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Covid, Anxiety and Information

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The Covid-19 pandemic hit the world at a bad time. By the late 2010s, much of the world had already entered a period of decreasing trust in traditional political parties, leaders and previously respected sources of information. More and more people around the world were turning to the internet and social media as the key sources for understanding their world and, not coincidentally, the term “fake news” had become well-established in multiple languages. Consequently, when a novel coronavirus emerged and swept across the planet in 2020, citizens’ need for reliable and trusted news and instruction on the appropriate response was enormous, but the information space in many countries was ill-adapted to providing it.

In this paper, we look at citizen’s responses to the informational challenge presented by the virus and at the factors that shape the way in which people went about (or did not go about) looking for health information. We examine specifically the factors that shaped who was likely to seek out more information about the virus and whether they were likely to do so from sources other than the ones they usually turn to and whether they were even likely to seek out sources with which they might normally expect to disagree. We build on literature, primarily in the study of American politics, that looks at the role of emotions in cueing citizens’ behavior in novel or changing situations. Using a range of different measures, we construct indicators of citizens’ emotional responses to the pandemic and collect detailed self-reported and observed behavioral data on media use across two waves of panel surveys in Russia and Ukraine.

We demonstrate that a key factor in shaping informational responses to the pandemic was anxiety. Marcus and MacKuen (1993) argued in the US context that anxiety is a crucial emotion in cueing citizens to novel or changing situations and leads people to seek out more information.

This information seeking goes together with a deliberative frame of mind that encourages genuine reflection and a desire to break out of existing habits and broaden the anxious citizen's mind (MacKuen et al 2010). We build on this insight in the context of a natural experiment in which citizens across many different countries were exposed, almost simultaneously, to a novel pandemic in a decentralized media environment in which online and traditional news sources competed for attention.

We make three main contributions. Empirically, we test the idea of anxiety and information search developed within the context of political polarization in the United States in a cross-national setting at the time of a global pandemic. Leveraging original online surveys we conducted in Russia and Ukraine, we examine the relationship between anxiety and the extent and nature of information search, testing the relationship between anxiety and information seeking in a more realistic context and on a broader scale than has been done before.

Second, we develop a new behavioral measure of information search that allows us to observe directly in a real world setting how respondents actually behave when given the opportunity to access more and more varied information. Most of the research on information search has been conducted either in a lab setting or using self-reported behavior. Here, we can observe directly the behavior of a broad range of citizens with different emotional states with regard to the pandemic. We offered respondents the chance to access up to eight articles about covid, carefully chosen to represent different parts of the media landscape in each country. Observing how many and which articles respondents requested, and interacting acting this with their answers to questions about existing media habits, gives a better behavioral measure of media use than simply self-reports.

Third, we expand the scope of Affective Intelligence Theory (AIT) out of the two party polarized political context of the United States. We demonstrate that citizens in a multiparty democracy like Ukraine and in an authoritarian regime like Russia behave in a similar manner when faced with a life threatening pandemic in that more anxious citizens are more likely to seek out more information about the virus than less anxious ones. However, we also show that the structure of the media environment has an effect on how this process actually plays out politically. In the context of a state dominated media environment like Russia, anxiety plays a key role in motivating people to look beyond the state controlled television that they usually rely upon to seek information from independent sources typically associated with the opposition. People who typically rely only on non-state sanctioned and independent sources also seek out more information, but they are less likely to look to cross the divide between state and independent media to do so. In Ukraine, where a cleavage remains between citizens with a more pro-Western orientation and those more oriented toward Russia (Pop-Eleches and Robertson 2017), those with a pro-Western orientation seem more likely to expand their media consumption beyond pro-Western sources.

Our arguments and evidence have significant implications for messaging around the pandemic and demonstrate the potentially powerful impact of anxiety in building a shared and accurate public health response. Faced with real life threats, citizens show a desire and a capacity to break out of their informational straightjacket and seek out new (for them) sources of information. This is true both in the highly restricted media environment of Russia and in the more competitive context of Ukraine. What this means from a public health perspective in the two countries depends on how we interpret the impact of “new” information and sources. If we were to equate having a broader and more varied media diet with a healthier media diet, then the

implications are clearly positive. Theoretically, AIT theory suggests that anxiety generates a genuine desire to understand the threat and to adopt a deliberative approach to taking protective action. Consequently, it seems reasonable to expect that the spirit of deliberation associated with anxiety should result in a more careful search of the available information.

However, this may be an optimistic reading. The evidence we have suggests that people become more open to seeking out new arguments, but not that these new arguments are necessarily valid ones. Perhaps, in seeking out new information, citizens are also more vulnerable to the ways in which information can be skewed or manipulated. Hence, empirically, the impact of new information will depend on the extent to which expanding the scope of search actually yields better information.

Politically, the implications also depend to some degree on the context. In a competitive media marketplace like Ukraine, exposure to new sources of information on Covid may or may not lead citizens to new political arguments. Research in long-standing democracies suggests that more choice of media tends to lead to a higher correlation between a person's political positions and the media that they consume (Prior 2007, Strömbäck et al. 2013, Stroud, 2011). Differences of opinion lead to differences in the information diet in the presence of more choice. Nevertheless, the evidence presented here suggests that anxiety about a pandemic – or potentially about some other important national problem or crisis – can lead people to expand their diet in search of more factual, less partisan information.

The implications in an “informational autocracy” like Russia (Guriev and Treisman 2019) where leaders seek to hold onto power less by intimidation than by dominating the informational space are clearer. As we show below, within the controlled environment of our surveys, respondents who previously only used state television for news and information were willing to

expand to independent and highly critical sources in their search for Covid related information. If it is indeed the case, that maintaining hegemony in the media space is crucial to contemporary autocracy, then anxiety may play a crucial role in undermining both media hegemony and the authoritarian regime.

COVID, Information and Media Bubbles

At the end of 2019, Covid-19 was a disease known only to a handful of scientists and even they knew very little about its transmission and likely consequences for those infected. Over the course of 2020 and 2021 a massive, global scientific effort was launched to try to understand how to limit the transmission of the virus, protect the vulnerable and to develop treatments and vaccines. A critical part of this whole process was an effort to educate the public on the virus and to inculcate public health behaviors that might limit the impact of the pandemic. Getting to grips with a public health challenge on this scale, requires understanding not just the virus and its dynamics, but coming to grips with the way in which citizens come to learn about the virus and the kinds of information that they are exposed to. This part of the challenge is particularly complicated in the context of information environments that are immensely complex and varied with an enormous range of potential sources of information and, crucially, misinformation, coming from both official government figures and non-official sources alike. Unpacking who is likely to access what kinds of information and developing an understanding of what shapes that information diet is a critical task.

The specifics of media framing and consumption are known to affect how citizens think about a whole range of science-related issues from climate change (Anderson 2009) to body image (Bartlett et al. 2008). In recent years, there has been intense and growing focus in social science journals on the problem of fake news and the threat that misleading or sensationalized

reporting, as well as deliberate misinformation campaigns, pose to public understanding of critical issues (Cinelli et al. 2020, Wang 2019). With the advent of the global pandemic, concern about the challenge of shaping public understanding has only increased.

A key challenge for spreading shared and accurate understandings of scientific issues is a tendency for citizens to fall into increasingly polarized information bubbles. This tendency has become of serious concern in both public health and politics. Schmidt et al. (2018) demonstrate in the context of attitudes toward vaccines how social media users who interact with postings on vaccination tend to over time to become polarized in their perspectives. Similarly, in politics, there has been a lot of concern about echo chambers and the tendency for political stances and choices of media to become increasingly correlated over time (Arcenenau and Johnson 2013), even as there is recognition that most people still have varied media diets (Dubois and Blank 2018) and continuing debate over the relationship between changes in the media environment and changes in citizen attitudes (Hopkins and Ladd 2014, Prior 2013). In the rest of this paper, we look at specifically at what factors shape patterns of media consumption in the context of Covid, focusing on the role of emotions in general and anxiety in particular in leading people to break out of media bubbles and seek new sources of information on the pandemic.

Anxiety and Information: Changing The Diet

The Covid-19 pandemic represented an enormous health threat to people all over the world. Nevertheless, people were divided in their reactions, responding with a whole range of feeling from fear and anxiety to anger and disbelief. In the context of a poorly understood new disease that was spreading rapidly across the globe, we expect variation in these emotional responses to the pandemic to be very important in shaping how people go about learning about the virus and its implications. Drawing on one line of reasoning in political psychology, *Affective*

Intelligence Theory, we expect that people who experience greater anxiety and fear of the disease are likely to expand their information diets both quantitatively and qualitatively more than those who experience less anxiety and fear. Thus consumption of news and information about Covid, will depend to an important extent on emotion.

There are two principal models in political science for understanding emotional responses to threat – Cognitive Attribution Theory (CAT) and Affective Intelligence Theory (AIT).

Cognitive attribution theories focus on individuals making a series of evaluations of a situation, such as evaluating the source of a threat and the extent to which it is manageable. For example, if the subject considers that the threat can be traced to a specific individual acting deliberately and that the threat can be met, then anger is the expected response. If neither of these conditions is met, then anxiety is more likely. In the CAT world, we would expect emotional responses to be inversely correlated, depending on how each person evaluates the situation (Vasilopoulos et al. 2019; 682).

The basic underlying premise of AIT, by contrast, is that emotions arise from subconscious monitoring of the situation around us in which three different systems are in operation simultaneously and so can generate more than one motion concurrently (Marcus 2010). A first system monitors looks out for new, unfamiliar stimuli and generates emotions like anxiety, worry and fear. A second system assesses current approaches to dealing with challenges and is regulated by emotions like enthusiasm, hope and pride, while a third, more recently elaborated system, identifies threats to current norms and practices from known outgroups and stimulates anger (MacKuen et al., 2010; Valentino et al., 2011). Given the subject of this paper – responses to the Covid-19 pandemic – we focus primarily here on anxiety and, to a lesser degree, anger, though all our models also measure enthusiasm.

The key insight of AIT that we examine here is that the brain responds in a preconscious way with these different emotional systems in different combinations and these responses condition quite different actions. Increases in anxiety focuses the person on the novelty of the situation. Novelty, in turn, encourages learning through two mechanisms – a search for more information and a spirit of openness and thoughtfulness in assessing that new information (Albertson and Gadarian 2015, MacKuen et al 2010).

Anxiety, of course, is not the only possible reaction to the pandemic. In the AIT world, aversion (which captures such feelings as anger and outrage) is also entirely possible either alongside or instead of anxiety. Aversion, by contrast, leads not to learning, but rather to a doubling down on existing political habits and a style of thinking based on previous convictions rather than changing thoughts. Not so much opening the mind, as closing the doors. As we show below, there is some empirical support for this view in the data here too.

Adapting this AIT approach to the context of covid, we would therefore expect to observe the following:

H1: Respondents exhibiting higher levels of anxiety will be more likely to consume more information about the virus.

H2: Respondents exhibiting higher levels of anxiety will be more likely to select media that are outside the usual media sources they consume.

H3: Respondents exhibiting higher levels of anxiety will be more likely to select media that are typically associated with a political perspective other than the one they usually hold.¹

¹ These hypotheses were preregistered with EGAP on 11/4/2020.

Research Design

We examine these hypotheses in the context of response to covid in Russia and Ukraine. Both Russia and Ukraine have been severely affected by the pandemic both in health terms and economically. Our data collection in Ukraine took place in December 2020, at the peak of Ukraine's first wave with around 10,000 new cases and 230 deaths per day. As of April 29, 2021, Ukraine has recorded 2.1 million cases and 45,211 deaths. In Russia, our data collection took place in November 2020, when cases in Russia were rising quickly passing 19 000 new cases and more than 300 deaths per day. The most recent numbers show 4.74 million cases and 108,000 deaths.²

Russia and Ukraine provide a fascinating comparison of two culturally comparable countries with very different political systems and media contexts. Both countries have large proportions of their population who rely primarily on television of news and information, though they both also have a high degree of internet penetration. In Russia, the regime is highly and increasingly authoritarian and television is heavily state controlled, though citizens continue to have relatively unimpeded access to the internet and a wide variety of news and information in Russian. In Ukraine, by contrast, television news and information has been characterized as “free but not independent” due to continued oligarchic influence over the main television channels.³ As a result, comparing responses to Covid across the two countries provides an opportunity to see the extent to which democracy and a relatively free press affect information gathering behavior. The fact that the Russian media is clearly defined into state and independent sources,

² Data from Johns Hopkins. See Dong, Du and Gardner “An interactive web-based dashboard to track COVID-19 in real time”, *The Lancet*. Published: February 19, 2020 DOI: [https://doi.org/10.1016/S1473-3099\(20\)30120-1](https://doi.org/10.1016/S1473-3099(20)30120-1).

³ Myroslava Gongadze cited in Christina Vosbikian, *Modern Media-Opoly: Broadcast Media's Interplay With Public Opinion In Post-Euromaidan Ukraine*, Princeton University 2018.

while media in Ukraine is divided amongst different oligarchs also allows us to go beyond measures of the quantity of media searched for Covid-related information and develop a measure of increasing variety in the media diet (see below).

The surveys in both Russia and Ukraine were conducted online using Qualtrics and their contracts with local owners of media panels. Respondents are paid by the local companies to complete a certain number of surveys over the time they are in the panel. Invitations to complete the surveys were issued on the basis of quota sampling in an effort to approximate the distribution of the population according to age, gender, education and region.⁴ Given the online nature of the survey, the sample is somewhat younger and significantly better educated than the population as a whole. Nevertheless, while it is difficult to establish population estimates in this way, the sampling technique allowed for a full range of variation on all the key variables of interest so there is no reason to expect that a nationally representative sample would generate substantively different results.

We conducted one survey rounds in each country. In Russia, we interviewed 1250 respondents in November and December of 2020. In Ukraine, the survey took place slightly later in December 2020/January 2021 respectively, with 1352 respondents. In Ukraine, surveys were available in both Ukrainian and Russian, with respondents being presented with whatever language their browser was set to.

Measuring Information Acquisition

We measured patterns of information acquisition in two different ways. As a first cut, we focused on self-reported tendencies to break out of media bubbles in the context of the Covid

⁴ For full details of the sampling and comparisons with how the resulting sample compares with a nationally representative sample, see Appendix.

pandemic. We followed Dubois and Blank (2018) by asking a set of three questions about the frequency with which people expose themselves to new or challenging information. Using a 4-point scale, we asked how often they read something new, something they disagree with and how often something they read changed their mind. In each country we created an index of these questions to measure the extent to which people say they break out of their own media bubble.

Then we moved beyond self-reports of the tendency to seek out new or challenging information by creating a behavioral measure of media consumption. The idea was to test directly how respondents actually behave in the presence of the chance to access information about covid. In each country, at the end of the survey, we offered respondents eight articles which they could check and receive upon finishing of the survey. Respondents could check as many (or as few articles) as they wished. The count of articles represents a measure of the quantity of information about covid that respondents sought out.

In each country the selection of media was carefully chosen to allow respondents choice from a number of different parts of that country's media landscape. These choices are then interacted with a question about media consumption habits ("how often do you use each of the following sources for political news and information" – daily, a few times a week, a few times a month, rarely, never) posed earlier in the survey.

The media options for each country are shown in Tables 1 and 2. In Russia, Table 1, we thanked respondents for their views on covid and told them, "if you would be interested to learn more about covid-19, look at the list of articles below. You may choose as many sources as you wish. You will receive access to the sources when you complete the survey". We offered articles from four state owned or controlled media sources – the main state television 1st Channel, the pro-Kremlin tabloid Life News, the website of the newspaper Izvestiya which is frequently used

by the presidential administration to communicate its policies and RBK, which is owned by pro-Kremlin oligarch, Mikhail Prokhorov. On the independent media side, we had two articles from Meduza, a Latvia-based Russian news agency that was declared a foreign agent by the Russian Ministry of Justice on April 23, 2021, Mediazone, an independent media outlet founded by former political prisoners Maria Alyokhina and Nadezhda Tolokonnikova (formerly of Pussy Riot) and the independent radio news station Echo Moskvy.

In order to minimize as far as possible the influence of article content on selection, we chose articles with headlines that were as neutral as possible. From 1st Channel, “Coronavirus in Russia: Everything is under control”, Izvestia “Adjusted for COVID: how the pandemic affected the preparation of the fuel and energy complex for winter”, RBK “The Ministry of Health announced the conditions for treating patients with coronavirus at home” and Life “In Russia, a neural network was taught to detect coronavirus by the cough”. On the independent side, we offered two Meduza articles “How the coronavirus epidemic is developing in Russia. Map.” and “We do not know how to treat this”. From Mediazone, “Coronavirus in Russia. October” and from Echo Moskvy, “Masking Rules Cover All of Russia Due to Amazing Discovery by Officials.”

Table 1 Measuring Media Behavior in Russia

Спасибо за участие в нашем опросе. Нам важно Ваше мнение о ситуации с коронавирусом. Если Вам интересно больше узнать о Covid-19, обратите внимание на статьи из списка ниже. Вы можете

выбрать столько источников, сколько хотите. Вы получите доступ к этим статьям, как только завершите опрос.

- Коронавирус в России: все под контролем. Первый канал, 1tv.ru (1)
- С поправкой на COVID: как пандемия повлияла на подготовку ТЭК к зиме. Izvestia, iz.ru (2)
- Минздрав назвал условия лечения пациентов с коронавирусом на дому. РБК, rbc.ru (3)
- В России научили нейросеть выявлять коронавирус по кашлю. Life, life.ru (4)
- Как развивается эпидемия коронавируса в России. Карта. Медуза. (5)
- Коронавирус в России. Октябрь. Медиазона (6)
- Мы не знаем, чем это лечить. Медуза. (7)
- Масочный режим по всей России вызван удивительным открытием чиновников. Эхо Москвы. (8)

In Ukraine, the media market is much less state dominated than in Russia, but nonetheless, there are different camps identifiable with different ownership structures. Despite the numerous political changes in the country, the media market remains dominated by oligarchic interests. This has meant that media tend to support the commercial rather than ideological interests of their owners. In the context of a weak and partially captured state, oligarchs and their media exercise what Ryabinska calls “partisan polyvalence”, a shifting set of alliances with different political parties and positions that moves around with the specific issues

at stake (Markus and Charnysh 2017, Ryabinska 2017: 74-75). Consequently, we sought to select media sources in Ukraine as a function of ownership rather than ideological or political positions. This, nonetheless, still allows considerable freedom of choice given the range of oligarchs and other forms of media ownership in Ukraine (Rybak 2018). We focus then on the one hand on stations owned by oligarchs associated with the pre-Maidan Yanukovich regime (STV owned by Viktor Pinchuk's StarLight Media Group; TRK Ukrayina owned by Rinat Akhmetov's Media Group Ukraine). As a "pro-Maidan" contrast, we looked at the post-Maidan president Petro Poroshenko's Channel 5 and the independent civil society owned Hromadske.ua.

The selection of headlines is shown in Table 2. For STV the headlines were "A Ukrainian who has already had the coronavirus vaccine tells how he feels" and "Mass vaccination for coronavirus has begun – how are preparations going?". For Ukrayina, "Ukrainians might begin to get the COVID-19 vaccine as soon as February" and "International agency approves Ukraine's request for 8 million doses of the COVID-19 vaccine". For Channel 5, we offered "Health minister Stepanov explains how mass vaccination will work in Ukraine" and "Healthcare ministry has worked out which Ukrainians are going to need free vaccinations for covid-19". And for Hromadske respondents could chose "In Ukraine about 21 million people are in high risk groups that should be first in line for the coronavirus vaccine" and "Moderna vaccine guarantees antibodies for Covid19 for a minimum of 3 months – tested at all ages".

Table 2 Measuring Media Behavior in Ukraine

Дякуємо за інтерес до нашого опитування! Ваша думка про ситуацію з коронавірусом є важливою для нас. Якщо Ви хочете дізнатися більше про COVID-19 та вакцини, які надійдуть у близькому майбутньому, перегляньте список статей нижче. Ви можете переглянути стільки джерел

інформації, скільки захочете. Ви отримаєте доступ до статей наприкінці дослідження.

- Українець, якому вже зробили щеплення від коронавірусу, розповідає, як він себе почуває. СТБ. <https://www.stb.ua> (1)
- Почалася масова вакцинація від коронавірусу - як йде підготовка? СТБ. <https://www.stb.ua> (2)
- Українці можуть почати отримувати вакцину від COVID-19 вже в лютому. Україна. (3)
- Міжнародне агентство схвалює запит України на 8 мільйонів доз вакцини COVID-19. Україна. (4)
- Степанов розповів як буде проходити вакцинація населення. 5 канал. <https://www.5.ua> (5)
- У МОЗ з'ясували, яким українцям знадобляться безкоштовні щеплення від COVID-19. 5 канал. <https://www.5.ua> (6)
- В Україні майже 21 мільйона осіб входить в групу ризику, які повинні першими вакцинувати від коронавірусу. Громадське. <https://hromadske.ua> (7)
- Вакцина Moderna гарантує наявність антитіл до Covid19 протягом мінімум 3 місяців - перевірено в будь-якому віці. Громадське. <https://hromadske.ua> (8)

Independent Variables

To measure anxiety, we followed Marcus et al. 2017, asking a self-report question, having respondents say the extent to which (on a 7 point scale) they felt each of fear (Rus: Страх; Ukr: Страх) worry (Rus: Обеспокоенность; Ukr: Занепокоєння) and anxiety (Rus: Опасения; Ukr: Стурбованість) about the covid pandemic. These responses were turned into a

single index.⁵ While this is the standard approach to measuring emotions in surveys, we also took into account the potentially unusual context of the pandemic. To do so we asked about worries around becoming ill, asking respondents on a 4 point scale how worried they were that (i) they or (ii) their friends or family would become infected with covid. We also asked respondents how worried they were that if they became infected they would not have access to each of the following: essential supplies, healthcare, hospital beds and ventilators. We created an index out of the answers. In the appendix, we show that the results are robust to this alternative measure of anxiety.

To measure anger, we created an index from the same self-reported scale, asking about anger (Rus: Ярость; Ukr: Гнів), bitterness (Rus: Злость; Ukr: Гіркота) and resentment (Rus: Обида; Ukr: Образа).

To test whether anxiety increases the propensity of individuals to seek out information from sources that differ from their own political views we had to identify indicators that capture the most salient political cleavages. Since the nature of political cleavages differed in the two countries, we approached this question differently in Russia than in Ukraine. In Russia, the dominant cleavage in both the media and the population was between regime supporters and regime opponents, which we capture with a survey question about approval for President Putin. In Ukraine, President Zelensky ran as a centrist outsider in the 2019 elections, who positioned himself between the anti-Russian rhetoric of the incumbent President Petro Poroshenko, and the former energy minister from the Azarov government, Yuriy Boyko, who advocated closer ties with Russia. Since Zelensky continues to command most support among centrists along

⁵ The Cronbach's alpha coefficients for the indices were .93 in Ukraine and .95 in Russia, indicating very high levels of reliability.

Ukraine's long-standing East-West divide, support for Zelensky does not map neatly onto the traditional political camps in Ukraine. Therefore, we instead created index capturing foreign policy preferences along a pro-Russian vs. pro-West axis using four survey questions: support for EU integration, support for NATO integration, the perceived importance of acknowledging Russian aggression, and the importance of rejecting closer economic and political ties to Russia.⁶

Controls

In our regressions we controlled for the other emotional dimension in AIT theory, enthusiasm. We measured enthusiasm using the same prompt and scale as the other emotions and asked about hope (Rus: Надежда;Ukr: Надія), pride (Rus: Гордость; Ukr: Гордість) and enthusiasm (Rus: Энтузиазм; Ukr: Ентузіазм).

Finally, all of our models included controls for several basic demographic variables, which may affect both information search and anxiety: age, gender, macro-region, education, and an economic welfare index that captured the extent to which respondents could afford to buy meat, clothes, necessary medications, consumer durables and to pay for utilities. Furthermore, in Ukraine we included a five-scale measure of the respondent's home language (ranging from only Ukrainian to only Russian).

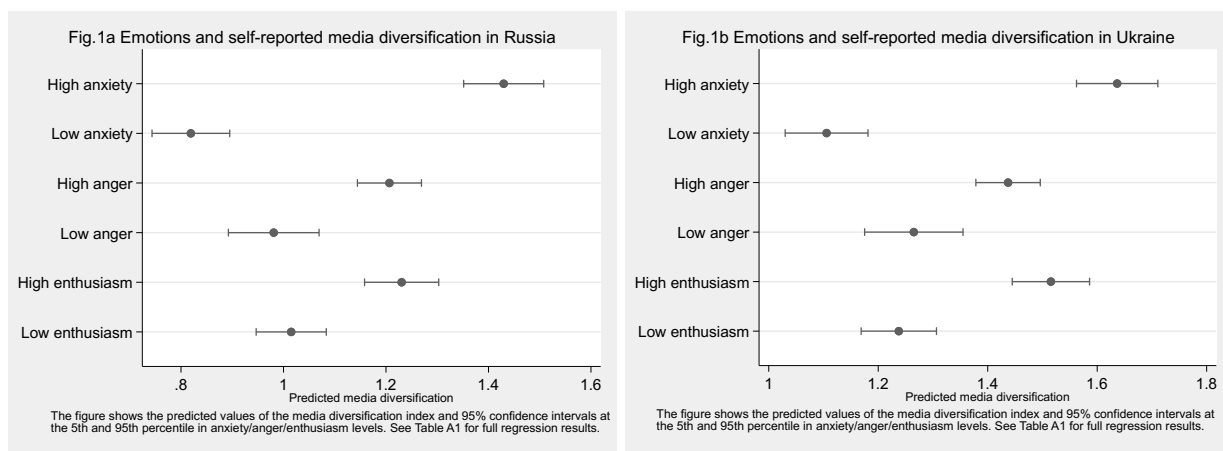
Analysis

As a first step in Figures 1a and 1b we report the impact of different emotions on self-reported media diversification practices in the two countries.⁷ The two figures show the predicted values on the media diversification index described above at low (5th percentile) vs. high (95th

⁶ The index had a Cronbach's alpha of .78.

⁷ To aid with the interpretation of the statistical results we present them graphically in the main paper but interested readers can find the full regression results in the appendix.

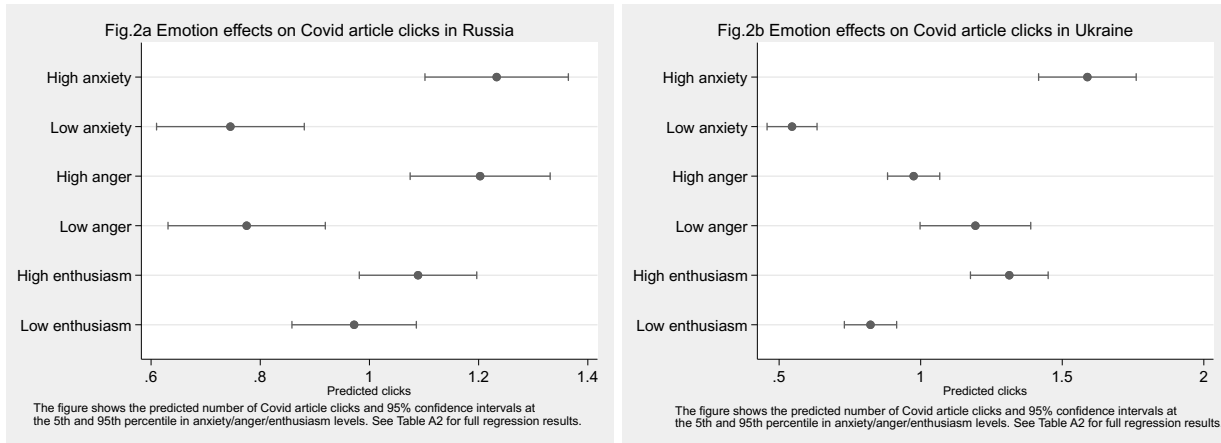
percentile) values of the indexes for each of the three emotions. While the overall levels of self-reported media diversification were somewhat higher in Ukraine than in Russia (1.37 vs. 1.13 on the 0-3 scale index), the overall emotional patterns were remarkably similar. In both countries higher levels of all three emotions were associated with statistically significant increases self-reported diversification in media consumption practices but the magnitude of the effect was considerably larger for anxiety than for either anger or enthusiasm. Furthermore, the magnitude of the anxiety effect was large not only in relative but also in absolute terms: going from the 5th to the 95th percentile in anxiety was associated with an increase of more than three quarters of a standard deviation in the media diversification index in each of the countries.⁸



While the analysis so far suggests that more anxious individuals were much more likely to increase and diversify their media consumption in the context of the pandemic, self-reported measures may raise concerns about the reliability of these findings. Therefore, we now turn to analyzing the behavioral measure based on the number of clicks on Covid-related articles that respondents chose at the end of the survey. As a first step, in Figures 2a and 2b we simply look at

⁸ For reference, this effect was about twelve times larger in Russia and five times larger in Ukraine as the difference in media consumption between someone with a high school vs. a university degree.

the relationship between emotions and the total number of clicks on any of the eight article headlines that respondents were presented in the survey.



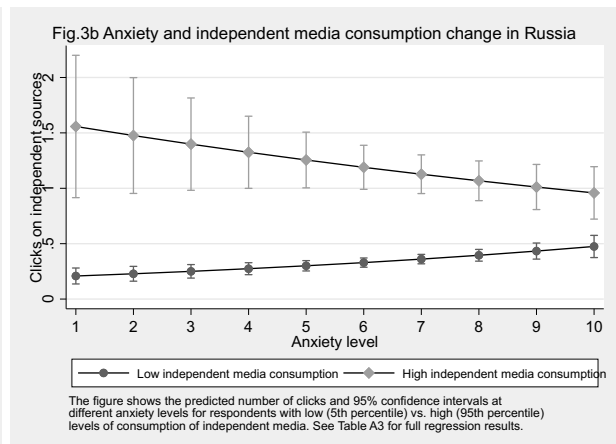
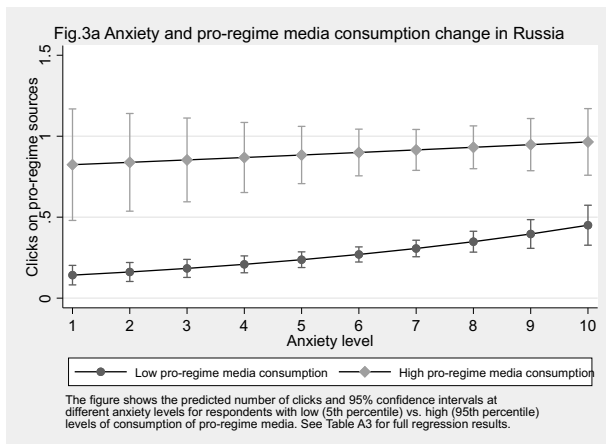
The patterns in the two figures confirm our theoretical expectations that higher anxiety is associated with a higher likelihood to seek out new information: in both countries the difference between low and high-anxiety individuals was highly statistically significant and substantively large, though the magnitude of the effect appears to have been noticeably larger in Ukraine than in Russia.⁹ By comparison, the effects of the other two emotions was smaller and more inconsistent across the two countries. Higher anger levels were associated with a significantly and substantively large increase in total article clicks in Russia but in Ukraine the effects were actually reversed, as angrier individuals were actually marginally less likely to click on Covid-related articles than their less angry counterparts.¹⁰ Meanwhile, the effects of greater enthusiasm were statistically significant and fairly large in Ukraine but were substantively small and statistically insignificant in Russia. Overall, the patterns in Figures 2a and 2b suggest that anxiety was the strongest and most consistent emotional predictor of article clicks, which is in line with

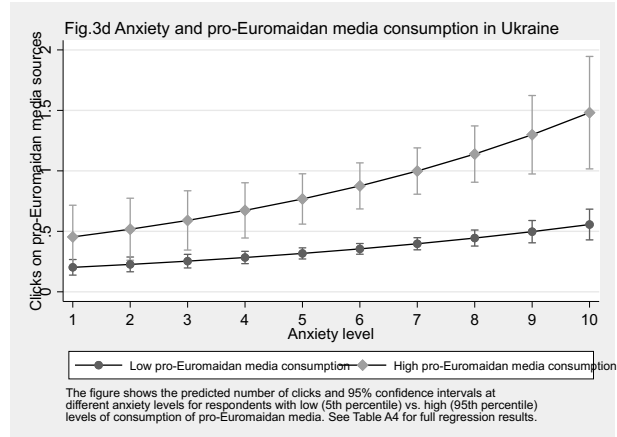
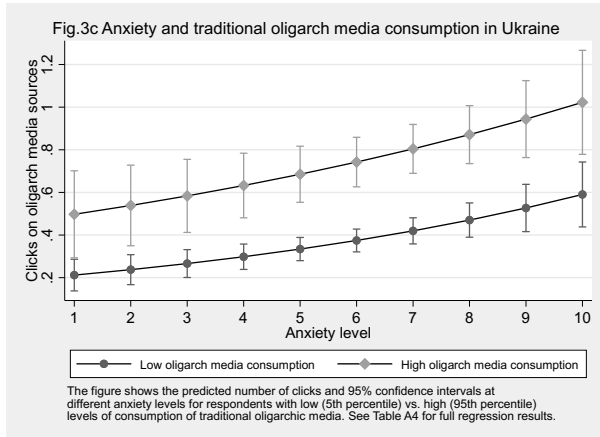
⁹ In Ukraine respondents at the 95th percentile of the anxiety scale were three times as likely to click on a link as those at the 5th percentile, while in Russia the difference was roughly 65%.

¹⁰ The effect was marginally significant at .09 one-tailed.

our hypothesis H1 about the role of anxiety in driving efforts to seek out more information about the nature of the threat.

While the evidence so far confirms that anxiety promotes information seeking behavior, to test whether these increases reflect a genuine broadening of information sources and types, we need to go beyond the total number of articles accessed and look closer at the types of articles chosen, and how they relate to prior media consumption patterns and political attitudes. As a first step in this direction, in Figures 3a-3d we test hypothesis 2 about whether anxiety promotes information seeking beyond an individual’s customary media “diet”. To do so, we measured initial media consumption by media block in each country and then analyzed how the propensity of clicking on articles from each block varies as a function of anxiety and pre-existing media preferences. Specifically, Figures 3a-3d present the predicted number of clicks on different types of articles across the full spectrum of the anxiety index for individuals who reported either low (5th percentile) or high (95th percentile) prior frequencies of following those particular media sources.





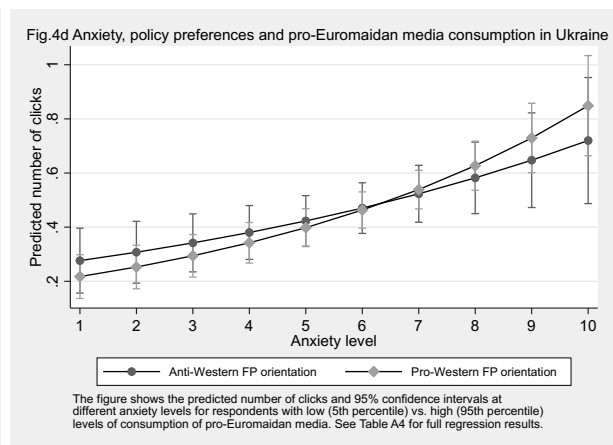
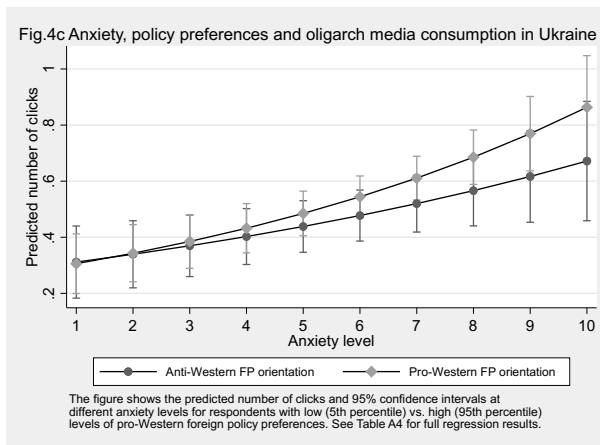
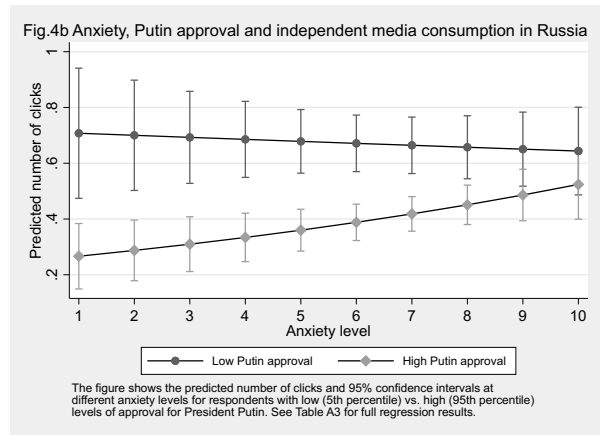
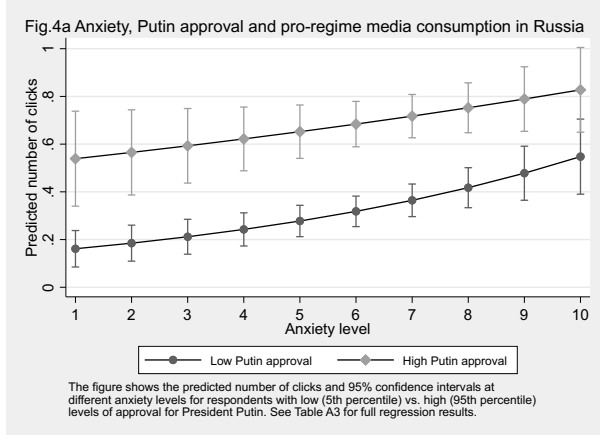
The most important takeaway from these four figures is that while people were – predictably – more likely to click on articles from media outlets that they had watched more often prior to the survey¹¹, higher levels of anxiety were associated with increases in article clicks not only for familiar/preferred media sources but also for sources outside of the respondents’ usual media menus. Across both countries and all four mass media blocks, higher anxiety was associated with a statistically significant increase in the number of clicks on articles from rarely/never accessed media sources and these effects were also substantively significant: respondents reporting the highest levels of anxiety clicked on anywhere between two and almost five times as many article links as their low-anxiety counterparts, even after we control for differences in demographics and other emotions.

However, a few differences across countries and media blocks are worth noting. First, in Russia anxiety diversified the relative mix of media choices: the trends in figures 3a and 3b clearly reflect at least a partial convergence in media choices due to the fact that anxiety did not lead to more clicks on articles from preferred sources. By comparison, in Ukraine the increases

¹¹ In all four figures the light grey line – corresponding to individuals who reported frequently accessing a particular set of media sources – was significantly higher than the dark grey line representing individuals who rarely or never accessed these sources, and the magnitude of this difference was quite large (with the frequent consumers being between two and five times more likely to click on articles from that particular type of media source.)

in clicks on articles from rarely used sources were matched in Figure 3c and exceeded in Figure 3d by increased clicks on articles from preferred sources. As a result, in Ukraine the overall mix of political messages was not necessarily more balanced among more anxious respondents despite the fact that they were more likely overall to seek out information from sources beyond their usual menu of media choices.

Finally, in Figures 4a-4d we present the results of tests of hypothesis 3, which focuses on the link between anxiety and searching for information from sources associated with a different political orientation. As Figures 4a and 4b show, in Russia the political differences between these two camps are quite clearly reflected in the propensity of respondents to click on Covid article links from different sources: Respondents who approved of Putin's performance were much more likely to click on articles from pro-regime media sources, while respondents who disapproved of Putin were much more likely to turn to independent media sources. However, the patterns in Figures 4a and 4b suggest that rising anxiety reduced the partisan gap in information preferences: in both figures higher anxiety was associated with a statistically significant and substantively large increase in the likelihood to click on articles from the "opposite" political camp, while the propensity of clicking on articles from one's own camp either increased more slowly (among Putin supporters in Figure 4a) or decreased slightly (among Putin opponents in Figure 4b) as anxiety levels increased. Overall, then, in Russia the high anxiety associated with the pandemic appears to have been quite effective in bursting the media bubbles in which supporters of different political camps often find themselves.



In Ukraine, the results in Figures 4c and 4d suggest a more ambiguous picture. On the one hand, higher anxiety triggered significant increases in article clicks across all combinations of respondents and news sources. Furthermore, these anxiety-induced information search was substantively large both in absolute terms – click rates increased between two and four times at high compared to low anxiety levels – and compared to the more modest increases in Russia. On the other hand, however, the figures also suggest that Ukraine did not have partisan media bubbles even at low levels of anxiety: the difference between pro-West and pro-Russian respondents, while highly predictive of vote choices in Ukraine in most elections, does not appear to affect the willingness of Ukrainians to access Covid-related information from sources associated with different parts of the political spectrum. Therefore, while anxiety undoubtedly

triggered information search across partisan lines, it may not have burst media bubbles because there were no real partisan media bubbles to begin with.

Conclusion and next steps

In this paper we have used attitudinal and behavioral data from online public opinion surveys in Russia and Ukraine to test the impact of emotions on information search in the context of the Covid-19 pandemic. In line with the theoretical predictions of Affective Intelligence Theory (AIT) we have found that, despite their important differences in regime and mass media environments, in both Russia and Ukraine higher levels of anxiety triggered significant increases in both the amount of Covid information respondents seek out, and in the variety of media sources they are willing to consult to satisfy their need for information. By comparison, higher levels of other emotions, like anger and enthusiasm, had smaller and more inconsistent effects on information acquisition behavior.

While the psychological underpinnings of this type of anxiety-fueled information search patterns may be very similar across the two countries, their political implications are arguably quite different. In Ukraine, where the mass media is free (though not independent), citizens appear to be completely comfortable “shopping” across different mass media venues in their search for information about the pandemic. By contrast, in Russia, where the Putin regime has consistently harassed and demonized the independent media, the deep political divisions along the regime cleavage are also visible in Covid information acquisition patterns, with regime

supporters preferring pro-regime outlets while opponents flock to the independent media. The lines between different kinds of media are simply much starker in autocracy than in democracy.

However, it is precisely in this context, that the role of anxiety in driving even Putin loyalists to seek out Covid-related information from independent media outlets could pose important political challenges to the Russian regime. Of the independent sources in our measure, three of the four articles we selected are run from third countries, two were from an organization officially declared by Russian authorities to be a foreign agent and one is associated with a group of former political prisoners. That pro-regime but anxious Russians were willing in the context of the pandemic to reach out this sources is an important indicator of the limits to the regimes ability to colonize the minds of Russians.

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