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**Economic Insecurity and Compliance to the COVID-19 Restrictions**

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We have no conflicts of interest to disclose.

Pre-registration, data, scripts and full material are available on

[https://osf.io/s5qr8/?view\\_only=16786ba0b51f4e2ca2e0d52652ea8ee8](https://osf.io/s5qr8/?view_only=16786ba0b51f4e2ca2e0d52652ea8ee8).

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**Economic Insecurity and Compliance to the COVID-19 Restrictions**

**Abstract**

The present research investigates economic insecurity as one potential determinant of citizens' compliance to restrictive policies implemented to combat the spread of the COVID-19 virus. Two pre-registered studies ( $N_{\text{Study 1}} = 305$ ;  $N_{\text{Study 2}} = 175$ ) were conducted in France during the second and the third wave of the pandemic to test correlational (Study 1) and causal (Study 2) links between economic insecurity, perceived constraints and transgressions (self-reported, Study 1; intended, Study 2). We hypothesized that the effect of economic insecurity is particularly strong for restrictions involving social affiliations (e.g., not meeting with friends and families). Results indicated that economic insecurity indeed increases perceived constraints and the tendency to transgress but for all types of restrictions (involving social affiliation or not). We propose that economic insecurity poses a threat to individuals' self-agency, which triggers psychological reactance to any form of restrictions to individual freedom.

*Keywords:* economic insecurity, compliance, COVID-19, social affiliation, reactance

## Economic Insecurity and Compliance

To fight against the COVID-19 pandemic, most countries implemented restrictive policies to break the spread of the virus. Those policies evolved over time and across countries from “soft” (e.g., washing hands, wearing masks) to “hard” measures (e.g., closing borders, curfews and lockdowns). Although following recommendations was strongly encouraged and disobedience may even be fined, the success of these restrictive policies ultimately depended on citizens’ compliance. Unfortunately, the exceptional pandemic went together with an exceptional economic recession, thereby aggravating the climate of uncertainty and threat. The present research aims to examine whether economic insecurity undermines citizens’ compliance with the restrictive policies aiming to contain the virus transmission.

### **Psychological Predictors of Compliance with Restrictive Policies**

A growing amount of research in psychology has attempted to identify the psychological mechanisms that underlie individuals’ adoption of prescribed and recommended behaviors to curb the risk of getting infected and transmitting the SARS-CoV-2 virus. Among them, the belief in conspiracy theory seems to hold an important place. Numerous correlational studies suggest that stronger endorsement of conspiracy beliefs regarding COVID-19 is negatively related to compliance with restrictive policies (Bierwiazzonek et al., 2020; Freeman et al., 2020; Imhoff & Lamberty, 2020). This negative association seems to be increased by a lower level of anxiety about the risks related to the pandemic (Erceg et al., 2020), right-wing political attitudes (Farias & Pilati, 2021) and vertical individualism (i.e., viewing oneself as an autonomous individual who accepts inequality) (Biddlestone et al., 2020). Other research reported that risk tolerance (Müller & Rau, 2021) and lower levels of political trust (Bargain & Aminjonov, 2020) negatively affect compliance to social distancing and lockdown prescriptions.

Despite acknowledging that the socio-economic climate played an undeniable role in the aforementioned psychological factors, so far, little research has been conducted to specifically examine how economic stressors may affect compliance to restrictive policies. To this matter, Probst, Lee and Bazzoli (2020) recently collected responses from US workers across 43 states and found that economic

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insecurity (i.e., job and financial insecurity) was negatively correlated to self-reports of compliance with COVID-19 prevention behaviors. The more participants experienced economic insecurity, the lower their compliance to the recommended prevention behaviors was (e.g., physical distancing, staying at home, disinfecting items and surfaces, washing hand frequently, avoiding touching one's face, and coughing inside one's elbow or in a tissue). Drawing on scarcity theory (Mani et al., 2013; Mullainathan & Shafir, 2014), authors interpreted this relationship as a result of a cognitive impairment caused by economic vulnerability. Scarcity theory posits that dealing with a lack of valued resources (e.g., time, food, money) induces a temporary mindset that consumes cognitive resources. With less cognitive resources available when engaging actions, individuals with a scarcity mindset would be less able to make appropriate decisions and to exert self-control while focusing on the most urgent and pressing needs. With regard to the COVID-19 pandemic, dealing with economic insecurity and having to anticipate the consequences of potential job or income losses could have translated into less cognitive resources to comply effectively with the prescribed and recommended health-related behaviors. Importantly, Probst et al. (2020) also found that the negative relationship between economic insecurity and self-reports of compliance with prevention behaviors was attenuated in US states offering more generous unemployment benefits. In other words, knowing that they have a safety net in case of job loss could contribute to relieving US employees from economic insecurity worries, thereby preserving cognitive resources.

However, in their study, Probst et al. (2020) focused on six behaviors that involved only personal and respiratory hygiene (e.g., hand washing, disinfection of surfaces, coughing inside one's elbow). Those behavioral recommendations all belong to the category of "soft" policies compared to harder policies that were implemented in many countries such as curfews and lockdowns. These policies are considered "hard" since they curtail individuals' freedom of action regarding their personal and, more importantly, social life. Not only they are more constraining but they are also distinct in nature from the "soft" policies. In fact, not being allowed to assist social gathering or to visit family members takes on the social dimension

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of individual's life. And with this difference in nature may come differences in the psychological processes that underlie their compliance. While it seems plausible that forgetting to wash one's hands systematically after contact with potentially contaminated surfaces may result from a temporary lack of cognitive resources (due to a scarcity mindset), the same rationale hardly extends to getting involved in social gatherings (but see Xie et al., 2020 for a different contention). Not complying with "hard" restrictive policies could rather emanate from making a deliberate decision than from cognitive lapses. For this matter, whether economic insecurity plays a role in compliance with restrictive social policies remains an open question.

### **Economic Insecurity and Compliance with Restrictive Social Policies**

The phenomenon of social affiliation in situations of stress is well-known in psychology (Gump & Kulik, 1997; Schachter, 1959) and despite competing theories on its determinants, there is a large consensus about its existence (Baumeister & Leary, 2017). Indeed, the experience (or anticipation) of a stressful and ambiguous situation increases the need to affiliate with people who share the same experience in order to exchange information and attitudes that helps mitigating the anxiety associated with the unpredictability of the situation. Economic insecurity arises from the experience of uncertainty regarding one's employment and financial resources (Probst, 2005), which makes this situation particularly likely to increase the need for social affiliation. Moreover, the pandemic and its economic collateral damages altogether concur to a very stressful context, as attested to by the impact on individuals' well-being and mental health (Holmes et al., 2020; Martinelli et al., 2021). For those who do not benefit from stable employment status or whose professional activity directly suffers from the consequences of the pandemic, uncertainty and stress may be at their highest peak. One basic and instinctive way to cope with stress is to seek for social contacts, and preferably with similar or close others (Taylor, 2011). And that is precisely what was strongly recommended not to do during periods of

lockdown. Coping with stressing situations would therefore directly enter in conflict with the restrictive social policies that are necessary to contain the virus propagation.

### **Purpose of the Present Research**

The objective of the present research is to examine the role of economic insecurity in individuals' compliance to restrictive policies. The two pre-registered studies (Study 1: [https://osf.io/cg3ks/?view\\_only=16b9069c47d7465e8bc45fd43a19250a](https://osf.io/cg3ks/?view_only=16b9069c47d7465e8bc45fd43a19250a); Study 2: [https://osf.io/g3hdz/?view\\_only=5167370d48a54e439f8a6412269a555d](https://osf.io/g3hdz/?view_only=5167370d48a54e439f8a6412269a555d)) were conducted in France during the second and the third wave of the COVID-19 pandemic in 2020. We tested the hypothesis that experiencing economic insecurity is associated with the perception of restrictive policies as more constraining and with a greater tendency to transgress them. In addition, in both studies, the nature (social vs. non-social) of the restrictions is tested as a within-participants variable: the association between economic insecurity and perceived constraint and intention to transgress was expected to be particularly true for “social” restrictions, namely, restrictions that deprive people from interacting face-to-face with others (e.g., not meeting with friends and families). The full material, including data and scripts are available on [https://osf.io/s5qr8/?view\\_only=16786ba0b51f4e2ca2e0d52652ea8ee8](https://osf.io/s5qr8/?view_only=16786ba0b51f4e2ca2e0d52652ea8ee8). In both studies, we report how we determined our sample size, all data exclusions, all manipulations, and all measures (Simmons et al., 2012).

### **Study 1**

Study 1 was run during the second lockdown in France, starting from October 30, 2020, which involved several measures and policies restraining citizens' mobility. Residents were allowed to go outdoors only for essential needs (e.g., doing groceries, going to a medical appointment). Except for imperative family reasons (e.g., picking up one's child from school), social contacts with friends and family members were not an exempting condition. On November 24, the French government announced that the lockdown would be eased in three progressive steps, starting on November 28. Study 1 was then run

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from November 30 to December 8 and involved questions regarding the past four weeks in November that took place under lockdown.

### Method

#### Participants and Sample Size

We conducted an a priori power analysis on the basis of an effect size of  $d=.40$  ( $f^2=.04$ ), which constitutes our smallest effect size of interest (SESOI; Lakens et al., 2018). Our SESOI was established by averaging the effect sizes of the correlations between compliance with CDC guidelines and two different predictors of economic insecurity (job and financial insecurity) reported by Probst et al. (2020). The power analysis using G\*power (Faul et al., 2007) indicated that 265 participants are required to have 90% chances to detect an interaction effect of a  $f^2=.04$  size. We planned to oversample and recruit around 300 participants. Three hundred five French participants (207 women, 96 men and 2 undefined) were recruited online through social media and large email diffusion ( $M_{age} = 38.83$ ;  $SD_{age} = 13.109$ ) and took part on a voluntary basis.

#### Measures

**Economic insecurity.** Economic insecurity was assessed with the Affective Financial Stress measure (Petitta et al., 2020) composed of 4 Likert scale items translated into French by a bilingual researcher. Participants indicated on a 5-point frequency scale ranging from 1 “Never” to “5 “Always” how often they experienced worries and concerns related to their current financial situation ( $\alpha = .913$ ;  $M = 2.565$ ;  $SD = 1.188$ ).

**Perceived constraints.** Based on the measures that were applicable during the November 2020 lockdown in France, a list of 11 items related to restrictive policies was created. Participants indicated to what extent each item was inconvenient to them on a 100-point scale ranging from 1 “Not inconvenient for me at all” to 100 “Extremely inconvenient for me” ( $\alpha = .832$ ;  $M = 53.488$ ;  $SD = 20.882$ ). Five of the items were a priori categorized as social, as they clearly involve social restrictions (e.g., “Not being able to

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visit family, friends and acquaintances”;  $\alpha = .784$ ;  $M = 61.313$ ;  $SD = 24.375$ ) while the other six items were categorized as non-social, as they did not primarily involve social restrictions (e.g., “Not being able to buy anything I want”;  $\alpha = .707$ ;  $M = 46.966$ ;  $SD = 22.262$ ).

**Self-reported transgressions<sup>1</sup>.** Based on the measures that were applicable during the November 2020 lockdown in France, a list of 13 non-recommended or prescribed behaviors, a priori defined as social or non-social, was created. Participants indicated how often they exerted each behavior during the 4-week of lockdown using a 7-point Likert scale (i.e., 1 “Never”, 2 “Only once the past 4 weeks”, 3 “two to three times the past 4 weeks”, 4 “Between 4 and 7 times the past 4 weeks (approximately once a week)”, 5 “Between 8 and 15 times a week the past 4 weeks (2 to 3 times a week)”, 6 “16 to 20 times for the past 4 weeks (approximately 4 times a week)”, 7 “More than 20 times over the past 4 weeks (almost every day or more)” ;  $\alpha = .784$ ;  $M = 2.059$ ;  $SD = 0.755$ ). Nine behaviors involved social contacts (e.g., “Invite family or friends to come over at my home”;  $\alpha = .805$ ;  $M = 2.068$ ;  $SD = 0.924$ ) and the other four behaviors did not primarily involve social contact (e.g., “Going outdoor for a walk for more than 1-hour”;  $\alpha = .423$ ;  $M = 2.097$ ;  $SD = 0.907$ )<sup>2</sup>.

### Procedure and Design.

After giving consent, participants first responded to the economic insecurity measure, followed by the perceived constraints and the self-reported transgressions measures. The design of the study is

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<sup>1</sup> We also measured independent and interdependent self-construals to test their association with perceived constraints and transgressions of the restrictive policies. But the poor internal consistency of the scale ( $\alpha = .616$ ), as well as the unexpected factorial structure (11 factors instead of 2), prevented us from running the analyses. One other measure regarding the maximum number of guests participants thought it was reasonable to gather with on Christmas Eve was initially included in the study. However, while data collection was still going on, the French government gave recommendations on December 3<sup>rd</sup> to limit Christmas Eve family reunion to 6 adults. These non-exploitable measures will not be discussed further in the present paper but are available on OSF.

<sup>2</sup> Given the low reliability of the non-social transgression scale ( $\alpha = .423$ ), a factorial analysis with an oblimin rotation was performed and four components emerged. Analyses run on those four components rather than the two a-priori dimensions (social vs. non-social policies) led to similar results (see Supplementary Material).

correlational with factors of interest being economic scarcity, perceived constraints (social vs. non-social) and self-reported transgressions (social vs. non-social). We predicted that economic insecurity positively correlates with perceived constraints and self-reported transgressions, but more specifically with the ones involving social contacts.

## Results

### Correlation matrix and preliminary analyses.

--- Insert Table 1 here ---

Preliminary analyses (cf. Table 1) indicated that gender was significantly related to most of the dependent variables (see Supplementary material) and was therefore included as a covariate in further analyses. Data were analyzed using mixed-ANCOVA (General Linear Model)<sup>3</sup>. The model tested whether economic insecurity predicted perceived constraints and transgressions of various restrictions. The social vs. non-social nature of the constraints and transgressions were tested as within-participants variables.

### Perceived constraints

Participants significantly perceived restrictive social policies as more constraining than non-social policies,  $F(1, 300) = 83.639, p < .001, \eta^2 = .227, 90\% \text{ CI } [0.153; 0.282]$ . Moreover, the main effect of economic insecurity indicated that the more economically insecure participants felt, the more they perceived all kinds of restrictive policies as constraining,  $F(1, 300) = 8.038, p = .005, \eta^2 = .026, 90\% \text{ CI } [0.005; 0.062]$ . However, economic insecurity did not interact with the nature (social vs. non-social) of restrictive policies ( $F < 1$ ). Contrary to our prediction, economic insecurity was not associated with the perception of restrictive social policies as more constraining than non-social ones.

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<sup>3</sup> All reported effects are maintained when gender is not entered in the analyses.

### Self-reported transgressions

Participants did not report transgressing more social than non-social restrictions,  $F(1, 300) = 2.169, p = .142$ . The main effect of economic insecurity was significant,  $F(1, 300) = 5.853, p = .016, \eta^2 = .019$ , 90% CI [0.002; 0.052], meaning that the more economically insecure participants felt, the more they reported transgressing all types of restrictive policies. However, economic insecurity did not interact with the nature (social vs. non-social) of restrictive policies ( $F < 1$ ). Contrary to our prediction, economic insecurity was not associated with a greater tendency to transgress restrictive social policies than non-social ones.

### Discussion

We hypothesized that the economic insecurity engendered by the consequences of the COVID-19 pandemic would enhance individuals' need for affiliation (Gump & Kulik, 1997; Schachter, 1959), which would motivate individuals to seek social contact (Martinelli et al., 2021) despite the restrictions imposed to curb the virus transmission. Accordingly, our main prediction was that experiencing economic insecurity would be associated with the perception of restrictive social policies as more constraining and with a greater self-reported tendency to transgress them than non-social ones. Our results support the hypothesis that economic insecurity is related to poor compliance to the restrictions. However, they did not support a moderation of this association by the nature of the restrictions. Indeed, economic insecurity was related to greater perceptions of constraints and greater reports of transgression for both social and non-social restrictions.

Thus, results from Study 1 confirm that the more participants felt economically insecure, the more they perceived the (social and non-social) restrictions as constraining, and the more likely they were to transgress restrictive policies. However, Study 1's material suffers from some limitations. In line with the November 2020 lockdown in France, two lists of social and non-social restrictive policies were created. A posteriori, the categorization of some of the non-social items seemed problematic. For example, "being

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restricted in one's mobility" could easily fall into the "social constraints" category if individuals usually travel to visit family or friends. The same logic applies to "not being able to do indoor sport" that can represent both social and non-social contexts. Since most of the items could eventually be social in nature, findings from Study 1 leave open the possibility that the social nature of the restrictions increases the association between economic insecurity, perceived constraints and transgressions of these policies.

In Study 2, the distinction between social and non-social measures was clearer. In addition, while most studies on the determinants of individuals' compliance to COVID-19 restrictive policies are correlational, Study 2's design was experimental and tested the causal role of economic insecurity. More precisely, we designed a manipulation procedure that aimed to put participants either in an economic security or insecurity mindset before reporting how constraining they perceived the restrictions to be and how often they planned to transgress them.

We hypothesized that participants who are led to feel economically insecure should perceive restrictive policies as more constraining and should be more willing to transgress them than participants led to feel economically more secure. In Study 1, this main effect was not moderated by the social (vs. non-social) nature of the restrictions. Thus, in Study 2, two alternative pre-registered hypotheses were tested. On the one hand, with the dichotomy between social vs. non-social restrictions being clearer, and in line with our initial hypothesis, we expected the above effect to be stronger for social restrictions than for non-social restrictions. On the other hand, if results from Study 1 were not due to the ambiguity of the items used, a main effect of the economic insecurity condition should be observed on both perceived constraints and self-reported transgressions, irrespectively of their social nature.

### **Study 2**

After a series of local lockdowns, the French government announced a third national lockdown starting from April 3 2021. Study 2 was launched on April 8, soon after this announcement. Since the lockdown had just started, Study 2 did not measure self-reported past transgressions but rather intentions

to transgress the restrictions that were in force at that time. On April 22, the French government announced that the lockdown would be eased in the following days. As a consequence, data collection was stopped on April 23.

### Method

#### Participants and sample size

We conducted a power analysis using the smallest effect size detected in study 1 (i.e.,  $f^2=.01$ ), which constituted our smallest effect size of interest to detect the predicted interaction effects. The a priori power analysis using G\*power (Faul et al., 2007) indicated that 262 participants were required to achieve 90% chances to detect an effect of this size in a design involving within- and between-participant comparisons as well as their interaction. Since we had access to a large pool of participants through course credit (i.e., students from two French universities), we initially planned to oversample and recruit 300 participants. Unfortunately, data collection had to be stopped before we reached the target sample size due to the lift of the lockdown, making our dependent variables obsolete. As a consequence, we were able to collect responses from 180 participants. One of them was exposed to both conditions due to a program failure and three of them failed the attention check measure and were excluded from analyses. The final sample is  $N = 175$  participants (161 women, 13 men, 1 who did not wish to answer the question;  $M_{age} = 20$ ;  $SD_{age} = 2.591$ ). The sensitivity power analysis assuming 90% power indicates that we were only able to detect an interaction effect of a size greater than  $f^2 = 0.015$  with our final sample size.

#### Measures

**Perceived constraints.** The items list from Study 1 was adjusted and updated as a function of the official measures that were applicable during the April 2021 lockdown in France (see Supplementary material). Participants' mean ratings of inconvenience was calculated for policies a priori categorized as

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social policies ( $M = 73.059$ ;  $SD = 20.809$ ;  $\alpha = .790$ ) and non-social policies ( $M = 54.909$ ;  $SD = 21.807$ ;  $\alpha = .767$ ).

**Intentions to transgress.** The item list from Study 1 was adjusted and updated as a function of the official measures that were applicable during the April 2021 lockdown in France. For each item, participants indicated how frequently they intended to exert the behavior on a 7-point Likert scale ranging from 1 “Never” to 7 “Several times in a week” (see Supplementary material). For one item (“moving outside of your county for non-essential trips and involving only you or your family”), participants indicated how likely they were to exert the behavior on a 7-point Likert scale ranging from 1 “No, I do not plan on doing it all” to 7 “Yes I will”. Participants’ mean intention to transgress was calculated for items a priori categorized as social policies ( $M = 3.582$ ;  $SD = 1.436$ ;  $\alpha = .862$ ) and non-social policies ( $M = 2.802$ ;  $SD = 1.010$ ;  $\alpha = .532$ )<sup>4</sup>.

**Manipulation check.** At the end of the study, participants were asked to indicate to what extent the affirmation “I am currently worried and stressed by my economic and professional future situation in reason of the COVID-19 crisis” was true for them on a 7-point Likert scale ranging from 1 “Absolutely not true for me” to 7 “Absolutely true for me”.

### Procedure and Design

After giving consent, participants were told that the study aimed to collect students’ experience of the pandemic. They were randomly assigned to one of the two experimental conditions of 2 (Economic situation induction: insecurity vs. security) x 2 (Perceived constraints: social vs. non-social measures) x 2 (Intentions to transgress: social vs. non-social measures) mixed design, with the economic situation

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<sup>4</sup> Given the low reliability of the non-social transgression scale ( $\alpha = .532$ ), a factorial analysis with an oblimin rotation was performed and four components emerged. Analyses run on those four components rather than the two a-priori dimensions (social vs. non-social policies) led to similar results (see Supplementary Material).

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induction as a between-participants variable and the two others as within-participants variables. Participants in the “economic insecurity” condition ( $N = 94$ ) were first reminded that the COVID-19 crisis was going to result, in the years to come, in a major economic crisis with negative consequences on the job market. Participants in the “economic security” condition ( $N = 81$ ) were first reminded that the COVID-19 crisis had some negative social and psychological repercussions and that, for these reasons, more jobs will be available in the psychology job market. Next, all participants were given as much time as needed to express their thoughts by writing anything that *worry* (insecurity condition) or *reassure\_*(security condition) *them as a student*, on both the financial and professional dimensions related to the COVID-19 crisis. Then, they completed both measures of perceived constraints and intentions to transgress. They also completed socio-economic and biographical measures as well as the attention and the manipulation check items. Finally, participants were thanked and debriefed.

### Results

Mixed-ANOVA (General Linear Model) was used to analyze the data. As in Study 1, the social vs. non-social nature of the constraints and transgressions were tested as within-participants variables.

#### Manipulation check

Participants in the economic insecurity condition reported higher levels of economic and professional related worries and stress due to the COVID-19 crisis ( $M = 4.74$ ;  $SD = 1.772$ ) than participants in the economic security condition ( $M = 3.96$ ;  $SD = 2.015$ ),  $F(1, 173) = 7.458$ ,  $p = .007$ ,  $\eta^2 = .041$ , 90% CI [0.006; 0.099]. Our manipulation seems to have been effective.

#### Perceived constraints

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Participants perceived restrictive social policies as more constraining than non-social policies<sup>5</sup>,  $F(1, 173) = 129.346, p < .001, \eta^2 = .428, 90\% \text{ CI } [0.337; 0.502]$ . However, neither the main effect of the economic situation induction nor the interaction with the nature of perceived constraints reached significance (all  $F$ s  $< 1$ ).

### **Intention to transgress restrictive policies**

Participants' indicated greater intention to transgress social policies than non-social policies,  $F(1, 173) = 59.743, p < .001, \eta^2 = .257, 90\% \text{ CI } [0.168; 0.340]$ . The main effect of the economic situation induction was also significant,  $F(1, 173) = 4.472, p = .036, \eta^2 = .025, 90\% \text{ CI } [0.001; 0.075]$ . Replicating results of Study 1 with an experimental design, participants in the economic insecurity condition indicated greater intentions to transgress both types of restrictive policies ( $M = 3.295; SD = 1.035$ ) than participants in the economic security condition ( $M = 2.936; SD = 0.938$ ). Contrary to our initial hypothesis, the interaction of economic insecurity condition with the social nature of restrictions failed to reach significance [ $F(1, 173) = 2.882, p = .095$ ]. The effect of the economic (in)security condition on intentions to transgress did not depend on the type of restrictive policies involved (social vs. non-social).

## **Discussion**

Study 2 aimed to test the same hypotheses as in Study 1 by manipulating, instead of measuring, economic insecurity. In line with Study 1's results, we found that participants who were led to reflect on the negative economic outcomes the COVID-19 crisis might have on their future economic situation intended to transgress restrictive policies (both social and non-social) to a greater extent than participants who were led to reflect on the potential positive economic outcomes of the crisis for their economic

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<sup>5</sup> With most participants being women, gender was then not a relevant covariate. Other potential covariates were found to be unrelated to our dependent variables of interest in Study 1 (see Supplementary Material). Therefore, no covariate has been included in the analysis.

future. We also attempted to test the predicted interaction, which failed to reach significance in Study 1, that participants exposed to a highly insecure economic future would perceive as more constraining and would intend to transgress more restrictive social than non-social policies. Once again, analyses did not reveal such an interaction effect. Indeed, although social restrictions are perceived as more constraining and are more likely to be transgressed than non-social policies, these effects were not moderated by the economic insecurity condition. The early stop in data collection resulted in a lower statistical power than expected, and could explain the non-significance of the interaction. However, this interaction was not observed in Study 1 either. In addition, the fact that the main effect of insecurity was significant, consistently with Study 1, sustain that all things equal, higher economic insecurity is associated to lower compliance to any prescriptions, both social and non-social ones.

### **General Discussion**

The present research aimed to examine how the experience of economic insecurity in the COVID-19 crisis influenced individuals' compliance with the mitigation measures that were recommended and prescribed in many countries. Two studies were conducted to test the correlational (Study 1) and the causal (Study 2) links between economic insecurity, perceived constraints and self-reported past transgressions (Study 1) as well as intentions to transgress (Study 2).

In line with Probst et al. (2020), the results of the two studies show that economic insecurity may explain part of citizens' non-compliance with COVID-19 restrictive policies. Indeed, the more economically insecure participants felt, the more likely they were to report past (Study 1) or future (Study 2) transgressions. A major strength of our work lies in the causal nature of the effect of economic insecurity (Study 2), which qualifies previous correlational findings and support that, beyond other factors, the mere temporary feeling of economic insecurity was sufficient to increase transgressions of the COVID-19 restriction policies.

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Among those restriction policies, some involved a social component (e.g., “Invite family or friends to come over at my home”) while others did not (e.g., “Not washing hands before going outdoors”). Our rationale was that the experience of economic insecurity constitutes a highly stressful and uncertain situation which enhance individuals’ need for social affiliation. Our main hypothesis was that economic insecurity would lead individuals to seek social contacts, which would translate into 1) perceiving social restrictions as more constraining than non-social restrictions, 2) a greater tendency or intent to transgress social than non-social restrictions. Results of both studies supported that social restrictions were perceived as more constraining and were more often transgressed than non-social restrictions, sustaining the view of these restrictions as “hard” (vs. “soft”) restrictions. However, results did not support the moderation hypothesis. Indeed, economic insecurity was related to a perception of both types of restrictions as more constraining (Study 1) and to a greater tendency or intent to transgress both types of restrictions (both studies). Worthwhile to note that the absence of the predicted interaction in Study 2 may also be partly caused by a lack of statistical power to detect a small-sized effect, given that data collection had to be stopped right after the announcement of the lockdown lift. Its absence is nevertheless congruent with the results from the well-powered Study 1.

Incidentally, Study 1’s additional analyses indicated gender differences in perceived magnitude of constraints depending on their nature: Women (but not men) perceived restrictive social policies as more constraining than non-social ones and men reported more transgressions than women, particularly non-social policies. Study 2’s sample characteristics (i.e., psychology students among which men are very much underrepresented) did not allow further investigation of gender effects in compliance to social restrictions. Gender did not moderate the link between economic insecurity and perceived constraints or self-reported transgressions evidenced in Study 1. However, beyond economic insecurity, the question of whether gender may affect perceptions of social and non-social restrictive policies as well as compliance to these restrictions would be worth investigating in future research.

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At first glance, the consistent and positive main effect of economic insecurity on (self-reported past and intended future) transgressions could seem surprising given that insecure individuals are those who may suffer the most from the crisis, and thus, would be expected to comply to the restrictions in order to limit the spread of the virus. However, and contrary to that assertion, results support that they are those who (actually or intend to) transgress the restrictions the most. The reasons why economic insecurity diminishes individuals' compliance to all types of restrictive policies would deserve attention. Probst et al. (2020) have suggested that economic insecurity triggers a scarcity mindset, which consumes part of the cognitive resources necessary to deal with the restrictive policies (e.g., washing hands frequently, disinfecting surfaces and objects, etc.). Our initial argument was that a scarcity mindset might not be the best candidate to account for diminished compliance with social restrictions (e.g., getting involved in social gatherings, inviting friends to come over one's home). Instead, we suggested that, in an attempt to cope with the stress and uncertainty related to economic insecurity, individuals would feel an increased need for social affiliation (Schachter, 1959) and would therefore seek more social contacts despite the restrictive official recommendations. In the end, our findings suggest that economic insecurity decreases compliance to all forms of restrictive policies, and not only to the ones that prevent social contact, which cannot be accounted for by an increased need for social affiliation. Unless one assumes that a scarcity mindset can equally result in failures to remind oneself to wash hands and in failures to avoid meeting up with friends or family, the present findings leave alternative explanations open.

As an aggravating factor, economic insecurity may have emphasized the threat that individuals experienced during the pandemic situation (Jutzi et al., 2020). Individuals not only feared to get contaminated but also feared that their future professional and economic situation would be compromised. Because official restrictions and recommendations reduce individuals' freedom of action and thus their sense of agency, economic insecurity may encourage people to try to regain it by using defensive strategies such as psychological reactance (Brehm & Brehm, 2013; Reiss et al., 2020). In support

## Economic Insecurity and Compliance

of this explanation, other recent research showed that individuals with high reactance expressed a decreased preference for security-related behavior and were more inclined to break curfews set in several countries as a mitigation measure against the COVID-19 pandemic (Soveri et al., 2020; Zhu et al., 2020). Therefore, it seems plausible that economic insecurity poses a threat to individuals' self-agency, and individuals in turn adopt defensive strategies, such as reactance to restrictions to their individual freedom.

Economic insecurity could also be experienced as a consequence of unfair or poor management decisions made by the government that negatively impacted the job market. Indeed, procedural justice models predict that when individuals feel that they have been treated unfairly by an authority, they tend to comply less to the rules or norms established by the said entity, which is perceived as illegitimate (e.g., Murphy, 2017; Murphy & Tyler, 2008). Individuals experiencing an increase in economic insecurity, could hold the government responsible and considered them even as illegitimate. This could explain the association observed between economic insecurity and compliance to official restrictions, especially in Study 1, the manipulation used in Study 2 being less likely to change justice perceptions (as it is based on the positive vs. negative impact of the crisis on the psychology-related job sector, rather than on the action of the government).

The present research further contributes to understanding the conditions under which citizens may be reluctant to comply with restrictions that are imposed (or highly-recommended) in several countries across the world in a pandemic situation. While a great deal of research has focused on the negative role of belief in conspiracy theories, our findings, along with those from Probst et al. (2020), point to the aggravating role of economic insecurity in compliance to mitigation measures. Interestingly, economic insecurity is also a strong predictor of belief in conspiracy theories (Douglas et al., 2019; Mao et al., 2020). Further research is needed to better understand the central role that economic insecurity may play by leading people to want to regain control over their lives, which could further translate into greater adherence to conspiracy theories and defense strategies such as reactance to restrictive policies.

## Economic Insecurity and Compliance

Given that many experts from all horizons predict that humanity will have to face major global challenges in the future (e.g., restrictions policies to limit global warming), investigating the impact of economic insecurity on citizens' compliance seems crucial.

Notably, the two reported studies were conducted in France, which tops social welfare spending ranking among OECD countries in terms of percentage of global domestic product (OECD, 2021). While Probst et al. (2020) found that the negative correlation between economic insecurity and self-reports of compliance with prevention behaviors was attenuated in US states offering more generous unemployment benefits, our findings indicate that economic insecurity still has a negative effect on compliance to official restrictions even in a country where the social welfare system is considered as one of the most generous in the world.

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## Economic Insecurity and Compliance

**Table 1.**

Correlation matrix of all variables involved in Study 1.

Variable	1	2	3	4	5	6	7
1. Education							
2. Gender	-.052 [-.17, .06]						
3. Insecurity	-.208*** [-.32, -.10]	-.030 [-.14, .08]					
4. Income	.305*** [.20, .41]	-.049 [-.16, .06]	-.409*** [-.52, -.31]				
5. Non-Social Constraints	-.017 [-.13, .10]	-.131* [-.24, -.02]	.172** [.06, .28]	-.005 [-.12, .11]			
6. Social Constraints	.067 [-.05, .18]	-.226*** [-.34, -.12]	.126* [.01, .24]	-.006 [-.12, .11]	.616*** [.53, .70]		
7. Non-Social Transgressions	.050 [-.06, .16]	.129* [.02, .24]	.106 [-.01, .22]	-.051 [-.16, .06]	.286*** [.18, .39]	.146* [.03, .26]	
8. Social Transgressions	.071 [-.04, .17]	-.039 [-.15, .07]	.120* [.01, .23]	-.027 [-.13, .08]	.191*** [.08, .30]	.185*** [.07, .30]	.382*** [.28, .49]

*Note.* Values in square brackets indicate the 95% confidence interval for each correlation. \* indicates  $p < .05$ . \*\* indicates  $p < .01$  and \*\*\* indicates  $p < \text{or} = .001$ .

## Supplementary Material

### Study 1

#### Pre-registration form

Pre-registration can be found here

[https://osf.io/cg3ks/?view\\_only=16b9069c47d7465e8bc45fd43a19250a](https://osf.io/cg3ks/?view_only=16b9069c47d7465e8bc45fd43a19250a).

#### Sample description

Participants' median highest degree was four years of studies after high-school and median annual net income was 22,570€. The majority of participants reported living in a house (61%) rather than an apartment (38%), either alone (17%) or with other adults (38.5%) and/or children (44,5%).

#### Scales items

	Items
Economic insecurity	<ol style="list-style-type: none"><li>1. I worry about having the funds to cover normal monthly expenses.</li><li>2. I feel like I am living paycheck-to-paycheck</li><li>3. I am stressed by my financial situation</li><li>4. An unexpected event such as a car repair could cause a financial emergency for me</li></ol>
Perceived constraints on <i>social</i> restrictions	<ol style="list-style-type: none"><li>1. Not being able to receive guests at home.</li><li>2. Not being able to visit family, friends and acquaintances.</li><li>3. Not being able to meet some new people.</li><li>4. Not being able to attend important family gatherings other than Christmas (example: birthday parties).</li><li>5. Having to restrain myself from touching close friends or relatives.</li></ol>
Perceived constraints on <i>non-social</i> restrictions	<ol style="list-style-type: none"><li>1. Not being able to buy anything I want.</li><li>2. Having to restrict my daily travel.</li><li>3. Not being able to go to restaurants or bars.</li><li>4. Having to systematically wear a mask.</li><li>5. Not being able to practice a team sport or to go to the gym.</li><li>6. Not being able to travel.</li></ol>
Self-reported <i>social</i> transgressions	<ol style="list-style-type: none"><li>1. Accept an invitation to visit friends or family.</li><li>2. Invite family or friends to come over at my home.</li><li>3. Make an appointment with acquaintances or friends to meet outdoors (example: at the park).</li></ol>

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4. Make an appointment with acquaintances or friends to meet indoors (example: at the groceries store).
5. Do outdoors physical exercise with non-household members.
6. Chat with non-household members outdoors and for less than 10 minutes.
7. Chat with non-household members indoors and for less than 10 minutes.
8. Chat with non-household members outdoors and for more than 10 minutes.
9. Chat with non-household members indoors and for more than 10 minutes.

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### Self-reported *non-social* transgressions

1. Do outdoors physical exercise alone (or with household members) beyond the 1km radius around home.
  2. Get out and walk around (not for professional purposes) alone (or with household members) for more than one hour.
  3. Go to a store to buy non-essential products.
  4. Use public transportation for others reasons than professional trips and imperative reasons (e.g., medical appointment).
- 

## Covariates analyses

To identify potential covariates, correlations between participants' gender (with women coded -1 and men coded +1)<sup>1</sup>, level of education (with lower levels of education coded -1 and higher levels of education coded +1)<sup>2</sup>, income and responses to the four main DVs (perceived social and non-social constraints, self-reported social and non-social transgression) were explored (cf. correlation matrix in the main document). Results indicated that gender significantly correlated with both type of perceived constraints, indicating that women reported higher levels of perceived social constraints,  $r = -.226$ ,  $p < .001$  and of perceived non-social constraints than men,  $r = -.131$ ,  $p = .023$ . In addition, men reported greater non-social transgressions,  $r = .129$ ,  $p = .025$ . No other correlation reached

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<sup>1</sup> Two participants reported undefined gender and were therefore excluded from the analyses involving gender.

<sup>2</sup> Level of education was categorized as low vs. high with a cut at the median (4 years of studies after high-school).

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statistical significance. Gender was therefore entered in all analyses as a covariate. Results indicated that participants' gender had a main effect on perceived restrictive policies,  $F(1, 300) = 12.311, p = .001, \eta^2 = .039, 90\% \text{ CI } [.011; .081]$ , which was further qualified by a significant interaction with the nature (social vs. non-social) of those policies,  $F(1, 300) = 4.940, p = .027, \eta^2 = .016, 90\% \text{ CI } [.001; .047]$ . Women perceived restrictive social policies as more constraining ( $M_{\text{social constraints}} = 65, SD = 23.725$ ) than non-social ones ( $M_{\text{non-social constraints}} = 48.883, SD = 21.898$ ) with a 16.117 points difference, as compared to men ( $M_{\text{social constraints}} = 53.246, SD = 23.731; M_{\text{non-social constraints}} = 42.848, SD = 21.898$ ; difference of 10.398 points). Moreover, men reported more transgressions of restrictive non-social policies ( $M = 2.275; SD = 0.901$ ) than of social ones ( $M = 2.019; SD = 0.921$ ) with a .256 points difference, as compared to women ( $M_{\text{non-social transgressions}} = 2.017, SD = 0.892; M_{\text{social transgressions}} = 2.090, SD = 0.921$ ; difference of -.073 points),  $F(1, 300) = 6.921, p = .009, \eta^2 = .023, 90\% \text{ CI } [.003; .057]$ . All other effects involving participants' gender did not reach significance.

### Factorial analyses

Given the low reliability of the non-social transgression scale ( $\alpha = .423$ ), an exploratory factorial analysis with a direct oblimin rotation was performed on the transgression items (see Table S1 for the matrix structure). Four components emerged. The first factor explains 30.11% of the variance and contains the four items involving planned social gathering (e.g., "accept an invitation to visit friends or family"). The second factor explains 14.15% of the variance and contains the four items involving unexpected chats (e.g., "Chat with non-household members indoors and for less than 10 minutes"). The third factor explains 9.11% of the variance and contains the three items related to physical exercising (e.g., "Do outdoors physical exercise with non-household members"). Finally, the fourth

## Economic Insecurity and Compliance

factor explains 8.17% of variance and contains the two items involving getting around to specific places (e.g., “go to a store to buy non-essential product”).

**Table S1.**

*Matrix Structure of the Factorial Analysis (Study 1)*

	Component			
	1 (Gathering)	2 (Chatting)	3 (Exercising)	4 (Moving)
Accept an invitation to visit friends or family.	<b>.852</b>	-.298	.211	.238
Invite family or friends to come over at my home.	<b>.806</b>	-.288	.073	.090
Make an appointment with acquaintances or friends to meet outdoors (example: at the park).	<b>.675</b>	-.230	.476	.174
Make an appointment with acquaintances or friends to meet indoors (example: at the groceries store).	<b>.620</b>	-.209	.294	.403
Chat with non-household members outdoors and for more than 10 minutes.	.310	<b>-.855</b>	.162	.050
Chat with non-household members indoors and for more than 10 minutes.	.345	<b>-.846</b>	.053	.174
Chat with non-household members indoors and for less than 10 minutes.	.178	<b>-.840</b>	.142	.132
Chat with non-household members outdoors and for less than 10 minutes.	.261	<b>-.758</b>	.194	-.006
Do outdoors physical exercise alone (or with household members) beyond the 1km radius around home.	.127	-.150	<b>.748</b>	.080
Do outdoors physical exercise with non-household members.	.366	-.159	<b>.685</b>	-.005
Get out and walk around (not for professional purposes) alone (or with household members) for more than one hour.	.184	-.123	<b>.628</b>	.327

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Use public transportation for others reasons than professional trips and imperative reasons (e.g.. medical appointment).	.165	.053	.216	<b>.759</b>
Go to a store to buy non-essential products.	.272	-.283	.048	<b>.753</b>

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Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Analyses were performed using this four-factors categorization (rather than the *a priori* two-dimensions categorization) as the within-participants variable. The main effect of economic insecurity on all types of transgressions was maintained,  $F(1, 299) = 3.857, p = .05, \eta^2 = .013$ . In addition, the main effect of transgression type was significant,  $F(3, 299) = 44.441, p < .001, \eta^2 = .31$ . Restrictions involving chatting ( $M = 2.53; SE = .089$ ) were the most strongly transgressed, followed by exercising ( $M = 2.211; SE = 0.71$ ), moving ( $M = 1.96; SE = .05$ ) and then social gathering ( $M = 1.711; SE = .05$ ). Importantly, once again, the interaction between economic insecurity and the nature of restrictive policies (gathering vs. chatting vs. exercising vs. moving) did not reach significance ( $F < 1$ ).

## Study 2

### Pre-registration form

Pre-registration can be found here

[https://osf.io/g3hdz/?view\\_only=5167370d48a54e439f8a6412269a555d](https://osf.io/g3hdz/?view_only=5167370d48a54e439f8a6412269a555d)

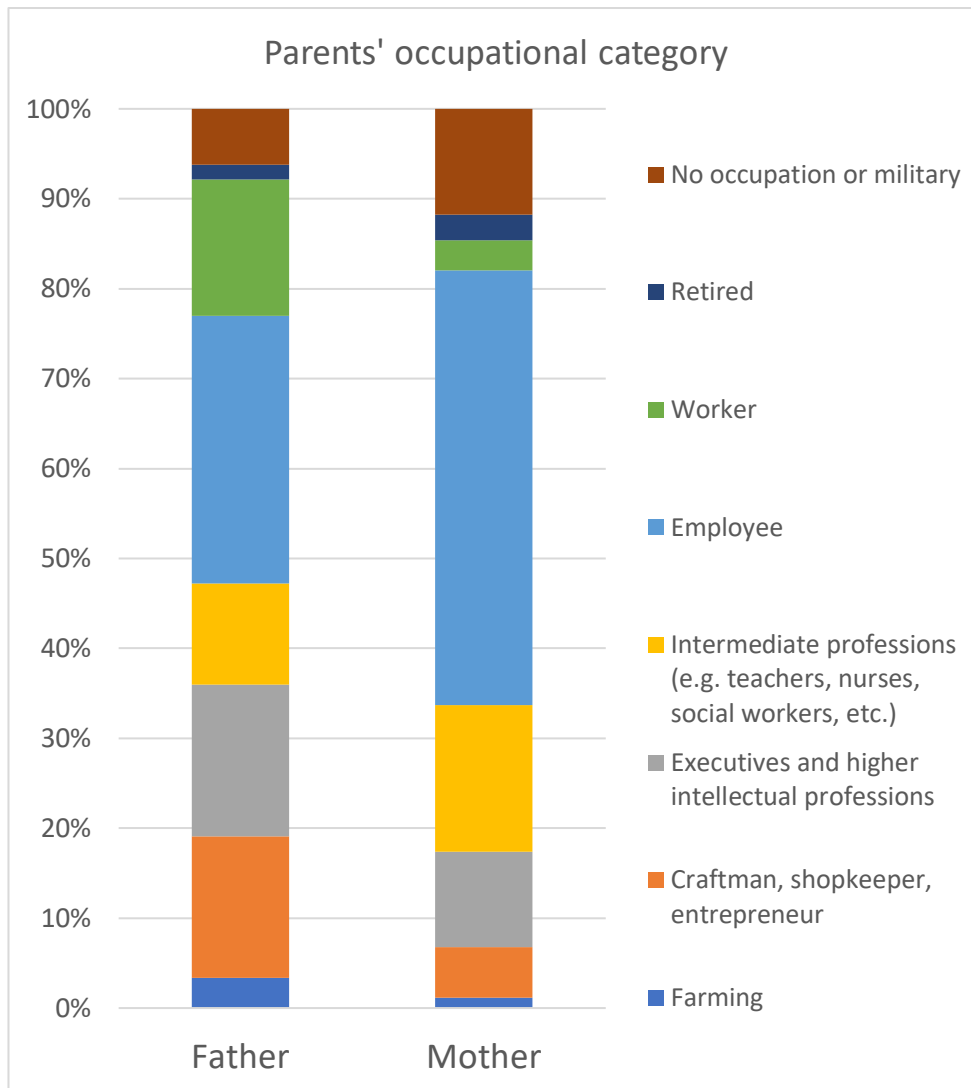
### Sample description

Given that participants were students, participants were asked to report their parents' sociodemographic information. Parents' median highest degree was high school diploma and median occupational category was employee (see Figure 1).

### Figure 1.

*Parents' Occupational Category*

## Economic Insecurity and Compliance



### Economic situation induction

In order to put participants either in an economic security or insecurity mindset, participants were first exposed to the following texts (translated from French).

In the “economic insecurity condition”: *In this study, we would like to know more about the students' experience of the current COVID-19 pandemic.*

*The current COVID-19 crisis will lead to an unprecedented economic crisis in the years to come and will have serious consequences for the job market.*

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*In a few sentences, please explain how the COVID-19 crisis could make it difficult for students to enter the job market and the impact this could have on your own economic and professional future situation (e.g., difficulties in finding a job in your field of interest).*

*We remind you that your answers are anonymous. Feel free to express any worries you have related to the COVID-19 crisis, both on the financial and professional dimensions.*

*In the “economic security condition”: In this study, we would like to know more about the students’ experience of current COVID-19 pandemic.*

*In order to deal with the social and psychological consequences of the COVID-19 crisis, the psychology job market will substantially grow in the years to come and job offers in that domain will multiply.*

*In a few sentences, please explain how the COVID-19 crisis could help psychology students to enter the job market and the impact this could have on your own economic and professional future situation (e.g., enhancing chances to find a job in your field of interest).*

*We remind you that your answers are anonymous. Feel free to express anything related to the COVID-19 crisis that reassure you, both on the financial and professional dimensions.*

### Scales items

	Items
Perceived constraints on <i>social</i> restrictions	<ol style="list-style-type: none"><li>1. Not being able to receive guests (friends, family, acquaintances) at home.</li><li>2. Not being able to go to bars, restaurants or night clubs.</li><li>3. Not being able to meet some new people.</li><li>4. Not being able to organize or attend important family gatherings (example: birthday parties).</li><li>5. Having to restrain myself from touching close friends or relatives</li><li>6. Not being able to visit family, friends and acquaintances whenever I feel like it.</li></ol>
Perceived constraints on <i>non-social</i> restrictions	<ol style="list-style-type: none"><li>1. Not being able to buy anything I want (because of shops closure).</li><li>2. Having to restrict my daily travel.</li><li>3. Having to systematically wear a mask.</li><li>4. Not being able to travel.</li></ol>

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	<ol style="list-style-type: none"><li>5. Having to carry an official certificate form when I need to go outside of my district.</li><li>6. Having to apply strict recommended hygiene measures (washing frequently my hands, use disposable handkerchiefs, wash or change my mask after each use)</li></ol>
Self-reported <i>social</i> transgressions	<ol style="list-style-type: none"><li>1. Invite family or friends to come over at my home.</li><li>2. Accept an invitation to visit friends or family.</li><li>3. Meet with more than 6 people (acquaintances, friends and non-household members) outdoors (example: at the park).</li><li>4. Chat outdoors with non-household members that you encounter (example: with your neighbor).</li><li>5. Drop by at some friends, acquaintances or close ones' home</li></ol>
Self-reported <i>non-social</i> transgressions	<ol style="list-style-type: none"><li>1. Go outdoors without wearing a mask</li><li>2. Go outdoors alone (or with household members) beyond a 10-km radius from home</li><li>3. Go to a store to buy non-essential products.</li><li>4. Not washing my hands before going out from home.</li><li>5. Re-use disposable handkerchiefs.</li><li>6. Use several times the same mask without washing it.</li><li>7. In the weeks to come, how often do you plan to travel outside of your district for non-essential trips (for other reasons than professional obligations, or imperative reasons)<sup>3</sup></li></ol>

### Factorial analyses

As in Study 1, the reliability of the non-social transgression scale was relatively low ( $\alpha = .532$ ). Consequently, an exploratory factorial analysis with a direct oblimin rotation was performed on the intention to transgress items (see Table S2 for the matrix structure). This analysis suggests the existence of four factors. The first factor explains 32.51% of the variance and contains the five items involving social gathering, the same as those used for the *a priori* classification as social transgressions. The second factor explains 12.51% of the variance and contains three items involving purely sanitary restrictions (e.g., “Not washing hands before going out from home”). The third factor explains 9.84% of the variance, with

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<sup>3</sup> For this item only, participants indicated how likely they were to exert the behavior on a 7-point Likert scale ranging from 1 “No, I do not plan on doing it all” to 7 “Yes I will”.

## Economic Insecurity and Compliance

the three items related to moving (e.g., “Go to a store to buy non-essential products”).

Finally, the fourth factor explains 8.17% of the variance and only contains the item “Re-use disposable handkerchiefs”.

**Table S2**

*Matrix Structure of the Factorial Analysis (Study 2)*

	Component			
	1 (Social)	2 (Sanitary)	3 (Moving)	4 (Handkerchiefs)
Accept an invitation to visit friends or family.	<b>.868</b>	.163	.369	-.148
Drop by at some friends. acquaintances or close ones' home.	<b>.868</b>	.178	.371	-.078
Invite family or friends to come over at my home.	<b>.830</b>	.204	.114	-.082
Meet with more than 6 people (acquaintances. friends and non-household members) outdoors (example: at the park).	<b>.766</b>	.161	.097	-.006
Chat outdoors with non-household members that you encounter (example: with your neighbor).	<b>.683</b>	.252	.254	.009
Not washing my hands before going out from home.	.098	<b>.786</b>	.076	-.325
Go outdoors without wearing a mask.	.217	<b>.785</b>	.009	.124
Use several times the same mask without washing it.	.403	<b>.584</b>	.362	-.269
Go to a store to buy non-essential products.	.173	.078	<b>.722</b>	-.017
Plan to travel outside of your district for non-essential trips.	.312	.050	<b>.646</b>	-.429
Go outdoors alone (or with household members) beyond a 10-km radius from home.	.227	.121	<b>.630</b>	.408
Re-use disposable handkerchiefs.	.095	.218	.019	<b>-.806</b>

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

## Economic Insecurity and Compliance

Analyses were performed with this four-factors categorization (instead of the two-dimensions *a priori* categorization) as the within-participants variable. The main effect of economic insecurity remained significant,  $F(1, 173) = 9.108, p = .003, \eta^2 = .05$ . The main effect of transgression type was also significant,  $F(3, 173) = 21.034, p < .001, \eta^2 = .108$ . Social restrictions ( $M = 3.576; SE = 0.109$ ) were transgressed more often, followed by moving restrictions ( $M = 3.019; SE = 0.101$ ) and then sanitary restrictions ( $M = 2.681; SE = 0.106$ ) and re-using handkerchiefs ( $M = 2.409; SE = 0.156$ ). However, once again, the critical interaction between economic insecurity and the nature (social vs. sanitary vs. moving vs. handkerchiefs) of restrictive policies did not reach significance ( $F < 1, n.s$ ).