

Does Personality Predict Compliance with the State in Ukraine?

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Abstract

The paper explores whether personality traits predict individual policy compliance in Ukraine. We use demographically representative panel data from 2019–2021 to isolate the temporal effects of pre-pandemic personality traits on individual experience with COVID-19 and adherence to government policies. The results confirm prior findings on the effect of neuroticism and conscientiousness on individual adaptation strategies during COVID-19. At the same time, contrary to data from other countries, we find that agreeable people in Ukraine are less likely to maintain social distance, and extraverts are less affected by lockdown restrictions. We interpret these results as signals of insufficient social compliance with state-imposed guidelines. The paper contributes to the growing literature on COVID-19 policy compliance by isolating the effects of pre-pandemic personality traits and featuring original data from a political context with low state capacity, low political trust, and widespread political non-compliance.

Keywords: personality, COVID-19, policy compliance, state capacity, Ukraine

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1 Introduction

The COVID-19 pandemic has brought a new direction to the research on individual compliance with government policies. Compliance with health guidelines such as mask-wearing, social distancing, and sheltering-in-place could have potentially saved hundreds of thousands of human lives [1, 2]. Not all states, however, enjoy sufficient enforcement capacity and political trust to initiate and maintain necessary health guidelines. When state capacity is low, policy-makers might rely on the individual-level predictors of policy compliance, including individual personality traits [3, 4, 5, 6].

Most research to date finds significant associations between at least some personality traits and general COVID-19 experience, individual policy compliance, and adherence to government guidelines (see Table 2 for a comprehensive review of these associations). At the same time, most of these studies originate from high-state capacity contexts with relatively high levels of social and political trust. Very few studies to date zoom in on the effects of personality traits beyond non-Western samples. Finally, with few exceptions [6, 7, 8, 9, 10, 11, 12], current studies measure personality traits together with other model predictors, introducing endogeneity concerns and potentially inflating the actual causal effects of personality traits.

In this paper, we focus on the individual-level predictors of policy compliance in Ukraine, a country with low state capacity, high political mistrust, and nihilist legal culture [13, 14, 15]. Despite the government’s efforts to impose relatively strict health policies in April–May 2020¹, the compliance with these policies was far from universal. Employing panel data from 2019–2021, we aim to explain the variation in individual COVID-19 experience and compliance with policy guidelines.

This paper addresses extant methodological gaps by leveraging original demographically representative panel data that we have been collecting in Ukraine since July 2019. The panel structure of the data provides critical benefits for causal inference, allowing us to evaluate how pre-COVID-19 personality traits predict individual exposure to the crisis and offer ecologically valid insights into specific psychological parameters that dispropor-

¹Ukraine’s COVID-19 response in March–May 2020 was the most strict one across all its immediate neighbors—Moldova, Romania, Hungary, Slovakia, Poland, Belarus, and Russia [16] (see also Figure 2).

tionally affect some individuals before, during, and after the pandemic.

Consistent with prior findings, we discover the negative effect of pre-pandemic neuroticism on perceived stressfulness of the pandemic and the weak positive effect of conscientiousness on wearing face masks. Openness to experience does not seem to deliver long-term effects on individual stress exposure and policy adherence. Finally, contrary to previous studies, extraverts in Ukraine do not report inflated stress related to the pandemic, and agreeable people seemed to avoid social distancing more than others. These findings suggest that social distancing and social isolation did not become a social norm in Ukraine, and the lockdown was not enforced strictly enough to make extraverts affected by social isolation.

This paper contributes to emerging research on the political psychology of government compliance and provides data-driven policy insights to improve individual agility in the context of COVID-19. We contribute to the research on individual responses to COVID-19 by leveraging panel data and examining the long-term effects of personality traits. Moreover, most current studies of personality effects are based on convenience samples and self-selected online samples, thus “failing to adequately represent the heterogeneity of the population” [6]. Our data provide informed statistical inference of pre-pandemic effects of personality traits on policy compliance and allow us to generalize these results to the entire population of Ukraine. Finally, the paper features policy implications for political contexts with low state capacity and highlights directions for an effective policy response to the pandemic in the countries with high rates of COVID-19 non-compliance.

2 Personality and Policy Adherence

2.1 Theoretical expectations

The onset of COVID-19 provided a telling example of the serious public consequences of low individual policy compliance. Although the majority of countries introduced a set of behavioral preventative policies such as wearing face masks, limiting public outings, and maintaining social distance, there have been significant individual and national variations in behavioral adherence to these policies. By September 2020, COVID mortality grew

81.3% in low adherence countries while increasing 8.4% in high adherence countries [1]. In the United States alone, higher individual adherence to just one policy of wearing face masks would have saved an estimated 129,574 lives from September 2020 to the end of February 2021 [2].

What explains the variation in adherence to policy guidelines? The answer lies at the intersection of (1) government-level characteristics such as enforcement capacity and bureaucratic responsiveness; and (2) individual-level characteristics such as political beliefs and policy compliance. Government-level characteristics are key when governments are able to enforce policies uniformly: under perfect state capacity, individual differences in compliance would be de facto absent. That was the case during the total lockdown in the UK: as Wright et al. demonstrated with a large-N sample, demographic, socioeconomic, and psychological characteristics did not explain the between-person variation in compliance during the first months of the lockdown [4].

When policies are not enforced consistently, individual-level characteristics become increasingly predictive of compliance [5, 3]. Moreover, when policies are administered under “fluid conditions,” or rapidly changing contexts of “social discontinuity,” personality traits explain individual adherence to government policies better than other individual-level predictors [17]. Since personality traits are rooted in deeply automatic cognitive and emotional responses to information, they predict individual responses to novel information under fluid conditions faster than identity- or ideology-based characteristics [17, 6]. As the recent data from more than 100,000 participants in 55 countries show, personality traits and the stringency of governmental policies *independently* predict adherence to government guidelines, and personality effects attenuate only when government policies are strictly enforced [18]. Given that COVID-19 is a handbook example of a “fluid condition,” unpacking the effects of personality traits on individual responses to COVID-19 is important for enforcing and targeting health policies correctly, especially in low state capacity contexts [19, 6, 20].

Why do personality traits predict individual behavior? Personality traits are rooted in distinct hormonal profiles that explain the combination of individual stability (conscientiousness, agreeableness, and reversed neuroticism) and plasticity (openness to experience

and extraversion) [21]. Conscientiousness, emotional stability, and agreeableness originate from the higher release of serotonin, the “social status” hormone [22, 23]. Dopamine, the “motivator” hormone, informs higher levels of behavioral (extraversion) and cognitive (openness to experience) ways of exploring the environment and soliciting excitement. Openness to experience also stems from a reduced sensitivity to disgust and lower levels of gustatory and threat sensitivity [24, 25].

Using the neurobiological theories of personality [21], we expect that the extreme threat posed by COVID-19 is differentially perceived by individuals with diverging personality profiles. The effects of personality on pandemic behavior are likely to be explained by the differential reactivity to stress that personality traits produce [9, 26].

Pandemic restrictions do not limit cognitive exploration, and thus those open to experience should not be strongly affected by pandemic stress. In general, openness to experience is not associated with mental health and stress perception directly [27]. The effects of openness to experience on compliance with government restrictions are likely to be positive, as those open to experience have an easier time adjusting to new regulations and rules. Note, however, that those open to experience are less sensitive to disgust, and thus might be less stressed about catching the virus and be *de facto* less mindful of government guidelines [28].

Conscientiousness is a personality trait responsible for adherence to rules and norms, and thus its direct effect on policy following should be positive. It is less clear how rule-following and dutifulness would affect the perception of general stress. One could develop a number of conditional explanations: for example, conscientiousness might exert a positive effect on pandemic-related stress in those countries where the imposed norms do not provide enough protection from COVID-19. A negative conditional effect is also possible in those contexts where conscientious people feel more protected than others. Since we are interested in direct effects only, we suggest that no clear theoretical expectations can be formulated regarding the effect of conscientiousness on COVID-related stress.

Since pandemic restrictions limit the interaction with others, those with higher levels of extraversion are directly deprived of the behavioral ways of soliciting excitement. We thus expect extraverts to be less willing to follow behavioral guidelines and more prone to

general stress due to restrictions on social interactions.

Agreeable people should display higher adherence to health guidelines since they, by definition, experience higher generalized empathy and higher trust in norms. We cannot predict any clear effect of agreeableness on general stress, since their levels of general stress are likely to be conditional on the emotional atmosphere in their inner circle.

Finally, neurotic individuals are susceptible to stress and emotional volatility. Thus, they should be most seriously affected by the spread of COVID-19 and exhibit higher levels of stress, anxiety, and depression. At the same time, the effects of neuroticism on the adherence to state-imposed guidelines are likely to be conditional on the availability and the specific content of these guidelines: neurotic people might be washing their hands more often than others if they believe that this behavior limits their exposure to the virus; at the same time, neurotic people might experience additional stress when staying alone at home amidst the pandemic. We thus assume a conditional effect of neuroticism on policy adherence and compliance.

Table 1 summarizes our theoretical expectations.

Table 1: Theoretical Expectations

	General Stress	Policy Adherence and Compliance
Openness	No direct effect	Higher following
Conscientiousness	No direct effect	Higher following
Extraversion	Higher stress	Lower following
Agreeableness	No direct effect	Higher following
Neuroticism	Higher stress	No direct effect

2.2 Previous studies

2.2.1 Personality and COVID-19 Experience

In this section, we discuss the results of the current studies of personality traits and COVID-19. We split the literature into two sections: the first one covers the available studies on the predictors of general COVID-19 related stress and experience in general, the second one sums up the data on the effect of personality traits on compliance with and

adherence to government guidelines. Both literatures are rapidly expanding as we write this paper; we would like to emphasize the tentative nature of this review and note our intention to update it in July 2021.

Openness to experience Openness to experience has been *positively* linked to general COVID-19 stress in cross-national data [29]; to a higher perceived risk of infection in Germany [6], and to higher COVID-19 anxiety in the US [30], but had no effect on negative response to the pandemic in Spain [31]. To our knowledge, few studies found an unambiguously negative effect of openness to experience on general stress and negative affective responses to pandemic [32].

Conscientiousness As expected, the effect of conscientiousness on COVID-related stress varies across available samples. Cross-national data, as well as studies from the US and Serbia, found a negative effect of conscientiousness on stress-related syndromes [29, 30, 33]. At the same time, conscientiousness had a positive effect on psychological distress during quarantine in Argentina [34] and the UK [35], and had no detectable effect on pandemic-related stress in Spain [31].

Extraversion As expected, recent studies detected that higher extraversion predicts higher average levels of perceived stressfulness of the COVID-19 pandemic in cross-national data [29], Canada [36], the UK [35], and Germany [9, 32, 37]. In countries with more relaxed lockdowns, studies found a negative effect of extraversion on general stress during the pandemic [30, 33]. In Spain, however, López-Núñez et al. find no effect of extraversion on the stressfulness of COVID-19 [31].

Agreeableness Consistent with theoretical expectations, the literature finds no clear-cut relationship between agreeableness and pandemic stress. Studies from Argentina, Spain, and Germany detected a positive effect of agreeableness on pandemic distress [34, 31, 32], while other studies from Spain and Germany and different data from the US and Serbia found a negative effect [38, 37, 30, 33]. Cross-national data also found no consistent effects of agreeableness on depression [29].

Neuroticism As expected, of all personality traits, neuroticism has the strongest and most consistent effect on general COVID-19 stress [29]. Personality traits inform our stress-coping mechanisms, and neuroticism, as the main maladaptive personality trait, predicts emotion-focused coping with the pandemic and thus prevents adaptation to the new environment [39]. Liu et al. also suggest that neuroticism exerts a negative effect on COVID-19 stress not only through higher levels of perceived threat but also lower levels of efficacy that neurotic people perceive [36]. Confirming theoretical expectations, cross-national and national-level data found consistent positive effect of neuroticism on anxiety, depression, and other stress-related mental symptoms during the onset of COVID-19 in Spain [38, 31], Germany [9, 40, 32, 37], the UK [10], Italy [41], Canada [36], the US [11, 30], and Argentina [34]. At the same time, there is currently no evidence that neuroticism predicts actual transmission of COVID-19 [42] and the likelihood of hospitalization [12].

2.2.2 Predicting Compliance

Openness to experience As predicted, higher openness to experience in the US and Germany was related to earlier onsets of COVID-19 and faster spread of the disease [43], but those open to experience were also more open to following new policies and regulations. Openness to experience predicted better following of government guidelines in cross-national data [18], macro-level data from the US and Germany [43], as well as rich and diverse national-level data from Germany [18, 32, 6, 44], Korea [42], the UK [4], the US [45, 46, 47, 37, 7]. Götz et al. show, based on sheltering-in-place data analysis across 55 countries, that higher openness to experience was associated with staying home when government orders were framed as suggestions rather than rigid policies [18].

At the same time, there is no evidence that openness to experience consistently predicts individual perception of government measures. Modersitzki et al. demonstrate that in Germany, those with higher aesthetic sensitivity (one of the facets of openness to experience) found imposed public measures more restrictive [32]. They note, however, that “the direction of associations [of aesthetic sensitivity] with perceived restrictiveness varied across measure domains” [32]. Finally, studies in Qatar [48], France [8], and Germany [49] find no effect of openness to experience on policy adherence.

Conscientiousness As expected, conscientiousness shows, almost universally, a positive and consistent direct effect on policy following. This effect has been found in cross-national [18] and macro-level data [43], as well as in Serbia [33], the US [4, 43, 46, 50, 37, 47, 7], Brazil [51], Germany [6, 52], Norway [53], Korea [42], Croatia [54], France [8] and Qatar [48]. Conscientiousness consistently predicted adherence to any official recommendation and diverse policies, including sheltering-in-place guidelines, prevention measures, mask wearing, hygienic behavior, and contact reduction [54, 53, 50].

Only a handful of studies found no effect of conscientiousness on policy adherence (on the data from Canada [36], the US [45], and Germany [49]). Importantly, a separate study from Germany sheds light on the lack of effect: as Modersitzki et al. demonstrate, conscientious people might disapprove of rigid restrictions on retail and services (since they value activities that “get things done” and have enhanced dutifulness and industriousness). Thus, conscientious people might follow all safety guidelines with the exception of economic restrictions and services curtailing.

Extraversion In theory, those with higher levels of extraversion should be less willing to follow government guidelines that restrict social interactions. Indeed, higher extraversion had a negative effect on policy compliance in cross-national data [18], as well as in Brazil [51], Korea [42], Norway [53], Germany [44, 32], Austria [55], and France [8]. Extraverts found implemented sheltering-in-place measures too restrictive [32], were less willing to change daily habits during the lockdown [8], resisted social distancing [51], and experienced especially high negative response to the restrictions to daily life when they had no romantic partner to live with [44].

At the same time, the effect of extraversion is apparently conditional on the specific content of the restrictions and the rigidity of their enforcement. A group of studies detected positive effect of extraversion on following government guidelines in Serbia [33], the US [45, 7, 43], and Germany [6, 37, 43]. Other studies from the US [47, 46] and Germany [49], as well as a study from Qatar [48], find no effect at all. The results from the UK were mixed [4].

Agreeableness On average, agreeable people tend to follow guidelines more often than others, as shown in cross-national data [18], and as well evidence from Serbia [33], Korea [42], the US [45, 47, 37, 7, 46], the UK [4], Germany [6, 49], Croatia [54], and Brazil [51].

The effect of agreeableness on policy compliance might be conditional on agreeable people’s attitudes towards the policies and their perception of the social consequences of the lockdown. In Germany, data revealed a positive effect of agreeableness on COVID-19 restrictions through the higher trust in policymakers and institutions [6, 32], and a negative effect of agreeableness on the attitudes towards restrictions on avoiding contact with the elderly or ill [32] (apparently, due to higher empathy and compassion of agreeable people [51, 56]). Bogg et al. demonstrate, on data from the US, that the effect of agreeableness on policy compliance disappeared after controlling for the norm-following component of this personality trait [46]. Finally, agreeableness had a negative effect on social distancing in the US in macro-level data [43], and null effects were found in Germany, [7], Qatar [48], and on panel data in France [8].

Neuroticism Finally, neuroticism does not seem to have a clear-cut effect on pandemic compliance in current studies. Positive effects were found in cross-national [18], macro-level data [43], Germany [40, 18, 49, 6, 32, 43], the UK [4], and Qatar [48]. Lower neuroticism in the US and Germany was related to earlier onsets of COVID-19 and faster spread of the disease [43]. At the same time, data from Korea [42], the US [37, 7], France [8], the UK [12], and Germany [44, 32, 6, 37, 18] demonstrated a negative effect of neuroticism, and no effect was found in the US [45, 47, 46, 7], Germany [52], and the UK after controlling for comorbidity, ethnicity, and lifestyle factors [12].

Table 2 summarizes the results of the meta-analysis.

Table 2: Personality Effects of Pandemic Experience and Policy Compliance

	General Stress	Policy Adherence and Compliance
Openness	Positive in cross-national data [29], the US [30], and Germany [6] No effect in Spain [31]	Positive in cross-national [18], Germany [18, 32, 6, 44], Korea [42], the UK [4], the US [45, 46, 47, 37, 7] No effect in Qatar [48], France [8], Germany [49] Negative effects in the US [43] and Germany [32, 43]
Conscientiousness	Positive in Argentina [34], the UK [35] No effect in Spain [31] Negative effect in cross-national data [29], the US [30], Germany [37], Serbia [33]	Positive in cross-national [18] and macro-level data [43], Serbia [33], the US [4, 43, 46, 50, 37, 47, 7], Brazil [51], Germany [6, 52], Norway [53], Korea [42], Croatia [54], France [8] and Qatar [48] No effect in Canada [36], the US [45], Germany [49] Negative attitudes towards restrictions on retail and services in Germany [32]
Extraversion	Positive in cross-national data [29], Canada [36], the UK [35], and Germany [9, 32] No effect in Spain [31] Negative in the US [30], Germany [37], and Serbia [33]	Positive in macro-level data [43], in Serbia [33], the US [45, 7], Germany [6, 37] No effect in the US [47, 46], Qatar [48], Germany on precautions [49], mixed results from the UK [4] Negative in cross-national data [18], Brazil [51], Korea [42], Norway [53], Germany [44, 32], Austria [55], and France [8]
Agreeableness	Positive in Argentina [34], Germany [32], and Spain [31] No effect in cross-national data [29] Negative in the US [30], Germany [37], Serbia [33], Spain [38]	Positive in cross-national data [18], Serbia [33], Korea [42], the US [45, 47, 37, 7, 46], the UK [4], Germany [6, 49], Croatia [54], and Brazil [51] No effect in Germany [7], Qatar [48], France [8], and when controlling for the rule following component in the US [46] Negative effect on social distancing in the US in macro-level data [43], and on restrictions on avoiding contact with the elderly and ill in Germany [32]
Neuroticism	Positive in cross-national [29] and national-level data [40, 34, 30, 36, 31, 9, 10, 11, 38, 41, 37, 32]	Positive in cross-national [18], macro-level data [43], Germany [40, 18, 49, 6, 32, 43], the UK [4], and Qatar [48] No effect in the US [45, 47, 46, 7], Germany [52], the UK after controlling for comorbidity, ethnicity, and lifestyle factors [12] Negative in Korea [42], the US [37, 7], France [8], the UK [12], Germany [44, 32, 6, 37, 18]

Panel-data studies with pre-pandemic personality traits measures are [6, 7, 8, 9, 10, 11, 12].

2.3 Current study

As seen from Table 2, most personality effects are conditional on a number of individual- and social-level factors such as the content of health policies, the restrictiveness of preventive and protective measures, and the level of state capacity.

It is thus important to get a better grasp of the direct effects of personality on policy compliance. These effects are especially hard to detect for the personality traits measured at the same time as outcome variables. As Rammstedt et al. note [6], “almost all of the studies assessed personality at the same time as the COVID-19-related outcome measures. Such cross-sectional (concurrent) designs cannot establish the direction of the effects and are susceptible to potential personality changes evoked by the COVID-19 pandemic.” With very few exceptions [6, 7, 8, 9, 10, 11, 12], existing literature does not measure the effect of pre-pandemic personality traits on subsequent exposure to the virus and policy adherence and compliance.

We contribute to the current research by providing a better estimate of the causal effect of personality traits on pandemic-related stress and policy compliance. We do so by measuring personality traits before, during, and after the main wave of COVID-19 (unlike some previous panel studies that only measured personality traits during the pandemic). This research design allows us to trace the change in personality traits in a three-year span and evaluate the causal effects of pre-pandemic personality traits on attitudes and behavior during and after the pandemic.

We expect that personality traits in 2019 have a long-term causal effect on individual experience with the pandemic. First, individual neurological differences that manifest as personality traits might be also responsible for choosing the most appropriate protection strategy. Personality is malleable; however, it is not completely volatile [6]. Individual personal differences are rooted in neurological and hormonal and thus are *relatively* stable over life span [21]. Second, individual personality differences affect their environmental strategies, adjustment, and adaptation. Finally, current research on COVID-19 demonstrated the advantages of using panel data on personality traits in predicting more nuanced personal strategies of stress-coping and policy adaptation [7, 9, 11]. Personality

traits measured as early as 2006 predict policy compliance in 2020 [12], and personality traits measured in 2019 were “amongst the strongest predictors of pandemic impact” in 2020 [35].

Besides adding to the literature on COVID-19 personality dynamic, we also contribute to the literatures on state compliance. Previous studies focus on developed countries with high rates of citizen compliance with the government regulations. We bring in data from a low state capacity context of Ukraine. Ukrainians demonstrate a relatively low level of trust in state capacity and low expectations about policy enforcement [13]. Studies of legal compliance estimate that Ukrainians have a transitional (partly coercive, partly compliance-oriented) legal culture [14]. Ukrainian citizens have low levels of political trust and are not typically compliant with formal government regulations [15]. [This section will be expanded further; any literature suggestions are welcome.](#)

Low political trust and low state enforcement did play their role in burdening Ukraine’s public health system. The government of Ukraine approached the pandemic responsibly: Ukraine enforced strict measures during the first wave of the virus, and kept most of the restrictions in place in Fall 2020–Winter 2021 [16], including required face masks in all public spaces since April 2020, required or recommended cancellations of public events throughout 2020–2021, recommended stay-at-home requirements, and mass coronavirus testing of an approximate 20% of the population by April 2020.

Still, due to low state capacity in enforcing these measures and underfunded public services, according to the public data by the Center for Systems Science and Engineering at Johns Hopkins University [57], as of April 21, 2021, an estimated 2.02 million Ukrainians were affected by the virus, with a 2.1% mortality rate (42,129 deaths)—numbers almost comparable to the exposure and the mortality rate in New York, the second most affected US state.

Given that state capacity in Ukraine is not high enough to perfectly enforce anti-pandemic measures, personality traits are expected to have a strong effect on subsequent political and social behavior. Based on the current state of research, we formulate two sets of hypotheses on the effect of personality traits on COVID-19 compliance and experience. One set relates to individual exposure to COVID-19. Another set of hypotheses relates

to the direct effects of personality traits on individual adherence to state guidelines. Note that these hypotheses discuss direct effects of personality traits; we do not account for potential conditional effects at this time.

Hypotheses: Openness Given that theoretical predictions and current research provide diverging expectations on the effect of openness to experience on general stress, we do not formulate any hypotheses on the direct effect of openness on general stress in Ukraine.

Given that those open experience are capable of faster adaptation to policy guidelines, we also expect that those higher in openness demonstrate higher exposure to COVID-19 in 2020 and higher compliance with health guidelines even if these guidelines are not imposed in a rigid manner.

Hypotheses: Conscientiousness Given that theoretical predictions and current research provide diverging expectations on the effect of conscientiousness on general stress, we do not formulate any hypotheses on the effect of conscientiousness on general stress in Ukraine.

Based on both theoretical predictions and current research, we expect that conscientious people demonstrate better adherence to policy guidelines both during and after the onset of the pandemic in Ukraine.

Hypotheses: Extraversion Based on both theoretical predictions and current research, we expect that extraverted people demonstrate higher general stress and lower adherence to policy guidelines both during and after the onset of the pandemic in Ukraine.

Hypotheses: Agreeableness Given that theoretical predictions and current research provide diverging expectations on the effect of agreeableness on general stress, we do not formulate any hypotheses on the effect of agreeableness on general stress in Ukraine.

Based on both theoretical predictions and current research, we expect that agreeable people demonstrate better adherence to policy guidelines both during and after the onset of the pandemic in Ukraine.

Hypotheses: Neuroticism Based on both theoretical predictions and current research, we expect that neurotic people demonstrate higher general stress in Ukraine.

Given that theoretical predictions and current research provide diverging expectations on the effect of neuroticism on general stress, we do not formulate any hypotheses on the effect of neuroticism on policy compliance in Ukraine.

3 Data

3.1 Participants

This section will be updated after we collect the third wave of the panel in June 2021.

We collect our data with an in-person survey administered by a public poll organization in Ukraine. Respondents were first invited to participate in this panel study in 2019. In 2020 and 2021, the attrition from the panel was substituted with an additional sociological weighted sample. We perform the analyses on the panel data only (i.e., including only those participants who stayed in the panel).

Table 3: Descriptive Statistics: Waves 1 and 2

	Wave 1 (N=802)	Wave 2 (N=803)	Panel (N=478)
Gender			
Males	357 (45%)	371 (46%)	211 (44%)
Females	445 (55%)	430 (54%)	267 (56%)
Age			
18-30	151 (19%)	142 (18%)	85 (18%)
31-45	235 (29%)	236 (29%)	133 (28%)
46-60	201 (25%)	206 (26%)	117 (24%)
61+	215 (27%)	217 (27%)	143 (30%)
Income status			
Do not have enough to cover necessities	49 (6%)	58 (7%)	33 (7%)
Have enough to buy food, rarely buy clothing	86 (11%)	103 (13%)	60 (13%)
Buy food and clothing, have no savings	329 (41%)	341 (43%)	194 (41%)
Have some savings	200 (25%)	193 (24%)	126 (26%)
Have savings, can afford a lot	37 (5%)	40 (5%)	18 (4%)
Difficult to answer	55 (7%)	30 (4%)	24 (5%)
Did not answer	46 (6%)	36 (5%)	23 (5%)

Table 3 provides descriptive statistics for the first two waves of the panel. The panel (478 respondents who took part in both waves) is demographically balanced, with 44% of male respondents and a mean age of 47 (range: 18—90). The socio-economic composition of the sample is consistent with the median income in Ukraine: most respondents in the

panel (41%) can afford to buy food and clothing but have no savings. It is important to note that this sample is not a convenience sample used in most personality studies of COVID-19, and it represents the heterogeneity of Ukraine’s population.

3.2 Survey questions

We use three annual waves of the same panel, capturing individual responses from July 2019 to June 2021. The first wave was collected in July 2019. It included questions on individual demographics, personality traits, and socio-economic characteristics. The second wave was collected in June 2020. It included all previous survey questions and additional data on COVID-19 experience, political attitudes, political identities, and questions on individual compliance with policy guidelines. By that time, the first round of government restrictions had been already completed, but the regulations imposed in Ukraine still remained more serious than in nearby countries [58, 16]. Since June 2020, the restrictions on economic activities, public gathering, and social distancing mostly remained in place (1). For the final wave of data collection in June 2021, we expect at least some restrictive measures to stay in place. We expect, however, that, owing to the onset of mass vaccination in Ukraine in April 2021, the most strict measures to be loosened. There is also evidence of psychological adjustment to the pandemic, and thus we expect that the third wave will reflect notable changes in policy compliance in the sample [59].

We use a Ukrainian-language version of the 10-item Personality Inventory (TIPI [60]) to measure individual personality traits in all three waves. Table 4 compares the distribution of responses in 2019 and 2020 on a 5-item scale, where 5 stands for the respondent completely agreeing with the prompt. Our sample’s averages changed after one year: openness to experience, agreeableness, extraversion, and, surprisingly, neuroticism slightly decreased, while conscientiousness levels remained the same.

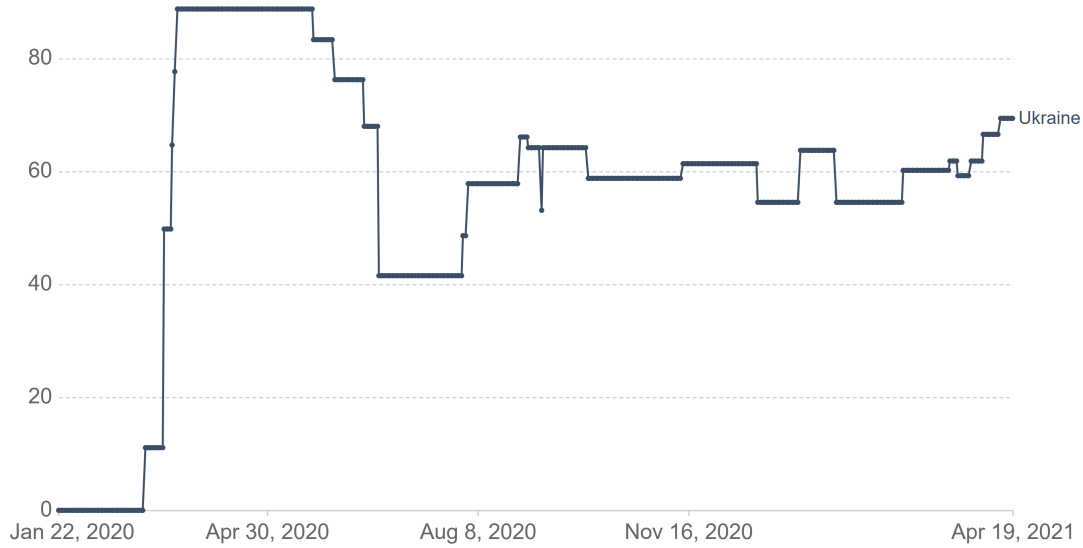
Two primary outcomes of interest—general stressfulness of COVID-19 and individual policy compliance—are measured with a set of closed-ended survey questions (Table 5).

Among 801 panel participants (those who took part in Wave 2 in 2020), only 10 respondents reported that the financial stance of their household “somewhat” improved, and no one reported significant improvement. We merge these respondents with those

COVID-19: Stringency Index



This is a composite measure based on nine response indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100 (100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest sub-region.



Source: Hale, Angrist, Goldszmidt, Kira, Petherick, Phillips, Webster, Cameron-Blake, Hallas, Majumdar, and Tatlow (2021). "A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker)." *Nature Human Behaviour*. – Last updated 21 April, 17:00 (London time)
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Figure 1: The Oxford COVID-19 Government Response Tracker: Data from Ukraine

Table 4: Descriptive Statistics: Personality Traits in Waves 1 and 2

	Wave 1 (2019)	Wave 2 (2020)
Openness to experience		
I am a person with artistic taste	3.2 (1.5)	2.85 (1.45)
I have an active, lively imagination	3.9 (1.3)	3.45 (1.25)
Average	3.5 (1.1)	3.15 (1.15)
Conscientiousness		
I am a lazy person (R)	3.9 (1.3)	3.95 (1.3)
I am accurate at work	4.5 (0.8)	3.95 (1.15)
Average	4.2 (0.8)	3.95 (0.8)
Extraversion		
I am a closed, reserved person (R)	2.9 (1.6)	3.3 (1.4)
I am a friendly person who loves talking to others	4.5 (0.8)	4.15 (0.95)
Average	3.8 (0.96)	3.75 (0.9)
Agreeableness		
I am an open, trusting person	3.8 (1.3)	3.55 (1.25)
I am a critical, demanding person (R)	2.2 (1.7)	2.3 (1.35)
Average	3.0 (0.9)	2.95 (0.85)
Neuroticism		
I am a calm person, resistant to stress (R)	3.6 (1.2)	2.3 (1.4)
I am a nervous, anxious person	2.4 (1.3)	1.9 (1.15)
Average	2.4 (1.0)	2.1 (0.95)

whose financial status remained the same. Most respondents also report poor preparedness for the economic downturn caused by the pandemic (76% estimated their preparedness as insufficient). Finally, 64% of the sample believe that they experience the same level of personal stress as other Ukrainians amidst the pandemic.

We measure policy compliance with three survey items. First, we ask whether the respondent approves of the need to stay at home amidst the compulsory lockdown for their protection against COVID-19. 27.5% of our sample disapprove of this measure. Second, we ask our respondents to evaluate their agreement with the statement: “In general, wearing masks in public places is effective for my protection against COVID-19.” 36.2% of our sample doubt that wearing masks is effective. Finally, we measure respondents’ attitudes towards maintaining a required social distance of 1.5-2 meters. 19.6% of our sample disagree that maintaining a social distance of 1.5-2 meters with other people is important for their protection against COVID-19, making this policy the most acceptable one for our respondents.

4 Results

4.1 Pre-pandemic personality traits

We start by discussing the effects of pre-pandemic personality traits on our outcomes of interest (Table 6 shows the results of ordered logit models with demographic controls). Openness to experience, measured in 2019, does not affect individual COVID-19 experience in 2020. This finding is consistent with our hypothesis. However, it does not affect individual policy compliance. Those open to experience are not differentially adjusted to new policy guidelines. Pre-pandemic conscientiousness has a positive, albeit weakly significant, effect on the willingness to stay at home during the compulsory quarantine, and does not affect the levels of perceived COVID-19 stress. These effects are consistent with theoretical expectations and prior data. Against expectations, extraversion in 2019 had no effect on stress and policy compliance in 2020. Greater agreeableness in 2019 is associated with respondents being less prepared for economic downturn and, unexpectedly, greater resistance to maintaining a recommended social distance. Finally, and consistent

Table 5: Outcome Measures: General COVID-19 Stress and Policy Compliance

Survey Questions	
General Stress	<p>To what extent did the coronavirus pandemic affect the financial stance of your household?</p> <p>1: Significantly worsened (18%) 2: Somewhat worsened (38%) 3: Did not change (43%) 4: Somewhat improved (1%) 5: Significantly improved (0%)</p> <p>To what extent were you, personally, prepared for the economic downturn caused by the coronavirus pandemic in Ukraine?</p> <p>1: Not prepared at all (44%) 2: Somewhat unprepared (32%) 3: Somewhat prepared (21%) 4: Well prepared (3%)</p> <p>How do you think you, personally, are handling the stress caused by the coronavirus pandemic in Ukraine, better or worse than others?</p> <p>1: Significantly worse (1%) 2: Somewhat worse (7%) 3: Same (64%) 4: Somewhat better (18%) 5: Significantly better (11%)</p>
Policy Compliance	<p>Do you approve of the need to stay at home amidst the compulsory lockdown for your protection against COVID-19?</p> <p>1: Completely disapprove (14.8%) 2: Somewhat disapprove (12.7%) 3: Somewhat approve (41.1%) 4: Completely approve (31.4%)</p> <p>To what extent do you agree with the following statement: "In general, wearing masks in public places is effective for my protection against COVID-19"?</p> <p>1: Completely disagree (19.9%) 2: Somewhat disagree (16.3%) 3: Somewhat agree (33.7%) 4: Completely agree (30.1%)</p> <p>To what extent do you agree with the following statement: "Maintaining a social distance of 1.5-2 meters with other people is important for my protection against COVID-19"?</p> <p>1: Completely disagree (9.5%) 2: Somewhat disagree (10.2%) 3: Somewhat agree (30.9%) 4: Completely agree (49.4%)</p>

with prior findings and theoretical expectations, pre-pandemic neuroticism has a strong negative effect on respondents' resistance to pandemic stress. We also find a weaker positive effect of pre-pandemic neuroticism on the willingness to wear a face mask.

Thus, we observe three big-picture insights. First, pre-pandemic personality traits have an impact on individual adaptation strategies a year after. Second, the most consistent findings in the literature so far—the negative effect of neuroticism on the ability to handle pandemic-related stress and the positive effect of conscientiousness on policy adherence—are confirmed in our data. Third, we discover two relatively counterintuitive effects that go against our theoretical expectations. Pre-pandemic levels of extraversion have no effect on stress and policy compliance in 2020, implying, potentially, that extraverts in a low state capacity context are not *that* isolated and deprived of social communication. Greater agreeableness is associated with *less* interest in maintaining social distance. Given that agreeable people typically agree with social norms, it is possible that maintaining social distance was not a social norm in Ukraine in 2020 (despite being the least contested health policy in our sample). These findings suggest that extraversion and agreeableness might reveal the true social norm in society—in the case of Ukraine, social pressure to avoid social distance was, apparently, enforced better than state-led policies.

Table 6: Pre-Pandemic Personality Effects on COVID-19 Stress and Policy Compliance

	Had a change in financial status	Prepared for economic downturn	Handles stress well	Stays at home during the lockdown	Agrees to wear a face mask	Maintains social distance
Age	-0.003 (0.006)	-0.020*** (0.006)	-0.020*** (0.006)	0.002 (0.006)	0.012** (0.006)	0.002 (0.006)
Female	-0.496*** (0.193)	-0.354* (0.190)	-0.052 (0.208)	0.207 (0.193)	0.019 (0.189)	0.098 (0.195)
Openness in 2019	-0.046 (0.082)	0.062 (0.084)	0.016 (0.092)	0.037 (0.087)	0.101 (0.081)	0.051 (0.086)
Conscientiousness in 2019	-0.004 (0.112)	-0.159 (0.111)	-0.158 (0.120)	0.220* (0.116)	0.088 (0.109)	-0.055 (0.115)
Extraversion in 2019	-0.058 (0.102)	-0.032 (0.101)	-0.007 (0.113)	0.018 (0.100)	-0.127 (0.100)	-0.008 (0.104)
Agreeableness in 2019	0.083 (0.106)	-0.200* (0.105)	-0.041 (0.113)	-0.123 (0.108)	-0.021 (0.104)	-0.211* (0.108)
Neuroticism in 2019	-0.130 (0.093)	-0.043 (0.093)	-0.289*** (0.102)	0.074 (0.093)	0.170* (0.091)	0.070 (0.094)
Observations	426	426	426	390	398	402

Note: *p<0.1; **p<0.05; ***p<0.01

4.2 Personality traits during the pandemic

We proceed by comparing these results to the effects of personality traits measured during the pandemic (Table 7 shows the results of ordered logit models with demographic controls). As expected, we see more “significant” effects. One should be careful, however, with over-interpreting these findings for the reasons discussed above.

The biggest difference between pre-pandemic and during-pandemic personality effects lies in the emerging effect of openness to experience and extraversion. Neither trait, measured in 2019, has an effect on individual stress and policy compliance in 2020; both traits have strong associations if measured at the same time with outcome measures. Respondents who are more open to experience in 2020 report a worsened financial position of their household, but find themselves better prepared for the upcoming economic downturn. Extraverts report better handling of COVID-related stress.

Conscientiousness remains associated with better policy compliance, confirming theoretical expectations and prior findings. It also reveals a negative effect on respondents’ evaluation of the financial stance of their household and preparedness for economic hardships. Against expectations and similar to the finding from the 2019 data (Table 6), agreeableness has a negative effect on individual stress handling. Finally, neuroticism has a negative effect on stress handling, however, the effect is weaker than the one from 2019.

Thus, even though personality traits measured during the pandemic still have some association with individual COVID-19 experience and policy compliance, the associations are somewhat different from the ones that we discover in the pre-pandemic data. Most notably, openness to experience and extraversion become significantly related to economic and personal stress experienced during the pandemic.

Table 7: Personality Effects on COVID-19 Stress and Policy Compliance

	Had a change in financial status	Prepared for economic downturn	Handles stress well	Stays at home during the lockdown	Agrees to wear a face mask	Maintains social distance
Age	-0.001 (0.006)	-0.019*** (0.006)	-0.020*** (0.006)	0.001 (0.006)	0.013** (0.005)	0.004 (0.006)
Female	-0.490*** (0.183)	-0.471*** (0.183)	-0.180 (0.200)	0.291 (0.184)	0.023 (0.181)	0.220 (0.186)
Openness in 2020	-0.108*** (0.041)	0.119*** (0.040)	0.063 (0.044)	0.025 (0.040)	0.064 (0.040)	0.026 (0.041)
Conscientiousness in 2020	-0.110* (0.062)	-0.139** (0.061)	0.025 (0.066)	0.111* (0.060)	0.053 (0.058)	0.035 (0.060)
Extraversion in 2020	0.058 (0.055)	0.039 (0.055)	0.120** (0.060)	-0.090 (0.056)	-0.023 (0.055)	-0.007 (0.056)
Agreeableness in 2020	-0.026 (0.053)	0.023 (0.053)	-0.183*** (0.059)	-0.011 (0.054)	0.007 (0.052)	-0.050 (0.056)
Neuroticism in 2020	-0.046 (0.049)	-0.009 (0.050)	-0.095* (0.053)	0.057 (0.050)	0.072 (0.048)	0.030 (0.049)
Observations	478	478	478	440	448	453

Note: *p<0.1; **p<0.05; ***p<0.01

4.3 Comparative effects of personality traits

In this section, we compare the relative effects of personality traits measured before and during the pandemic. Table 10 shows the results of ordered logit models with demographic controls².

The first column shows the predictors of the perceived change in the financial stance of the household caused by the pandemic. In this model specification, pre-pandemic personality traits remain unrelated to the outcome variable. Of the personality traits measured during the pandemic, extraversion in 2020 is significantly related to the financial status of the household after including pre-pandemic personality traits in the model. This might imply that something in the levels of extraversion in 2020 (that is not present in extraversion measured in 2019) is in fact associated with a change in financial status in 2020. After the addition of pre-pandemic extraversion to the model, extraversion in 2020 no longer captures the partial effect of pre-pandemic extraversion on individual financial status.

Openness to experience in 2020 remains negatively related to the outcome variable. This implies that those open to experience during the pandemic are more likely to think that the pandemic has negatively affected the financial stance of their household. Neither neuroticism or agreeableness in 2020 are associated with the evaluation of the financial stance.

Thus, individual perception of the financial stance of their household does not seem to be associated with pre-pandemic personality traits in our sample. It is associated, however, with openness to experience, conscientiousness, and extraversion measured during the pandemic: a harder perceived hit on the financial stance of the household as a result of the pandemic is predicted by higher openness to experience, higher conscientiousness, and lower extraversion. These directions are very different from most associations found so far in cross-national data (Table 2).

The second column evaluates how prepared respondents felt they are for the economic downturn brought by the pandemic. Here, higher pre-pandemic levels of agreeableness,

²Geographic region, residence, and pre-pandemic economic status are included in additional model specifications; they are not significantly associated with the outcomes.

higher pandemic levels of conscientiousness, and lower pandemic levels of openness are associated with individual reported preparedness for economic decline. As discussed, the negative effect of agreeableness is theoretically unexpected and requires further investigation. The inclusion of pre-pandemic personality traits in the model did not change any previously established effects.

The third column reflects the predictors of the subjective handling of stress during the pandemic. Here, pre-pandemic levels of neuroticism remain significantly related to the reduced individual subjective preparedness to handling pandemic stress. Interestingly, the inclusion of pre-pandemic neuroticism in the model cancels a previously significant effect of neuroticism measured during the pandemic. It seems that neuroticism is not confounded by other contextual variables, and its levels before the pandemic exhaustively explain the variation in individual handling of pandemic stress. We also find that after the inclusion of pre-pandemic personality traits in our model, openness to experience in 2020 becomes positively related to handling stress well, implying that something specific in openness in 2020 accounts for its effect on COVID-related stress. Both extraversion and agreeableness levels during the pandemic remain significantly associated with the subjective stress levels: the more agreeable and introverted respondents are, the higher they evaluate their stress levels during the pandemic.

Altogether, these results provide several insights into the psychological predictors of pandemic experience. Neuroticism appears to be the least context-dependent predictor of the stressful experience caused by the pandemic. On the contrary, openness to experience and extraversion seem to be most context-dependent, and their effects become significant only insofar they are related to the specific individual experience during the pandemic. Surprisingly, agreeable people in Ukraine are less prepared for the economic decline and personal stress brought by the pandemic—a finding that highlights that the pandemic experience in Ukraine might be especially hard for those who value social trust and connectivity.

At the same time, these findings do not offer a clear-cut picture of the comparative effects of pandemic and pre-pandemic personality. It seems that for some of the outcomes, pre-pandemic personality traits have better predictive capacity than personality traits

measured on the spot, but there is no clear pattern that is visible from this analysis. [We will perform a time-series analysis after collecting the third wave of the data to shed light on these findings.]

We now turn to the analysis of policy compliance.

The fourth column evaluates individual predictors of staying at home during the compulsory lockdown. Here, we do not see any strong associations, and even demographic controls do not account for the willingness to observe social isolation. Conscientiousness in 2020 remains the only weakly significant predictor of the compliance with the quarantine.

The fifth column evaluates the willingness to wear a face mask. The only weak predictor of mask-wearing is age. No personality trait is significantly related to compliance with this policy.

The final column contains the predictors of social distancing. Again, with the exception of the weak negative effect of agreeableness, no principal predictor is associated with compliance with this policy.

These results might be interpreted in a number of ways. On the one hand, the discovered associations make some sense: the positive effect of conscientiousness on staying at home and the negative effect of past agreeableness on maintaining social distance are relatively intuitive. On the other hand, these effects are very weak and potentially spurious, and other variables, including demographic controls, are not significant. There seems to be little personality effect on individual compliance with policy guidelines in Ukraine.

Table 8: Comparative Personality Effects on COVID-19 Stress and Policy Compliance

	Had a change in financial status	Prepared for economic downturn	Handles stress well	Stays at home during the lockdown	Agrees to wear a face mask	Maintains social distance
Age	0.0003 (0.006)	-0.020*** (0.006)	-0.023*** (0.007)	0.001 (0.006)	0.011* (0.006)	0.002 (0.006)
Female	-0.433** (0.198)	-0.369* (0.197)	-0.067 (0.217)	0.198 (0.198)	-0.062 (0.195)	0.091 (0.201)
Openness in 2019	0.021 (0.085)	0.037 (0.087)	-0.036 (0.096)	0.019 (0.089)	0.075 (0.084)	0.048 (0.089)
Conscientiousness in 2019	0.035 (0.115)	-0.121 (0.113)	-0.174 (0.124)	0.188 (0.118)	0.078 (0.111)	-0.058 (0.118)
Extraversion in 2019	-0.118 (0.109)	-0.084 (0.107)	-0.042 (0.120)	0.080 (0.107)	-0.132 (0.105)	-0.012 (0.110)
Agreeableness in 2019	0.078 (0.108)	-0.214** (0.107)	-0.044 (0.115)	-0.120 (0.110)	-0.017 (0.105)	-0.206* (0.109)
Neuroticism in 2019	-0.122 (0.097)	-0.012 (0.098)	-0.264** (0.107)	0.046 (0.096)	0.146 (0.094)	0.063 (0.097)
Openness in 2020	-0.133*** (0.045)	0.101** (0.045)	0.083* (0.048)	0.002 (0.044)	0.061 (0.045)	0.004 (0.046)
Conscientiousness in 2020	-0.158** (0.069)	-0.161** (0.068)	0.026 (0.073)	0.129* (0.068)	0.022 (0.066)	0.011 (0.068)
Extraversion in 2020	0.118* (0.063)	0.050 (0.063)	0.136** (0.068)	-0.101 (0.064)	0.002 (0.062)	0.009 (0.064)
Agreeableness in 2020	-0.013 (0.058)	0.084 (0.058)	-0.213*** (0.065)	-0.034 (0.059)	0.038 (0.057)	-0.029 (0.061)
Neuroticism in 2020	-0.043 (0.055)	-0.027 (0.056)	-0.070 (0.060)	0.048 (0.057)	0.068 (0.054)	0.013 (0.055)
Observations	426	426	426	390	398	402

Note: *p<0.1; **p<0.05; ***p<0.01

4.4 Policy compliance and incumbent voting

In the previous section, we found that personality predicts financial and personal stress experienced during the pandemic but fails to consistently predict individual policy compliance. To unpack these results, we evaluate two additional model specifications. First, to see whether political orientation might provide a better explanation for individual variation in compliance, we measure the effect of personality traits controlling for the incumbent vote in 2019. Our analysis rejects this hypothesis: there is no evidence that accounting for the support for Volodymyr Zelensky allows for better evaluation of the effects of personality traits on policy compliance during the pandemic (Table 9).

Table 9: Comparative Personality Effects on COVID-19 Stress and Policy Compliance

	Had a change in financial status	Prepared for economic downturn	Handles stress well	Stays at home during the lockdown	Agrees to wear a face mask	Maintains social distance
Age	0.0004 (0.006)	-0.020*** (0.006)	-0.024*** (0.007)	0.001 (0.006)	0.011** (0.006)	0.002 (0.006)
Female	-0.438** (0.199)	-0.347* (0.197)	-0.060 (0.217)	0.193 (0.198)	-0.049 (0.196)	0.086 (0.202)
Voted for Zelensky	0.061 (0.190)	-0.446** (0.188)	-0.104 (0.207)	0.214 (0.192)	-0.188 (0.187)	0.080 (0.195)
Openness in 2019	0.022 (0.085)	0.035 (0.087)	-0.037 (0.096)	0.024 (0.089)	0.071 (0.084)	0.051 (0.089)
Conscientiousness in 2019	0.035 (0.115)	-0.120 (0.114)	-0.171 (0.124)	0.183 (0.118)	0.083 (0.112)	-0.057 (0.118)
Extraversion in 2019	-0.118 (0.109)	-0.084 (0.108)	-0.042 (0.120)	0.080 (0.106)	-0.133 (0.105)	-0.012 (0.110)
Agreeableness in 2019	0.073 (0.109)	-0.179 (0.109)	-0.035 (0.117)	-0.142 (0.112)	-0.0001 (0.106)	-0.212* (0.110)
Neuroticism in 2019	-0.123 (0.098)	-0.015 (0.098)	-0.264** (0.107)	0.041 (0.097)	0.147 (0.094)	0.063 (0.097)
Openness in 2020	-0.133*** (0.045)	0.099** (0.045)	0.083* (0.048)	0.003 (0.044)	0.061 (0.045)	0.004 (0.046)
Conscientiousness in 2020	-0.159** (0.070)	-0.157** (0.068)	0.025 (0.073)	0.128* (0.068)	0.019 (0.066)	0.011 (0.068)
Extraversion in 2020	0.118* (0.063)	0.054 (0.063)	0.136** (0.068)	-0.102 (0.064)	0.003 (0.062)	0.009 (0.064)
Agreeableness in 2020	-0.012 (0.058)	0.081 (0.058)	-0.214*** (0.065)	-0.031 (0.059)	0.035 (0.057)	-0.028 (0.061)
Neuroticism in 2020	-0.044 (0.055)	-0.019 (0.056)	-0.068 (0.060)	0.044 (0.057)	0.069 (0.054)	0.012 (0.055)

Observations

426

426

426

390

398

402

Note:

*p<0.1; **p<0.05; ***p<0.01

4.5 Policy compliance and social mobility

We proceed by testing whether the objective change in the financial status of the household might have affected individual preparedness for COVID-19 and respondents' willingness to comply with policy guidelines. For that, we measure the change in individual responses to a survey question about socio-economic status in 2019 and 2020. As a reference category for this model, we use those whose socio-economic status became better in 2020 (for example, those who shifted from "We do not have enough money to cover basic necessities" to "We have enough money to buy food but we do not buy clothes often"). We find, first, that objective and self-reported measures of socio-economic change correlate. Those who reported a decline in their socio-economic status in 2020 (as compared to their own answer in 2019) did also report worsened conditions for their household. They also, surprisingly, reported that they handle pandemic-related stress better than other people.

After we control for the change in socio-economic status, we obtain stronger and more significant effects of personality traits in 2019 on policy compliance and stress in 2020. The major difference between current and previous models is that, after controlling for socio-economic status, openness to experience in 2020 does no longer affect the preparedness for the economic downturn and better stress handling. We confirm, however, the effects of neuroticism and agreeableness in 2019 on the willingness to wear masks and maintain social distance in 2020.

Table 10: COVID-19 Stress, Policy Compliance, and Social Mobility

	Had a change in financial status	Prepared for economic downturn	Handles stress well	Stays at home during the lockdown	Agrees to wear a face mask	Maintains social distance
Age	0.003 (0.007)	-0.020*** (0.007)	-0.019*** (0.007)	0.002 (0.007)	0.016** (0.006)	0.003 (0.007)
Female	-0.474** (0.220)	-0.339 (0.219)	-0.046 (0.241)	0.126 (0.217)	-0.175 (0.217)	-0.004 (0.224)
SES got worse in 2020	-0.677** (0.297)	-0.300 (0.291)	0.660** (0.324)	0.213 (0.300)	0.130 (0.297)	0.436 (0.306)
SES did not change in 2020	-0.327 (0.262)	-0.109 (0.258)	0.124 (0.287)	0.253 (0.260)	0.179 (0.266)	0.425 (0.271)
Openness in 2019	-0.006 (0.092)	0.031 (0.094)	-0.001 (0.104)	-0.007 (0.096)	0.032 (0.092)	0.018 (0.098)
Conscientiousness in 2019	-0.013 (0.124)	-0.133 (0.121)	-0.150 (0.136)	0.101 (0.127)	0.012 (0.122)	-0.044 (0.129)
Extraversion in 2019	-0.084 (0.121)	-0.120 (0.120)	-0.029 (0.133)	0.049 (0.116)	-0.128 (0.115)	0.032 (0.122)
Agreeableness in 2019	0.052 (0.120)	-0.244** (0.122)	-0.076 (0.129)	-0.190 (0.123)	-0.090 (0.118)	-0.334*** (0.124)
Neuroticism in 2019	-0.169 (0.107)	-0.003 (0.108)	-0.302** (0.119)	0.086 (0.107)	0.174* (0.105)	0.131 (0.110)
Openness in 2020	-0.136*** (0.050)	0.076 (0.050)	0.068 (0.054)	0.013 (0.048)	0.073 (0.050)	0.019 (0.051)
Conscientiousness in 2020	-0.148** (0.075)	-0.130* (0.074)	-0.021 (0.080)	0.176** (0.074)	0.065 (0.072)	0.042 (0.075)
Extraversion in 2020	0.137** (0.069)	0.063 (0.070)	0.169** (0.075)	-0.094 (0.070)	0.026 (0.068)	-0.016 (0.070)
Agreeableness in 2020	0.0001 (0.064)	0.075 (0.064)	-0.217*** (0.072)	-0.051 (0.064)	0.027 (0.063)	0.004 (0.068)
Neuroticism in 2020	-0.035 (0.060)	-0.018 (0.061)	-0.061 (0.065)	0.053 (0.061)	0.082 (0.058)	0.016 (0.060)
Observations	355	355	355	330	333	335

Note:

*p<0.1; **p<0.05; ***p<0.01

4.6 Predictors of panel attrition

This section will be completed after the completion of the final wave in June 2021.

5 Discussion

Our preliminary analysis of the effects of personality traits on individual experience during the pandemic in Ukraine delivered several noteworthy results. First, we show that personality traits do affect individual perception of financial and personal burden brought by the pandemic but have an almost negligible effect on individual policy compliance. Second, the comparison of the effects of personality traits measured before and during the pandemic shows that some traits are more context-dependent than others. Specifically, the effects of neuroticism and conscientiousness seem to be rather long-term and context-independent, with individual levels of neuroticism in 2019 consistently predicting higher stressfulness of COVID-19 and individual conscientiousness in 2019 predicting better compliance with mask-wearing policies. Other personality traits, in particular, openness to experience and extraversion, matter “at the moment” and do not seem to deliver long-term effects on individual stress exposure and policy adherence. Third, we find that agreeableness in Ukraine predicts lower policy compliance. This finding indirectly shows that social distancing and social isolation did not become a social norm in Ukraine, and agreeable individuals have a hard time following government guidelines. Fourth, extraverted people in Ukraine, unlike in most other countries, did not seem to suffer more than others during the COVID-19 lockdown. This finding might indirectly suggest that the lockdown was not enforced strictly enough to affect extraverts during social isolation.

Thus, we support the prior findings in detecting the negative effect of neuroticism on stress and the positive effect of conscientiousness on policy compliance. We do, however, find unexpected effects of extraversion and agreeableness that require further exploration. We also detect an interesting effect of social mobility on policy compliance, and this might be a potentially fruitful direction for future research.

6 Limitations

We would like to conclude by discussing some limitations of this analysis.

Although we make an effort to measure personality traits before the pandemic, our analysis is still correlational, and we are aware of the causal challenges and the presence of unobserved confounders that panel data cannot address. Still, using pre-pandemic personality traits is the best option available to us given the challenging nature of individual psychological characteristics [6]. Importantly, the pandemic might affect personality traits and transform individual psychological characteristics, as early data from Wuhan suggest [61]. Wright et al. also detect a temporal change of personality traits during the pandemic in the US sample [4]. Our next step will involve a time-series analysis of the endogenous feedback effects of personality traits and pandemic experiences.

While we only study the effect of the incumbent vote on policy compliance in this paper, a growing body of literature finds that generalized political trust, patriotism, political knowledge, trust in science, and individual susceptibility to conspiracy theories moderate the effect of personality traits on policy compliance [62, 63, 64, 65, 66]. Our next steps will involve the investigation of the change in the relative importance of these factors during and after the onset of the pandemic.

We do not examine any mechanisms behind the detected effects of personality traits. Some studies suggest that not all personality traits are important for explaining COVID-19 experience once COVID-19 related beliefs are controlled for [67, p.4]. Future research might involve more careful examinations of values, beliefs, and sub-facets of the traits. Paying attention to individual self-efficacy is an important alternative explanation behind individual compliance during the pandemic [46, 68, 6]

Finally, we do not study dark personality traits such as psychopathy, narcissism, disintegration, callousness, Machiavellianism, and deceitfulness [69, 56, 62, 20]. Some studies demonstrated that the sense of callousness and psychological entitlement might explain individual non-compliance with policy guidelines better than conventional personality traits, while other findings challenge this approach [32, 70]. While we do not contribute to this important strand of literature, we acknowledge the need to pay attention to the dark side

of individual personality in future studies.

7 Conclusion

The current study uses high-quality, nation-wide, demographically representative panel study in Ukraine to evaluate the effects of pre-pandemic personality traits on individual generalized stress, economic status, and policy compliance during COVID-19. We join the few longitudinal studies that were able to trace the effect of pre-pandemic personality traits on the individual experience with the pandemic in 2020 and 2021. Although we find that personality traits do affect individual perception of financial and personal burden brought by the pandemic, their effect on individual policy compliance is limited and requires further exploration.

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A Appendix

Table 11: Pre-Pandemic Personality Effects on COVID-19 Stress and Policy Compliance

	Had a change in financial status	Prepared for economic downturn	Handles stress well	Stays at home during the lockdown	Agrees to wear a face mask	Maintains social distance
Age	-0.002 (0.006)	-0.019*** (0.006)	-0.021*** (0.007)	0.002 (0.006)	0.011* (0.006)	-0.00001 (0.006)
Female	-0.582*** (0.197)	-0.394** (0.194)	-0.035 (0.212)	0.193 (0.196)	-0.053 (0.192)	0.064 (0.198)
Openness						
I am a person with artistic taste	0.003 (0.068)	0.048 (0.066)	0.049 (0.073)	-0.060 (0.067)	0.086 (0.066)	0.072 (0.068)
I have an active, lively imagination	-0.033 (0.080)	0.040 (0.080)	-0.052 (0.087)	0.107 (0.081)	0.00002 (0.078)	-0.052 (0.082)
Conscientiousness						
I am a lazy person (R)	-0.047 (0.075)	-0.155** (0.074)	-0.116 (0.080)	0.061 (0.074)	-0.028 (0.073)	-0.055 (0.076)
I am accurate at work	0.065 (0.123)	0.117 (0.119)	0.039 (0.131)	0.223* (0.128)	0.186 (0.122)	0.034 (0.129)
Extraversion						
I am a closed, reserved person (R)	-0.066 (0.062)	0.025 (0.061)	0.055 (0.067)	-0.029 (0.061)	-0.106* (0.059)	-0.045 (0.063)
I am a friendly person, love chatting	0.297** (0.125)	-0.141 (0.128)	-0.256* (0.142)	-0.001 (0.128)	0.076 (0.129)	0.049 (0.134)
Agreeableness						
I am an open, trusting person	-0.121 (0.082)	-0.173** (0.080)	0.028 (0.086)	0.002 (0.082)	-0.025 (0.080)	-0.048 (0.085)
I am a critical, demanding person (R)	0.156** (0.074)	-0.037 (0.072)	-0.035 (0.079)	-0.122 (0.074)	-0.006 (0.072)	-0.150** (0.073)
Neuroticism						
I am a calm person, resistant to stress (R)	-0.068 (0.077)	0.082 (0.075)	-0.148* (0.084)	0.060 (0.078)	0.148* (0.076)	0.120 (0.080)
I am a nervous, anxious person	-0.038 (0.074)	-0.116 (0.075)	-0.156* (0.082)	-0.003 (0.074)	0.031 (0.072)	-0.049 (0.075)

Observations

426

426

426

390

398

402

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 12: Pandemic Personality Effects on COVID-19 Stress and Policy Compliance

	Had a change in financial status	Prepared for economic downturn	Handles stress well	Stays at home during the lockdown	Agrees to wear a face mask	Maintains social distance
Age	0.0002 (0.006)	-0.016*** (0.006)	-0.019*** (0.006)	0.001 (0.006)	0.015*** (0.006)	0.003 (0.006)
Female	-0.455** (0.185)	-0.433** (0.185)	-0.201 (0.201)	0.276 (0.185)	0.032 (0.182)	0.226 (0.187)
Openness						
I am a person with artistic taste	-0.061* (0.034)	0.041 (0.036)	-0.014 (0.037)	0.009 (0.035)	0.011 (0.035)	0.018 (0.035)
I have an active, lively imagination	-0.041 (0.039)	0.127*** (0.042)	0.060 (0.043)	0.034 (0.039)	0.091** (0.040)	0.013 (0.040)
Conscientiousness						
I am a lazy person (R)	-0.069 (0.042)	-0.047 (0.044)	-0.051 (0.045)	0.102** (0.043)	0.090** (0.041)	0.042 (0.042)
I am accurate at work	-0.001 (0.059)	-0.017 (0.056)	0.106* (0.062)	-0.021 (0.056)	-0.058 (0.056)	-0.048 (0.056)
Extraversion						
I am a closed, reserved person (R)	0.068* (0.035)	0.124*** (0.037)	0.063* (0.038)	-0.064* (0.036)	-0.001 (0.034)	-0.029 (0.036)
I am a friendly person, love chatting	0.045 (0.055)	-0.107** (0.054)	0.046 (0.058)	-0.023 (0.056)	-0.029 (0.054)	0.045 (0.054)
Agreeableness						
I am an open, trusting person	-0.112** (0.044)	-0.093** (0.045)	-0.087* (0.047)	0.008 (0.045)	-0.016 (0.044)	-0.010 (0.044)
I am a critical, demanding person (R)	0.065* (0.035)	0.062* (0.036)	-0.083** (0.039)	-0.032 (0.037)	-0.003 (0.035)	-0.033 (0.037)
Neuroticism						
I am a calm person, resistant to stress (R)	-0.082** (0.038)	-0.016 (0.039)	-0.042 (0.041)	0.076* (0.039)	0.054 (0.038)	0.006 (0.039)
I am a nervous, anxious person	0.042 (0.042)	-0.006 (0.043)	-0.060 (0.045)	-0.021 (0.042)	0.010 (0.042)	0.030 (0.043)
Observations	478	478	478	440	448	453

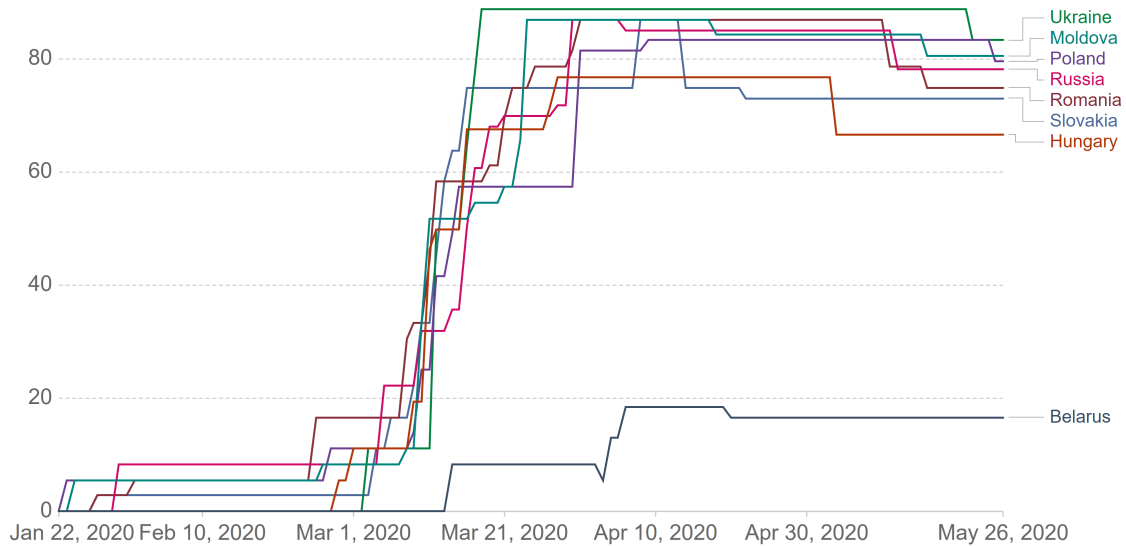
Note:

*p<0.1; **p<0.05; ***p<0.01

COVID-19: Stringency Index

This is a composite measure based on nine response indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100 (100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest sub-region.

Our World
in Data



Source: Hale, Angrist, Goldszmidt, Kira, Petherick, Phillips, Webster, Cameron-Blake, Hallas, Majumdar, and Tatlow (2021). "A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker)." *Nature Human Behaviour*. – Last updated 22 April, 18:00 (London time)
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Figure 2: The Oxford COVID-19 Government Response Tracker: Data from Ukraine and Its Neighbors