Depressive Symptoms and Conspiracy Beliefs

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Abstract

Conspiratorial beliefs can endanger individuals and societies by increasing the likelihood of harmful behaviors such as political violence and the flouting of public health guidelines. While scholars have identified various correlates of conspiracy beliefs, one factor that has received scant attention is depressive symptoms. Depressive symptoms may be associated with a loss of control that conspiracy beliefs can counter by providing an antidote to uncertainty and distress. This relationship between depression and conspiratorial thinking, however, likely depends on other individual and situational factors. The researchers use three large surveys to document the connection between depression and conspiracy beliefs. While a relationship consistently exists, its extent depends on other factors: Variables that lead to an additional loss of control (e.g., illness) strengthen the relationship between depression and conspiracy beliefs, and those that provide a sense of control (e.g., social support) vitiate it. The results provide insight for the development of underappreciated interventions — treating depression with acute attention to those experiencing other sources of uncertainties can reduce conspiracy beliefs.

Conspiracy beliefs constitute a substantial political and public health threat. Such beliefs can lead individuals to be more likely to endorse political violence (Jolley and Paterson 2020, Baum et al. 2022), purchase guns (Lacombe et al. 2022), reject science (Goertzel 2010), and ignore public health orders (Sternisko et al. 2021). This makes understanding the correlates of conspiracy thinking vital so as to facilitate the development of interventions. Scholars have identified a host of factors that relate to conspiratorial mentalities—examples include national narcissism (Sternisko et al. 2021), political extremity (Imhoff et al. 2022; c.f., Enders and Uscinski 2021), free market values (Lewandowsky et al. 2013), knowledge combined with low political trust (Miller et al. 2016), and intuitive thinking (Oliver and Wood 2014, 2018; c.f., Binnendyk and Pennycook n.d.). These and other relevant variables tend to be unmalleable, making intervention strategies a challenge. As Sternisko et al. (2021: 1) state, "Since belief in these ideas is relatively immune to standard interventions against misinformation, researchers advise paying special attention to prevention (Jolley and Douglas, 2017)."

Here we focus on an understudied correlate of conspiracy beliefs: depressive symptoms.[2] Major depression is a condition for which a range of effective interventions exist. Indeed, the U.S. Center for Disease Control (CDC) describes depression as "a common and treatable mental disorder" (Brody et al. 2018). In their study of conspiracy beliefs, Fountoulakis et al. (2021: 624) emphasize the importance of identifying the role of mental health, stating, it "could be of practical utility since most of these factors [e.g., depression] are modifiable." Interventions that jointly consider depression and conspiracy beliefs, however, require the identification of the most vulnerable contexts. We offer such insight by exploring sources of heterogeneity in the

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[2] Throughout, our focus is on depressive symptoms and thus when we employ alternative wording such as "depression," readers should understand it to mean depressive symptoms rather than depression per se (i.e., a clinical diagnosis).

relationship between depression and conspiracy beliefs—that is, what increases the likelihood of there being a relationship between the two? Answering this question would allow clinicians to develop and apply treatments targeting conspiratorial thinking when treating specific populations for depression. It also provides insight into variations in drivers of conspiratorial thinking, and importantly, reveals an underappreciated means of decreasing the impact of conspiracy beliefs.

Using three waves of a large-scale survey, we document a strong relationship between experiencing at least moderate depressive symptoms and holding a range of COVID-19 based conspiracy beliefs. We also show that factors that undermine a sense of control—including illness and having to care for dependents—exacerbate the association between depression and conspiratorial thought. In contrast, having strong social support that might provide a sense of security lessens this association. These results suggest that the extent to which depression is tied to conspiracy beliefs depends, in part, on other variables that shape one's sense of control.

Conspiracy Beliefs and Depressive Symptoms

A conspiracy theory is an effort to explain an event by invoking the machinations of powerful people, who attempt to conceal their role while pursuing malevolent goals (Sunstein and Vermeule 2009). Conspiracy ideation comes in many guises—for example, believing that NASA faked the moon landing, or that the government suppressed evidence that the MMR vaccine causes autism. While many such theories involve governmental institutions, others concern industry (e.g., pharmaceutical), marginalized groups (e.g., Muslims, Jews), or organizations (e.g., employers) (van Prooijen and Douglas 2017). Generally speaking, conspiratorial thinking is a strong and stable part of one's identity that often spans across multiple issues (Oliver and Wood 2014: 954, 958, Lewandowsky, Oberauer, and Gignac 2013: 630, Uscinski and Parent 2014, Baum et al. 2022). Moreover, such beliefs lead people to feel a

3

heightened sense of threat, which, in turn, reduces their capacity to distinguish between truth and falsehood (Newman et al. 2021). This contributes to the aforementioned negative downstream consequences—such as endorsing political violence, rejecting science, and ignoring public health orders.

A well-developed literature identifies various factors that correlate with conspiratorial beliefs (e.g., Sternisko et al. 2021, Imhoff et al. 2022, Oliver and Wood 2014, 2018, Binnendyk and Gordon Pennycook n.d., Uscinski et al. n.d.). One such variable is major depression. Major depression is the most prevalent mental health disorder in advanced societies (Lépine and Briley 2011). Depression may be accompanied by a sense of a loss of control, particularly an external locus of control that refers to a sense that outcomes depend on powerful others, chance, fate or luck (Wiersma et al. 2010, Cheng et al. 2013). To cope with such feelings, individuals often seek to regain a sense of control and conspiracy theories facilitate this process by providing explanations and a sense of certainty (Kossowska and Bukowski 2015, Moulding et al. 2016, van Prooijen and Douglas 2017).[3] van Prooijen (2017: 51) explains, "People are particularly receptive to conspiracy theories when they lack control, and hence feel powerless. Lacking a sense of control leads to mental sense-making in the form of illusory pattern perception, that is, connecting dots that [are] not necessarily connected in reality." Similarly, Levinsson et al. (2021: 2) explain "Conspiracy beliefs may provide a mechanism to empower [depressed] individuals by allowing them to adopt narratives that explain and reduce the current uncertainties and distress [providing] individuals with an opportunity to … feel in control…"

Along these lines, a stream of literature documents a relationship between depression and conspiratorial beliefs. For example, Swami et al. (2016) show that stress—a common antecedent

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[3] This is an old idea insofar as Hofstadter (1966) explains that conspiracy theories provide simplified, causal explanations for distressing events.

of depression—acts as precursor to conspiracy beliefs. A series of studies during COVID-19 also reveal a connection: De Coninck et al. (2021) find, in an eight country study, that higher feelings of depression were associated with greater conspiracy beliefs (in six of the eight countries); Fountoulakis et al. (2021) used a sample from Greece to show that the presence of depression (but not a history of depression) related to holding conspiracies; and, Perlis et al. (2022) employed panel data in the U.S. to show that those experiencing moderate or severe depressive symptoms at an earlier point in time were more likely to endorse conspiratorial statements at a later point in time.

That studies focused on COVID-19 is not happenstance. Indeed, conspiracy beliefs typically increase during crises for reasons like the depression dynamic. Evidence "suggests that the aversive feelings that people experience when in crisis—fear, uncertainty, and the feeling of being out of control—stimulate a motivation to make sense of the situation, increasing the likelihood of perceiving conspiracies in social situations" (van Prooijen and Douglas 2017: 323). Šrol et al. (2021) find that risk perceptions during COVID-19 led to feelings of low control and, subsequently, conspiracy theory endorsement. Crises, such as COVID-19, also stimulate depression. The rates of moderate or severe depression increased three-fold with the onset of the pandemic such that approximately 30% of the American population reported being at least moderately depressed (Ettman et al. 2022, Perlis et al. 2022).

To the extent that depression relates to conspiracy beliefs (which, in turn, have potential harmful consequences), interventions aimed at addressing depression might also provide an opportunity to vitiate conspiracy ideation in vulnerable individuals. Of course, there are a range of effective treatment strategies for major depression, and thus, it would be useful to know when depression is more or less likely to be associated with conspiratorial thought. Put another way,

what factors amplify or ameliorate the relationship between depressive symptoms and conspiracy beliefs? As far as we are aware, prior work has not explored this question. Addressing it would help with understanding when interventions to treat depressive symptoms may lead to additional positive outcomes (beyond the obvious goal of lessening the symptoms) by potentially tempering conspiracy beliefs. We pay particular attention to variables that influence the amount of control one feels, with the expectation that individuals who otherwise experience a loss of (external) control (e.g., a loss of self-efficacy) and become depressed will be substantially more likely to hold conspiracy beliefs. In contrast, factors that provide security and a sense of (external) control can counteract the connection between depression and conspiracy beliefs.

Data

We recruited respondents through the PureSpectrum survey platform, which aggregates and deduplicates paid panelists from multiple sources. We specifically use data from three survey waves, with each wave quota-sampled to approximate the population of each U.S. state (including Washington, D.C.) with respect to age, race/ethnicity, and gender. Emerging evidence suggests this methodology can perform as well as traditional probability sampling (Enns and Rothschild 2021, Lehdonvirta et al. 2021, Radford et al. 2022). The field time and effective sample sizes (after removing incomplete cases) are as follows.[4]

- June – July 2021: N = 20,001 (Wave 1).

- August – September 2021: N = 16,784 (Wave 2).

- December 2021 – January 2022: N = 18,427 (Wave 3).

To minimize topical selection bias, we did not inform respondents of the purpose of the survey when they entered it, and questions covered a broad range of topics, mostly related to public

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[4] In our analyses, sample sizes vary slightly by model, due to occasional item non-response.

6

health. We filtered out inattentive and semi-automated respondents through multiple closed- and open-ended attention checks.

Measures

We measured conspiracy beliefs with three items, repeated on each wave, that capture the intersection of pharmaceutical and governmental conspiracies. Specifically, we provided respondents with a series of statements and asked them to assess the accuracy of each with the response options being "accurate," "inaccurate," and "not sure." We selected the specific statements based on Google searches for prevalent conspiracies at the time and perusal of the CDC website area on common myths. The specific items are as follows.

- Coronavirus was created as a weapon in a Chinese lab (bioweapon).

- The COVID-19 vaccines contain the lung tissue of aborted fetuses (fetus).

- The COVID-19 vaccines contain microchips that could track people (microchip).

We coded responses of "accurate" as evidence of holding a conspiracy belief and responses of "inaccurate" or "not sure" as no evidence of such a belief (following prior work; e.g., Druckman et al. 2021b).[5] We analyze each separately to allow for variable dynamics and to look for consistency across items and time.

We measured participants' experiences with depression via the Patient Health Questionnaire (PHQ-9), a widely used tool to screen patients for depression in primary care settings (Kroenke and Spitzer 2002, Arroll et al. 2010). The module begins by asking respondents, "Over the last two weeks, how often have you been bothered by any of the following problems?" and then presents nine items, all measured on four-point scales from "not at all" to "nearly every day" (scaled 0 to 3). Example items include "little interest or pleasure in

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[5] We take this approach because we are interested in who holds a clear conspiracy belief, rather than degrees of uncertainty.

doing things," "feeling down, depressed, or hopeless," "feeling tired or having little energy," and so on. The items are then summed to create an overall numeric indicator (ranging from 0 to 27). Clinicians often utilize thresholds to differentiate qualitatively distinct levels of depression (Kroenke and Spitzer 2002). For this reason and for analytic clarity in looking for heterogeneous effects (as explained below), we follow prior work in defining distinct groups a priori: not depressed (PHQ-9 $\leq$ 9), and at least moderate depressive symptoms (PHQ-9 $\geq$ 10). The 10 cut-point is the common demarcation of having at least moderate depression (e.g., Levis et al. 2019, 2020, Baum et al. 2022, Ettman et al. 2022, Perlis et al. 2022). We find, in each respective wave, 27%, 26%, and 26% of the sample (unweighted) register as at least moderately depressed, which matches the aforementioned figures from other sources during COVID-19 (e.g., Ettman et al. 2022).

As explained, we are particularly interested in factors that affect feelings of control. We suspect that personally experiencing or having someone in one's household experience COVID-19 generates feelings of a loss of control given it is an illness over which one has little power. Additionally, having children in the household may stimulate a loss of control since it means caring for a dependent during a time of highly constrained influence given the virus and its consequences (e.g., closed schools, no extracurricular or social activities). On the flip side, an essential source of control—particularly when it comes to external loci—are various forms of social support since they can provide emotional and financial safeguards. Chen et al. (2001) show that individuals with social support have increased feelings of control that decrease psychological distress and improve health management (also Fusilier et al. 1987, Strong and Gore 2020). We account for four types of social support by measuring how many people the respondent reports having in their network who could a) take care of them if they fell ill (care),

b) lend them money (lend), c) talk to them if they were feeling sad or depressed (talk), and d) help them find a job (job). It also is conceivable that mask wearing could provide a sense of taking control to address COVID-19; however, notably, this would be an internal locus of control and, in that sense, may do less to counter the external loss of control stemming from depression.[6]

We also account for a range of covariates including demographic features (race, gender, age, income, educational attainment, whether the respondent identifies as an Evangelical Christian, how urban or rural the respondent's county of residence is), political features (partisan and ideological identification, with higher scores representing more Republican and conservative, respectively), and how closely the respondent reports following COVID-19 related news and information. All question wordings are in Appendix A. One limitation of our data is that we do not have a direct measure of feelings of control and thus are unable to test the proposed theoretical mechanism; including such a measure would be an important step for future work.

Correlates of Conspiracy Beliefs

To test our basic hypotheses concerning depression and the other variables we posited as affecting control, we regress each of our conspiracy items (in each wave) on the relevant variables (using logistic regressions). We present those results in Table 1 which displays results for each conspiracy belief from each wave.

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[6] We recognize that mask wearing may be endogenous to conspiracy beliefs, and may also suggest increasing concern and thus a loss of control.

Table 1. Explaining Conspiracy Beliefs (Waves 1, 2, 3)

	Bioweapon Wave 1	Bioweapon Wave 2	Bioweapon Wave 3	Fetus Wave 1	Fetus Wave 2	Fetus Wave 3	Microchip Wave 1	Microchip Wave 2	Microchip Wave 3
Black	−0.059	0.229	0.422***	0.300*	0.109	−0.015	0.189	0.277	0.178
	-0.13	-0.148	-0.119	-0.174	-0.211	-0.186	-0.18	-0.217	-0.2
Hispanic/Latino	−0.073	0.036	0.243*	0.126	0.13	−0.107	0.054	−0.211	0.349*
	-0.137	-0.155	-0.134	-0.195	-0.205	-0.2	-0.194	-0.25	-0.201
Asian	−0.068	−0.113	−0.277	−0.099	−0.255	−0.123	−0.129	−0.512	−1.124***
	-0.178	-0.2	-0.18	-0.26	-0.308	-0.251	-0.283	-0.364	-0.429
Other Race	0.041	0.106	0.249	−0.435	−0.099	−0.390	−0.251	−0.504	−0.020
	-0.244	-0.243	-0.231	-0.409	-0.38	-0.404	-0.476	-0.477	-0.44
Female	−0.250***	−0.109	−0.274***	−0.410***	−0.224*	−0.300***	−0.625***	−0.395***	−0.612***
	-0.078	-0.084	-0.074	-0.116	-0.129	-0.113	-0.124	-0.146	-0.138
Age (Normalized)	0.065	−0.057	0.059	−0.369***	−0.483***	−0.310***	−0.434***	−0.594***	−0.516***
	-0.044	-0.048	-0.043	-0.073	-0.079	-0.069	-0.077	-0.094	-0.091
Household Income (Logged)	−0.087**	−0.022	0.019	0.108	−0.036	0.018	−0.048	−0.052	−0.018
	-0.043	-0.02	-0.018	-0.07	-0.031	-0.028	-0.069	-0.033	-0.03
College	−0.097	−0.097	−0.244***	0.149	0.111	−0.014	−0.245*	−0.085	−0.119
	-0.083	-0.087	-0.078	-0.128	-0.135	-0.118	-0.141	-0.156	-0.148
Evangelical Christian	0.401***	0.574***	0.458***	0.594***	0.747***	0.794***	0.930***	0.831***	0.687***
	-0.077	-0.083	-0.075	-0.114	-0.128	-0.109	-0.121	-0.145	-0.136
Urbanicity (6pt)	−0.027	0.037	0.078***	0.027	−0.056	0.009	−0.013	−0.016	−0.079*
	-0.026	-0.027	-0.025	-0.038	-0.043	-0.037	-0.041	-0.049	-0.047
Children in Household	0.396***	0.427***	0.243***	0.562***	0.361***	0.542***	0.647***	0.769***	0.652***
	-0.084	-0.091	-0.079	-0.121	-0.132	-0.116	-0.126	-0.147	-0.141
Party ID (7pt)	0.164***	0.211***	0.183***	0.078**	0.009	0.077**	0.103***	0.026	−0.009
	-0.022	-0.026	-0.023	-0.032	-0.04	-0.034	-0.034	-0.043	-0.041

Ideological Identity (7pt)	0.232***	0.255***	0.228***	0.129***	0.148***	0.120***	−0.045	0.103*	0.158***
	-0.03	-0.034	-0.031	-0.042	-0.052	-0.045	-0.043	-0.056	-0.053
COVID-19 News Interest	0.079*	0.144***	0.033	0.142*	0.295***	0.036	0.044	0.107	0.099
	-0.046	-0.052	-0.045	-0.073	-0.082	-0.068	-0.076	-0.091	-0.085
Had COVID-19	0.131	0.127	0.250**	0.839***	0.561***	0.149	0.667***	0.660***	0.152
	-0.12	-0.125	-0.105	-0.152	-0.169	-0.143	-0.161	-0.187	-0.172
Household Member Had COVID-19	0.293***	0.123	0.01	0.102	−0.099	0.252*	0.176	0.007	0.032
	-0.109	-0.112	-0.097	-0.148	-0.166	-0.133	-0.155	-0.181	-0.161
Follows Mask-Wearing Guidelines (4pt)	−0.159***	−0.220***	−0.159***	−0.110**	−0.374***	−0.287***	−0.050	−0.133*	−0.125*
	-0.035	-0.039	-0.034	-0.054	-0.06	-0.051	-0.059	-0.072	-0.065
Social Support: Care	−0.009	−0.062***	0.028	−0.020	−0.058*	0.002	−0.047	−0.163***	−0.049
	-0.02	-0.021	-0.018	-0.031	-0.035	-0.027	-0.034	-0.045	-0.037
Social Support: Lend	0.015	0.031	0.002	0.004	0.090**	0.017	0.014	0.052	0.006
	-0.024	-0.024	-0.021	-0.034	-0.038	-0.031	-0.038	-0.045	-0.04
Social Support: Talk	−0.044**	0.004	−0.013	−0.045*	−0.060**	−0.051**	−0.066**	−0.032	−0.094***
	-0.018	-0.019	-0.016	-0.027	-0.03	-0.026	-0.03	-0.035	-0.035
Social Support: Job	0.004	−0.037**	−0.018	0.017	−0.001	0.006	0.023	0.004	0.052*
	-0.018	-0.019	-0.016	-0.027	-0.03	-0.025	-0.029	-0.035	-0.031
At Least Moderate Depressive Symptoms	0.288***	0.355***	0.361***	0.455***	0.373***	0.177	0.658***	0.551***	0.818***
	-0.086	-0.091	-0.084	-0.12	-0.135	-0.122	-0.121	-0.147	-0.136
Num.Obs.	4748	4836	5348	4747	4840	5351	4752	4840	5353
AIC	4778.8	4232.6	5106.6	2501.2	2109.5	2722.9	2276.6	1704.1	1943.3

BIC	4927.5	4381.7	5258.1	2649.9	2258.7	2874.4	2425.4	1853.2	2094.8
Log.Lik.	−2366.385	−2093.279	−2530.307	−1227.620	−1031.752	−1338.454	−1115.317	−829.035	−948.670
RMSE	1	0.93	0.97	0.72	0.65	0.71	0.69	0.59	0.6

Note: Entries are logistic regression coefficients with standard errors underneath. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ for two-tailed tests.

Most importantly, we find clear support for our expectation that depression significantly and positively correlates with conspiracy beliefs; it does so in every regression except the wave 3 fetus item. We also find that, consistent with expectations, the variables we asserted as diminishing control increase the likelihood of holding a conspiracy belief. Experiencing COVID-19 personally *or* in one's household does so in 7 of the 9 regressions and having children in the household does so in every regression. Moreover, those variables we suggested as enhancing control decrease the likelihood of holding a conspiracy belief: wearing a mask and at least one type of social support, mostly talk and care, each does so in all but one case.

When it comes to political and demographic variables, looking across all regressions, we find consistent significant and positive relationships for being an Evangelical Christian, partisanship (Republican), and ideology (conservative). The former may reflect more intuitive thinking among Evangelicals (e.g., Oliver and Wood 2018) while the latter two should be interpreted with caution as they may be specific to the particular conspiracy topics on which we focus. Partisan and/or ideological inclinations do not invariantly correlate with conspiracy beliefs (Imhoff et al. 2022); but here, Republicans and conservatives might have embraced the items given they tended to minimize the COVID-19 threat (Druckman et al. 2021a) and vaccines in general (Pink et al. 2021). Interestingly, we do not find a consistent positive relationship with education, counter to prior work (e.g., van Prooijen 2017). Otherwise, we find robust negative relationship with being female and age.[7]

Heterogeneities in the Relationship between Depressive Symptoms and Conspiracy Beliefs

To systematically characterize heterogeneity in the relationship between moderate depressive symptoms and beliefs in conspiracy theories, we adapt the S-learner (or "single"

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[7] COVID-19 news interest has a significant positive relationship with conspiracy theories in some cases. This might reflect obtaining more information about COVID-19 leading to a feeling of less control over events.

learner) described in Künzel et al. (2019). The S-learner is a particular type of metaalgorithm: a procedure that combines information from different components of a machine learning pipeline to account for heterogeneity in the relationship between a particular feature and an outcome—typically an experimental treatment effect. The procedure for the S-learner is as follows. First, the researcher estimates the following:

$$\widehat{\mu} = M(Y \sim (X, W))$$

where $\widehat{\mu}$ is an estimator that predicts Y as a function M of a binary independent variable of interest W and additional covariates X.[8] Next, the researcher estimates $\widehat{\tau}$ as the difference in predicted values of Y when W is set to 1 or 0, respectively, keeping all values of X as they are observed in the data:

$$\widehat{\tau} = \widehat{\mu}(x, 1) - \widehat{\mu}(x, 0)$$

In the experimental context, $\widehat{\tau}$ represents an estimate of conditional average treatment effects, allowing researchers to predict how sensitive each individual respondent would be to the experimental treatment as a function of their individual-level features. For our observational purposes, $\widehat{\tau}$ is more akin to an individual-level marginal effect—the difference in the predicted probability of believing a given conspiracy theory if individuals with particular sets of characteristics (x) do or do not have moderate depressive symptoms (W).

Social scientists have previously applied the S-learner to estimate and characterize treatment effect heterogeneity in experimental data (Hill 2011, Green and Kern 2012, Athey and Imbens 2016). We view the S-learner as being more appropriate to apply to observational data than its more advanced cousins, the T-leaner (short for "two" learner) and X-learner (named for

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[8] In prior applications to experiments, W represents whether the unit was assigned to the treatment (1) or control (0) condition. This is why dichotomizing our measure of depressive symptoms is analytically useful in addition to being consistent with theoretical conceptualizations.

how it uses training observations in an "X" shape across two models) described in Künzel et al.

(2019), which both involve fitting separate models for control and treatment observations.

Precisely because the S-learner fits one model to the training data, and considers W to be just

another feature in that model alongside covariates X, the S-learner is more explicitly estimating

the relationship between W and Y (including the extent to which this relationship is moderated by

X) after accounting for the relationship between X and Y itself. This is less important in

experimental settings where randomization allows the researcher to assume that there is no

independent relationship between X and Y.

To guard against the risk of overfitting and identifying spurious relationships, we build

held-out estimation into multiple steps in this process. First, we estimate $\hat{\mu}$ using the generalized

random forest (Athey and Imbens 2016, Wager and Athey 2018, Athey et al. 2019). Generalized

random forests are an extension of the commonly-used random forest algorithm (Breiman 2001)

that imposes "honest" estimation: in each iteration of the algorithm, the training data is

partitioned into "splitting" and "estimating" subsamples. Splits in the decision tree are derived

using the splitting subsample, but predictions are derived by applying those splits to the

estimating subsample. This ensures that for each iteration of the algorithm, an observation is

used *either* to fit the tree or estimate its effects, but not both, reducing the risk of overfitting to

noise in the data.

Second, we fit the generalized random forest using a randomly sampled (without

replacement) 70% of the data for each survey wave and predict individual level marginal effects

using the held-out 30%.[9] That is, we estimate $\hat{\mu}$ using a majority training subset of the data, but

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[9] Training and testing observations are held constant within survey wave across outcomes. That is, the same 70% of respondents are used to estimate $\hat{\mu}$, and the same 30% of respondents are held out to estimate τ, for each conspiracy theory in a given survey wave.

apply it to estimate $\hat{\tau}$ on the minority, held-out subset of the data. All subsequent analyses are conducted on this held-out set, which was not used to train the generalized random forest. This allows us to test whether our estimate of how much more (or less) likely respondents are to believe a given conspiracy theory if they have moderate depressive symptoms is useful for *predicting*—on new, unseen data—whether the respondent actually believes the conspiracy theory if they do in fact have moderate depressive symptoms.

Figure 1 shows the raw distributions of individual-level differences in predicted probability of believing each conspiracy theory, in each wave. That is, it plots the distributions of τ. Higher values reflect respondents for whom the probability of believing the given conspiracy theory is predicted to increase by more if they exhibit moderate depressive symptoms, while values closer to zero reflect respondents who are predicted to have similar probabilities of believing the conspiracy theory regardless of whether they exhibit moderate depressive symptoms. There are three things to note about these distributions. First, they are single-peaked with modes typically near zero. For most respondents, depression is predicted to have modest effects on the probability of believing conspiracy theories. Second, they are asymmetric—the predicted effects of depression are almost always positive. Finally, they have long tails to the right; for some respondents, the differences in predicted probabilities conditional on depressive symptoms is substantial. The implication is that depression has heterogeneous effects—for some it does little to stimulate conspiracy beliefs but for others it leads to such thinking.[10]

Figure 1. Distributions of Differences in Predicted Probability of Belief Conditional on Moderate Depressive Symptoms

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[10] The bioweapon distributions notably differ, likely reflecting bi-partsian support (relatively) for that belief.

Distributions of Differences in Predicted Effects, Held-Out Samples
x- and y-axis scales float by cell
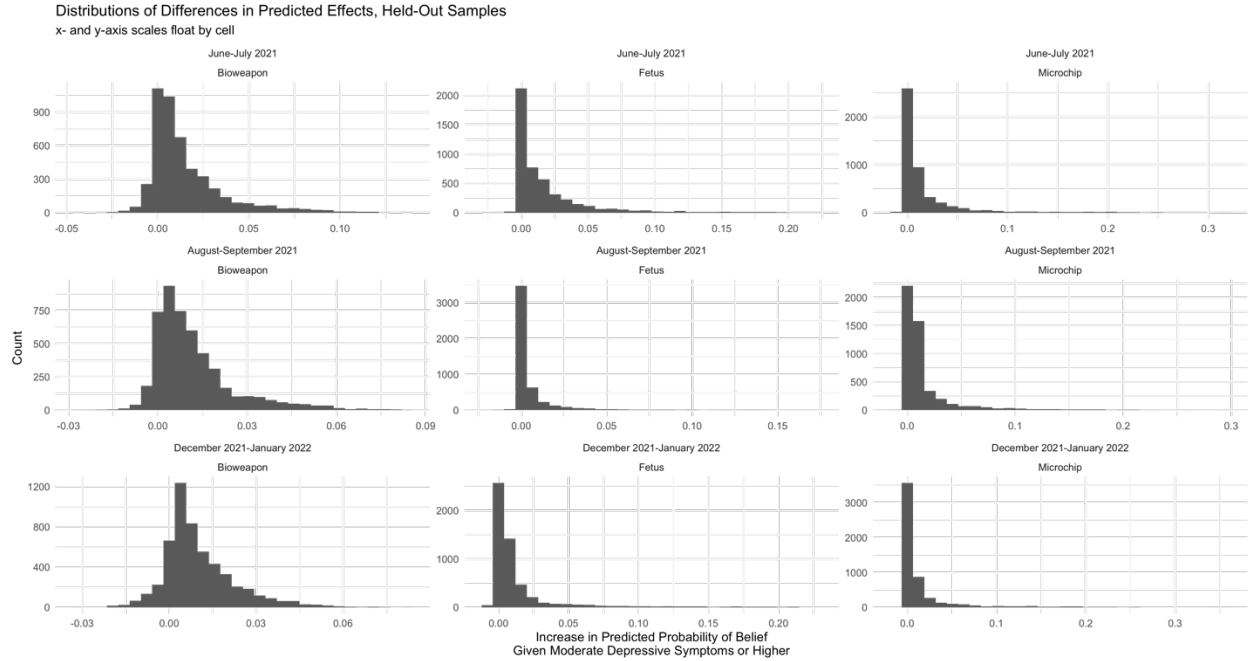
To infer whether these estimates of $\hat{\tau}$ are useful, we fit new logistic regressions estimating the probability of believing each of the three conspiracy theories in each wave's held-out set. These regressions include all of the features from those in Table 1, as well as two additional covariates: the difference in predicted probability of believing the conspiracy theory given moderate to severe depressive symptoms (that is, $\hat{\tau}$), and its interaction with whether the respondent actually reports moderate depressive symptoms. If this last coefficient—the interaction between the difference in predicted effects given symptoms, and whether the respondent in question actually has symptoms—is positive and significant, we can infer that there is significant heterogeneity in the relationship between moderate depressive symptoms and the given conspiracy belief that is robust to out-of-sample prediction.

Full tables for these regressions are included in Appendix B (Table B.1) and show that this interaction term is significant in 7 of 9 specifications. That is, with the exceptions of the bioweapon and microchip outcomes in the second wave, we find significant heterogeneity. Respondents for whom moderate depression is predicted to increase the probability of endorsing

the conspiracy theory by greater amounts are significantly more likely to endorse the conspiracy theory if they report at least moderate depressive symptoms.

Next, we turn to specific sources of heterogeneity—that is, the covariates associated with there being a stronger predicted relationship between moderate depression and a conspiracy belief. We focus on the variables we posited to otherwise affect feelings of control (given our goal of characterizing the interactive impact of distinct sources of control). However, in Appendix B, we provide full results of multivariate regressions that take the difference in predicted probability of belief conditional on moderate depressive symptoms as the outcome of interest, as a function of the remaining demographic, social, and political independent variables. That is, in these regressions, coefficients reflect variation in *for whom* moderate depressive symptoms are associated with an increased probability of conspiracy theory belief. A significant coefficient means heterogeneous effects such that if the variable is positive (negative), it means depression leads to more conspiracy beliefs as the variable increases (decreases).

Those results in Appendix B (Table B.2) show some intriguing sources of predicted heterogeneity. For instance, overall, having moderate depression had a relatively disproportionately larger effect on White respondents (relative to non-White respondents), male respondents (relative to female respondents), younger respondents, higher-income respondents, and educated respondents. These findings suggest that depression has a larger effect, in generating conspiracy beliefs, on relatively advantaged groups (e.g., White, high income, educated men). This, perhaps surprising, result may suggest that practitioners be advised to anticipate the possibility of such thinking with the onset of depression among these individuals. We also find larger effects among Democrats and liberals; while that may reflect a ceiling effect among Republicans and conservatives, it is an important reminder that depression can stimulate

18

conspiracy beliefs among individuals who are generally less likely to hold those specific beliefs (a la the prior results). In contrast, depression exacerbates conspiratorial beliefs even further among Evangelicals, suggesting an acutely susceptible population.[11]

For the other variables, we present Figures 2, 3, and 4 that display, for each wave and variable value, the relative probability impact of moderate level depressive symptoms on holding the conspiracy belief. For example, in Figure 2, for the bioweapon belief in wave 1, respondents who reported having had COVID-19 averaged a three-percentage point increase in predicted probability of believing the conspiracy theory conditional on having moderate to severe depressive symptoms; those who did not report having had COVID-19 averaged a one percentage point increase. Thus, depression has a larger effect on those who had COVID-19. A factor that may stimulate a loss of control—i.e., COVID-19—becomes even more likely to lead to a conspiracy belief with the addition of depression. The loss of control is compounded. We find the same basic pattern for having had COVID-19 across all conspiracy beliefs and all waves. This holds as well for having a household member who experienced COVID-19 and having children in one's household. When an individual already is coping with a loss of control that comes from situational factors such as illness and overseeing dependents in a challenging time, the addition of depression intensifies the likelihood of that person turning to conspiracy beliefs. Consequently, the intersection of other sources of uncertainty with depression form a recipe for increased conspiratorial thinking.

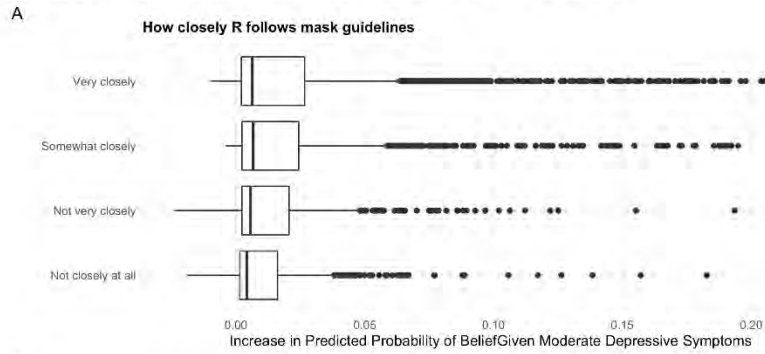[11] We also find depression tends to have a smaller effect on respondents who live in more urban areas and a larger effect on those who express high COVID-19 news interest.

Figure 2: Heterogeneous Impact of Moderate Depressive Symptoms, Wave 1

Distributions of differences in predicted probabilities by moderate depressive symptoms
Conspiracy theory: COVID-19 is a bioweapon created in a Chinese lab (June - July 2021)
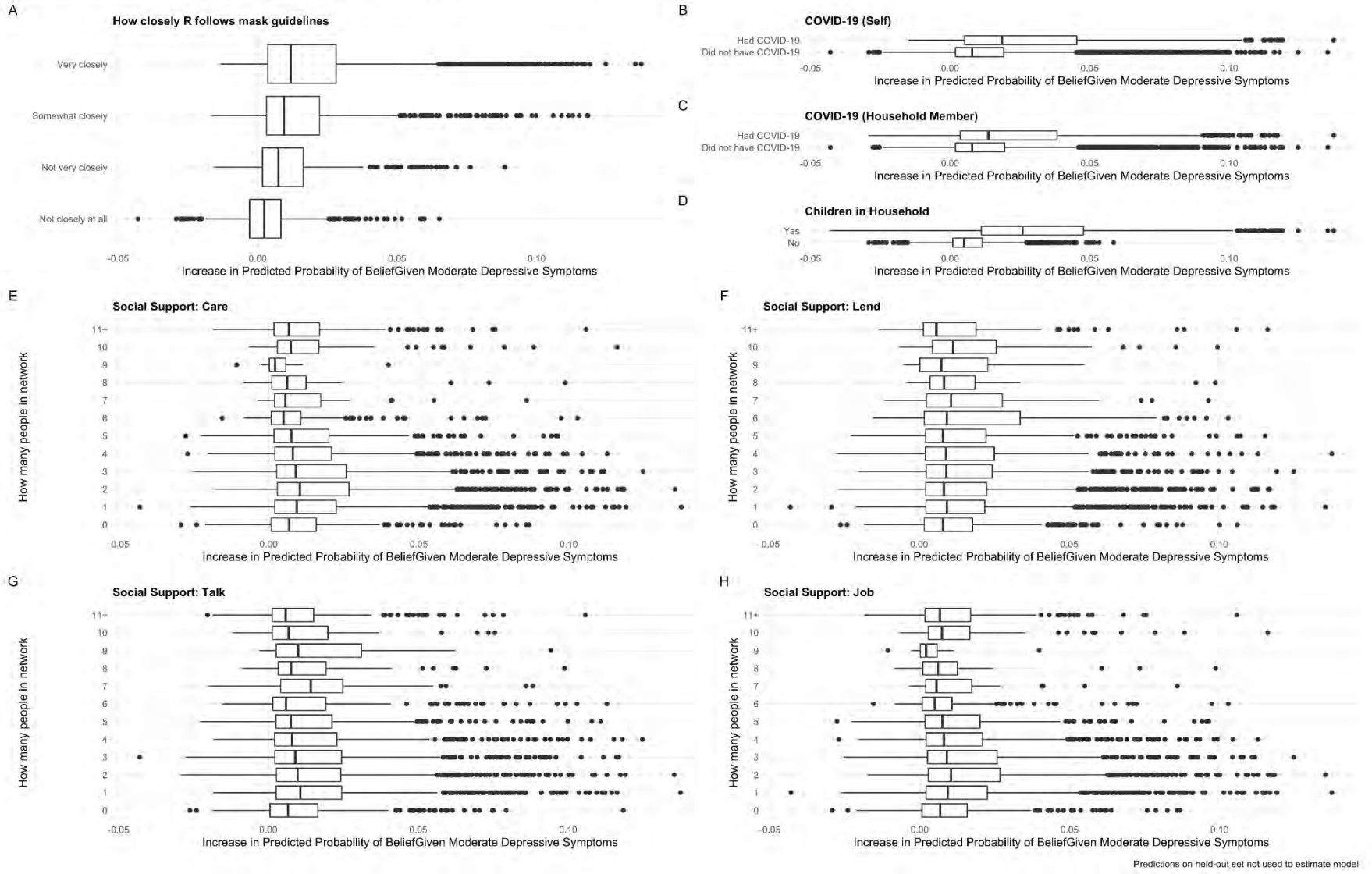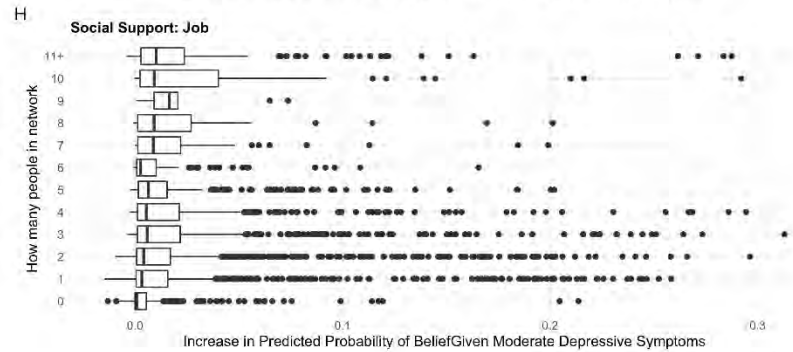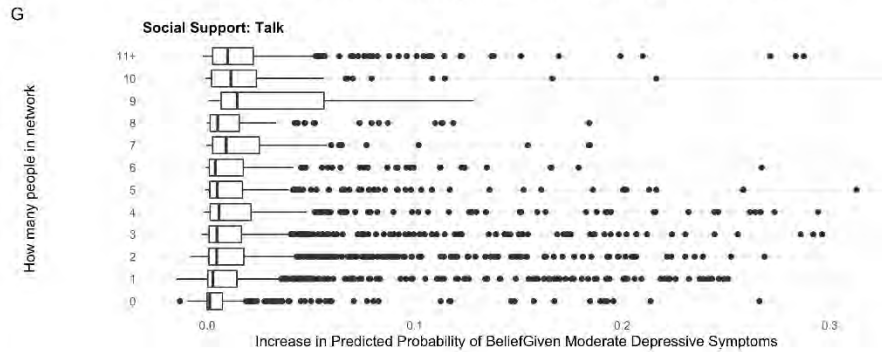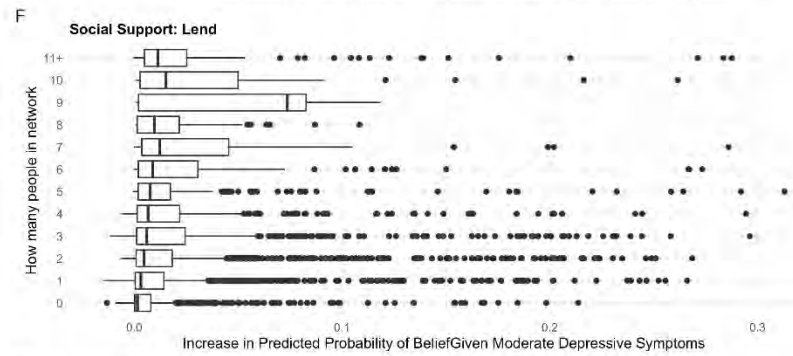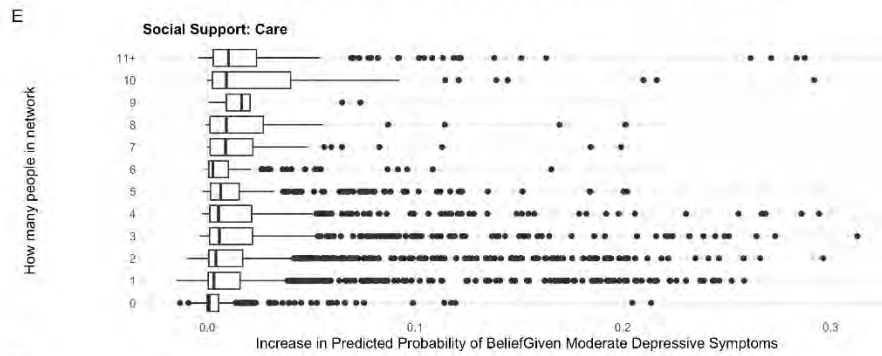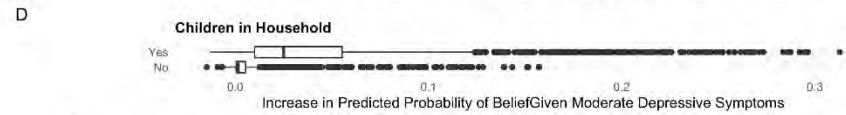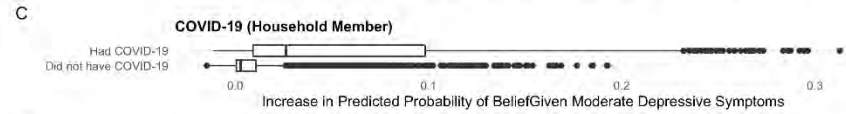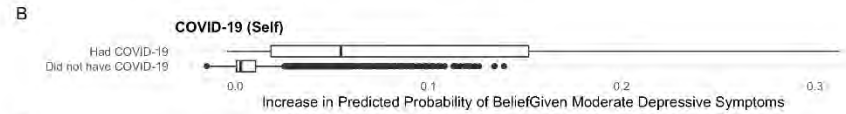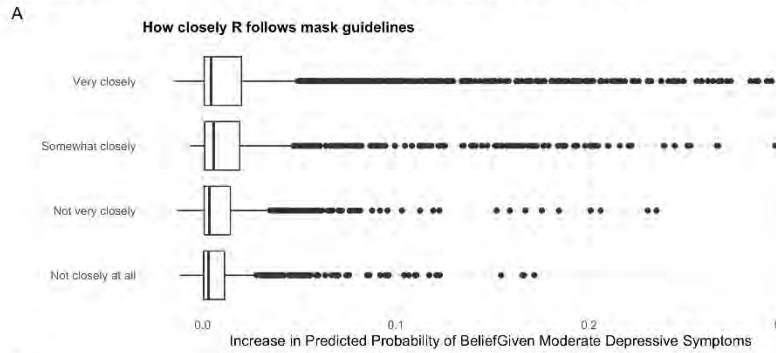
Distributions of differences in predicted probabilities by moderate depressive symptoms

Conspiracy theory: COVID-19 vaccines contain lung tissue of aborted fetuses (June - July 2021)
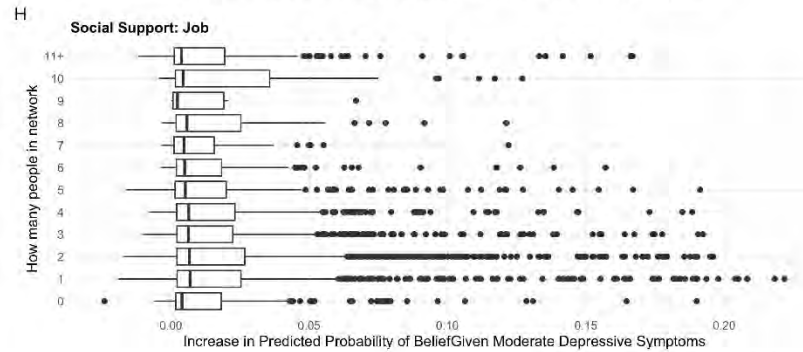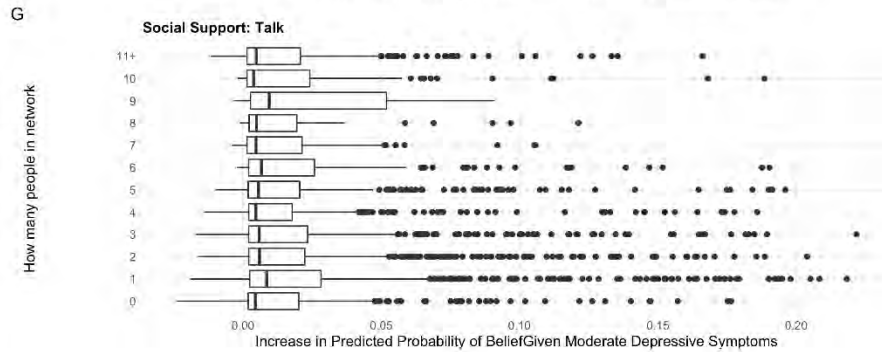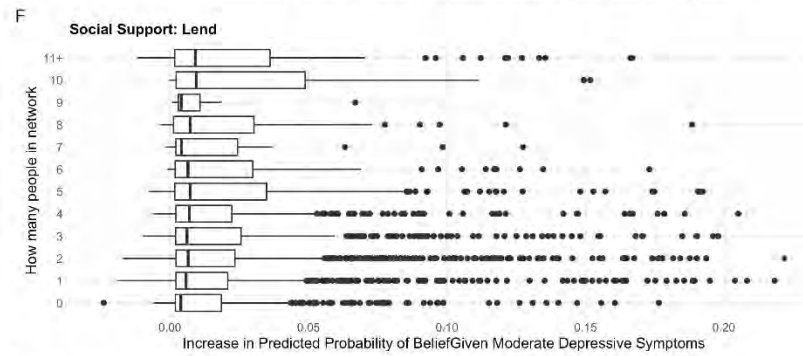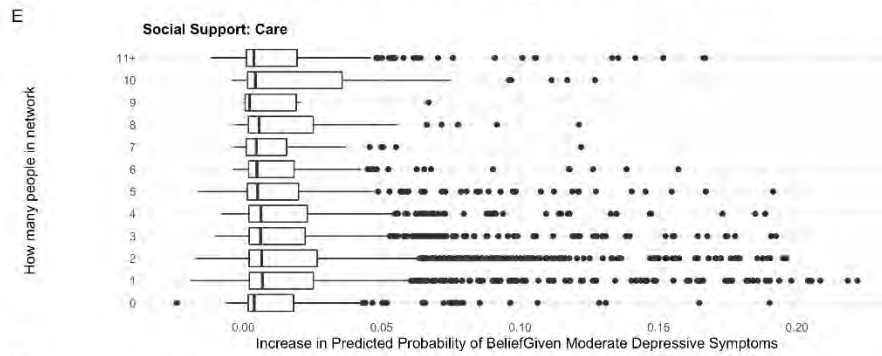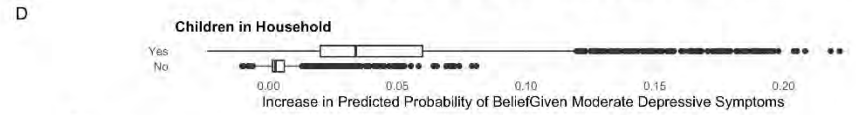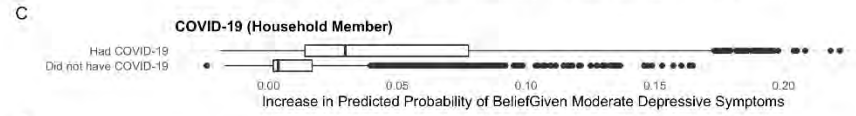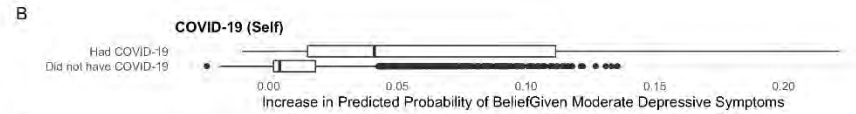
A — How closely R follows mask guidelines

B — COVID-19 (Self)

C — COVID-19 (Household Member)

D — Children in Household

E — Social Support: Care

F — Social Support: Lend

G — Social Support: Talk

H — Social Support: Job

Predictions on held-out set not used to estimate model

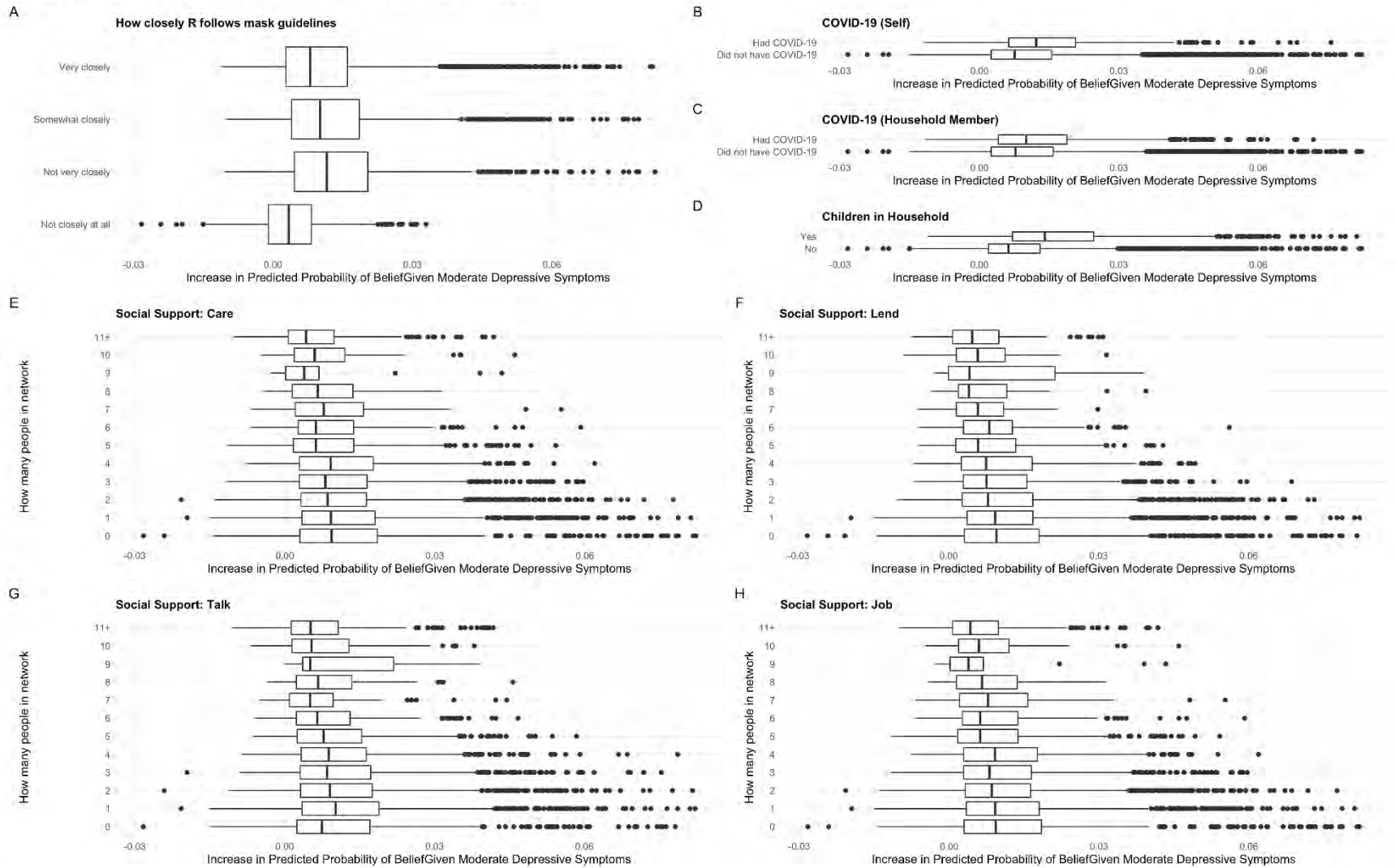**Distributions of differences in predicted probabilities by moderate depressive symptoms**

Conspiracy theory: COVID-19 vaccines contain microchips that can track people (June - July 2021)

A

How closely R follows mask guidelines

B

COVID-19 (Self)

C

COVID-19 (Household Member)

D

Children in Household

E

Social Support: Care

F

Social Support: Lend

G

Social Support: Talk

H

Social Support: Job

Predictions on held-out set not used to estimate model

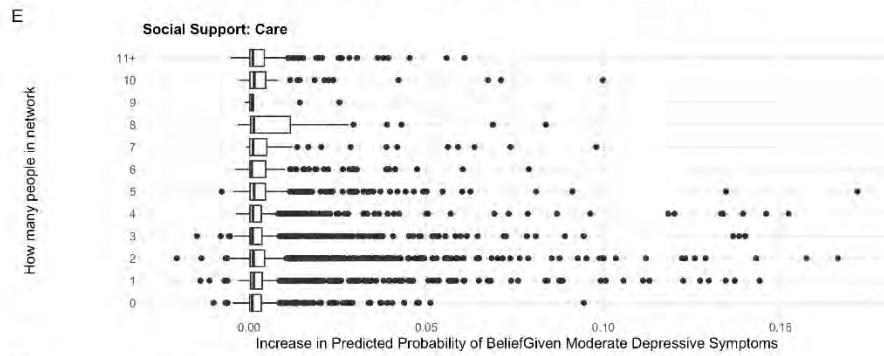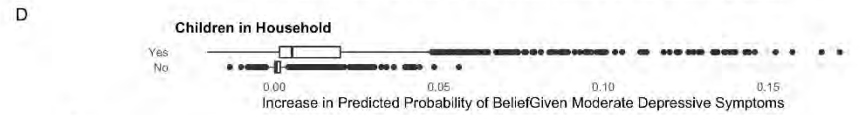# Figure 3: Heterogeneous Impact of Moderate Depressive Symptoms, Wave 2

Distributions of differences in predicted probabilities by moderate depressive symptoms

Conspiracy theory: COVID-19 is a bioweapon created in a Chinese lab (August - September 2021)

Distributions of differences in predicted probabilities by moderate depressive symptoms

Conspiracy theory: COVID-19 vaccines contain lung tissue of aborted fetuses (August - September 2021)
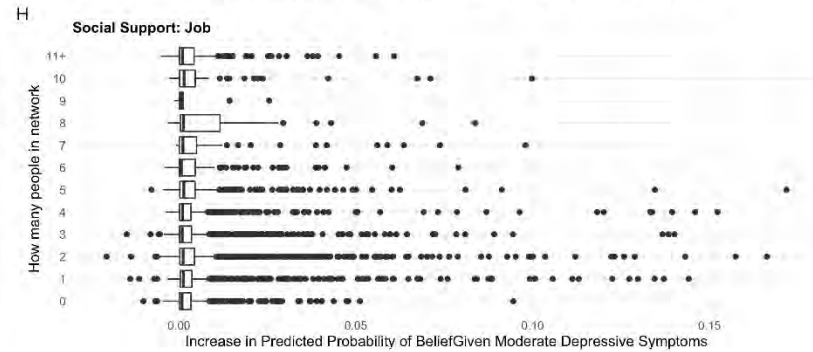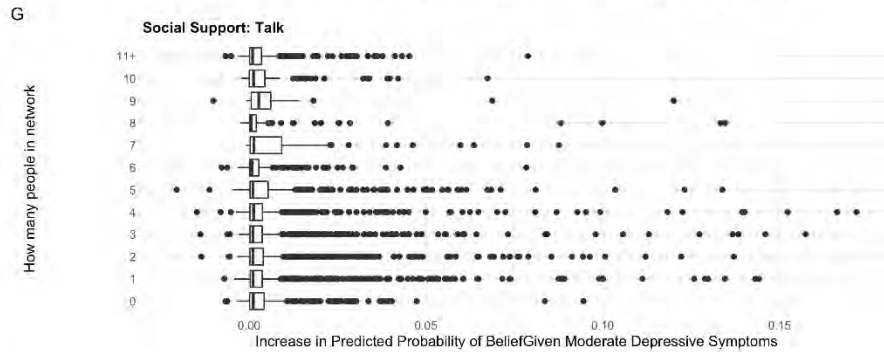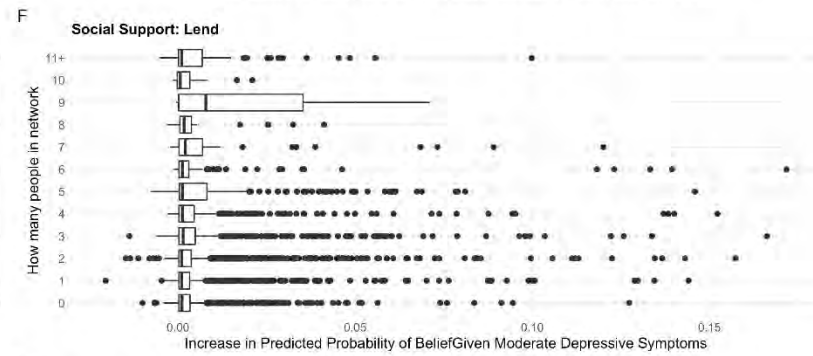
Distributions of differences in predicted probabilities by moderate depressive symptoms

Conspiracy theory: COVID-19 vaccines contain microchips that can track people (August - September 2021)
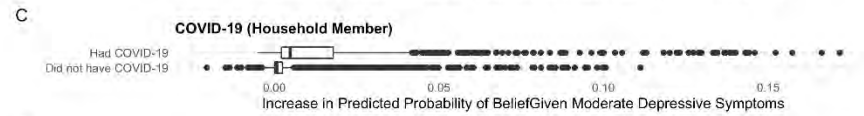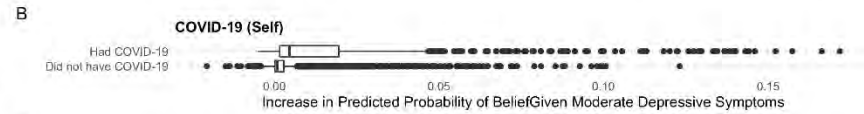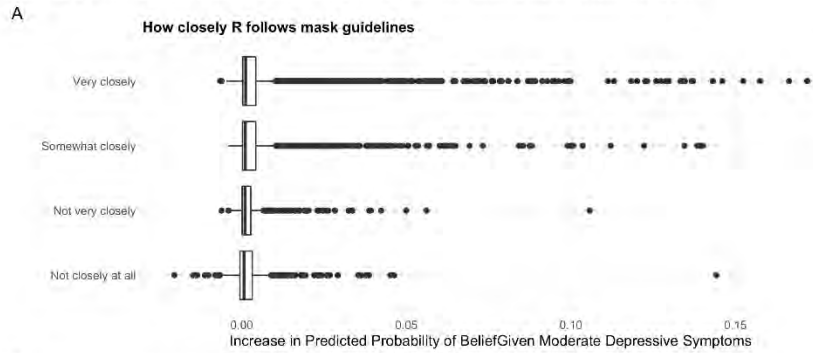
Figure 4: Heterogeneous Impact of Moderate Depressive Symptoms, Wave 3

Distributions of differences in predicted probabilities by moderate depressive symptoms
Conspiracy theory: COVID-19 is a bioweapon created in a Chinese lab (November - December 2021)
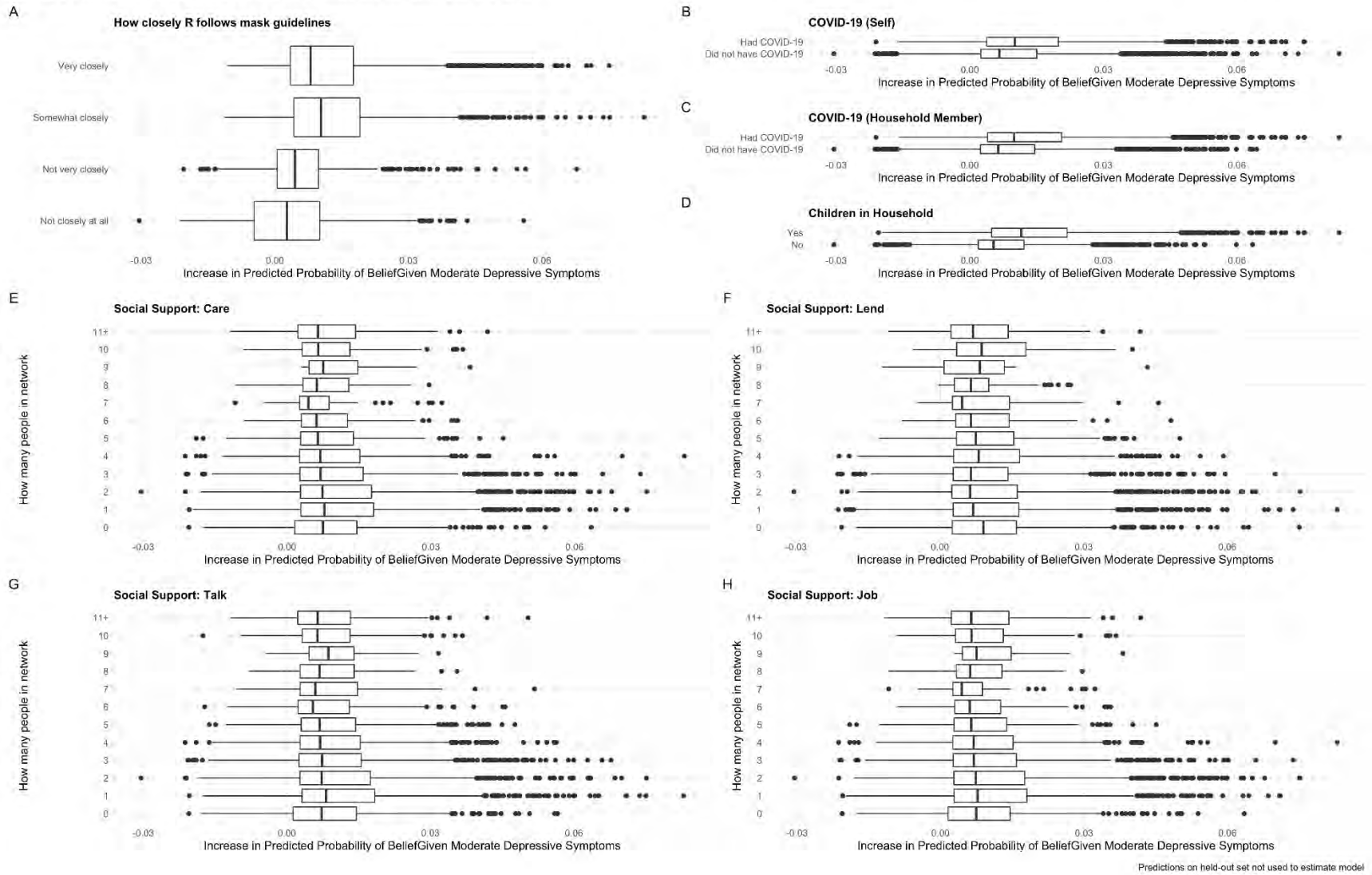
Distributions of differences in predicted probabilities by moderate depressive symptoms
Conspiracy theory: COVID-19 vaccines contain lung tissue of aborted fetuses (November - December 2021)
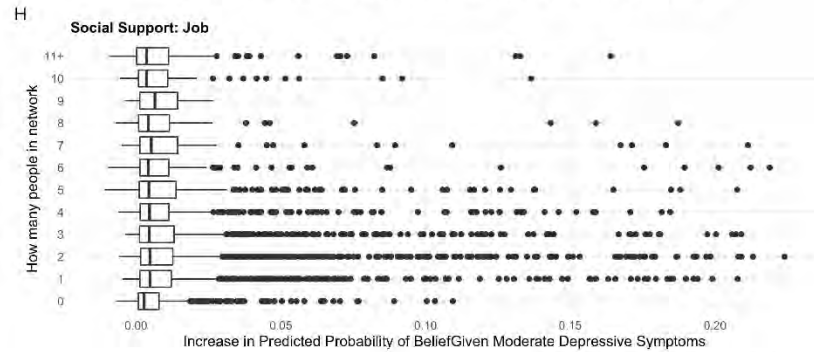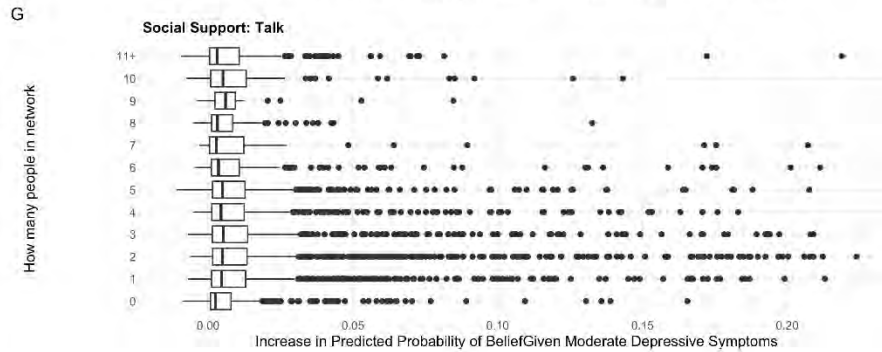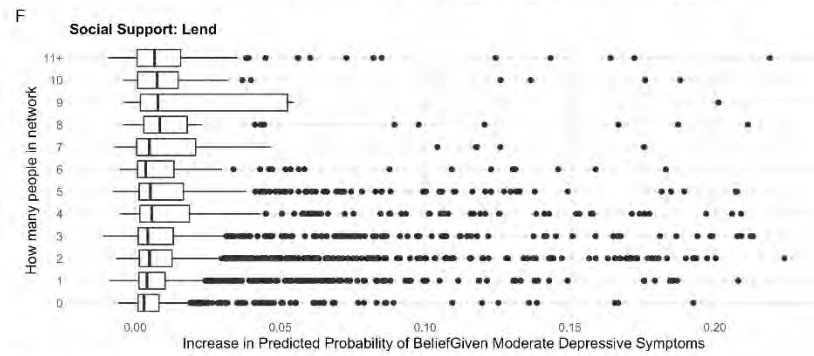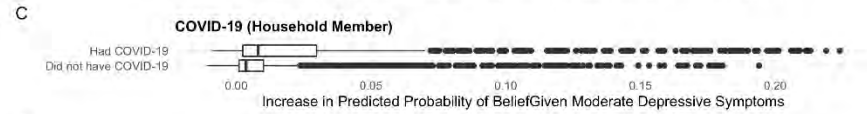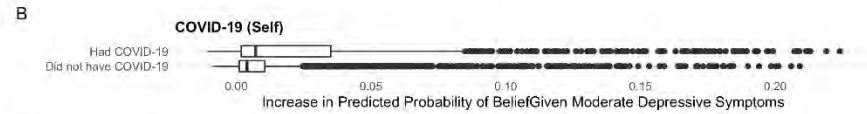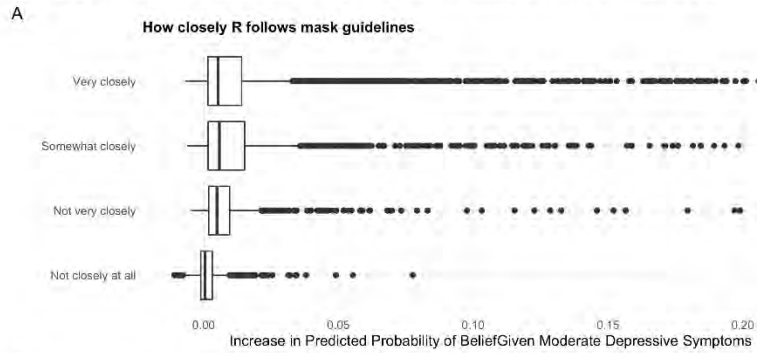
A **How closely R follows mask guidelines**

B **COVID-19 (Self)**

C **COVID-19 (Household Member)**

D **Children in Household**

E **Social Support: Care**

F **Social Support: Lend**

G **Social Support: Talk**

H **Social Support: Job**

Predictions on held-out set not used to estimate model

Distributions of differences in predicted probabilities by moderate depressive symptoms

Conspiracy theory: COVID-19 vaccines contain microchips that can track people (November - December 2021)

A — How closely R follows mask guidelines

B — COVID-19 (Self)

C — COVID-19 (Household Member)

D — Children in Household

E — Social Support: Care

F — Social Support: Lend

G — Social Support: Talk

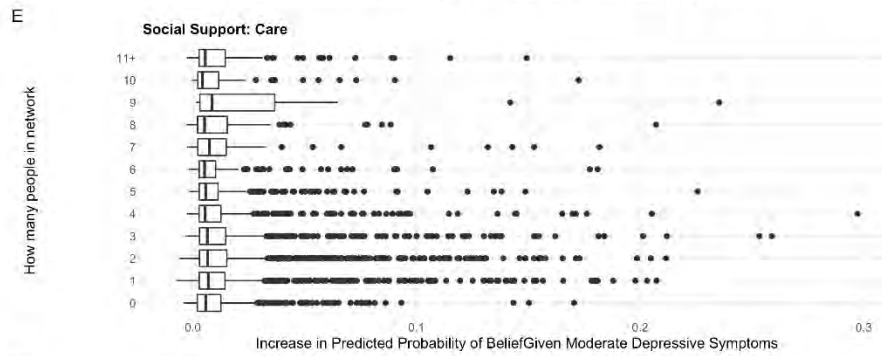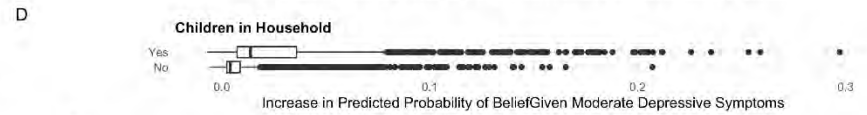H — Social Support: Job
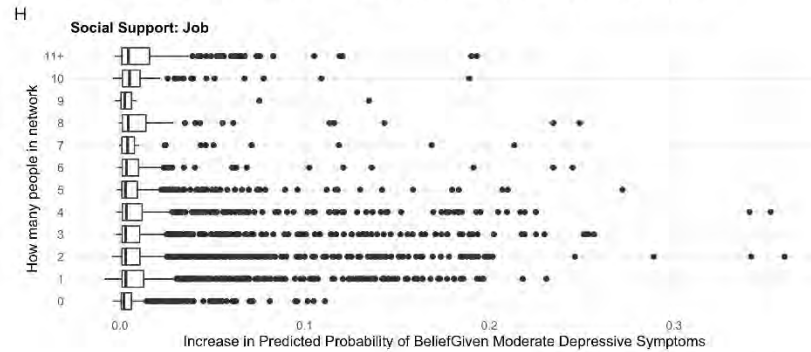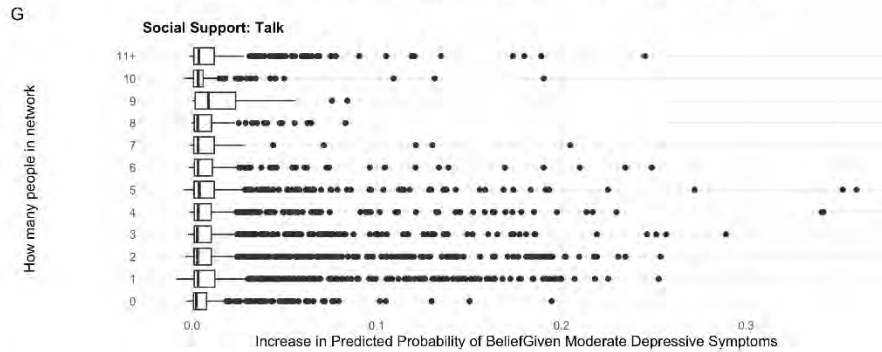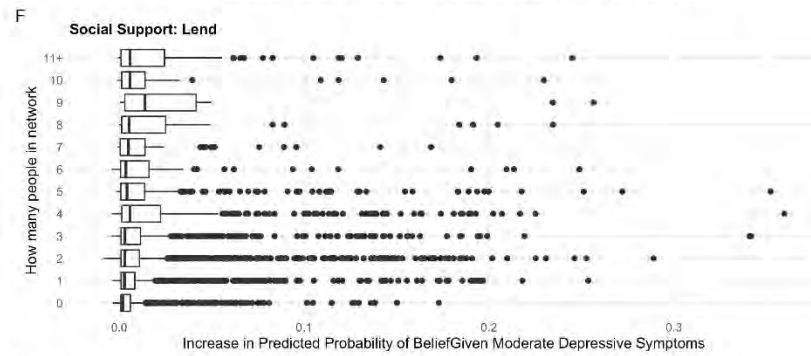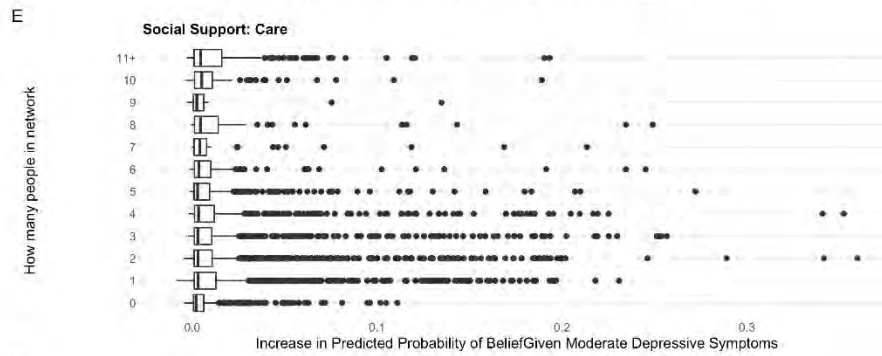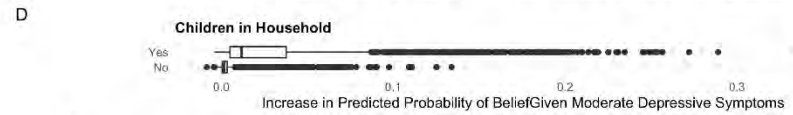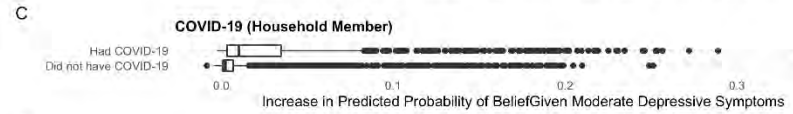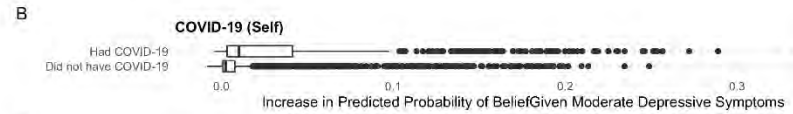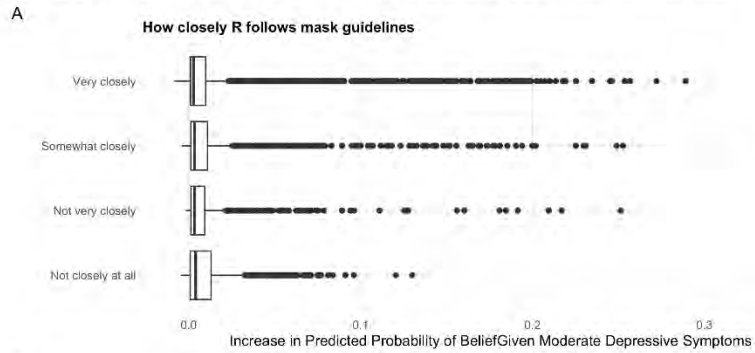
Predictions on held-out set not used to estimate model

In contrast, we see that social support—a dynamic that can provide a feeling of control due to the security it brings—can counteract moderate depression's impact on conspiracy beliefs. For example, in wave 2, regarding the bioweapon belief, we see that the predicted effect of moderate to severe depressive symptoms is negatively correlated with the number of people the respo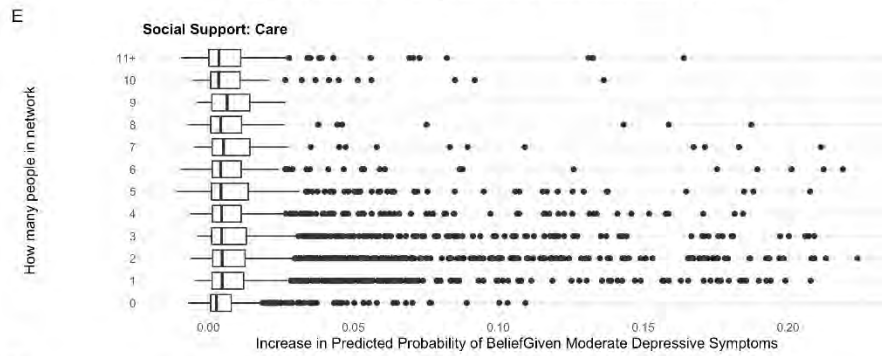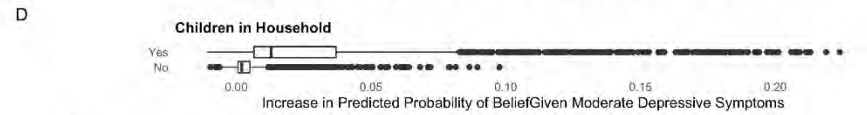ndent reports having available to talk to if they felt sad or depressed ($r = -0.14$). Across items and waves, the social support results display some non-linearities and vary somewhat in which type of social support matters. However, in nearly every case, social support is negatively associated with the predicted effect of moderate depression on conspiracy beliefs (the significance is most clearly documented in Appendix B, Table B.2). Social support has long been understood as an essential approach to addressing depression (e.g., Wang et al. 2018). We show it also can limit the likelihood of depression stimulating conspiracy beliefs. Perhaps not surprisingly, the most consistent positive type of social support is having people with whom to talk when sad or depressed, while the least impactful is having people who can lend money.

Alas, we do not find the same results for mask wearing. We had predicted it would provide individuals with a sense of control and thus should counteract the effects of depression on conspiracy beliefs. Yet, we find largely the opposite—across waves and beliefs, we find consistent evidence that the more one reports adhering to mask guidelines, the more the probability of holding a conspiracy belief increases with the onset of depression. This is an interesting result that we suspect reflects two dynamics, mentioned earlier: 1) following the guidelines closely may signal an insufficient attempt to gain control by people who are feeling a loss of control, and/or 2) following the guidelines provides an internal source of control that is insufficient and even backfires given depression typically works by undermining the external locus of control.

Overall, our results highlight substantial heterogeneities in the relationship between depression and conspiracy beliefs. The connection appears strong among those with more advantaged status and, perhaps importantly, among those who have other factors that limit their control. On the other hand, the increased control that often comes with social support can help counter the impact of depression.

Conclusion

While conspiracy beliefs are by no means a novel societal feature (van Prooijen and Douglas 2017), concern about them has ostensibly increased. This may stem from a growing evidentiary base that shows their role in contributing to deleterious outcomes such as violence and the flouting of public health guidelines. These beliefs allow individuals to cope with uncertainty or anxiety by providing narratives of what is, when other answers are difficult to generate. As such, it seems straightforward that the experience of depression—where one often feels a loss of control—correlates with holding a conspiracy belief. We built on prior work by demonstrating such a relationship across conspiracies, over-time. Perhaps more importantly, we moved beyond extant investigations by investigating whether the impact of depression varies across individuals. We find clear evidence that it does. Factors that stimulate a loss of control, including illness or caring for dependents, are exacerbated by depression leading to higher likelihood of conspiracy beliefs. Alternatively, social support that may provide security tempers the relationship between depression and conspiracy beliefs. We also have some intriguing suggestive evidence that advantaged groups are more susceptible to depression leading to conspiracy beliefs.[12] From a theoretical perspective, this adds to what we know about conspiracy

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[12] One worry about the results is that we focused on COVID-19 specific conspiracy beliefs that were right-leaning. While also right-leaning, our wave 3 survey included an item that asked about whether the people who stormed the Capitol on January 6, 2021, were members of Antifa. We find the same sources of heterogeneity as with our COVID-19 items (as displayed in the final column of Appendix B, Table B.2.).

beliefs—depression appears to be a correlate but one that varies in its relationship. Practically, this provides crucial insight into interventions. Treatments for depression are well developed, albeit always challenging, but can be attuned to account for conspiracy beliefs, particularly in situations where other factors may be inducing a loss of control. Such treatments also constitute a rarely acknowledged intervention that could temper the effects of conspiracy beliefs.

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Appendix A: Question Wording

Below are some statements about the current health crisis. To the best of your knowledge, are those statements accurate or inaccurate?

Coronavirus was created as a weapon in a Chinese lab.
>> Accurate (1)
>> Inaccurate (2)
>> Not sure (3)

Below are some statements about the COVID-19 vaccines that are currently being distributed. To the best of your knowledge, are those statements accurate or inaccurate?

The COVID-19 vaccines contain microchips that could track people.
>> Accurate (1)
>> Inaccurate (2)
>> Not sure (3)

The COVID-19 vaccines contain the lung tissue of aborted fetuses.
>> Accurate (1)
>> Inaccurate (2)
>> Not sure (3)

Over the last two weeks, how often have you been bothered by the following problems?

Little interest or pleasure in doing things
>> Not at all (1)
>> Several days (2)
>> More than half the days (3)
>> Nearly every day (4)

Feeling down, depressed, or hopeless
>> Not at all (1)
>> Several days (2)
>> More than half the days (3)
>> Nearly every day (4)

Trouble falling or staying asleep, or sleeping too much
>> Not at all (1)
>> Several days (2)
>> More than half the days (3)
>> Nearly every day (4)

Feeling tired or having little energy
>> Not at all (1)
>> Several days (2)
>> More than half the days (3)
>> Nearly every day (4)

Poor appetite or overeating

Not at all (1)
Several days (2)
More than half the days (3)
Nearly every day (4)
Feeling bad about yourself or that you are a failure or have let yourself or your family down
Not at all (1)
Several days (2)
More than half the days (3)
Nearly every day (4)
Trouble concentrating on things, such as reading the newspaper or watching television
Not at all (1)
Several days (2)
More than half the days (3)
Nearly every day (4)
Moving or speaking so slowly that other people could have noticed or so fidgety or restless that you have been moving a lot more than usual
Not at all (1)
Several days (2)
More than half the days (3)
Nearly every day (4)
Thoughts that you would be better off dead, or thoughts of hurting yourself in some way
Not at all (1)
Several days (2)
More than half the days (3)
Nearly every day (4)

What racial or ethnic group best describes you? (Please select all that apply)
Asian or Asian-American (1)
Black or African-American (2)
Hispanic or Latino (3)
Native American or Alaska Native (4)
Pacific Islander or Native Hawaiian (5)
White or Caucasian (6)
Other: (7) _____

How would you describe your gender identity?
Man (1)
Woman (2)
Genderqueer/Gender non-conforming (3)
Another gender identity: (4) _____

What is your current age?

▼ 18 (18) ... 110 (110)

What was the total combined income of your household for the past year? Please give us your best estimate.

        Less than $10,000 (1)
        $10,000 to $14,999 (2)
        $15,000 to $24,999 (3)
        $25,000 to $34,999 (4)
        $35,000 to $49,999 (5)
        $50,000 to $74,999 (6)
        $75,000 to $99,999 (7)
        $100,000 to $149,999 (8)
        $150,000 to $199,999 (9)
        $200,000 or more (10)

What is the highest level of education you have completed?

        Grade 9 or less (1)
        Some high school, did not graduate (2)
        High school graduate (diploma, GED, or equivalent) (3)
        Some college, no degree (4)
        Associate degree (AA, AS) (5)
        Bachelor's degree (BA, BS) (6)
        Graduate degree (master's, PhD, or professional degree beyond bachelor's) (7)

What is your religion or faith-based practice? (Please select all that apply)

        Agnostic (1)
        Atheist (2)
        Baptist (3)
        Buddhist (4)
        Church of Christ (5)
        Catholic (6)
        Eastern Orthodox (7)
        Episcopalian (8)
        Evangelical (9)
        Hindu (10)
        Jewish (11)
        Lutheran (12)
        Methodist (13)
        Mormon (14)
        Muslim (15)
        Pentecostal (16)
        Presbyterian (17)
        Protestant (18)

Quaker (19)
Roman Catholic (20)
Seventh-day Adventist (21)
United Church of Christ/Congregational (22)
Other Christian (23) _____
Other Religion or Faith-Based Practice (24)

_____
None (25)

Urbanicity is inferred based on county of residence (based on ZIP code) using the Census's classification.

I have _____ children under 18 years old.

Generally speaking, do you think of yourself as a...
Republican (1)
Democrat (2)
Independent (3)
Other: (4) _____

Do you think of yourself as closer to the...
Republican Party (1)
Democratic Party (2)
Neither (3)

Do you consider yourself to be a...
Strong Democrat (1)
Not very strong Democrat (2)

Do you consider yourself to be a...
Strong Republican (1)
Not very strong Republican (2)

In general, do you think of yourself as...
Extremely liberal (1)
Liberal (2)
Slightly liberal (3)
Moderate, middle of the road (4)
Slightly conservative (5)
Conservative (6)
Extremely conservative (7)

How closely do you follow news and information about the current coronavirus (COVID-19) outbreak?

Very closely (4)
Somewhat closely (3)
Not very closely (2)
Not closely at all (1)

Have you been diagnosed with coronavirus (COVID-19)?

1 = Yes, I was diagnosed by a medical professional
2 = No, I was not diagnosed but I think I may have it now
3 = No, I was not diagnosed but I think I had it previously and recovered
4 = No, I was not diagnosed and I do not think I ever had it
5 = I am not sure

How many members of your household (other than yourself) have been diagnosed with coronavirus (COVID-19)?

None (0)
One (1)
Two (2)
Three (3)
Four (4)
Five or more (5)

In the last week, how closely did you personally follow the health recommendations listed below?

Wearing a face mask when outside of your home.

Now please think of your complete social circle of family, friends, neighbors, and other acquaintances. Approximately how many of them could you count on for the following things?

To care for you if you fell ill and needed it (1)   ▼ None (1) ...11 or more (12)
To lend you money if you needed to borrow it (2)   ▼ None (1) ... 11 or more (12)
To talk to if you had a problem, felt sad or depressed (3) ▼ None (1) ... 11 or more (12)
To help you if you needed to find a job (4)   ▼ None (1) ... 11 or more (12

Appendix B: Heterogenous Effects

In Table B.1, each model is a logistic regression estimating the probability that a respondent in the held-out set reports that a particular conspiracy theory is "accurate" in a particular survey wave. The final three coefficients are for moderate depressive symptoms, the differences in predicted probability of belief given at least moderate depressive symptoms (based from the model estimated using the training set), and their interaction. A positive and significant interaction effect indicates that respondents who are predicted to be more likely to believe the conspiracy theory if they are depressed were actually more likely to believe the conspiracy theory if they were depressed.[13]

In Table B2, each model is an ordinary least squares regression estimating the difference in predicted probability of a particular conspiracy belief given moderate depressive symptoms (represented in percentage points) for a particular survey wave. Positive and significant coefficients indicate that the given characteristic is associated with a larger (positive) change in the predicted probability of believing the conspiracy theory *if* the respondent reports moderate depressive symptoms. Put simply, coefficients describe the sources of predicted heterogeneity in the relationship between moderate depressive symptoms and the given conspiracy belief. We also include in this table a non-COVID-19 conspiracy—that those who stormed the Capitol on January 6th, 2022, were members of Antifa—as mentioned in a note in the conclusion. We do this to show the results are robust to non-COVID-19 conspiracy beliefs.

Table B.1. Correlates of Conspiracy Theory Beliefs by Wave, Held-Out Set

	Bioweapon (Wave 1)	Bioweapon (Wave 2)	Bioweapon (Wave 3)	Fetus (Wave 1)	Fetus (Wave 2)	Fetus (Wave 3)	Microchip (Wave 1)	Microchip (Wave 2)	Microchip (Wave 3)
Black	−0.029	0.219	0.426***	0.431**	0.202	0.133	0.266	0.387*	0.276
	-0.131	-0.148	-0.12	-0.179	-0.214	-0.189	-0.182	-0.221	-0.205
Hispanic/Latino	−0.047	0.039	0.254*	0.214	0.21	−0.018	0.147	−0.072	0.404**
	-0.137	-0.155	-0.134	-0.198	-0.207	-0.203	-0.196	-0.251	-0.204
Asian	−0.040	−0.117	−0.272	−0.013	−0.187	0.003	−0.086	−0.360	−1.053**
	-0.179	-0.2	-0.18	-0.263	-0.31	-0.253	-0.285	-0.368	-0.43

[13] As noted in the text, we recognize that in two cases (bioweapon, wave 2 and microchip, wave 2) the interaction is not significant, and thus these heterogeneity results should be interpreted with some caution. Also, additional specifications to the models in Table B.1 are available from the authors. This includes versions of with different sets of variables included (e.g., versions of Table B.1 that include a baseline sans the depression variable, and that include only depression with the predicted probabilities and an interaction).

Other Race	0.078	0.111	0.264	−0.355	−0.039	−0.261	−0.166	−0.430	0.041
	-0.244	-0.243	-0.232	-0.417	-0.381	-0.404	-0.475	-0.482	-0.44
Female	−0.191**	−0.098	−0.268***	−0.145	−0.132	−0.149	−0.542***	−0.050	−0.486***
	-0.081	-0.085	-0.075	-0.135	-0.133	-0.119	-0.128	-0.168	-0.147
Age (Normalized)	0.047	−0.064	0.055	−0.423***	−0.480***	−0.292***	−0.442***	−0.483***	−0.492***
	-0.044	-0.049	-0.043	-0.074	-0.08	-0.07	-0.078	-0.099	-0.094
Household Income (Logged)	−0.110**	−0.024	0.017	0.024	−0.043	−0.004	−0.108	−0.069**	−0.026
	-0.044	-0.021	-0.018	-0.071	-0.03	-0.027	-0.069	-0.032	-0.03
College	−0.129	−0.101	−0.252***	0.066	0.028	−0.135	−0.348**	−0.232	−0.243
	-0.084	-0.087	-0.079	-0.131	-0.139	-0.123	-0.147	-0.164	-0.158
Evangelical Christian	0.306***	0.584***	0.432***	0.502***	0.489***	0.519***	0.803***	0.189	0.411**
	-0.087	-0.086	-0.079	-0.118	-0.152	-0.127	-0.127	-0.204	-0.174
Urbanicity (6pt)	−0.025	0.036	0.080***	0.035	−0.054	0.023	0.006	−0.004	−0.072
	-0.026	-0.027	-0.025	-0.039	-0.043	-0.038	-0.041	-0.049	-0.047
Children in Household	0.292***	0.411***	0.230***	0.250*	0.207	0.421***	0.505***	0.582***	0.556***
	-0.095	-0.094	-0.08	-0.15	-0.143	-0.122	-0.135	-0.154	-0.147
Party ID (7pt)	0.184***	0.202***	0.186***	0.101***	0.033	0.110***	0.106***	0.073	0.009
	-0.025	-0.028	-0.023	-0.033	-0.041	-0.036	-0.034	-0.045	-0.042
Ideological Identity (7pt)	0.236***	0.262***	0.226***	0.146***	0.161***	0.138***	−0.042	0.126**	0.160***
	-0.03	-0.035	-0.031	-0.043	-0.052	-0.046	-0.044	-0.057	-0.054
COVID-19 News Interest	0.063	0.140***	0.028	0.099	0.237***	−0.050	0.013	0.057	0.041
	-0.046	-0.052	-0.046	-0.073	-0.083	-0.07	-0.076	-0.092	-0.087
Had COVID-19	0.09	0.121	0.241**	0.458**	0.433**	0.034	0.338*	0.377*	0.072
	-0.121	-0.125	-0.105	-0.18	-0.177	-0.149	-0.197	-0.201	-0.178
Household Member Had COVID-19	0.267**	0.119	0.001	−0.081	−0.215	0.173	0.036	−0.088	−0.039
	-0.11	-0.112	-0.097	-0.161	-0.173	-0.136	-0.164	-0.186	-0.165

Follows Mask-Wearing Guidelines (4pt)	−0.173***	−0.223***	−0.157***	−0.120**	−0.380***	−0.303***	−0.066	−0.143**	−0.117*
	-0.035	-0.04	-0.036	-0.055	-0.061	-0.052	-0.059	-0.073	-0.065
Social Support: Care	−0.007	−0.061***	0.028	−0.014	−0.054	0.004	−0.044	−0.163***	−0.048
	-0.02	-0.021	-0.018	-0.031	-0.035	-0.028	-0.035	-0.046	-0.037
Social Support: Lend	0.014	0.031	0.003	−0.002	0.085**	0.007	0.003	0.041	−0.006
	-0.024	-0.024	-0.021	-0.035	-0.038	-0.032	-0.039	-0.046	-0.041
Social Support: Talk	−0.045**	0.004	−0.012	−0.045	−0.055*	−0.046*	−0.066**	−0.024	−0.092**
	-0.018	-0.019	-0.016	-0.028	-0.031	-0.026	-0.03	-0.036	-0.036
Social Support: Job	0.005	−0.036**	−0.018	0.02	−0.006	0.006	0.021	0.001	0.051
	-0.018	-0.019	-0.016	-0.027	-0.03	-0.025	-0.029	-0.035	-0.031
Predicted Probability Difference: At Least Moderate Depressive Symptoms (Percentage Points)	0.019	−0.002	−0.017	0.062**	0.087*	0.047**	0.042**	0.128***	0.031
	-0.032	-0.036	-0.036	-0.03	-0.047	-0.024	-0.02	-0.031	-0.024
At Least Moderate Depressive Symptoms	0.059	0.252**	0.220**	0.003	0.235	−0.156	0.496***	0.526***	0.624***
	-0.107	-0.122	-0.109	-0.159	-0.154	-0.146	-0.146	-0.184	-0.163
Predicted Probability Difference x At Least Moderate Depressive Symptoms	0.124***	0.069	0.116**	0.106***	0.084*	0.109***	0.036*	0.005	0.046**
	-0.034	-0.055	-0.057	-0.025	-0.048	-0.025	-0.018	-0.03	-0.023
Num.Obs.	4748	4836	5348	4747	4840	5351	4752	4840	5353
AIC	4763.5	4234.6	5106.2	2470.5	2097.2	2686.6	2266.1	1687	1934.9
BIC	4925.1	4396.7	5270.8	2632.1	2259.3	2851.2	2427.8	1849.1	2099.5
Log.Lik.	−2356.745	−2092.289	−2528.078	−1210.235	−1023.617	−1318.280	−1108.048	−818.494	−942.444
RMSE	1	0.93	0.97	0.72	0.65	0.7	0.68	0.58	0.59

Note: Entries are logistic regression coefficients with standard errors underneath. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ for two-tailed tests.

Table B.2. Correlates of Differences in Predicted Probability of Conspiracy Beliefs Given At Least Moderate Depressive Symptoms by Wave, Held-Out Set

	Bioweapon (Wave 1)	Bioweapon (Wave 2)	Bioweapon (Wave 3)	Fetus (Wave 1)	Fetus (Wave 2)	Fetus (Wave 3)	Microchip (Wave 1)	Microchip (Wave 2)	Microchip (Wave 3)	January 6th Antifa (Wave 3)
Black	−0.346***	0.355***	−0.300***	−0.874***	−0.347***	−1.000***	−0.986***	−0.334***	−1.366***	−0.417***
	-0.062	-0.059	-0.047	-0.077	-0.058	-0.093	-0.112	-0.094	-0.11	-0.061
Hispanic/Latino	−0.305***	−0.165***	−0.265***	−0.673***	−0.408***	−0.788***	−0.979***	−0.669***	−0.915***	−0.465***
	-0.067	-0.064	-0.053	-0.089	-0.06	-0.105	-0.125	-0.1	-0.125	-0.07
Asian	−0.338***	−0.138*	−0.353***	−0.732***	−0.391***	−0.948***	−0.609***	−0.730***	−1.233***	−0.455***
	-0.084	-0.074	-0.06	-0.106	-0.075	-0.119	-0.158	-0.117	-0.143	-0.076
Other Race	−0.139	−0.323***	−0.222**	−0.518***	−0.316***	−0.679***	−0.821***	−0.595***	−0.741***	−0.421***
	-0.123	-0.101	-0.098	-0.15	-0.098	-0.188	-0.251	-0.164	-0.23	-0.125
Female	−0.764***	−0.402***	−0.373***	−1.577***	−0.418***	−1.238***	−1.051***	−1.399***	−1.578***	−0.732***
	-0.04	-0.036	-0.03	-0.051	-0.035	-0.06	-0.074	-0.057	-0.071	-0.039
Age (Normalized)	0.004	0.176***	−0.100***	0.015	−0.153***	−0.470***	−0.139***	−0.582***	−0.675***	−0.159***
	-0.021	-0.019	-0.017	-0.027	-0.02	-0.033	-0.039	-0.032	-0.039	-0.022
Household Income (Logged)	0.294***	0.039***	0.048***	0.435***	0.049***	0.152***	0.676***	0.090***	0.117***	0.143***
	-0.022	-0.009	-0.007	-0.028	-0.009	-0.014	-0.04	-0.014	-0.017	-0.009
College	0.344***	0.089**	0.316***	0.494***	0.369***	0.854***	0.728***	0.555***	1.094***	0.873***
	-0.042	-0.036	-0.031	-0.053	-0.036	-0.061	-0.077	-0.057	-0.072	-0.04
Evangelical Christian	1.461***	−0.725***	0.886***	0.670***	1.467***	2.635***	1.877***	3.240***	3.482***	1.520***
	-0.042	-0.039	-0.033	-0.053	-0.038	-0.064	-0.077	-0.062	-0.077	-0.042
Urbanicity (6pt)	−0.012	−0.023*	−0.077***	−0.076***	−0.024**	−0.137***	−0.187***	−0.066***	−0.148***	−0.080***
	-0.013	-0.012	-0.01	-0.017	-0.012	-0.02	-0.024	-0.019	-0.024	-0.013
Children in Household	1.890***	0.895***	0.487***	3.140***	1.033***	1.618***	2.403***	1.355***	1.667***	0.693***
	-0.043	-0.039	-0.032	-0.054	-0.039	-0.063	-0.079	-0.063	-0.075	-0.041

Party ID (7pt)	−0.339***	0.325***	−0.004	−0.109***	−0.079***	−0.207***	−0.040*	−0.171***	−0.210***	−0.254***
	-0.012	-0.011	-0.01	-0.015	-0.011	-0.019	-0.022	-0.018	-0.022	-0.012
Ideological Identity (7pt)	0.047***	−0.163***	0.017	−0.050***	−0.042***	−0.073***	−0.004	−0.041*	0.028	0.01
	-0.015	-0.014	-0.012	-0.019	-0.014	-0.024	-0.028	-0.023	-0.029	-0.016
COVID-19 News Interest	0.172***	0.126***	0.049**	0.274***	0.230***	0.537***	0.346***	0.176***	0.529***	0.121***
	-0.024	-0.023	-0.019	-0.031	-0.022	-0.038	-0.044	-0.036	-0.045	-0.025
Had COVID-19	0.337***	0.268***	0.003	2.695***	0.705***	0.612***	5.155***	1.860***	0.922***	0.869***
	-0.064	-0.056	-0.044	-0.082	-0.055	-0.088	-0.118	-0.091	-0.105	-0.057
Household Member Had COVID-19	0.205***	0.163***	0.319***	1.849***	0.575***	0.649***	1.786***	0.457***	0.744***	0.507***
	-0.057	-0.049	-0.04	-0.072	-0.05	-0.079	-0.105	-0.08	-0.094	-0.052
Follows Mask-Wearing Guidelines (4pt)	0.248***	0.228***	0.284***	0.142***	0.055***	0.195***	0.191***	0.004	0.055	0.255***
	-0.018	-0.018	-0.015	-0.023	-0.018	-0.029	-0.034	-0.029	-0.034	-0.019
Social Support: Care	−0.017	−0.029***	−0.008	−0.041***	−0.023***	−0.030**	−0.026	−0.036**	−0.020	−0.021**
	-0.01	-0.009	-0.008	-0.013	-0.009	-0.015	-0.018	-0.014	-0.017	-0.01
Social Support: Lend	0.027**	−0.019*	−0.024***	0.071***	0.034***	0.080***	0.121***	0.061***	0.103***	0.022*
	-0.012	-0.01	-0.009	-0.014	-0.01	-0.017	-0.022	-0.016	-0.02	-0.011
Social Support: Talk	−0.024***	−0.018**	−0.013*	−0.051***	−0.028***	−0.061***	−0.021	−0.042***	−0.058***	−0.036***
	-0.009	-0.008	-0.007	-0.011	-0.008	-0.013	-0.016	-0.012	-0.016	-0.009
Social Support: Job	0	−0.031***	−0.003	0.013	0.013*	0.019	0.024	0.009	0.006	0
	-0.009	-0.008	-0.007	-0.011	-0.008	-0.013	-0.016	-0.012	-0.015	-0.009
Num.Obs.	4748	4836	5348	4747	4840	5351	4752	4840	5353	5349
R2	0.654	0.321	0.326	0.752	0.496	0.558	0.686	0.584	0.547	0.564
R2 Adj.	0.652	0.318	0.323	0.75	0.494	0.556	0.685	0.582	0.545	0.563
AIC	15677	15011.2	15532.6	17985.5	15020.8	22860.9	21548	19605.4	24633.3	18326
BIC	15825.7	15160.3	15684	18134.2	15169.9	23012.4	21696.7	19754.5	24784.7	18477.5

Log.Lik.	−7815.486	−7482.609	−7743.302	−8969.740	−7487.379	−11407.457	−10750.987	−9779.692	−12293.633	−9140.024
F	424.836	108.203	122.73	680.768	226.171	320.289	493.032	322.193	306.255	328.491
RMSE	1.26	1.14	1.03	1.6	1.14	2.04	2.33	1.83	2.41	1.34

Note: Entries are OLS regression coefficients with standard errors underneath. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ for two-tailed tests.