Unintelligent Decision-Making?

The Impact of Discovery on Defendant Plea Decisions

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The disclosure of evidence, primarily from the prosecutor to the defense (i.e., discovery) is key to a fair and just legal system. Restrictive discovery policies have been criticized for contributing to innocent defendants pleading guilty (Alkon, 2014) and to uninformed plea decisions (Friedman, 1971). Open-file policies, in which prosecutors broadly share evidence with the defense, are a leading reform to address these issues. This study investigated the impact of guilt and access to discovery information (with or without exculpatory evidence) on plea decisions. We hypothesized that, in comparison to their counterparts, participants who had access to all of the evidence (i.e., those in open-file condition) and participants who were innocent would rate the evidence against them as significantly weaker, their probabilities of conviction at trial as significantly lower, and would be less likely to take the plea deal. We also hypothesized that ratings of evidence strength and probability of conviction would mediate expected relations between the plea decision and conditions. One-hundred participant-defendants were randomly assigned to open- vs. closed-file and guilt vs. innocence conditions and asked to review case materials that either contained full or partial discovery. They were then asked to rate the strength of the evidence against them, their probability of conviction, and to accept or reject a plea offer in a hypothetical case. Defendant guilt and access to discovery information impacted perceived evidence strength, which subsequently impacted plea decision-making. Our findings indicate that access to discovery information indirectly impacted defendants' plea decisions.

I   Introduction

Evidence is one of the most important elements in the criminal justice system. Ideally, with enough inculpatory evidence guilty defendants should be convicted and conversely with adequate exculpatory evidence (i.e., evidence that points away from a defendant's guilt) innocent defendants should be acquitted. Despite the importance of evidence in the criminal justice system, however, rules that govern the disclosure of evidence during one of the most crucial phases—guilty pleas-- are unclear. Guilty pleas account for the vast majority of criminal convictions in the United States (Bureau of Justice Statistics, 2010; Jones et al., 2018) and yet defendants' access to evidence during this phase can be restricted. The restriction of evidence (i.e., access to discovery information) in the context of guilty pleas raises concerns about the fairness and validity of pleading guilty, and also about the risk of wrongful convictions from innocent defendants pleading guilty to crimes they did not commit (Bibas, 2004; Yaroshefsky, 2008).

Such concerns became a reality for George Alvarez. Alvarez, at the time a special-education student in the ninth grade, was accused of and then pled guilty to, assaulting a peace officer (*Alvarez v The City of Brownsville,* 2018). Four years into his sentence, however, exculpatory video footage the prosecution never gathered from police officers came to light, and eventually led to a finding of "actual innocence" for Alvarez in the Texas Court of Criminal Appeals. Alvarez then sued the City of Brownsville, TX, arguing that his rights to exculpatory evidence were denied. However, the Fifth Circuit Court of Appeals reasoned that because Alvarez pled guilty, his constitutional right to exculpatory evidence did not apply and the city was therefore not liable (*Alvarez v The City of Brownsville,* 2018).

Open file discovery policies, or policies that require the prosecution to broadly share evidence with the defense early on in the criminal process, are the leading reform to address several criticisms of the pre-plea restriction of discovery information and situations like Alvarez's (Alkon, 2014; Prosser, 2006). To our knowledge, however, no research has examined if access to discovery information, particularly exculpatory information, influences defendant plea decision-making. In the present study, we examine the impact of access to full versus partial discovery on defendant plea decision-making. Additionally, we do so under the conditions of defendant guilt and innocence. One criticism of restrictive pre-plea disclosure is the risk that innocent defendants, like Alvarez, will plead guilty to crimes they did not commit because they lack adequate information before the plea must be entered (Alkon, 2014; Gregory, 2012).

II   Discovery Policies

In the landmark case *Brady v Maryland* (1963) the Supreme Court ruled that material evidence pointing to a defendant's innocence (i.e., exculpatory evidence) must be turned over by the prosecution to the defense, reasoning that the suppression of such evidence violates defendants' due process rights. So-called *Brady* violations by prosecutors have led to an untold number of wrongful convictions. However, the Supreme Court's ruling in *Brady* (which has been extended to evidence not directly in possession of the state; *Kyles v Whitley*, 1995), involved the suppression of evidence during trials, and the application of *Brady* to the disclosure of exculpatory evidence during guilty pleas remains relatively unclear. What is exceedingly clear, however, is that our criminal justice system is one of pleas and not one of trials; approximately 97% of all convictions are resolved through pleas (Jones et al., 2018). Therefore, defendants' pre-plea access to discovery information remains an important issue, one with which many states have recently grappled with (e.g., Maryland, New York, and Virginia).

In 2002, the Supreme Court addressed the pre-plea disclosure requirements for one specific type of exculpatory evidence. In its decision in *United States v Ruiz* (2002), the Supreme Court reasoned that access to "exculpatory impeachment evidence" (i.e., evidence that speaks to the credibility of a witness) is necessary to ensure the fairness of a trial, but not necessary to ensure the voluntariness of a plea. Some lower federal and state courts have followed the Supreme Court's reasoning in *Ruiz* and further restricted the application of *Brady,* expressly stating that traditional exculpatory material (i.e., evidence that can directly support innocence) does not need to be turned over during the plea-bargaining process (see Zottoli et al., 2019). For example, in the Alvarez case described above, the Fifth Circuit Court of Appeals relied on *Ruiz* in their decision to not mandate disclosure of traditional exculpatory evidence pre-plea (*Alvarez v The City of Brownsville,* 2018).

There are many who argue that the pre-plea discovery standards, such as those established in the *Ruiz* and lower court decisions, are far too restrictive and jeopardize the fairness and validity of the plea process (Alkon, 2014; Friedman, 1971). For example, Ostrow (1981) argued that the plea process cannot be truly fair without a full disclosure of evidence. Additionally, the *Ruiz* decision specifically has been criticized for failing to appreciate the potential connection between the disclosure of impeachment evidence and support for claims of innocence, reasoning that under certain circumstances (e.g., evidence that speaks to the credibility of the prosecution's primary witness), impeachment evidence can be as damning to a case as traditional exculpatory evidence (McMunigal, 2007; see also Cassidy, 2011).

In contrast to policies that limit defendants' access to pre-plea discovery information, open-file policies generally involve the prosecution sharing their entire case file with the defense. For example, New York recently overhauled its discovery polices from "some of the most restrictive in the nation," to an open-file model in which prosecutors are required to turn over discoverable materials to the defense three days prior to the deadline for plea acceptance (Schwartzapfel, 2019). Open-file policies are a leading reform to address several criticisms of more restrictive discovery policies and offer a solution beyond extending *Brady* to the plea process (Alkon, 2014; Douglass, 2001; Prosser, 2006). A solution some argue is necessary, given that *Brady* requires the disclosure of evidence that is both favorable to the defense and material (i.e., important) to the outcome, arguably exempting much of the evidence in the prosecution's possession from disclosure

requirements (Douglass, 2001; Gregory, 2012). As of 2019, 18 states practiced an open-file model of discovery; however, only 11 states have explicit statutes about prosecutors' pre-plea discovery obligations (Zottoli et al., 2019).

III Discovery and Plea Decision-Making

Defendants who do not have access to discovery may also be especially susceptible to outside pressures and lack the necessary information to negotiate deals with the prosecution that represent the prosecution's case against them (Alkon, 2014). Plea bargaining has been described as inherently coercive, as it forces defendants to choose between a certain lesser punishment by pleading guilty or risk a far greater punishment if found guilty at trial (Kipnis, 1976; Langbein, 1992). Additionally, the perceived voluntariness of defendant plea decision-making can be impacted by numerous external factors, such as prosecutorial leverage (e.g., time-limited deals, overcharging) and the value of the bargain itself (Caldwell, 2011; Redlich, Bibas, Edkins, & Madon, 2017). For example, prosecutors may overcharge as a way to gain leverage during plea negotiations (Caldwell, 2011). External pressures (e.g., the value of the bargain itself) may be even more influential for innocent defendants (Bibas, 2004; Redlich et al., 2017). Faced with external pressures and limited discovery information, innocent defendants may plead guilty for fear of losing at trial and risking even harsher sentences than those offered during plea negotiations (Bibas, 2004). Evidence from laboratory studies suggests that fear of losing at trial and penalty fears are associated with innocent individuals accepting guilty pleas (e.g., Redlich & Shteynberg, 2016; Zimmerman & Hunter, 2018). Ultimately, the lack of pre-plea discovery information and the potentially coercive nature of the plea-bargaining process raises concerns not only about the fairness of guilty pleas, but also about the validity of plea decisions (Ostrow, 1981).

In order for plea decisions to be considered valid, guilty pleas must be entered knowingly, intelligently, voluntarily, and with a factual basis of guilt (*Boykins v Alabama*, 1969; *Brady v United States*, 1963; see Redlich, 2016). Yet defendants' limited access to discovery information before pleas are entered raises concerns about the validity of uninformed pleas. Friedman (1971) argued that in order for defendants to make fully informed decisions to plead guilty they must be able to "assess knowledgeably the likelihood of conviction at trial" (p. 528) and that this assessment is only possible with an evaluation of evidence held by the prosecution. In fact, plea bargaining with inadequate discovery has been equated to bargaining "blindfolded" (Bibas, 2004, p. 2495) and attributed to leading to "a fuzzy notion of the likely consequences of entering a guilty plea" (Covey, 2007, p. 217). For innocent defendants, making fully informed plea decisions without access to the evidence against them is presumably even harder than for guilty defendants, as they should have less knowledge (if any) of the crime they are being charged with and of the potential evidence that could implicate them (Bibas, 2004). Additionally, McConkie (2017) argues that factually guilty defendants also need to be aware of evidence in the prosecution's possession in order to realistically gauge the strength of the government's case against them, their chances of conviction at trial, and to understand the likely sentencing consequences of a plea.

The "shadow of the trial" theory predicts that plea decisions are based on defendants' perceived probability of conviction at trial, which is influenced by evidence strength (Bibas, 2004; Bushway, Redlich, & Norris, 2014). Research on defendant plea decision-making supports the argument that individuals consider the strength of the evidence against them and their probability

of conviction when making plea decisions (Bordens, 1984; Peterson-Badali & Abramovitch, 1993; Zimmerman & Hunter, 2018). Furthermore, some research suggests that prosecutors consider probability of conviction and strength of evidence when making plea decisions and may be more likely to offer plea deals in cases with lower probabilities of conviction (McAllister & Bregman, 1986) and with weaker evidence (McAllister, 1990; Pezdek & O'Brien, 2014). Kutateladze, Lawson, and Andiloro (2015) found that evidentiary factors had an impact on prosecutorial decision-making in New York, such that when prosecutors had more evidence available it led to more punitive plea offers (i.e., plea-to-charge rather than reduced charge offers). Therefore, defendants' access to evidence during this process may be especially important to ensure valid plea decisions.

While arguments have been made suggesting that plea decisions cannot be fully informed and fair without access to pre-plea discovery information, little research has been conducted examining the impact of discovery on decision-making. The few studies that have been conducted have largely focused on the decisions of prosecutors. Using a hypothetical scenario, Lucas, Graif, and Lovaglia (2006) found that greater case severity, importance of obtaining a conviction, and belief in defendant guilt impacted mock prosecutor's decisions to commit misconduct and withhold exculpatory discovery information. Additionally, using the same basic paradigm developed by Lucas and colleagues (2006), Luna and Redlich (2020) examined the impact of two discovery policies on mock prosecutor behavior. Specifically, mock prosecutors told about the *Ruiz* decision withheld significantly more discovery information overall and more exculpatory items than those not told about *Ruiz*, whereas information about open-file policies had the opposite effect. Similarly, Turner and Redlich (2016) surveyed prosecutors and defenders in Virginia and North Carolina, finding that the two states' disparate discovery policies impacted prosecutors reported pre-plea behavior. Compared to Virginia's restrictive discovery policies, North Carolina's open file polices promoted more informed guilty pleas; prosecutors and defense attorneys reported that defendants had access to more of the state's evidence against them (Turner & Redlich, 2016).

IV The Present Study

The purpose of the present study was to examine the impact of discovery information and guilt on mock defendant plea decision-making. Using a 2 (File Condition: Open- v Closed File Jurisdiction) x 2 (Guilt Condition: Guilty v Innocent) between-subjects study design, we examined how access to full v partial discovery and to potentially exculpatory information impacted true and false guilty plea decisions. Because restrictive or closed-file discovery policies have been criticized for not allowing defendants access to comprehensive discovery information to make fully informed plea decisions by evaluating the strength of the evidence against them and their probability of conviction at trial (Covey, 2007; Friedman, 1971), we hypothesized that ratings of evidence strength and probability of conviction at trial would mediate relations between our manipulated variables and plea decisions. In addition to evidence strength and probability of conviction at trial, we also explored the possibility that participants' reports of whether the interviews impacted their decisions would mediate relations between our manipulated variables and plea decisions. Furthermore, because participants in the Open-File Jurisdiction (OFJ) conditions had access to more discovery information, including potentially exculpatory evidence, we hypothesized that those in the OFJ conditions would rate the evidence against them as

significantly weaker and their probabilities of conviction at trial as significantly lower than participants in the Closed-File Jurisdiction (CFJ) conditions, and therefore would also be less likely to take the plea deal.

Finally, because a prominent criticism of restrictive discovery polices is that they place innocent defendants at risk for pleading guilty to crimes they did not commit (e.g., Bibas, 2004), we also examined plea-decision making when mock defendants were guilty and innocent. We hypothesized that participants in the guilty conditions would rate the strength of the evidence against them as significantly stronger and their probability of conviction at trial as significantly higher than those in the innocent conditions and would therefore be more likely to accept the plea deal (a very consistent finding in the literature; for a review, see Wilford & Khairalla, 2019). Further, we hypothesized that innocent participants who had access to potentially exculpatory evidence (i.e., in OFJ conditions) would have the lowest ratings of the evidence strength and probability of conviction at trial and would be the least likely to take the plea deal in comparison to those in the other three conditions.

A. Pilot Studies

Before proceeding with the main experiment, we conducted two pilot studies to refine our procedures. The purpose of the first pilot was to determine if the discovery instruction itself given to participants influenced plea decisions and therefore acted as a confound. More specifically, we examined if merely telling people their case was in an open-file jurisdiction was sufficient to influence plea decisions (as opposed to actual information provided). In the first pilot study (N=32) every participant received full discovery and only the discovery instruction was manipulated. Participants were informed that "some prosecutors work in what is called an Open-File jurisdiction and others have more discretion when turning over evidence" and then either told that the prosecutor in their case worked in an Open-File jurisdiction (OFJ) or were given an ambiguous instruction (AMB) that read: "The Prosecuting Attorney in your case does not work in an Open-File jurisdiction but rather can decide what evidence to turn over that he or she thinks you should see. In your case, the prosecutor is known to be unpredictable when it comes to sharing information. Therefore, you may or may not be reading about all of the evidence that the prosecution has on you." Plea decision was measured by asking participants if they were willing to accept the plea offered by the prosecution or not.

We did not find a significant difference between the OFJ and AMB conditions $\chi(1) = 0.667$, $p = .414$, $\phi = -.144$, indicating that the instruction given to participants did not influence their plea decision. Thus, we decided to use the OFJ instruction in the main experiment. In addition, five participants in the AMB condition failed the manipulation check question, whereas none did so in the OFJ condition.

The second pilot study was conducted to determine if the number of exculpatory items turned over to participants in the Closed-File jurisdiction (CFJ) instruction condition influenced plea decisions. Every participant (N=34) was given the same CFJ instruction and the number of exculpatory items given to participants was manipulated to be either two exculpatory items (2 exculpatory) or none of the exculpatory items (0 exculpatory). Two exculpatory items were chosen

for the first condition based on the average amount of discovery turned over by participants in a related, previous study (Luna & Redlich, 2020).

A significant difference between the 2 exculpatory and 0 exculpatory conditions was not found $\chi(1) = 0.486$, $p = .486$, $\phi = -.120$, indicating that the number of exculpatory items given to participants did not influence plea decisions. For the main experiment we used the no (0) exculpatory information in our Closed-File condition, as this allowed for a cleaner examination of access to exculpatory information or not. All participants in both exculpatory conditions correctly answered the manipulation check, with the exception of one respondent who took less than four minutes to complete the entire survey.

V Method

A. Participants

One-hundred and seven students from a large eastern university participated in the study. Of those participants, one was excluded due to a language barrier. An *a priori* power analysis conducted using the R pwr package for chi-square tests revealed that we would need at least 88 participants to have sufficient power (0.80) in order to detect a medium effect size (0.3) at $\alpha = 0.05$ with our main analyses on defendant plea decisions. Fifty-eight percent of participants were female, and the majority of participants were White (55.2%) followed by Asian (27.6%), Black (15.2%) and Other (1.9%). Participant age ranged from 18-41 years ($M = 20.63$, SD=3.35). Participant education level ranged from freshman in college (35.8%) to completed graduate degree (0.9%), and the average (current or past) college GPA was 3.35 (SD =0.42). Additionally, participants' experience with the criminal justice system (as a victim, witness, or defendant) ranged from no experience (46.2%, score of 1) to a score of 8 out of 10 (1.9%), with a mean response of 2.44 (SD = 1.84).

B. Materials and Design

We used a modified version of the Lucas et al. (2006) paradigm. The participant role was switched from a prosecutor in the original paradigm to a defendant in the current study. Additionally, the crime was held constant (robbery-burglary-malicious wounding) across conditions and instead discovery jurisdiction and defendant guilt were manipulated.

Participants playing the role of defendants were given several documents to familiarize themselves with their criminal case. Two versions of Packet 1 and Packet 2 were created, one for female participants (Michelle Kamen) and one for male participants (Michael Kamen). Both Michael and Michelle's cases were identical and only the first name and pronouns differed. Additional documents included a Plea Decision Form, the Juror Bias Scale (Kassin & Wrightsman, 1983), a Post-Study Questionnaire, and a Debriefing form.

Demographics Questionnaire. Participants were asked several demographics questions including gender, age, race, and ethnicity, as well as current level of education, grade point average (GPA), college major, and future career/occupation plans. Additionally, participants were asked

to rate their level of experience with the legal system as either a "victim, witness, or suspect/defendant." Participants responded using a 10-point scale where higher responses indicated more experience with the legal system.

Packet 1. "Packet 1" contained two documents: 1) "Your Role – Defendant" and 2) "Facts Relevant to the Case." The document "Your Role – Defendant" instructed participants that they would be acting as defendant Kamen (Michelle or Michael depending on participant gender), who was charged with "the robbery, statutory burglary and malicious wounding of Mr. Steven Davis." The document explained that as defendant Kamen, their job was "to decide whether to accept or reject a guilty plea offered by the prosecutor." Participants were also led to believe that other participants, assigned the roles of judge and prosecutor, would complete the study at different times. Participants were told that the prosecutor's job was to convict them by "either convincing the judge beyond a reasonable doubt" that they were guilty or "via a guilty plea." Additionally, they were told that the judge's job was to determine "whether he or she believes that you are making an informed and voluntary decision about the plea offer."

"Packet 1" was also manipulated by our independent variables. Participants were either told they were guilty or innocent of the crimes they were being charged with, based on condition. Additionally, participants in each condition were instructed that the prosecutor assigned to their case would be turning over case information and that: *Not all prosecutors have the same rules for turning over case information. Some prosecutors work in what is called an Open-File jurisdiction and others work in a Closed-File jurisdiction and have more discretion when turning over evidence*. Participants in the OFJ condition were told: *The Prosecuting Attorney in your case works in what is called an Open-File jurisdiction. This means that the prosecutor tends to broadly share information with the defense, and often turns over the whole case file to the defense. Therefore, you will be reading about all of the evidence that the prosecution has on you.* And participants in the CFJ condition were told: *The Prosecuting Attorney in your case works in what is called a Closed-File jurisdiction. This means that the prosecutor tends to be restrictive when turning over information to the defense. Therefore, it's likely you will not read all of the evidence that the prosecution has on you.* In addition to being told this, when reviewing the evidence, it was further made clear to participants in CFJ conditions that they were not privy to all of the evidence, as portions were blacked out.

In the "Facts Relevant to the Case" document participants learned that the victim, Steven Davis, was assaulted in his home. Steven Davis was reported missing by his employer and in response the police performed a wellness check. When officers arrived at the residence it appeared to have been ransacked and once inside the body of an unconscious white male was found in the hallway. Emergency medical personnel were called and the unconscious man (Davis) was admitted to the hospital for severe blunt force trauma to the head. The "Facts Relevant to the Case" document also included details of the case, some of which pointed away from the defendant, Kamen, and to the victim's estranged wife and her boyfriend as possible suspects. Information was also provided that pointed to Kamen as the assailant. For example, Kamen had a previous history of illegal entry and robbery, an eyewitness identification, the fact that his/her cousin used to work for Mr. Davis, as well as information that his/her alibi for the time of the assault was uncorroborated. The eyewitness identification described here stated that the victim's neighbor

recalled an "unusual individual loitering in the neighborhood on the day of the assault", which led to the creation of a sketch and eventually to Kamen being identified.

Packet 2. "Packet 2" contained instructions ("Interview Instructions"), a detective's notes ("Detective John Hensen's Typed-Up Notes") and five interviews of witnesses and the defendant. The "Interview Instructions" instructed participants that the prosecutor in their case had access to all interviews conducted by the police department and that they would not see that information unless the prosecutor shared it with them. In the OFJ condition participants were again told: *As mentioned, the prosecutor in your case works in an Open-File jurisdiction and is therefore likely to share the entire case file of information with you.* And participants in the CFJ condition were reminded: *As mentioned, the prosecutor in your case works in a Closed-File jurisdiction and is therefore unlikely to share the entire case file of information with you. In addition, to protect the identities of witnesses and other private information, certain information has been blacked out.* Thus, in the CFJ condition, participants read interviews with portions that were redacted, which was intended to make it more salient that there was discovery information they were not privy to. Participants had no way of knowing whether the redacted information was incriminating, exculpatory, or guilt-irrelevant, only that the prosecutor did not turn it over to them. "Detective John Hensen's Typed-Up Notes" included case information from the perspective of the detective assigned to the case. This document was only given to participants in the OFJ condition and included additional case information, such as the eyewitness identification of Kamen.

The five interviews given to participants consisted of four police interviews from the investigation into the assault of Steven Davis and one from the interrogation of defendant Kamen. As with the "Facts Relevant to the Case" document some of the information in the interviews pointed to Kamen as the assailant. However, there were four pieces of exculpatory information that pointed to the victim's estranged wife as a possible suspect. For example, the police interview of the victim's wife included*: Well, yes, he had an insurance policy worth a million dollars. And yes, I was the benefactor and would not have collected if he died after our divorce went through. I know what you're driving at, but I had absolutely nothing to do with what happened to him.* Participants in the OFJ condition were given all of the case information. Participants in the CFJ condition, however, were given redacted versions of the interviews. The redacted version of the interviews included the same interrogation as in the OFJ condition, however all four pieces of the exculpatory information and 25 of 48 interview questions were blacked out (i.e., redacted) so that participants could not read the information. Additionally, all names and identifiers were redacted in the CFJ version.

Plea Decision Form. The "Plea Decision Form" instructed participants that they were facing a potential maximum sentence of 75 years for the charges of robbery, malicious wounding, and burglary. Participants were also told that based on the "the average sentences of similarly situated defendants" they would likely face 10-17 years if convicted at trial.[1] Similar to other studies (e.g., Tor et al., 2010), participants were told an estimate of their probability of conviction at trial, i.e., 65% or two-in-three chance of being convicted. The plea offer outlined in the document was for one charge of robbery. Participants were instructed that if they agreed to a plea deal the prosecution would drop the malicious wounding and statutory burglary charges and they

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[1] These numbers are based on guidelines retrieved from the Virginia Criminal Sentencing Commission, the state in which the research took place.

would likely receive a 2-5 year prison sentence. Participants indicated if they wanted to accept or reject the plea offer for robbery. Finally, participants were asked why they chose to accept or reject the plea deal in an open-ended question. A coding scheme was developed for this question. Interrater reliability was assessed between two coders on a sample of 80% of responses to this question, 90.3% agreement was obtained, and discrepancies were discussed until a consensus was reached.

Juror Bias Scale (JBS). The Juror Bias Scale measures individuals' inclinations towards the prosecution or defense (Kassin and Wrightsman, 1983), inclinations which may feed into plea decision-making, particularly when guilty. The scale consists of 22 items and contains a mixture of filler questions, probability of commission statements (e.g., "Out of every 100 people brought to trial, at least 75 are guilty of the crime with which they are charged"), and reasonable doubt statements (e.g., "For serious crimes like murder, a defendant should be found guilty if there is a 90% chance that he committed the crime"). The probability of commission and reasonable doubt statements are also classified as either a prosecution-biased statement (e.g., "Too often jurors hesitate to convict someone who is guilty out of pure sympathy") or a defense-biased statement (e.g., "Circumstantial evidence is too weak to use in court"). Participants responded to each of the 22 items using a 5-point Likert scale (1=*strongly agree*, 3=*agree and disagree equally*, 5=*strongly disagree*). Total JBS scores were calculated by adding the total value of reverse coded defense-biased statement responses and the total value of the prosecution–biased statement responses. The JBS scale was keyed in the direction of prosecution bias, thus higher JBS Total scores indicate a stronger prosecution bias. Cronbach's alpha for the JBS was .604.

Post-Study Questionnaire and Debriefing. The post-study questionnaire contained two manipulation checks. The first asked participants if they were guilty or innocent of the crimes they were charged with, and the second asked if the prosecutor in their case worked in an Open or Closed File jurisdiction. The questionnaire also included three questions that assessed participants' perceptions of their case. Specifically, participants were asked what they believed the probability was they would be convicted at trial using a 0-100% scale, how strong they thought the evidence was against them (1 = *weak*, 10 = *strong*). Additionally, participants were asked if the interview information impacted their decision to accept or reject the plea (yes/no) and why or why not (open-ended).

C. Procedure

Participants were recruited for the study through the SONA Experiment Management System. Interested participants scheduled an appointment through the SONA website for a one-time laboratory session in exchange for research participation credit. Prior to participation, individuals were randomly assigned to one of the four conditions. After obtaining informed consent, participants were asked to complete the demographics questionnaire. Next, participants were told that they would play the role of a defendant, judge, or prosecutor. They were assigned this role by drawing one of three slips of paper held by a research assistant. However, every piece of paper was labeled defendant, and thus every participant was assigned that role (see Lucas et al. (2002) paradigm for similar procedures). Participants were then asked to read "Packet 1" and to knock on the door when finished. After participants knocked on the door, letting the research assistant know that "Packet 1" was finished, they were given "Packet 2" to read. After reading "Packet 2", participants were administered the Plea Decision Form, JBS, and the Post-Study

Questionnaire, and then debriefed by a research assistant. Participants were then asked not to share the details of the study with others and thanked for their participation. Together "Packet 1" and "Packet 2" took an average of 22.04 minutes (SD = 9.39) to complete.

VI Results

Two manipulation check questions were asked (one for each condition). All but one participant got at least one question correct (99.1%), and most (94.3%) of the sample was accurate on both questions. The seven participants who did not pass one or both manipulation checks were replaced, resulting in a total *n* of 100 participants, and 25 participants in each of the four cells (i.e., OFJ/Guilty, OFJ/Innocent, CFJ/Guilty, and CFJ/Innocent).

Preliminary analyses were first conducted to determine if there were significant differences by participant characteristics and JBS scores on the main dependent variable, plea decision. Plea decision was not significantly related to: participant age, gender, race, grades, experience with the criminal justice system or JBS scores (p's $\geq$.08). Therefore, these factors are not discussed further.

A. Plea Decision

Overall, 65% of the sample rejected the plea deal ($n = 65$) and 35.0% ($n = 35$) accepted. As expected, guilt significantly impacted decisions, $\chi(1) = 42.24$, $p = .001$, $\phi = -.650$. Specifically, among those in the guilty condition, 66.0% accepted the plea deal, compared to only 4.0% of those in the innocent condition. File condition did not impact plea decisions however, $\chi(1) = 1.099$, $p = .295$, $\phi = .105$. Of those in the OFJ condition, 30.0% chose to accept the plea deal versus 40.0% in the CFJ condition. Thus, although having more information reduced willingness to accept the plea offer (by ten percentage points), this reduction was not significant. When the influence of file condition is examined when guilty, the effect remains non-significant, though again in the anticipated direction. Specifically, among guilty participants in the OFJ condition, 56% pled guilty in comparison to 76% in the CFJ condition, $\chi(1) = 2.228$, $p = .136$, $\phi = .211$. Because too few participants pled guilty when innocent, it was not possible to do a similar analysis for the innocent condition. Therefore, it was not possible to test the hypothesis that innocent participants in the OFJ condition would be the least likely to accept the plea deal.

Participants were also asked an open-ended question why they chose to accept or reject the plea deal. Codes were developed separately for those who chose to accept versus reject the plea deal. For those who chose to accept the deal, seven themes emerged, and for those who chose to reject the plea deal, five themes emerged (see Table 1). All participants answered this question and most answers represented more than one code; 91.4% of participants who chose to accept the plea and 67.7% of those who chose to reject the plea supplied answers representing more than one code. Among the 35 participants who accepted the plea deal the most common reasoning was that the plea deal offered a reduced sentence and/or charge (85.7%). Among participants who rejected the plea deal (N=65), however, the most common rationale (69.2%) was that they did not feel that there was enough evidence against them. Relatedly, half of participants (50.7%, $n = 33$) who rejected the deal cited the existence of other potential suspects as the rationale behind their decisions; of these, most (n=27) were in the OFJ condition.

Table 1. Rationales for Why Participants Accepted or Rejected the Plea Deal Offered

Accepted the Plea Deal (n=35)			Rejected the Plea Deal (n=65)		
Code	Example	%	Code	Example	%
Reduced sentences/ charges	No matter if I did it or not, 2-5 instead of a possible 10-17 is nothing.	85.7%	Lack of evidence/ circumstantial/ reasonable doubt	The police have no evidence that I used my bat to hit Mr. Davis. They found none of the stolen items in my house. No fingerprints.	69.2%
High probability of conviction	I accepted based on the 65% chance of being convicted.	42.9%	Other suspects	Also, there are other potential suspects for the crime such as his wife and the boyfriend, whose car was also found on the scene.	50.7%
Mentioned potentially exculpatory evidence/wea k evidence	I considered pleading not guilty and hope that some evidence points to Charles, Mrs. Davis' boyfriend, of the crime. She and Charles had plenty of motive and there was a lack of good evidence against me.	42.9%	Innocent	I'm innocent and didn't commit this crime. I'm very confident that my innocence will be proven.	47.7%
Criminal history	I have prior convictions, I have been through the criminal justice system before, I have been around criminals and I understand that a jury wouldn't look favorably on the fact that I have been convicted of illegal entry and robbery and I have also been to prison	40.0%	Real assailant would get away	If I accept the deal, the real assailant would never come to trial and get away.	9.2%
Evidence points to me/defendant	I believe most of the evidence is directed towards the defendant considering the bat, the	40.0%	Mentioned that the plea deal would be	The safer option would be to take the plea deal.	7.7%

	description and the wrench		safer/trial is riskier
I am guilty/should be punished	I did it so I should take the deal.	34.3%	
Best interest to plea/more reasonable/better option/safer	Also, because there's so much "evidence" the prosecutor has, it would be safe to plead guilty.	25.7%	

B. Hypothesized Mediating Variables

We also examined three factors, along with our manipulated variables, that we expected to influence the decision to accept or reject plea offers.

Evidence Strength. Participants provided ratings of how strong they believed the evidence was against them (1-10). Perceptions of evidence strength ranged from 1 = weak (n=2; 2.0%) to 10 = strong (n=1; 1.0%), with an average rating of 4.92 (SD=2.01). We conducted a 2 (Guilt) x 2 (File Condition) ANOVA with perceptions of evidence strength as the dependent variable. Significant main effects emerged for both conditions, but the interaction was not significant, $F(1, 96)=1.39$, $p=.241$, $\eta p^2=.014$. Despite the evidence being exactly the same in both conditions, as expected participants in the guilty condition rated the evidence as significantly stronger (M=5.30, SD=2.00) than those in the innocent condition (M=4.54, SD=1.96), $F(1, 96)=4.15$, $p=.044$, $\eta p^2=.041$. Additionally, consistent with our hypothesis, participants in the OFJ condition rated the evidence against them as significantly weaker (M=4.24, SD=1.86) than those in the CFJ condition (M=5.60, SD=1.94), $F(1, 96) = 13.30$, $p = .0001$, $\eta p^2=.122$. In this instance, those in the CFJ conditions did have access to less information than those in the OFJ conditions.

Probability of Conviction at Trial. Participants also provided ratings of their perceived probability of conviction at trial (0-100%). The average rating for this was 58.36% (SD=20.1) with ratings ranging from 10% (n=1, 1.0%) to 100% (n=2, 2.0%) probability of conviction at trial. A 2 (Guilt) x 2 (File Condition) ANOVA was conducted on this measure and again significant main effects emerged for both conditions, but not for the interaction, $F(1, 96)=.710$, $p=.401$, $\eta p^2=.007$. Consistent with our hypothesis, participants in the guilty condition rated their probability of conviction at trial as significantly higher (M=64.10, SD=18.47) than those in the innocent condition (M=52.62, SD=20.20), $F(1, 96)=9.37$, $p=.003$, $\eta p^2=.089$. Additionally, as hypothesized those in the OFJ condition rated their probability of conviction as significantly lower (M=53.16, SD=21.70) than those in the CFJ condition (M=63.56, SD=17.04), $F(1, 96)=7.69$, $p=.007$, $\eta p^2=.007$.

Interview Impact. In addition to evidence strength and probability of conviction at trial, we also explored participants' reports of whether the interviews impacted their plea decisions. Most participants (n=80; 80%) stated that the interviews impacted their decision. We conducted chi-square analyses on this measure by condition. Guilt condition did not have a significant impact,

$\chi(1) = 2.25$, $p = .134$, $\phi = .15$. Among those in the innocent condition, 80.0% stated that the interviews impacted their decision compared to 74.0% in the guilty condition.

File condition, however, significantly impacted whether or not participants stated that the interviews impacted their plea decision $\chi(1) = 4.00$, $p = .046$, $\phi = -.20$. Among those in the OFJ condition 88.0% said that the information in the interviews impacted their decision versus 72.0% in the CFJ condition. Moreover, further chi-square analyses revealed that the effect of file condition held only for those in the innocent condition, $\chi(1) = 4.15$, $p = .042$, $\phi = .29$. When innocent, 24 of 25 participants in the open-file condition (96%) said that the interview impacted their plea decision. In contrast, among innocent participants in the closed-file condition, only 19 of 25 (76%) said the same. File condition did not affect interview impact among guilty participants, $\chi(1) = 0.94$, $p = .33$, $\phi = .14$.

C. Path Analysis

A path analysis was conducted to determine the pathways by which our independent variables (guilt and file condition) and hypothesized mediating variables (interview impact, evidence strength, and probability of conviction at trial) influenced plea decision. First, we conducted zero-order correlations between our variables of interest (see Table 2). Next, we conducted our path analysis using the Analysis of Moment Structure (AMOS) statistical package for SPSS. Analyses were based on the percentile bootstrap method with 1,000 samples. Our model included all hypothesized paths and had very good fit, $\chi2(3, 100) = 0.104$, $p = .991$; IFI = 1.02; NFI = .999; and RMSEA = .0001 (Figure 1). Direct effects, indirect effects, CIs, and significance levels for the model are presented in Table 3.

Table 2. Spearman's Correlations Between Guilt Condition, File Condition, Interview Impact, Evidence Strength, Probability of Conviction, and Plea Decision

	1	2	3	4	5	6
1. Guilt condition	___	.000	-.150	.185	.283**	.650**
2. File condition		___	.200*	-.373*	-.286**	-.105
3. Interview impact			___	-.087	-.45	-.262**
4. Evidence strength				___	.598**	.384**
5. Probability of conviction					___	.319**
6. Plea decision						___

Note: Pearson correlations were used for the relationship between evidence strength and probability of conviction. * $p < 0.05$, ** $p < 0.01$

Figure 1 reveals that guilt condition had a significant direct effect on plea decision, such that compared to those in the innocent condition those in the guilty condition were significantly

more likely to accept the plea deal. Guilt condition also had a significant indirect effect mediated through evidence strength ($\beta = 0.078$, $p = .019$). In comparison to those in the innocent condition those in the guilty condition were more likely to rate the strength of the evidence as stronger; strength of evidence, in turn, increased willingness to accept the plea deal.

File condition did not have a direct effect on plea decision, but did have an indirect effect however, with evidence strength and interview impact acting as mediating variables ($\beta = -0.13$, $P = .001$). That is, in comparison to those in the CFJ conditions, participants in the OFJ conditions rated the strength of the evidence as significantly weaker and the impact of the interview information as significantly higher. The interview impact, in turn, significantly reduced willingness to accept the plea offer whereas the strength of evidence did the opposite. Contrary to our hypotheses however, probability of conviction at trial did not act as a mediating variable. However, evidence strength and probability of conviction were strongly correlated, $r = .598$. When evidence strength was removed from the model, probability of conviction at trial was a significant mediator for both guilt ($\beta = 0.032$, $p = .014$) and file conditions ($\beta = 0.030$, $p = .005$). Finally, we note here that when we reran the path model excluding guilt-innocence status, the significant, indirect paths from file condition to plea decision remained.
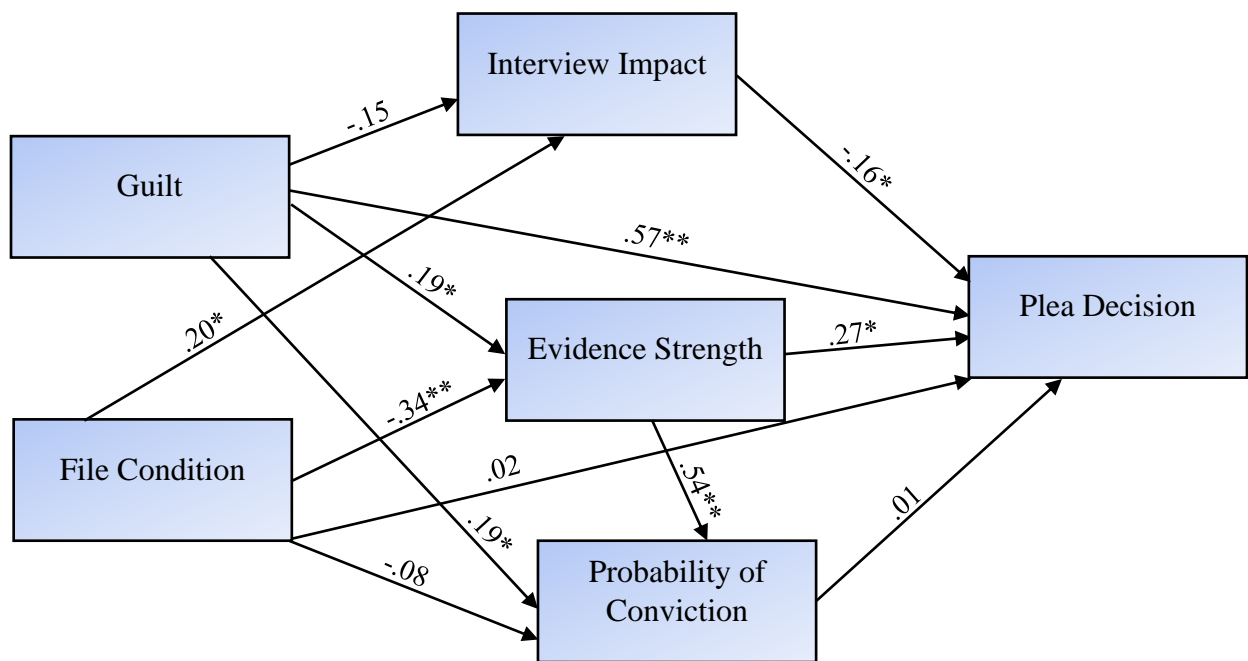

Figure 1. Path model of the relations among guilt condition, file condition, interview impact, evidence strength, probability of conviction, and plea decision (0 = reject plea offer, 1 = accept plea offer). * $p < 0.05$, ** $p < 0.01$

Table 3. Direct Effects, Indirect Effects, 95% Confidence Intervals, and Significance Levels

	Estimate	Lower Bound	Upper Bound	*p*-value
Direct Effects				
Effects on interview impact				
Guilt condition	-.150	-.335	.049	.153
File condition	.200	.021	.398	.018
Effects on evidence strength				
Guilt condition	.190	.006	.356	.041
File condition	-.340	-.518	-.153	.002
Effects on probability of conviction				
Guilt condition	.185	.027	.342	.017
File condition	-.078	-.263	.094	.341
Evidence strength	.536	.355	.690	.002
Effects on plea decision				
Guilt condition	.571	.414	.713	.002
File condition	.021	-.136	.171	.817
Interview impact	-.161	-.295	-.037	.005
Evidence strength	.266	.071	.451	.008
Probability of conviction	.012	-.154	.190	.884
Indirect Effects				
Guilt condition	.078	.013	.171	.019
File condition	-.126	-.220	-.066	.001

VII   Discussion

Defendants' limited access to pre-plea discovery information, such as established in the Supreme Court *Ruiz* decision, is a controversial issue and one that many argue limit defendants' ability to make fully informed plea decisions (Bibas, 2004; Covey, 2007; Friedman, 1971). Open-file discovery polices have been advocated as the leading reform for these issues, however, to our knowledge no research has examined if and how discovery information impacts defendant plea decisions. We examined the impact of discovery information, including possible exculpatory information, on mock defendant plea decisions. Additionally, because limited access to discovery has been criticized for contributing to wrongful convictions via false guilty pleas (Yaroshefsky, 2008), we also examined the impact of discovery when defendants were guilty and innocent. In brief, we found that amount of discovery information indirectly influenced plea decisions, whereas defendant guilt had both a direct and indirect effect on plea decisions.

A. Guilt-Innocence Status

Consistent with past research we found that guilty participants were more likely to accept the plea deal than innocent participants (Bordens, 1984; Henderson & Levett, 2018; Wilford & Khairalla, 2019). However, because plea decision-making is complex and involves the evaluation of various factors, we expected, and found, certain variables to mediate relations between guilt

(and file condition; see below) and plea decisions. The main theory of plea decision-making, Bargaining in the Shadow of Trial (see Bibas, 2004; Dezember & Redlich, 2019), and past research indicates that individuals consider the strength of evidence against them and their probability of conviction at trial when deciding whether to plead guilty (Bordens, 1984; Peterson-Badali & Abramovitch, 1993; Zimmerman & Hunter, 2018). Indeed, participants' own rationales in the current study for why they chose to accept or reject the plea deal offered further support that defendants consider both strength of the evidence and probability of conviction when making plea decisions. In answering an open-ended question, among those who chose to accept the plea deal, probability of conviction at trial and perceived evidence strength each emerged as themes over 40% of the time. Additionally, for those who chose to reject the plea deal, the perceptions of evidence strength theme emerged almost 70% of the time and the possibility of other suspects in the case (i.e., potentially exculpatory information) emerged about 50% of the time. When we included evidence strength and probability of conviction at trial as mediating variables in our path analysis, as well as participant ratings of the impact of the interviews (i.e., discovery material) on their plea decisions, we gained a deeper understanding of the impact of guilt and discovery on plea decisions.

As hypothesized, guilty participants rated the evidence against them as significantly stronger and their probability of conviction at trial as significantly higher than innocent participants. Strength of evidence, in turn, acted as a mediating variable and increased willingness to accept the plea deal. Although we did not find that probability of conviction at trial acted as a mediating variable between defendant guilt and plea decisions, when we excluded evidence strength from our path analysis, we did find the hypothesized effect of probability of conviction. Specifically, those in the guilty condition rated their probability of conviction as significantly higher than those in the innocent condition, probability of conviction, in turn, increased willingness to plead guilty. Because evidence strength and probability of conviction at trial were strongly correlated, the inclusion of both in our original path analysis likely suppressed the effect of probability of conviction at trial.

B. Open- v Closed-File Discovery

Although we did not find a direct effect of the amount of discovery information on plea decisions, we did find indirect effects that lend support to the argument that access to discovery information is important to making informed plea decisions (Friedman, 1971; Redlich, 2016). Specifically, participants' access to discovery information, including exculpatory information, significantly influenced both ratings of the strength of the evidence against them and their perceived probability of conviction at trial. As expected, participants in open-file conditions (i.e., with access to full discovery) rated the strength of the evidence against them as significantly weaker and their probability of conviction at trial as significantly lower than participants in closed-file discovery conditions. In addition, as noted, when evidence strength was excluded from the path analysis, probability of conviction at trial also significantly mediated the relation between file condition and plea decisions.

Participants in the open-file conditions were also more likely to state that the interviews (i.e., discovery information) impacted their plea decisions. This finding was especially true of innocent participants in the open-file condition; all but one participant in this condition stated that

the interviews influenced their decision, which was not the case among innocent participants in the closed-file condition. In turn, interview impact and evidence strength both acted as significant mediating variables, with interview impact reducing willingness to accept the plea deal and evidence strength having the opposite effect. This set of findings supports the complex relationship between discovery and defendant plea decisions, indicating that the evaluation and consideration of various factors, like evidence strength and probability of conviction at trial, are involved. Therefore, as McConkie (2017) notes, access to discovery information is important for both factually innocent and factually guilty defendants. Additionally, this set of findings suggests the possibility that if our sample size had been larger, we may have been able to detect significant differences between file conditions for plea decisions. Future research should examine if and how access to discovery information impacts defendants' ability to negotiate deals with the prosecution, and whether that information also leads to deals that more accurately represent the cases against them (Alkon, 2014). Future research should also examine the type of discovery information available to defendants, whether it be exculpatory impeachment evidence or traditional *Brady* material.

C. Limitations and Conclusions

To our knowledge, the current research is the first attempt to examine how open-file discovery policies, or access to discovery, influence defendant plea decision-making. While we were able to gain valuable insights into how discovery and guilt impact plea decisions, there are limitations that we note here. First is that this was a hypothetical scenario using mock defendants. Although the majority of guilty plea studies have used such experimental vignette methods, leading to a great deal of insight into plea decision-making behaviors (e.g., Bordens, 1984; Bushway, Redlich, & Norris, 2014; Edkins, 2011; Pezdek & O'Brien, 2014; Tor et al., 2010; Zimmerman, & Hunter, 2018), the extent to which findings generalize to actual plea decisions needs further investigation. This limitation is related to two others, one being the use of University students as defendants. Although we did not find that self-reported experience with the criminal justice system influenced our main dependent variables, future research should include samples with more extensive criminal justice experience. And two, was the lack of situational pressures and incentives, which have been shown to impact both true and false guilty pleas in actual cases (Caldwell, 2011; Redlich et al., 2017). Such pressures and incentives from prosecutors in the form of time-limited deals and immediate release from pretrial detention are present in real world plea negotiations but were absent from the present research. Because plea bargaining has been described as inherently coercive (Kipnis, 1976; Langbein, 1992), the impact of discovery information on plea decisions when situational pressures and incentives are present warrants further exploration.

A second limitation was the found floor effect of innocent participants pleading guilty, which precluded our ability to test the hypothesized interaction between innocence and the file conditions on plea decisions. However, we did find a significant interaction between guilt status and file condition on interview impact ratings. In line with our hypothesis, we found that file condition significantly impacted these ratings of the discovery information, but only when innocent. In addition, when guilt-innocence status was removed from the path analysis, perceived evidence strength and interview impact (and to a degree, probability of conviction), remained as significant mediators of plea decision through file condition. Finally, we conducted a preliminary,

online follow-up study (N=100) that addressed the floor effect and raised the false guilty plea rate to 20% (in contrast to the 4% in the current study). We found similar results to those reported here and we did not find a significant interaction effect on plea decisions as hypothesized.

Finally, the file jurisdiction instructions given to participants and the use of redacted information in our CFJ conditions may have introduced an unintended confound. Participants in the CFJ were informed that it was possible for them to be treated differently than defendants in other jurisdictions (i.e., OFJ), and because of the use of redacted information were able to see that they were not privy to certain information. These study procedures, while mimicking real-life, may have impacted participants' perceptions of fairness and thus our results. Past research has found perceptions of fairness to impact plea decisions (Gazal-Ayal & Tor, 2012; Tor, Gazal-Aval, & Garcia, 2010). It is important to note, however, that while perceptions of fairness may have differed in our OFJ and CFJ conditions (a construct we did not measure), we did not find an effect of file condition on plea decisions.

Despite these limitations, our findings shed important light on how access to evidence may directly and indirectly affect defendant plea decision-making. Defendants who plead guilty waive their rights to the majority of their constitutional safeguards afforded at trial (e.g., the presumption of innocence, proving guilt beyond a reasonable doubt, cross-examining accusers, etc.) (Redlich, 2016). Ensuring that plea decisions are valid, that is, made knowingly, intelligently, voluntarily, and with a factual basis of guilt, is one of the few safeguards in place during the plea-bargaining process. Safeguards that are necessary, as 20% of all known wrongful convictions in the United States involved false guilty pleas (National Registry of Exonerations, n.d.). Discovery policies vary considerably, however, and depending on the state, defendants can enter what are considered to be legally valid pleas without complete knowledge of the state's evidence against them (see Zottoli et al., 2019). As indicated by the title of this article, can plea decisions be intelligent without full knowledge of the evidence against one? Findings from the current study indicate that while plea decisions are complex, access to discovery information impacts defendants' ratings of the strength of the evidence against them and perceptions of the information itself, which in turn affects the decision to accept or reject pleas. Without access to full discovery information, particularly potentially exculpatory information, defendants necessarily have limited ability to make fully informed plea decisions, which raises concerns about the fairness and validity of bargaining and the wrongful conviction of innocents (Covey, 2007; Friedman, 1971).

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