claim that images invariably strengthen political communication. In a time characterized by growing discontent at expertise, "alternative facts", and intense political lobbying against scientific consensus on important issues (e.g. climate change, crime), such a challenge is crucial and takes place in the skeptical trend opened by public opinion researchers (e.g. Nyhan et al. 2014; Nyhan and Reifler 2015; Nyhan, Reifler, Richey and Freed 2014).

We argue that there is a crucial need to theorize and evaluate the actual impact of the use of numbers in security communication and more specifically their ability to convince an audience that something or someone constitutes a security threat, thereby strengthening prominent theories of security framing and politics (chiefly securitization theory). Securitization theory may be understood as a complement to, or as a subfield of framing theory (Watson 2012) that studies how political actors "securitize" issues—i.e., present social issues as security threats calling for exceptional action to be taken outside of the usual routes of political deliberation (Waever 1995; Buzan, Waever and De Wilde 1998). Emphasising the performative dimension of language, securitization research examines "the 'securitizing speech-acts' through which threats become represented and recognized" (Williams 2003: 513). Therefore, as Stritzel (2007) or Balzacq (2005) sum up, any securitization process has four components: the *securitizing actor*, the *audience*, the *context* and the *securitizing move* itself (i.e., the very attempt to move a poli-

cy field or object away from normal politics into extraordinary politics),[3] which mirrors Entman's (1993) seminal four locations of the framing process: communicator, receiver, culture and text. Surprisingly, framing theory in general is silent on numbers' influence. While research exists that shows how changes in the display of numerical information alter receivers' perceptions and attitudes (most notably Kahneman and Tversky 1984), to our knowledge, no study documents the impact of numerical argumentation in framing per se. In securitization research, while the literature identifies several factors that increase the prospects of a successful securitization—e.g. use of iconic images (e.g. Hansen 2011; Heck and Schlag 2013) or emotions display (e.g. Van Rythoven 2015)—the influence of numbers has so far been overlooked. Only Berling (2011) has come close to this question in her overview of the role of "science" in securitization, when she noted that scientific artefacts can be mobilized to support a securitizing move. However, she embraced the abovementioned consensus on numerical determinism by assuming that "scientific language […], the graph, the numbers" unambiguously add to the weight of securitizing arguments. As we demonstrate more fully below, this widely shared assumption may not always hold in practice.

Thus, the purpose of this paper is to determine the role of quantitative information in the context of security communication understood as securitization, and to provide an initial empirical assessment of whether this kind of information helps or hinders the effectiveness of a securitization message. We recognize that numbers may have powerful effects on the many non-linguistic dynamics involved in securitization (which are commonly highlighted by the more "sociological" twist of the theory, see footnote 3), as shown for example by Baele, Balzacq and Bourbeau (2017). However, in the present paper, we only consider the primary linguistic act of communicating a security threat through language. From an empirical standpoint, we use an original experimental design which answers the call in Baele and Thomson's (2017) for the development of an experimental agenda in securitization. This choice responds to Balzacq's longstanding call for more research on the reception of securitizing attempts by audiences (Balzacq 2005) in a way that expands the limited methodological scope of securitization theory (c.f., Balzacq and Leonard 2011; Baele and Sterck 2015) and connects it with adjacent paradigms of security communication. From a theoretical standpoint, we advance the literature by connecting three separate strands of literature—the growing literature on the quantification of politics, cognitive approaches to information processing, and securitization theory—in a way that offers an explanation of the limited conditions under which numbers can indeed become powerful rhetorical devices in security.

To address the need for a theoretical and empirical assessment of numbers' argumentative power in security communication, the paper proceeds in four steps. First, we draw on the literature in cognitive

[3] Since Balzacq's formulation (2011), it is acknowledged that ST has been deployed in two different ways, each focusing on specific aspects of securitizing moves. The "philosophical" conception of securitization mainly draws on Austin's philosophy of language to stress the performative role of security speech-acts, whilst the "sociological" conception emphasizes the importance of socio-political factors and practices driving securitization dynamics (e.g. Bigo 2002; Balzacq 2005; Huysmans 2011).

psychology which casts doubt on the idea that numbers always increase persuasion, instead stressing the many factors that condition, limit, or enhance the use of numbers as a rhetorical tool, especially in the political debate. We then justify the need to examine these findings in the realm of security communication and securitization, and put forward two interconnected hypotheses that aim to specifically identify and measure the impact of numbers in attempts by (apparently) unbiased actors to securitize new, non-politically charged issues. Second, we expose our empirical method designed to test these hypotheses, bringing randomized-controlled experiments into securitization theory.[4] Third, we present our empirical findings, which, to a large extent, contradict the "numerical determinism thesis" outlined above. Finally, we discuss these results by offering a series of talking points that build on the strengths and limitations of our study to enrich the debate on security communication and securitization.

Security Communication and Securitization: Do Numbers Really Matter?

The scientific community did not wait for political science, security studies, and securitization research to empirically evaluate the impact of numbers in argumentation. Cognitive psychologists in the 1980s specified the conditions under which quantitative arguments hold significantly higher persuasiveness than qualitative ones, and more recent studies led by Dan Kahan and colleagues of the "Cultural Cognition Project" show that these conditions are even further delimited when it comes to argumentation on political issues specifically. Together, these studies cast doubt on the claim that numerical arguments are inherently more powerful than qualitative ones, in other words that they have a direct, unambiguous, and unconditional impact on securitization dynamics.

Research in cognitive psychology suggests that numbers may have a special ability to change perceptions and behaviors, but only at very specific conditions. These studies build on Petty and Cacioppo's theory of "central and peripheral routes of information processing" (Petty, Cacioppo & Goldman 1981; Petty, Cacioppo & Schumann 1983), which argues that new information is processed in our mind through either a "central" or "peripheral" route. In other words, all pieces of information are not processed – i.e. understood, memorized, classified, etc. – in the same way by the brain. Under specific internal and external constraints (e.g., lack of time, personal relevance of the message for the receptor, receptor's lack of motivation, receptor's absent-mindedness), information is not processed in a "normal" way, but rather in a "fast-tracked" way: individuals rely on the most evident indirect cues in order to gain a quick understanding of the information without fully processing it. Yalch and Elmore-Yalsh claimed in their seminal paper *The Effects of Numbers on the Route to Persuasion* (1984) that one of these constraints appears to be, at least for some individuals, the presence of numbers in the information. When a message contains many numbers, people often process the information in a peripheral way, fast-tracking it

[4] We are only aware of a single attempt to test securitization theory experimentally (Vultee 2011).

by relying on visible indirect, secondary cues to understand it (e.g., who is speaking, where this information is found, etc.). The reason for that is simple: some people process numbers more slowly than others, and with only a limited amount of time (or a considerable amount of time if the numbers are complex), these individuals are forced to rely on the peripheral route. In other words, "the presentation of quantitative information stimulated people to rely on a peripheral cue—the character of the communicator—as a basis for judgment, so that an expert communicator induced greater persuasion than did a source of lower expertise" (Yalch and Elmore-Yalch 1984: 526).

However, and crucially for us, what their experiments did surprisingly not provide is evidence that quantitative is actually superior to qualitative information. Although the quantitative message delivered by an expert was the most convincing, differences between the effects were not large and the quantitative message provided by the non-expert source was the least convincing of all. Artz and Tybout came to a similar conclusion, suggesting that "expert sources are expected to quantify message claims whereas non-expert sources are not" (1999: 51). They indeed observed that persuasion is low when the source and the message format are incongruent (e.g. an expert not using numbers), and conversely high when source and message format match (e.g. an expert using numbers). However, they also revealed, somewhat unexpectedly, that this conclusion only holds when the sources are perceived to have an interest in the message; when the source is seen as completely unbiased, numbers have absolutely no impact on persuasion. Moreover, more recent research has shown that numbers' strengthening impact on persuasion only occurs when the numbers are "sharp" (e.g. 69.83%, as opposed to "round" numbers like 70%; see Schindler and Yalch 2006) or more generally speaking presented in a complex way. Lindsay and Yun (2003) demonstrate that only *credible, seemingly verifiable*, and *large-N* statistics have a positive comparative advantage against qualitative information, provided that the source is legitimate. Empirical results also tend to show that numbers have a more powerful effect in positive messages than in negative messages (Ratneshwar & Chaiken 1991; Cobb & Kuklinski 1997).

Taken together, these studies restrict the heuristic universe in which the numerical determinacy thesis would be expected to hold. These findings seem to imply that quantitative security communication is only likely to be more persuasive – thereby strengthening securitizing dynamics – under very specific circumstances, specifically when every component of the securitization process is set right: the *audience*'s ability to deal with numbers, the *securitizing actor*'s perceived legitimacy or expertise, and the formatting of the numbers themselves in the *securitizing speech-act*.

The transposition of these results to the political realm makes intuitive sense and is normatively appealing: highly legitimate political figures using accurate numbers can rightly be expected to be more believed and followed than notoriously unreliable leaders using imprecise numbers. Druckman's (2001) claim that frames delivered by credible sources are more likely to shift opinions goes in this direction. However, and more in line with recent prominent political events like Donald Trump's election to the

presidency of the United States, Dan Kahan and colleagues at Yale's "Cultural Cognition Project" have provided evidence suggesting that politics has its own logic within which these findings do not apply. Through a series of studies evaluating the public's attitudes on complex and politically polarizing issues such as climate change (Kahan 2012), nanotechnologies (Kahan et al. 2008), or gun control (see Kahan & Braman 2003 for the case-study; Kahan & Braman 2006 for a broader theoretical discussion), they document a strong tendency for people who are confronted by quantitative evidence to interpret this information in a way that only confirms their own preexisting opinion, ideological beliefs, or worldview. Subjects demonstrated a tendency to accept the evidence when it matches their views and discarded it as when it did not. In other words, when it comes to polarizing themes, legitimacy and expertise of the source is highly dependent on the audience's pre-existing opinion. On gun control, for example, Kahan and Braman clearly stress the weight of individuals' preexisting worldviews and values: "individuals can be expected to credit or dismiss empirical evidence on 'gun control risks' depending on whether it coheres or conflicts with their cultural values" (Kahan & Braman 2003: 1291). Since there are experts apt at providing each side with quantitative "evidence", it is naïve to assume that more quality statistics simply and directly imply more persuasion. Therefore, the impact of numbers in political argumentation seems to differ from other fields, as they are more persuasive when confirming one's previously held beliefs and may actually *decrease* the persuasiveness of arguments that are inconsistent with previously held beliefs (Kahan et al. 2013). These polarizing tendencies, moreover, are exacerbated, when "more numerate subjects [use] their quantitative-reasoning capacity selectively to conform their interpretation of the data to the result most consistent with their political outlooks" (Kahan et al. 2013: 1). Overall, this strand of research suggests that the two most important secondary cues highlighted by previous research in cognitive science play a less simple and direct role when an argument is political in nature.

In summary, the literature suggests a number of general findings with implications for understanding the role of numbers in security communication. Above all, simple appeals to numerical determinacy are completely at odds with available evidence. The relative influence of numerical content seems to be contingent on, at least, presentation, the source's relative legitimacy, and the audience's political views and numeracy. This stands in line with recent evidence on quantitative communication on health (Nyhan et al. 2014; Nyhan and Reifler 2015) and immigration (Grigorieff, Roth and Ubfal 2016), two areas otherwise already investigated by securitization scholars. Yet, other key aspects remain unclear. First and foremost, are these effects present when it comes to *security* communication in general and *securitization* attempts more specifically? As securitization theory has extensively documented, security argumentation is a specific kind of language with its own rules and dynamics, so the extent to which claims on the efficiency of numbers in political argumentation hold true in security rhetoric is uncertain. More specifically, the impact of numbers in the securitization of a new, non-politicized issue remains under-studied—Kahan and colleagues deliberately study already divisive, highly political issues such as climate change or gun control, setting aside the specific question of the securitization of new or less heated problems. Sec-

ond, what happens when the legitimacy of the source is politically neutral? Kahan and colleagues' experimental designs either provide clear clues of the sources' political affiliation or use issues where opinion is already so polarized that the public will infer the source's political affiliation from the content of their message, leaving the question of a neutral legitimacy open. In one of securitization theory's initial frameworks, Buzan et al. (1998) identify source legitimacy as a minimal "felicity condition" of successful securitizing moves, but do not provide further details. The present paper addresses these two points, with the aim of *identifying and measuring the impact of numbers in attempts by (apparently) unbiased actors to securitize new, non-politically charged issues*. We formulate two hypotheses based on the aforementioned literature:

- *H1*. Numbers (and source legitimacy) have no effect on their own.
- *H2*. Numbers will only have an impact on perceptions of threats and support for solutions when the source is legitimate, and when securitization rules are respected.

The remainder of this study outlines our experimental design and empirical results, and offers a discussion of the relevance of our findings for future work on the influence of numerical content in the security domain.

Method: Experimenting on Quantitative Securitization

Experimental design

We examine our hypotheses using a randomized-controlled vignette experiment.[5] Subjects were randomly assigned to four conditions based on varying the *legitimacy* of the securitizing actor and the presence or absence of *quantitative information* in a securitizing message. Table 1 below presents a general overview of the design; the remainder of this section outlines in more detail how we manipulated source legitimacy and the presence of quantitative information in the context of a potential security threat.

[5] We choose an experimental approach following Baele and Thomson's (2017) call to use experiments to highlight the conditions under which securitization fails or succeeds; by doing so, we contribute to the introduction of experimental methods into IR and security studies (e.g. Hudson & Butler 2010) and attempt to bridge the gap between constructivist IR and quantitative methods (in line with Barkin and Sjoberg 2017). The choice of a vignette experiment stands in straight line with Merolla and Zechmeister's (2009) research on the effects of threat depictions on the public. Vignette experiments "use short descriptions of situations or persons (vignettes) that are usually shown to respondents in order to elicit their judgments about these scenarios" (Atzmüller and Steiner 2015) – see also Collett and Childs 2011 or Hainmueller, Hangartner and Yamamoto 2015 on the internal and external validity of vignette experiments.

	Non-legitimate source	Legitimate Source
Qualitative text	Condition 1: qualitative "blogger"	Condition 2: qualitative "scientist"
Quantitative text	Condition 3: quantitative "blogger"	Condition 4: quantitative "scientist"

Table 1: *Experimental design.*

The securitizing message. The vignette was a fictitious (but real looking) opinion article on tuberculosis and anti-tuberculosis policy, artificially constructed so as to match the characteristics of a securitizing move highlighted by the literature (e.g. Buzan, Waever and De Wilde 1998; Williams 2003; Balzacq 2005): it *1)* explicitly and repeatedly identifies an issue usually addressed outside the security domain as a security threat, *2)* clearly stresses the urgency of the security problem created by this issue, and *3)* unambiguously calls for extraordinary security-oriented politics.[6] We chose to focus on tuberculosis in order to avoid a highly contentious issue with a long history on the political agenda (e.g. migration).[7] Moreover, health securitization is an emerging and controversial issue that requires further investigation (e.g. Elbe 2006; McInness and Rushton 2013).[8] The vignette (with its variants) is available in Section 1 of the online appendix.

Varying the use of numbers. The primary focus of this study is to empirically identify the effect of quantitative information in a securitizing message. As such, it was necessary to construct a message with and without quantitative information, while ensuring that the underlying informational content was as similar as possible. We achieved this objective by first constructing the "quantitative" version of the message[9] and then carefully revising the article to replace statistical references with natural language alternatives. For instance, consider the following excerpt from the quantitative version of the article on the threat of multi-resistant strains of TB:

> *"These new variants are sometimes not curable, so mortality is rising: in the UK the mortality of normal TB is 1%, compared to 26% for multi-resistant TB"*

We then "translated" this content into its non-quantitative equivalent as follows:

[6] More precisely, in the present case, and in line with the securitization literature, the op-ed argued in favour of a) the need to bypass parliament and act instead through executive orders, b) the compulsory monitoring of "at risk populations" (foreigners and the poor people) with penalties for non-compliance with health and administrative control, and c) the criminalization of tuberculosis transmission.

[7] Studies repeatedly show how ignorant the general public is about the aetiology, prevalence and impact of major important viral infections (e.g. Sterck 2014 on HIV/AIDS).

[8] For example, the 2000 US National Security Strategy argued that *"the worldwide epidemic HIV/AIDS is destroying peoples and economies on an unprecedented scale and is now the number one cause of death in Africa, killing over 5,500 per day"* (US NSS 2000), and its 2006 equivalent claimed that *"the President's Emergency Plan for AIDS Relief is an unprecedented, 5-year, $15 billion effort. Building on the success of pioneering programs in Africa, we have launched a major initiative that will prevent 7 million new infections, provide treatment to 2 million infected individuals, and care for 10 million AIDS orphans and others affected by the disease. We have launched a $1.2 billion, 5-year initiative to reduce malaria deaths by 50 percent in at least 15 targeted countries"* (US NSS 2006).

[9] Several variables were taken into account in order to maximize the chance of producing the strongest possible effect of numbers. First, in line with Linsday and Yun's warning that unrealistic numbers are never convincing (2003), we offered plausible statistics, mainly drawing on real scientific literature. Similarly, we paid attention to Schindler and Yalch's (2006) evidence that sharp numbers expressed in complex ways are more convincing by making quantitative statements expressed in sharp numbers only. Yet in line with securitization theory, we also artificially boosted some numbers to create an enhanced sense of threat.

reached, a new one was suggested to the experts and re-evaluated until all items and the full text were judged to be translated in the best possible way. The rating form for this expert-based translation procedure is available in Section 2 of the online appendix (full output and documentation available on demand).[10] A pilot experiment with around twenty participants clearly showed that all those who read the quantitative vignettes did not miss the presence of numbers in the argumentation.

Varying the securitizing actor's legitimacy. Subjects receiving the quantitative and non-quantitative securitizing attempts were also randomly assigned to receive the message from a legitimate or illegitimate source. The "legitimate" securitizing actor was imbued with the attributes known to represent and actually enhance perceived scientific legitimacy (a wise-looking older white man with a white lab coat, presented as the "Centennial Professor of Public Health at the Massachusetts Institute of Technology" and "Co-Director of the UK Independent Committee on Infectious Diseases"), while the "illegitimate" actor lacked any of these characteristics (a young man with untidy hair and a casual jumper, only labeled as a "political blogger and columnist"). In the sections that follow, we refer to these two securitizing actors as "the scientist" and "the blogger". Again, we chose to assign securitizing actors the most uncontroversial attributes of politically neutral legitimacy in an effort to avoid the powerful effects of ideologically-dependent legitimacy highlighted by Kahan and colleagues. Maintaining the political profile of the authors as neutral, we can also better isolate the specific effects of both the audience's preexisting political preferences. The design of the article made it virtually impossible for readers to miss the legitimacy cue, which was heavily emphasized. This was confirmed by various checks. First, in the pilot of the experiment, all participants referred to the profile of the author when commenting on the text, explicitly mentioning either his legitimacy/expertise when they read the "scientist" vignette. Second, in the online experiment, a significant proportion of participants (0.83) gave the correct answer when asked: "who is the author of the article?".[11]

Participants and Procedures

We examine our hypotheses using two different samples. First, we relied on a sample of students from a large, highly-selective University in the UK (**study 1**). The survey was conducted in April of 2015. Respondents were asked to participate in a survey that "investigates policymaker's options facing health issues in general and tuberculosis in particular, and measures public opinion on these options". They were told that "one way of addressing the disease is that presented in the text you are about to read, and we would like to know how strongly you agree with this way of addressing it". They were instructed that they would receive a small, token gift in return for participation. A total of 116 students chose to partici-

[10] We recognize the fact that different individuals may "translate" qualitative information in quantitative information (and conversely); this may depend on many different factors – education, familiarity with numbers, cultural background, etc. This question is open for further research. Our procedure, carried out with a "coherent" group of academics, showed high consistency between translation decisions.

[11] It is worth noting that the blogger may have appeared somehow expert in the quantitative vignette, given his heavy use of statistics. While this might explain some results, we focus here on legitimacy as a status, not supposed expertise as a skill.

pate in **study 1**, representing the vast majority of those asked. Participants were given 10 minutes to complete the survey.[12]

Second, given debates regarding the presence (or absence) of biases in experimental evidence based on students (e.g. Sears 1986; Mintz et al. 2006; Henry 2009; Druckman & Kam 2009), we replicated our design using a larger and more diverse online sample of individuals residing in Britain (**study 2**). Study 2 was conducted in July of 2015 and relied on 279 subjects that are part of an existing online panel in the UK.[13] Again, respondents were asked to participate in a survey that "investigates policymaker's options facing health issues in general and tuberculosis in particular, and measures public opinion on these options", and they were told that "one way of addressing the disease is that presented in the text you are about to read, and we would like to know how strongly you agree with this way of addressing it". We financially compensated participants for their time. Consistent with **study 1**, subjects were given 10 minutes to complete a short questionnaire.[14]

Not surprisingly, the student sample differs in pronounced ways from both the online sample and the overall UK population. Moreover, the online sample used in **study 2** is no way representative of the British population, as it is biased towards left-leaning females and home-owners. These descriptive statistics underscore the need to practice caution when generalizing these results to any general population; yet, our primary interest here is not in the external validity, but instead the internal validity of our empirical findings. Overall, we observe balance across treatment conditions with respect to key demographic variables and thus randomization worked as expected (summary statistics for both studies available on demand).

Measures

Outcome measures. In line with securitization theory, which argues that successful securitizing messages enhance threat perception and thereby promote support for extraordinary measures, we focus on two primary outcomes: *perceptions of threat* and *support for measures* to reduce the threat of TB. We operationalize each construct using multiple survey items. To gauge threat perception, we include Likert-scale items on the perceived "urgency" of the threat, the "importance" of the issue, and whether the respondent views TB as a threat to "society" or to them "personally." When considering support for policy measures aimed at reducing the threat, we include the following five Likert-scale items: whether the respondent supports 1) "executive action" to reduce the threat, 2) "yearly screenings" for TB, 3) "compulsory, frequent checks with social workers and doctors," 4) conditioning "social benefits" on receiving

[12] And an additional, timed 5 minutes to complete a short mathematics exercise – see footnote 15 in the results section for an explanation of this addition. The mathematics test is available in online appendix section 4.

[13] Participants took part (and were remunerated) in the experiment using the *ProlificAcademic* online survey platform, which allows the screening of participants' compliance and attention in taking the survey. More participants took part in the online survey, but for robustness purposes we dismissed around of quarter of the total, following a series of quality checks (chiefly the ability to answer questions on the text and the speed at which the survey is filled). Since ProlificAdademic participants have been shown to be less dishonest, more naïve, more diverse and more reliable than MTurk participants (Peer et al. 2017), we believe that our final sample is highly reliable.

[14] And an additional, timed 5 minutes to complete a short mathematics exercise, see footnote 12.

TB treatment, and 5) criminal action against "individuals who transmit the disease due to a clear lack of care". The full questionnaire is available in online appendix section 3. Further, to combine the multiple items into a single scale for threat perception and support for solutions, we employ a simple additive index (Cronbach's $\alpha > 0.85$ for both threat perceptions and support for solutions) and normalize each measure to range from 0 to 1. For the student sample, the mean value of the *threat perception index* is 0.58 (standard deviation = 0.13), while the mean of the *solutions index* is 0.64 (standard deviation = 0.14); for the online panel, the mean value of the *threat perception index* is 0.67 (standard deviation = 0.18), while the mean of the *solutions index* is 0.65 (standard deviation = 0.21). While there is no shortage of ways to combine multiple items into a single construct (e.g., factor analysis, principle components analysis, etc.), we opted for a simple additive index to ensure an easily interpretable scale which still maintains high levels of reliability.

Results: The Limited Role of Numbers in Securitization

Does this design confirm or discredit the numerical determinacy thesis? Our results tend to weaken it, by confirming hypothesis 1 and providing mixed evidence on hypothesis 2. These results thus provide initial evidence to suggest that numbers may not enhance securitizing security communication in any direct, unambiguous, or unconditional way.

We turn first to our estimates for the unconditional impact of the numbers and source legitimacy treatments on threat perception and support for policy solutions. Does the presence of numbers, on its own, strengthen a securitizing message? What about source legitimacy? Does legitimacy, on its own, influence threat perceptions and support for policy action? Figure 1 below provides the estimated difference in the mean level of the *threat perception* and *solution* indexes across subjects receiving the numbers (or source legitimacy) treatment and those that did not. The figure provides the full posterior estimate for the difference of means, a point estimate for the difference based on the posterior median, and 90% credible interval. We rely on Bayesian inference to evaluate our hypotheses. Specifically, we estimate the average treatment effect (ATE) across the various treatment conditions via a standard linear regression model. For both the student and online samples, we follow Gelman, Jakulin, Pittau and Su (2008) and employ weakly regularizing priors for both the regression and variance parameters: $\beta \sim N(0, 1)$ and $\sigma \sim$ HalfCauchy(0, 5). While the advantages of a Bayesian approach are treated at length elsewhere (c.f., Gill 2008, ch. 1; Kruschke 2011, ch. 11), we prefer these methods because they allow one to focus attention on the uncertainty of interest to researchers—i.e., the posterior estimate of the average treatment effect (ATE).[15]

[15] The findings are quite similar when using traditional methods. These results are available on demand with the authors.

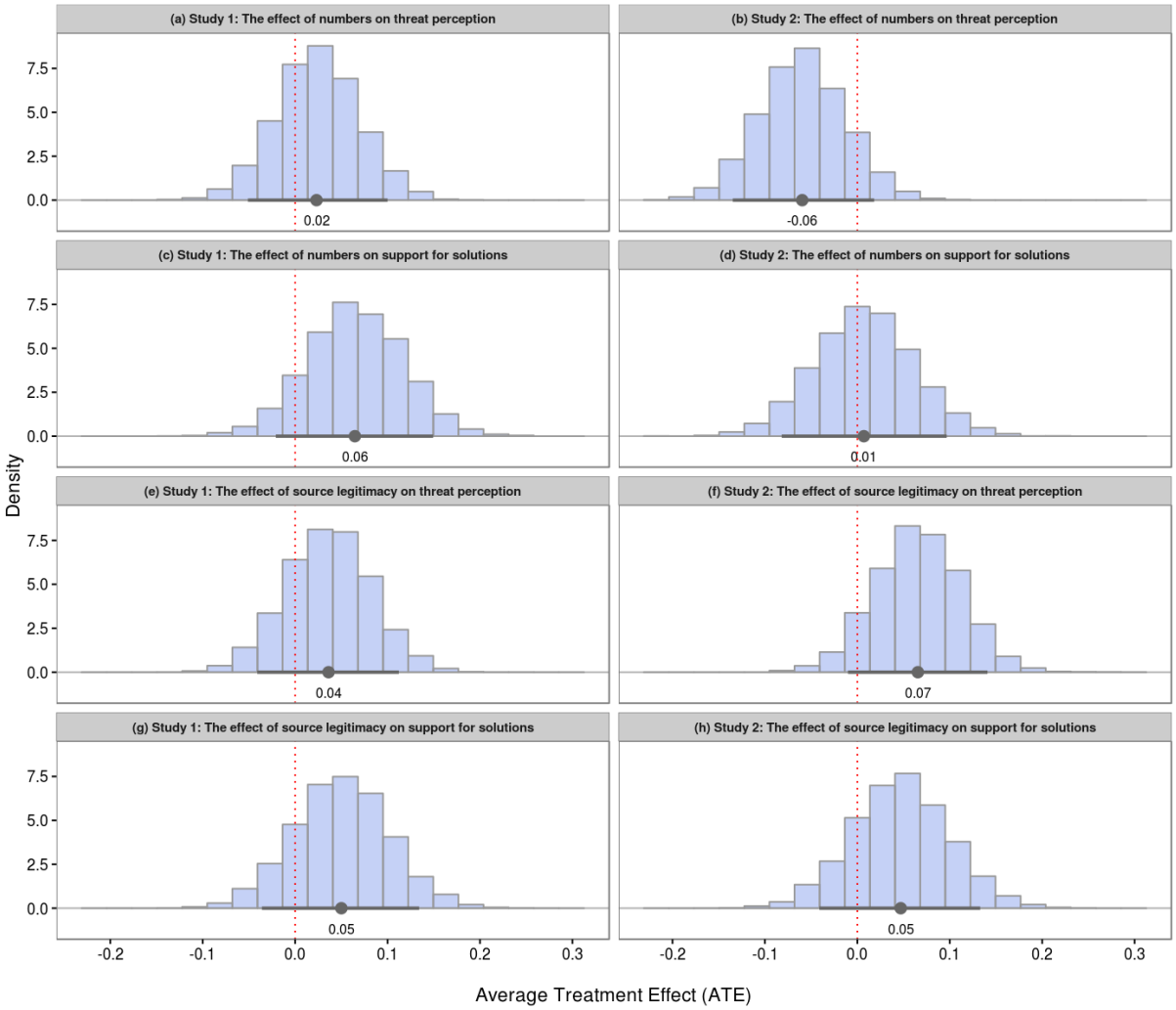


Figure 1: *Unconditional effect of numbers and source legitimacy*. This figure provides estimates for the individual influence of numbers and source legitimacy on threat perceptions and support for policy solutions. The left column provides the results for study 1 (student sample), while the column on the right replicates the analysis for study 2 (online panel). Each sub-figure provides an estimate of the full posterior distribution (i.e., the histogram), a point estimate based on the median of the posterior, and 90% credible intervals.

First, turning to the unconditional effect of the *numbers* treatment, the evidence is inconsistent across the two samples (student and online) and different outcome measures (threat and solutions). When considering the student sample, we find little difference across individuals in the treatment and control condition on the threat perception measure and some (albeit limited) evidence of a positive effect regarding support of solutions, as the majority of the posterior distribution is positive. However, when considering the online sample, the influence of numbers on threat perception is actually most likely negative (Pr[ATE < 0 = 0.90]), while we find little support for any influence of the numbers treatment on solutions.

Second, when considering the unconditional effect of the *source legitimacy* treatment, while the point estimates are consistently positive, there is considerable uncertainty associated with each estimate and thus the findings must be interpreted with caution. Overall, the estimated unconditional effects for both

the numbers and source legitimacy treatments are substantively weak and therefore fail to provide clear evidence of an effect for either treatment condition. These findings are generally consistent with hypothesis 1.

Next, we examine the interactive influence of numbers and source legitimacy. As described above source legitimacy seems to play a central role in modifying the influence of reception of numerical content, yet there have been various interpretations of this impact, and it is unclear how it applies to security communication, let alone new securitization attempts. Figure 2 below examines the combined effect of the numbers and source legitimacy treatments. Subjects assigned to numbers treatment with a legitimate source (i.e., the scientist) serve as the baseline category and thus the figure presents the mean differences with this group. Moreover, since the "Scientist, numbers" treatment might theoretically be expected, *a priori*, to have the largest substantive influence on the effectiveness of the securitizing message, the estimated average treatment effects should be uniformly negative. Is this expectation borne out by the data? The short answer is no. Overall, the results—across the both samples and outcome measures—are weak and uncertain: there is no evidence for an interactive effect of securitizing moves' quantification and securitizing actor's legitimacy. In substantive terms, the largest difference is observed when comparing the baseline condition ("Scientist, numbers") to the blogger not using numbers for the solutions measure in the student sample. Here, we do observe the expected negative relationship with a reasonable degree of uncertainty that confirms the lower power of non-numerical securitizing moves put forward by a non-expert source. However, beyond this instance the results are generally inconsistent with hypothesis 2.[16]

[16] Our choice of a randomized-controlled experiment inherently controls for individual differences in terms of numeracy or political opinion and as such offer an undifferentiated account of numbers' effects that corresponds to what we wanted to evaluate: the gross reception of a quantitative move amongst the general public. However, prompted by Kahan et al.'s work that emphasises the differentiated reception of numerical arguments on polarized issues along the lines of numeracy and political worldviews, we estimated the impact of these two factors. The full analysis, which is available on demand, shows (in both **study1** and **study2**) no effect of both.

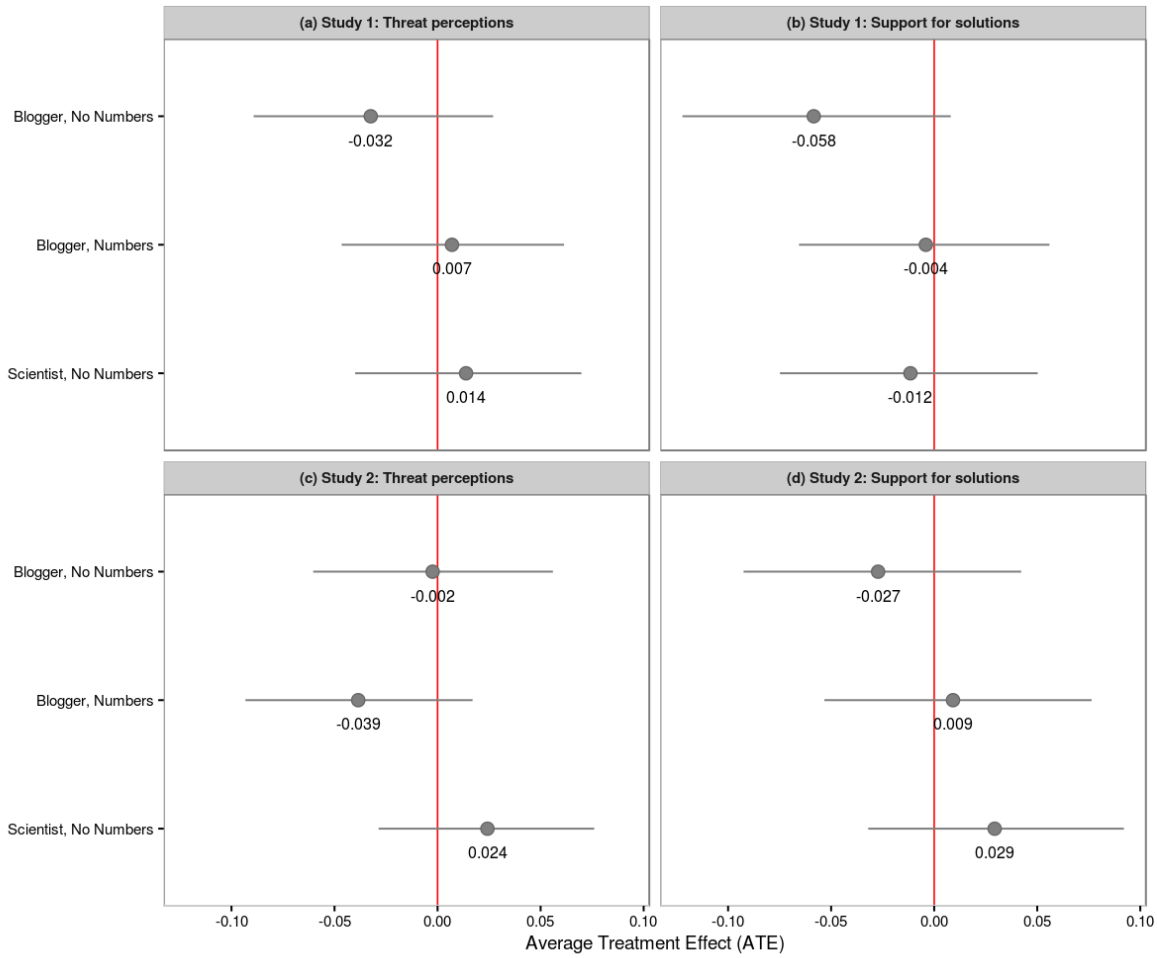


Figure 2: *Interactive effect of source legitimacy on numbers*. The results are based on an interactive regression model with 'Scientist, numbers' (i.e., the group expected, *a priori*, to express the highest levels of perceived threat and support for solutions) as the baseline condition. Each sub-plot presents posterior median and the 90% credible interval.

Discussion: Validity, Legitimacy and the Power of Words

This paper sought to establish, in the context of security communication, whether numbers truly are the "rhetorical weapons" that many experts and scholars assume. Our experiment, applied to two different samples, suggests that numbers may not have the direct, unconditional, and unambiguous power to convince an audience that something (or someone, or a group) is a security threat.

In line with the literature in cognitive science, we find weak evidence that framing a securitizing message in terms of quantitative information aligns respondents' perceptions and preferences with those promoted by the securitizing actor. Our experiment further questions the applicability of numerical determinism and expands it to the realm of securitizing communication and securitizing language. There is some minimal evidence for a mediating role of legitimacy: people who absolutely lack credibility and do not use numbers are the least successful securitizing actors. However, beyond this finding, the interplay between legitimacy and the use of numbers becomes less clear. In sum, there is very little evidence that securitizing moves can be strengthened by the use of numbers in rhetoric. This conclusion, together with

the specificity of the method (with its strengths and importantly its weaknesses) that has been used here, raises three talking points to be addressed by securitization scholars in future research.

First, our experimental design focused solely on establishing internal validity and thus it is difficult to speculate how these results may differ in the "real world". It might be that the small effects of numbers detected in our study would be amplified or even altered in more "real" securitizing moves happening in real-life situation, with a strong sense of urgency and importance (e.g. a communication on prime-time TV) and where cues about the (perceived) political affiliation of the expert are more evident. In line with Balzacq's call for methodological triangulation in critical security studies (2014), our experiment provide results that should be tested by alternative methods that privilege external validity.

Second, while our experimental setting had the advantage of controlling the political dimension of legitimacy, the absence of a strong interactive effect of numbers with the securitizing actors' legitimacy may be caused by the politically-neutral, expert legitimacy that we bequeathed to the securitizing actor. There is growing evidence that scientific legitimacy is on the decline in political settings (e.g. Radaelli 1999; Crow 2014) in the broader environment of populism and democracy contestation (e.g. Zimring 1996), as evidenced by Donald Trump's election to the presidency of the United States or the rise of parties like UKIP in the UK or Front National in France, both criticizing "scientists" and the "educated elite". This trend might explain why the "blogger" of our experiment might actually be seen, when using numbers that look accurate and verifiable, as a valid, somewhat "authentic", and perhaps even a "resisting" voice that does not belong to the established elite. More research is needed in security communication in general and securitization theory in particular to identify the specific effects of particular types of legitimacy (traditional or political, rational-legal or scientific, charismatic) on the success or failure of various formats of messages (quantitative securitization being one). Additionally, it worth recognizing that even in the absence of clearly identifiable effects triggered by quantitative security language, arguing with numbers tends to severely constrain the scope of potential counter-argumentation and political contestation (Baele, Balzacq & Bourbeau 2017).

Third and perhaps more importantly, our experimental design, by choosing to isolate the effects of numbers, did not include a control group who did not even face a securitizing message before completing the questionnaire. While this does not limit our findings and stands in line with many similar experiments, it limits our ability to explore the underlying mechanisms involved and the heterogeneity of effects observed. More importantly, this aspect limits our ability to directly locate the causes of one striking feature of our results: despite the blatantly harsh extraordinary measures advocated by the securitizing actor, preferences for these measures were quite high amongst respondents. Indeed, after reading the text, even left-leaning subjects tended to agree to the idea that tuberculosis is a security threat that needs to be addressed by harsh executive security measures targeting immigrants and the poor. This seems to suggest – yet without a control group it cannot be confirmed—that it is in fact very easy to convince an

audience that something or someone is a security threat and that extreme measures urgently need to be implemented. In other words, language-based securitizing moves seem to work extremely well, with or without numbers. This is a troubling result, as the literature on securitization has mostly denounced the problems that such a framing produces (e.g. Floyd 2011), especially when it comes to health issues (e.g. Elbe 2006). While "sociological" approaches to securitization stressing non-linguistic factors have progressively gained prominence over more "philosophical", language-focused ones (see footnote 3), our study seems to recall – if needed – the force of language in securitizing dynamics. However, only further studies with tailored methodologies would be able to fully evaluate the pure effect of security language on public perception and support for extraordinary measures—a central claim of securitization theory that has yet to be systematically tested (Baele & Thomson 2017). In this regard, our study clearly calls for follow-up experimental work on the relationship between security communication (with/without numbers), threat perception, and security policy preferences.

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