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CITATION

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Over 95% of criminal convictions in the United States are the result of guilty pleas. Consequently, it is critical that we ensure the process of pleading guilty is as free of coercion as possible. Yet, research has indicated that incarcerating defendants to await trial could have an undue influence on their decision to plead guilty. The current research employed a novel computer simulation to examine the impact of the COVID-19 pandemic on plea decision making among the innocent and the guilty when faced with potential pretrial detention. While presenting COVID-related information to participants increased both true and false guilty pleas, further analyses indicated that concerns about COVID-19 weighed more heavily on the innocent than the guilty. These findings illustrate the negative impact a pandemic could have in combination with a system of pleas that often allows prosecutors to provide defendants with just one guaranteed respite from jail—a guilty plea.

Public Significance Statement
The majority of U.S. jail inmates have not been convicted of crimes, but are instead detained to await their day in court. Detained defendants are particularly likely to accept plea offers to secure immediate release from incarceration. In our study, we found that the added risk of COVID exposure in jail made participant-defendants more likely to plead guilty to avoid pretrial detention, whether they were actually guilty or not.

The American criminal justice system has become "a system of pleas," with approximately 95% of criminal cases today resolved via guilty pleas (Reaves, 2013). The vast majority of these guilty pleas are the result of plea bargaining, in which prosecutors offer reduced sentences in exchange for defendants' waiver of their right to trial (Dervan, 2019a; Devers, 2011). In fact, guilty pleas (and plea bargains) are on the rise all over the world, with significant increases observed in several countries including China, Russia, South Korea, and Japan (Fair Trials, 2017; Pardieck et al., 2020). While some researchers and practitioners commend the efficiency of plea bargaining, others have raised serious concerns over its arbitrary,

opaque, and potentially psychologically coercive properties (for reviews, see Bibas, 2004; Fisher, 2000; Hollander-Blumoff, 2007; Redlich et al., 2017; Zottoli et al., 2016, 2019). For instance, defendants are often detained to await trial; during this time, prosecutors are free to offer plea deals. Offers for time served (which would result in defendants' immediate release) can be extremely attractive given the risks associated with incarceration—these risks were amplified in 2020 and 2021—when the COVID-19 pandemic infiltrated America's prisons. In addition to the risk of infection, defendants also faced longer pretrial incarcerations due to courtrooms limiting their in-person proceedings during the pandemic. Given both the controversies surrounding guilty pleas as well as their prevalence, inquiries regarding plea-relevant decisions have been present among multiple disciplines for decades (e.g., Alschuler, 1979; Helm & Reyna, 2017; McAllister & Bregman, 1986; Yan & Bushway, 2018).

The Innocence Problem and Plea Bargaining

Even though the term "plea bargaining" implies a negotiation between the prosecution and the defense, empirical studies have found that the practice is closer to a unilateral decision made by prosecutors (Bordens & Bassett, 1985; Rakoff, 2014; von Helversen & Rieskamp, 2009). Prosecutors determine the charges that defendants face, which

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sets the stage for the severity of the punishment (Wilford & Khairalla, 2019). Over the past few decades, new laws expanding mandatory minimums have greatly strengthened the connection between charge and sentence, making it even easier for prosecutors to create substantial gaps between the plea and trial sentence (Dripps, 2016; Klein, 2006)—creating offers that are extremely difficult to refuse. A direct consequence is that factually innocent defendants might plead guilty to avoid the possibility of severe sentences if convicted at trial (Blume & Helm, 2014; Rakoff, 2014; Scherr, Redlich, et al., 2020), sometimes known as a "trial penalty" (Dervan, 2019b; Yan & Bushway, 2018). In fact, of the 375 total DNA exonerees on record at the Innocence Project, 44 (11.7%) were convicted via a guilty plea as opposed to a trial (Innocence Project, n.d., last visited February 18th, 2021). Other databases and studies of court records similarly suggest that 10%–20% of guilty pleas might actually be false (for reviews, see Redlich, 2010; Wilford & Khairalla, 2019). Experimental studies, meanwhile, have uncovered comparable, or even higher false guilty plea rates among participant-defendants (e.g., Dervan & Edkins, 2013; Henderson & Levett, 2018; Redlich & Shteynberg, 2016; Tor et al., 2010; Wilford & Wells, 2018; Zimmerman & Hunter, 2018). Researchers have also opined that the number of false guilty pleas is likely underestimated given the increased obstacles that defendants who pleaded guilty face when attempting to overturn their convictions (e.g., reduced avenues for appeal; Wilford & Khairalla, 2019).

The innocence problem is further complicated by the fact that many defendants have to make a plea decision while being detained. As of 2018, two-thirds of American jail inmates (around 490,000) were *unconvicted*—instead, they were being held to await court action or for other reasons (Zeng, 2020). When the seriousness of the charges is relatively low, prosecutors often offer these defendants a "time served" sentence that will lead to their immediate release (Roberts, 2011). This adds yet another strong incentive for one to plead guilty. In fact, recent analyses of official court data from multiple jurisdictions found that detained defendants pled guilty much faster than defendants not detained (Petersen, 2019, 2020). Although the proportion of false guilty pleas attributable to pretrial detention is unknown, a recent experimental study found pretrial detention significantly increased false guilty pleas among participant-defendants (Edkins & Dervan, 2018). Moreover, studies on real-life defendants have also identified the desire to get out of jail as a risk factor for false guilty pleas (Malloy et al., 2014; Redlich et al., 2010).

Plea Decision Making

Clearly, there are several external variables that can impact the decision to plead. Yet, the current dominant model of plea decision making—the shadow-of-the-trial model—accounts for a predictive effect of only two variables (Landes, 1971). Essentially, it posits that plea offers will be accepted when the plea sentence is less than the expected value of the trial (which is calculated by multiplying the trial sentence by the probability of conviction). This model has been regularly criticized for being overly simplistic (Bibas, 2004; Redlich et al., 2017; Wilford et al., 2019), with recent research showing that there is room to improve its predictive power (Wilford et al., in press). Few alternatives to the shadow-of-the-trial model have emerged, and those that have also lack a clear method to account for the direct impact of other external variables on plea outcomes

(e.g., fuzzy trace theory, Helm & Reyna, 2017; the trial penalty model, McCoy, 2005).

Given the similarities between the decision to plead guilty and the decision to confess (Redlich, 2010; Scherr, Normile, et al., 2020; Wilford & Wells, 2018), we believe the confession literature can also provide relevant theories. Specifically, the interrogation decision-making model offers a useful framework through which to consider the impact of external variables (Yang et al., 2017). This model posits that individuals confess when the perceived utility of confessing outweighs the utility of denying, and it recognizes the importance of separating proximal (immediate) from distal consequences. Proximal consequences will often be weighted more heavily due to their immediacy and the typically higher probability by which they are expected to occur. Thus, the model would posit that those in pretrial detention would be very tempted to plead guilty if it would result in immediate freedom, despite the long-term (or distal) negative consequences of a criminal record and the associated collateral consequences (McWilliams & Hunter, 2021). If additional factors (like the COVID pandemic) make pretrial detention even more unpleasant, then the attractiveness of pleading guilty when immediate freedom is offered will increase across all defendants—guilty and innocent.

Further, a meta-analysis comparing the driving factors behind true versus false confessions found that true confessions tended to be motivated by more internal factors (e.g., guilt) while false confessions were driven by more external factors (e.g., social pressure, Houston et al., 2014). Consistent with this finding, plea research has indicated that innocent defendants were more influenced by age and attorney recommendation than guilty defendants (Henderson & Levett, 2018; Redlich & Shteynberg, 2016). Accordingly, we would also expect innocent defendants to be influenced by external pressures like the risks associated with being detained more than their guilty counterparts.

Plea Bargaining and the COVID-19 Health Crisis

Initially discovered in late 2019, a novel coronavirus disease (named COVID-19) has led to a worldwide pandemic. In the early months of the pandemic, researchers quickly pointed out that overcrowding and the infeasibility of social distancing made prisons and jails particularly susceptible to COVID-19 outbreaks (Akiyama et al., 2020; Kinner et al., 2020). In fact, The Marshall Project (2021) estimated that over 381,000 prisoners had tested positive and over 2,400 had died as of February 2021. A New York Times (2021) database estimated that more than 612,000 people in prisons and jails have been infected, and over 2,700 inmates and correctional officers have died.[1] Clearly, the pandemic has had a significant negative impact on the already-austere prison and jail conditions (Baud et al., 2020; Saloner et al., 2020; Verity et al., 2020). While all inmates are subject to the effects of the pandemic, such effects could be particularly salient to those who are being held pretrial (the two-thirds majority of jail inmates, Zeng, 2020), because the time

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[1] Both websites were lasted visited on February 22nd, 2021. The Marshall Project data were last updated on February 19th and the New York Times webpage was updated on February 22nd. The Marshall Project data only included jail statistics for Alaska, Connecticut, Delaware, Hawaii, Rhode Island, and Vermont, in which the state had a unified prison and jail system.

for which they will be incarcerated is indeterminate and can change regularly (Carroll, 2020).

Given the severity of the situation, medical and social science researchers have jointly called for the criminal justice system's collective adaptation, including the selective release of inmates (Franco-Paredes et al., 2021; Nowotny et al., 2020; Vose et al., 2020). Since the beginning of the pandemic, many state and federal criminal justice agencies have been proactively working to reduce the use of imprisonment (Hummer, 2020; National Association of Pretrial Services Agencies, 2020; for a collection of state and local efforts, see Prison Policy Initiative, 2021). Nevertheless, according to a Vera Institute of Justice (2021) database that contained 326 counties' jail data, the median population reduction percentage between February 2020 and February 2021 was only 16%. Moreover, during the early months of the pandemic, restrictions of gatherings (which included juries) and workplace safety measures resulted in considerable delays and disruptions of case processing, which are still being felt months afterward (Baldwin et al., 2020; Johnson, 2020; Miller & Blumstein, 2020; Skolnik, 2020). Thus, at the time of data collection (July 2020), detained defendants who insisted on their right to a jury trial faced two additional risks: The possibility of a COVID-19 outbreak at the detention location and extended detention due to trial delays. These two factors could have effectively increased the proximal gains of pleading guilty for those offered sentences of time served, and legal scholars have expressed concern that these incentives may lead to an increase in false pleas (Cannon, 2020; Johnson, 2020).

The Current Research

Previous experimental studies of defendants' plea decisions have relied primarily on two paradigms. The first, known as the vignette or narrative paradigm, asks subjects to imagine themselves (or someone they are being asked to advise) being charged with a crime and offered a plea deal (e.g., Bordens, 1984; Tor et al., 2010; Zimmerman & Hunter, 2018). The second is typically referred to as high-stakes or cheating paradigm studies (Russano et al., 2005). Typically, the experimenter asks student-subjects to perform a test, then rightfully or wrongfully accuses them of cheating during the test. The experimenter then offers to drop the accusation or reduce the associated charges in exchange for a guilty plea or acceptance of a plea-like offer (e.g., Dervan & Edkins, 2013; Henderson & Levett, 2018; Wilford, Wells, & Frazier, 2021). Both study paradigms produce false guilty pleas, though high-stake studies usually render more false guilty pleas than vignette studies—whereas vignettes typically produce false guilty plea rates around 20%, high-stakes studies often observe rates of 40%–50% (Dervan & Edkins, 2013; Wilford & Wells, 2018; Wilford, Wells, & Frazier, 2021). While research using these methods has contributed greatly to our understanding of plea decision making, they both possess notable limitations. Namely, vignettes rely greatly on participants' imaginative abilities, while cheating paradigms are limited to noncriminal (academic) sanctions (Wilford et al., 2019).

In the current research, we employed a new experimental paradigm that provides participants with an immersive and dynamic virtual environment, while preserving the presentation of criminal sanctions. Preliminary research relying on this simulation indicated that participants do find it more immersive and believed that it resulted in more realistic decision making relative to a vignette

(Wilford, Frazier, et al., 2021). Within the current simulation, participant-defendants were randomly assigned to be guilty or innocent and either received information about the threat of COVID-19 or did not.

Many experimental studies have found that guilty defendants are generally more likely to plead guilty than innocent ones (Redlich & Shteynberg, 2016; Schneider & Zottoli, 2019; Tor et al., 2010; Wilford, Wells, & Frazier, 2021; Wilford et al., in press). Accordingly, we predicted that guilty participant-defendants would plead guilty more frequently than innocent participants (Hypothesis 1 [H1]). Also, given the well-documented effect that proximal consequences can have on decision-making (Yang et al., 2017), we further predicted that participant-defendants provided with information regarding the risks posed by COVID-19 would be more likely to plead guilty than those not provided such information (Hypothesis 2 [H2]). Finally, we predicted that the effect of COVID information would be greater among the innocent than the guilty (Hypothesis 3 [H3]). This finding would be consistent with confession research indicating that false (versus true) confessions are more vulnerable to the influence of external factors (Houston et al., 2014).

Method

The methodology for this experiment was approved by the institutional review board of the first author's institution. The study was preregistered on the Open Science Framework before data collection began: https://osf.io/3k6mp/?view_only=10eb2bdcf7fe49bd831356142713146a, and the data that support the findings of this study will be made available with the preregistration upon publication.

Participants

An a priori statistical power analysis was performed for sample size estimation using G*Power 3.1 (Faul et al., 2009). A sample of 704 participants was estimated to achieve 0.8 power to detect the predicted interaction with a small to a medium effect size of 0.3, at the standard .05 α level. Based on our previous research, we anticipated ~12% of the study sample would fail more than one of the manipulation checks and need to be excluded. Consequently, we planned to recruit approximately 800 participants online through Prolific Academic (PA). PA provides access to an online participant pool consisting of over 70,000 participants worldwide. All study participants had to be 18 years of age or older, identify as residents of the U.S., and access the study from a desktop or laptop computer using Mozilla Firefox or Google Chrome (to ensure the simulation displayed properly). They also had to have a prior study completion rate of 95% or higher.

Sixteen of the initially recruited participants failed two of three attention checks; thus, their data were excluded, and they were not compensated for participating in the study. Of the 811 who were compensated for completing the study, 107 failed to accurately respond to four out of five manipulation checks (Table S1 in the Supplemental Materials provides the accuracy rates for all five manipulation check questions). Thus, the final sample size was $N = 704$. The mean age of our final sample was 31.0 years ($Mdn = 28$). Participants were 51.8% female, 45.5% male, and 0.6% transgender, and 2% gender nonconforming. Participants identified as White (60.5%), Asian (13.9%), Black (11.4%), Hispanic or

Latinx (6.3%), American Indian or Native Alaskan (0.4%), Native Hawaiian or Pacific Islander (.1%), and bi- or multiracial (5.6%), with a small percentage (1.7%) choosing "not listed" or opting not to respond to this question.

Design

This study employed a 2 (Guilt status: innocent or guilty) × 2 (COVID: information or no information) between-participants design. All participants were accused of theft and were randomly assigned to innocence or guilt via an animated flashback sequence. We chose a theft scenario because of its prevalence. As of 2019, larceny-theft was by far the most common Uniform Crime Report (UCR) Part I crime, and one of the most common reasons for arrest among all crime types (Federal Bureau of Investigation, 2020, Tables 1 and 29). About half of the participants were randomly assigned to receive information from their defense attorney regarding the complications posed by the current COVID-19 pandemic, while the other half were not told anything about COVID-19. We believed that this was the most plausible way in which defendants could be provided with this type of information from a source seen as reliable (Henderson, 2021; Henderson & Shteynberg, 2019). A demo of the present study is available at demo.pleajustice.org/covid.

Materials

Simulation

The computer simulation was developed by a team of researchers, designers, and computer programmers led by the first author. The simulation is a web application written in JavaScript and HTML. It composes animated scenes with assets created in Adobe Animate and renders them in the participants' browsers. The text, images, buttons, and the sequence of the animations are controlled with a JavaScript Object Notation (JSON) configuration file within the simulation code. This configuration file can be generated using another web-based graphical user interface (which is available to any interested plea researcher at researcher.pleajustice.org). Further documentation concerning how the simulation was made and how it can be modified is available on pleajustice.org/internal. In this simulation, participants directly observed an avatar they created be accused of a theft and then offered a plea deal.

Measure

Participants were asked demographic questions both at the beginning and end of the study (e.g., age, race/ethnicity, educational attainment, etc.). They were also asked to estimate the chances that they would plead guilty at two points during the study (on a scale of 0%–100%), as well as whether they would ultimately plead guilty or reject the offer. Following the simulation, participants were asked to recall their objective guilt status (innocent or guilty), the length of the sentence they were offered for pleading guilty (6 months probation), the length of the sentence they could receive if found guilty at trial (9 months in jail), and whether their attorney provided them with any COVID-19 information (yes or no). If they had pleaded guilty, they were asked when they would be free to go home (1–2 days); if they had refused to plead, they were asked where they would await trial (jail). These five questions were used as

manipulation checks. Participants had to answer four out of these five questions correctly for their data to be included in subsequent analyses.

Participants were then asked a number of questions regarding their perceptions of the evidence, guilt status, likelihood of conviction, potential punishments, and the influence of COVID-19 (and other factors) on their plea decision. They then answered counterfactual measures designed to assess whether a change in their guilt status or COVID-19 information would have led them to a different decision. We also asked participants about their prior experiences with or knowledge of the legal system, as well as a few questions measuring their perceptions of COVID-19 (e.g., how concerned they were with contracting the virus). We had no a priori hypotheses regarding these particular measures as they were exploratory.

Procedure

The purpose of the study was advertised as: "increasing our scientific understanding of the criminal justice process." After providing informed consent through Qualtrics, participants were asked questions to double-check that they met the minimum criteria for study participation (e.g., age, residency, etc.). Next, participants were asked initial demographic questions before being directed to the simulation (Figure 1).

The simulation began by allowing participants to construct an avatar. Once their avatar was complete, the simulated scenario began with text introducing the date and time of the incident (March 3, 2020, at noon). Participant-avatars were shown walking through a mall, arriving at a sunglasses store, and trying on a pair of sunglasses when the scene fades. Additional text then appeared to convey that a court summons arrived 2 weeks later.

The next scene begins with a prosecutor in a courtroom who presents larceny charges against the participant-avatars (Figure 2). The participants' real first names (requested during the consent process) were incorporated here and throughout the simulation to increase participants' engagement. The prosecutor also presents surveillance footage showing the participant-avatars asking for expensive sunglasses, trying them on, and then walking toward the exit with the sunglasses atop their heads (Figure 3). The footage was identical for both innocent and guilty participants, as the angle made it plausible that such footage could miss an innocent person leaving merchandise immediately before exiting the store. After the prosecutor had presented his case, the judge provided participant-avatars with a description of their rights (Figure 4), and stated that they would be held to wait until counsel could be assigned to the case.

The participant-avatars then appeared in a holding cell where they flashed back to the day of the incident. If innocent, the participant-avatars are shown removing the sunglasses and setting them down on a counter before exiting the store; or, if guilty, they are shown leaving the store with the sunglasses resting atop their heads (see Figure 5). In both conditions, the participant-avatars explicitly state that they are innocent or guilty.

The simulation then transitioned to a meeting room where the participant-avatars' defense attorney introduced a plea offer from the prosecutor for 6 months probation if they were willing to plead guilty. If not, the defense attorney stated that the prosecutor would pursue the maximum penalty of 9 months in jail, as well as pretrial detention, due to their prior conviction. At this juncture, all

Figure 1

Avatar Customization
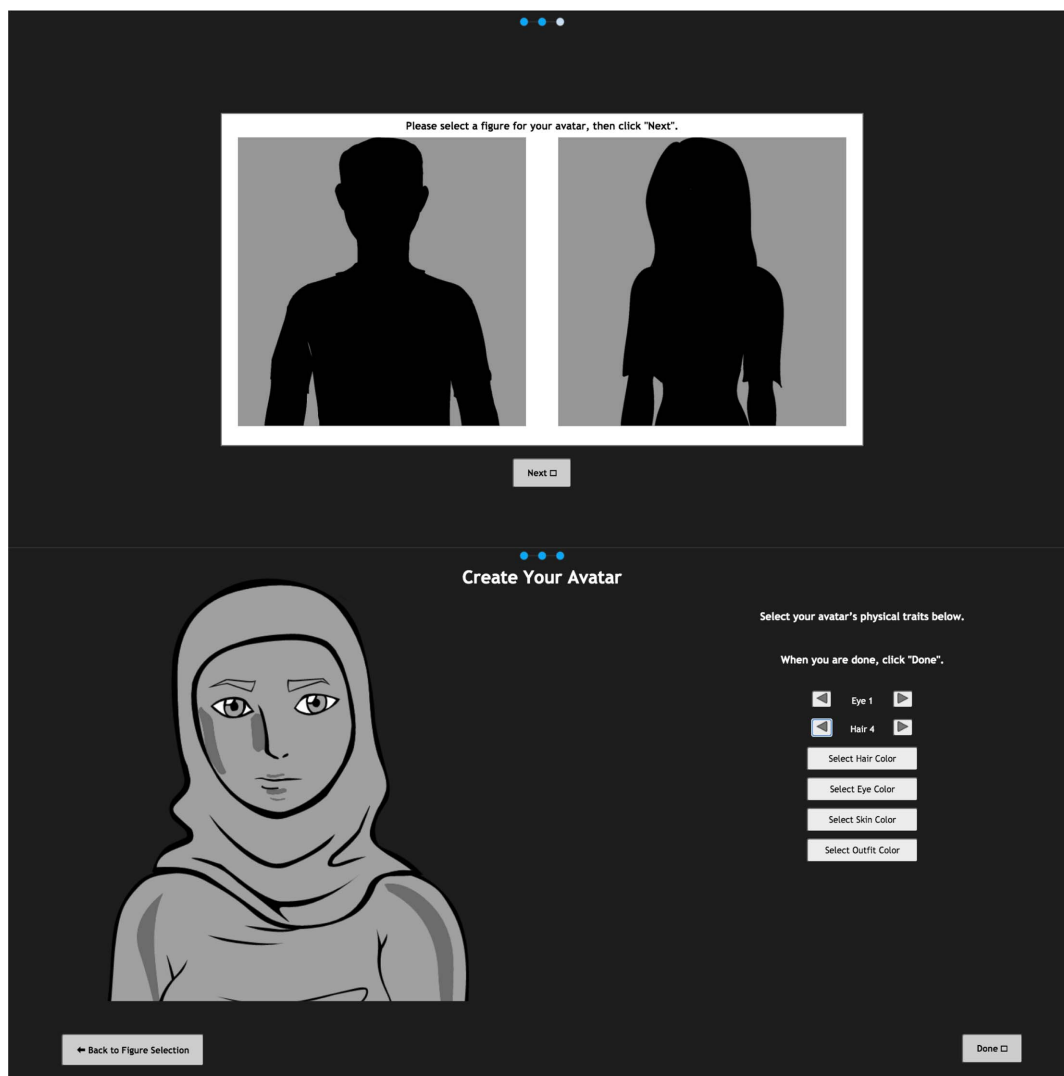
Note. The graphics were shown in black and white, as pictured, until participants began the customization process. See the online article for the color version of this figure.

participants rated the chances they would plead guilty based on the deal they were presented (Time 1). Participants in the COVID-information conditions were then told by their attorney:

> I also want you to be aware of the additional complications presented by the coronavirus. Due to the pandemic, many court dates have been pushed back, which means, if you reject the plea, you will likely be held in jail for several weeks, or even months, longer than usual. Further, the jail is currently having an outbreak of coronavirus that has impacted several inmates. I myself have clients who have contracted coronavirus while in jail, and it has not been easy to get them the appropriate treatment while in jail.

This was the only portion of text that differed between conditions; participants in the no-COVID information condition were not provided with this information. Importantly, the attorney did not advise participants to accept or reject the plea in any of the conditions

concluding, "Ultimately, the decision to plead guilty or go to trial is up to you." Participants were then directed to either "Plead Guilty" or "Reject Offer." They were then redirected to Qualtrics to again rate the chances that they would plead guilty (Time 2), and to answer the previously described questionnaires (e.g., manipulation checks, counterfactuals, prior crime experience, other demographics, etc.). Upon completing the study, participants were asked to submit their unique PA ID (to prevent any repeat participants), and those who passed the embedded attention checks were compensated $3.25 for the ˜30-min study (Figure 6).

Results

We began by conducting a logistic regression on the primary outcome of interest, participants' dichotomous plea decisions

Figure 2

The Prosecutor Presents the Charges Against the Participant-Avatar

Note. The simulation incorporated the participant's first name when presenting the charge (and at various other points). See the online article for the color version of this figure.

(testing H1–H3), entering the main effects of guilt-status and COVID information, along with the Guilt-status × COVID information interaction in a single block. See Table 1 for a full breakdown of the descriptives across experimental conditions.

Figure 3

CCTV Footage of the Alleged Theft
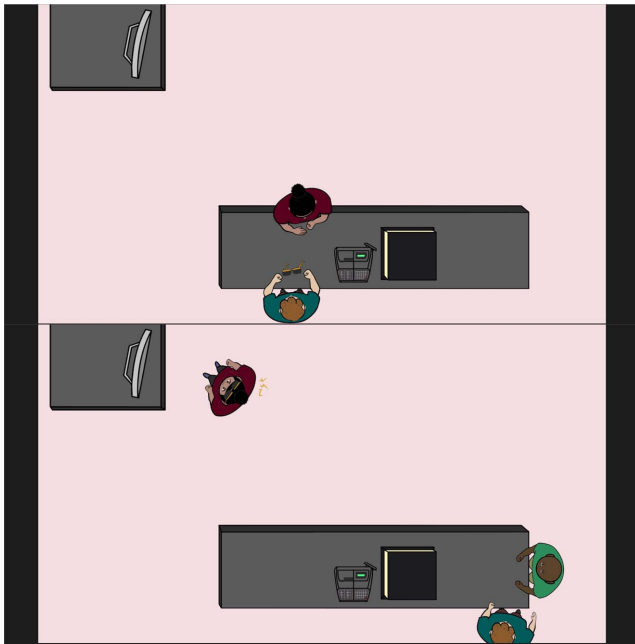
Note. The footage showed the participant-avatar ask for a pair of sunglasses behind the counter (top), and then take them to a mirror to try on before receiving a series of texts from friends (bottom). See the online article for the color version of this figure.

We also conducted a more sensitive test of H2 and H3 (given the difficulty in observing significant effects on a dichotomous variable). Specifically, we examined participants' reported willingness to accept a plea offer at two time points—for those in the COVID information conditions, these time points were separated by information pertaining to their potential exposure to the virus in jail. We predicted (in accordance with H2) that those in the COVID information conditions would exhibit a greater increase in their willingness to plead guilty at Time 2 than those in the uninformed conditions. We further predicted that this increase in willingness to plead guilty would be greater for innocent than guilty individuals (consistent with H3). To conduct this analysis, we created difference scores for each participant by subtracting the willingness to accept a plea scale at Time 1 (pre-COVID information, when applicable) from the same scale at Time 2 (post-COVID information and plea decision)—positive scores indicated an increased self-reported willingness to accept the plea from Time 1 to Time 2, while negative scores indicated a decreased willingness to accept the plea from Time 1 to Time 2. We then conducted a between-subjects factorial analysis of variance (ANOVA) on these difference scores. See Table 2 for full descriptives across experimental conditions with both parametric and nonparametric statistics.

Finally, we conducted a series of exploratory analyses on self-reported perceptions of the plea scenario—these analyses allowed for a more fine-grained test of our prediction that innocent participant-defendants would be more profoundly impacted by COVID information than guilty participant-defendants (H3). Overall, unless otherwise specified, we conducted analyses testing the full 2 (Guilt status: innocent or guilty) × 2 (COVID: information or no information) factorial design, and we report effect sizes and confidence intervals when applicable. Below we summarize the results of these analyses organized by hypothesis, and analyses of other dependent measures are available in the Supplemental Materials.

Figure 4

The Judge Presents the Participant-Avatars' Rights

Note. See the online article for the color version of this figure.

H1: Guilt Status Effect

Consistent with our prediction, guilt status significantly predicted dichotomous plea acceptance, $B = 1.92$, Wald's $\chi^2(1, N = 704) = 54.91$, $p < .001$, $OR = 6.85$, 95% CI [4.12, 11.39].

Figure 5

Flashback to the Time of the Accused Theft for Innocent Participant-Avatars

Note. Guilty participant-avatars would not see the top image and in the bottom image, the sunglasses would be shown atop their heads. See the online article for the color version of this figure.

Participant-defendants in the guilty condition (87%) were far more likely to plead guilty than those in the innocent condition (50%; see Table 1). Because guilt status remained constant between Time 1 and Time 2 measures for the interval/ratio willingness to accept the plea measure, there was no main effect of guilt-status on shifts in willingness to accept the plea, $F(1, 700) = 0.01$, $p = .918$, $\eta^2 = .01$; ignoring any interaction with potential COVID information, innocent ($M = 5.32$, $SD = 25.90$) and guilty ($M = 5.46$, $SD = 17.85$) participant-defendants showed a similar, subtle shift in favor of accepting the guilty plea.

H2: COVID Information Effect

Consistent with our hypotheses, the presence or absence of COVID information significantly predicted plea acceptance, $B = .52$, Wald's $\chi^2(1, N = 704) = 5.49$, $p = .019$, $OR = 1.68$, 95% CI [1.09, 2.58]. Participant-defendants were more likely to plead guilty in the COVID-information condition (74%) than in the no COVID-information condition (65%; see Table 1). Similarly, there was a main effect of COVID information on shifts in willingness to accept the plea, $F(1, 700) = 35.07$, $p < .001$, $\eta^2 = .05$—participant-defendants informed about COVID ($M = 9.95$, $SD = 23.14$) became more willing to accept the plea agreement postinformation than those that were not informed ($M = .49$, $SD = 19.67$).

H3: Interaction Between Guilt Status and COVID Information

For dichotomous plea decisions, the interaction between guilt status and COVID-information was not statistically significant, $B = -.08$, Wald's $\chi^2(1, N = 704) = .04$, $p = .837$, $OR = .93$, 95% CI [.44, 1.95]. However, the COVID-information × Guilt-status interaction was significant for the more sensitive measure of shifts in willingness to plea, $F(1, 700) = 4.04$, $p = .045$, $\eta^2 = .01$. Examining the simple main effects of this interaction indicates that

Figure 6
The Meeting With the Defense Attorney

Note. The defense attorney relays the plea deal (Top); in the COVID-warning conditions, the defense attorney also communicates a number of the complications introduced by the pandemic (Bottom). See the online article for the color version of this figure.

while guilty defendants shifted more toward favoring a guilty plea after COVID information ($M = 8.49$, $SD = 17.44$) compared to when they were not informed ($M = 2.14$, $SD = 17.75$), $t(367) = -3.47$, $p = .001$, $d = .36$, 95% CI [.15, .57], innocent defendants shifted even more dramatically toward favoring a guilty plea when given COVID information ($M = 11.59$, $SD = 28.16$) compared to when they were not ($M = -1.29$, $SD = 21.47$), $t(318.59) = -4.72$, $p < .001$, $d = .51$, 95% CI [.29, .73].

For simplicity of presentation, we only include parametric tests and corresponding effect sizes in text. But, because the distribution of this particular variable was extremely leptokurtic, we present the nonparametric simple effects analyses in Table 2 as well. This analysis provides support for our third hypothesis; namely, that while the risk of COVID is likely to influence guilty pleas across the board, this effect will be more pronounced among the innocent.

Table 1

Proportion of Participant-Defendants Pleading Guilty Across Experimental Conditions

Guilt status	COVID information	N (%)	Total
Innocent	No information	71 (44)	163
	Information	97 (56)	172
Guilty	No information	148 (84)	176
	Information	172 (89)	193

Exploratory Analyses Pertaining to H3

In addition to our primary analyses, we conducted exploratory analyses to further examine the degree to which COVID fears and guilt-status interacted to affect participant-defendants' plea decision making. Participant-defendants who pled guilty were asked to rank how important eight factors were to their decision (1 = *most important*, 8 = *least important*)—among these variables were "COVID-related concerns" and "guilt-status" (the other six factors were: case evidence, risk of jail sentence, avoid pretrial detention, seemed like a good deal, perceived pressure from prosecutor, other). We conducted a between-subjects factorial ANOVA on the rankings of COVID-related concerns and guilt-status to assess whether the self-reported influence of these factors varied as a function of the experimental conditions. Additionally, participant-defendants who received COVID information were asked to assess the degree to which that information influenced their decision on a Likert-type scale (from 1 = *no influence* to 6 = *substantial influence*). Focusing on the defendants that pled guilty, we conducted a *t*-test to determine whether innocent defendants felt more influenced by the COVID information than guilty defendants.

COVID-Related Concerns. Main effects of both guilt-status, $F(1, 484) = 5.93$, $p = .015$, $\eta^2 = .01$, and COVID information, $F(1, 484) = 259.82$, $p < .001$, $\eta^2 = .35$, were qualified by the Guilt-status × COVID-information interaction, $F(1, 484) = 3.84$, $p = .051$, $\eta^2 = .01$ (see Table 3 for full descriptives). This interaction met traditional standards of statistical significance when data were transformed to correct for positive skew ($p = .033$ and .022 for square-root and log10 transformations, respectively). We present analyses on the raw scores for transparency and simplicity of interpretation. When defendants who pled guilty did not receive COVID information, innocent ($M = 5.87$, $SD = 1.84$) and guilty ($M = 5.95$, $SD = 1.58$) defendants did not differ in their rankings regarding the importance of COVID-related concerns, $t(217) = 0.33$, $p = .742$, $d = .05$, 95% CI [−.24, .33]. When defendants received the COVID information and pled guilty, innocent defendants ($M = 2.85$, $SD = 1.79$) ranked COVID-related concerns as

more important than guilty defendants ($M = 3.58$, $SD = 1.80$), $t(267) = 3.23$, $p = .001$, $d = .41$, 95% CI [.15, .66].

Guilt-Status. We conducted this analysis to determine whether COVID information affected the perceived importance of actual guilt in deciding to plead guilty. There was a main effect of guilt-status on perceptions of its importance, $F(1, 484) = 45.87$, $p < .001$, $\eta^2 = .09$, such that guilty defendants ($M = 3.83$, $SD = 1.81$) ranked guilt-status as more important than innocent defendants ($M = 5.04$, $SD = 1.77$). There was also a main effect of COVID information on the perceived importance of guilt-status, $F(1, 484) = 20.57$, $p < .001$, $\eta^2 = .04$. Defendants who pled guilty and received COVID information ranked guilt-status as less influential ($M = 4.57$, $SD = 2.01$) than those who pled guilty and did not receive COVID information ($M = 3.84$, $SD = 1.62$)—this effect suggests that factual guilt was less important to participant-defendants who received COVID information. The Guilt-status × COVID-information interaction did not reach statistical significance, $F(1, 484) = 2.55$, $p = .111$, $\eta^2 = .01$. See Table 3 for full descriptives.

COVID Information Influence. For defendants who received COVID information and pled guilty, there was a significant difference between innocent and guilty defendants regarding the effect of the COVID information, $t(221.20) = 3.72$, $p < .001$, $d = .45$, 95% CI [.20, .70]. Innocent defendants rated the COVID information as more influential ($M = 3.81$, $SD = 1.28$) than guilty defendants ($M = 3.18$, $SD = 1.45$).

Discussion

The current research experimentally demonstrates that the COVID-19 pandemic could be meaningfully impacting plea decisions. Our results indicated that informing participant-defendants about the risks associated with COVID-19 boosted both true and false guilty pleas. While we did not observe an interaction effect between guilt status and the impact of COVID information on the acceptance of the plea offer, we did find an association between COVID information and other outcomes of interest. Participants' willingness to accept a plea increased after being provided with COVID information, but more so for innocent than guilty individuals. Furthermore, COVID-concerns factored more heavily among false guilty pleaders than true guilty pleaders, and false guilty pleaders who received COVID information rated that information as more influential than true guilty pleaders. These findings provide support for the notion that defendants may feel increased pressure to plead guilty to avoid jail during a pandemic, and that innocent defendants might be particularly susceptible to this increased pressure. In further support of these findings, some scholars have observed a notable increase in plea bargains during the pandemic (Baldwin et al., 2020; Johnson, 2020), although comprehensive

Table 2

Simple Main Effects for Change in Willingness to Plead Guilty (Time 2–Time 1) Across Experimental Conditions

Guilt status	COVID info.	M (SD)	t statistic (p)	Mann–Whitney (p)	d	r (r²)
Innocent	No info.	−1.29 (21.47)	−4.72 (<.001)	8667.5 (<.001)	.51	.33 (.11)
	Info.	11.59 (28.16)				
Guilty	No info.	2.14 (17.75)	−3.46 (.001)	12743.5 (<.001)	.36	.22 (.05)
	Info.	8.49 (17.44)				

Note. For transparency, we present both parametric and nonparametric analyses/effect sizes for simple main effects, respectively.

Table 3
Mean Importance Rankings for Both COVID-Concerns and Guilt-Status

Guilt status	COVID info.	COVID-concerns rank M (SD)	Guilt-status rank M (SD)	N
Innocent	No info.	5.87 (1.84)	4.44 (1.58)	71
	Info.	2.85 (1.79)	5.47 (1.77)	97
Guilty	No info.	5.95 (1.58)	3.56 (1.57)	148
	Info.	3.58 (1.80)	4.06 (1.96)	172

Note. Lower scores indicate a higher rank, that is, a higher importance.

national court statistics have yet to emerge. Thus, the presence of a pandemic could represent yet another factor, among a host of others, leading defendants to plead guilty, regardless of actual guilt.

We also observed the predicted impact of guilt status. Guilty participants were significantly more likely to accept the plea offer than innocent participants. This finding is consistent with previous research demonstrating a significant effect of guilt, and confers further support for extending the shadow-of-the-trial model to include guilt status as a predictor (Wilford et al., in press). That said, the false guilty plea rate even in the no COVID-information condition was still substantial. Specifically, 44% of innocent participants not provided any COVID-19 information still agreed to plead guilty. While this was significantly lower than the proportion of guilty participants who pled guilty (84%), it is alarmingly high considering the plausibility of the offer we presented. Similar deals are commonly seen in misdemeanor cases (Petersen, 2019), which represent the vast majority of criminal adjudications in the U.S. (Mayson & Stevenson, 2020).

This high false guilty plea rate could have contributed to the null interaction between guilt status and COVID information on plea outcomes. Because the baseline for false guilty pleas was already unusually high (exceeding 40%), the range for which a significant increase could be observed may have been restricted. It could also be that the predicted interactive effect was simply not strong enough to have a significant impact on the dichotomous outcome of plea acceptance (particularly given that a differential effect was observed for change in willingness to accept a plea). Further research should examine the impact of variables like COVID when the baseline rate for false guilty pleas is lower. This result also highlights the degree to which pretrial detention can make plea offers alluring even when the difference between the plea and trial sentence is relatively small. Thus, our findings further highlight the substantial impact that proximal consequences can have, extending findings from the confession literature to plea decision making (Yang et al., 2017).

Researchers have argued for a more cautious application of pretrial detention even before the pandemic (Edkins & Dervan, 2018; Lowenkamp et al., 2013). Our results further illustrate the impact that pretrial detention can have on plea outcomes when additional dangers are presented with incarceration (i.e., a pandemic). Without pretrial detention, defendants' plea decision making would not be clouded by the immediate risks accompanying incarceration, like exposure to COVID-19. COVID-19 has visibly exacerbated many long-existing problems within the court system, and this pandemic offers an inflection point after which practitioners should consider alternative and innovative modes of criminal case processing (Baldwin et al., 2020; Cannon, 2020; Johnson, 2020;

Turner, 2021). Such innovations are represented well by an organization known as The Liberty Fund—a New York-based nonprofit that posts bail for defendants facing a misdemeanor charge. As many as 87% of their clients made it to all court appearances (The Liberty Fund, n.d.), which provides direct evidence against one of the primary arguments for keeping defendants detained pretrial when they cannot afford bail—the alleged risk that they will flee and/or fail to appear in court.

In *Lafler v. Cooper* (2012), the U.S. Supreme Court characterized our justice system as a "system of pleas," and the U.S. is not the only country undergoing such a transformation (Fair Trials, 2017; Pardieck et al., 2020). Unfortunately, while trials have long been shaped by both legislation and court rulings, the recognition of "plea-bargaining law" is relatively new (see Scalia's dissenting opinion in *Lafler v. Cooper*). As a result, the process of pleading guilty includes a mere fraction of the due process protections that trials possess. The current research adds to growing literature on the plea process and its myriad of issues (Redlich et al., 2017; Wilford & Redlich, 2018; Yan, 2020). The literature has already shown that defendants have to weigh the proximal benefits against the distal costs of pleading guilty, especially when they are detained pretrial and their release is contingent on a guilty plea. Anything that increases the risks associated with pretrial detention, like a pandemic, will naturally make the prospect of immediate release and pleading guilty even more attractive. While this arguably grants leniency to factually guilty defendants, it might also drive more factually innocent defendants into false guilty pleas. We believe that policymakers and prosecutors need to be aware of these dynamic mechanisms in order to better protect the rights of all defendants.

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