The Wrongful Conviction Law Review

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Editorial Board

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Table of Contents

Just Data: Advancing the Innocence Movement

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The *Innocence Project Scholarship Issue* features four research projects that the Innocence Project's Data Science and Research department determined were poignant studies that should be shared widely to both educate and inspire scholars interested in contributing to the innocence movement. Wrongful convictions, once thought to be rare, have been documented across the United States and throughout the world, and illuminate fundamental problems in the criminal legal system which affect everyone. To date, the Innocence Project counts 241 victories (DNA exonerations, exonerations with other evidence, post-conviction Alford pleas, resentencing and release in cases with evidence of innocence), while the National Registry of Exoneration has recorded 3,343 exonerations nationwide. Of course, these are only the cases that have been identified. The best estimate of the rate of wrongful convictions to date comes from a study by Gross et al. (2014), which reported a wrongful conviction rate of about 4% for capital cases. The injustice of any innocent person's incarceration is intolerable, as are the systemic issues which these individual cases reveal, including disparate treatment by race, class, gender, sexual orientation, and more. The need to rebuild the criminal legal system based on humanity, equity, science, and justice is as strong now as ever.

Since its inception, the Innocence Project's work has always been guided by science; using DNA testing to prove innocence was an innovation. Thirty years later, the organization has grown and evolved, and an innocence *movement* has emerged. An Innocence Network of over 70 independent organizations around the world are righting wrongful convictions and reforming the criminal legal system. And we still rely on science. Not only the physical science of DNA testing but also social science. We cite research in our legal briefs, call on experts to testify in court, use rigorously collected data to inform our policy advocacy, educate the public, and inform our day-to-day duties.

[1] The Innocence Project works to free the innocent, prevent wrongful convictions, and create fair, compassionate, and equitable systems of justice for everyone. Founded in 1992 by Barry C Scheck and Peter J Neufeld at the Benjamin N Cardozo School of Law at Yeshiva University, New York. The organization is now an independent nonprofit. Our work is guided by science and grounded in anti-racism.

Each of the social science articles in this special issue were featured in the Innocence Project's first ever virtual gathering dedicated to research, *Just Data: Advancing the Innocence Movement*. Hosted by the Data Science and Research department, this event was unique, featuring new research, as well as the perspective of a scholar with expertise in Post-Traumatic Stress Disorder who was once wrongfully convicted, Ginny LeFever, and a panel of practitioners brainstorming publicly about gaps in research and new areas to explore. By connecting a variety of academic experts, impacted people who have direct knowledge of the system, and practitioners within the innocence movement, we believe we can leverage complementary expertise and catalyze practically actionable research to bolster legal and policy work nationwide.

The following studies showcase the wide variety of methodologies and subjects that contribute to our collective understanding of flaws in the criminal legal system and their impacts on peoples' lives. From the underlying causes to the lifetime of consequences, these scholars shed new light on unexplored elements of wrongful convictions. They also leave the door open for further inquiry, including longitudinal exploration of the effects of incarceration, the related topics of guilty pleas and "the trial penalty" (noted differences between sentences stemming from a guilty plea vs. those who do not accept pleas), and the recurring issues surrounding criminal investigations and trials.

Berube et al. provided us with a novel statistical exploration of commonly cited factors known to contribute to wrongful convictions. Those concerned with wrongful convictions have long recognized what have become known as "canonical factors" that contribute to wrongful convictions: mistaken witness identification, perjury or false accusations, false confessions, false or misleading forensic evidence, official misconduct, and inadequate legal defense. This classification system has helped identify and prove wrongful convictions and has led to reforms, yet does not capture the nuances of these stories. Berube et al. set out to investigate relationships between these six canonical factors using data from the National Registry of Exonerations and latent class analysis. Based on 2,880 exoneration cases, they found four distinct patterns of wrongful conviction: Investigative Corruption (high probability of official misconduct followed by a high probability of perjury or false accusation), Failures to Investigate (characterized by low probabilities across the six factors but the highest probability of false or misleading forensic evidence), Witness Mistakes (the highest probability of mistaken eyewitness identification), and Intentional Errors (characterized by the highest probability of perjury or false accusation and the second-highest probability of official misconduct, plus a relatively low probability for the other four factors). Notably, Investigative Corruption and Intentional Errors accounted for more than half of exonerations.

Helm took a deep dive into some of the factors that have contributed to recent wrongful convictions in England and Wales and introduced us to a series of overturned convictions of postal workers which provided unique insights into the use of digital evidence in modern law enforcement. This analysis of cases from the Miscarriages of Justice Registry suggested a shift from the evidence more traditionally understood as forensic science (e.g., medical, biological, chemical, and feature comparison) to digital evidence driving the majority of identified wrongful convictions in the area in recent years. As with other forensic sciences, digital evidence is seen as objective and trustworthy, with the power to convince attorneys, judges, and jurors, and to induce guilty pleas from the accused. However, the "Post Office Scandal" revealed that in reality this type of evidence is prone to bias and error, and that system actors, including defense attorneys, fail to

critically evaluate it. Helm situated these vulnerabilities in the context of broader system issues including backlogs and limited funding and suggested educating attorneys on digital evidence and increased judicial scrutiny in guilty plea cases.

The power and fallibility of eyewitness testimony is well recognized. Though we know the types of actions that can contaminate eyewitness memory (e.g., non-blind lineup administration, post-identification feedback and its ability to inflate a witness' confidence), it is unclear whether jurors can determine whether a witness' testimony is reliable. Lebensfeld and Smalarz relied on hundreds of mock jurors to explore how courtroom cross-examination can impact jurors' impressions and discernment of the original, recorded eyewitness identifications. Their work revealed that, surprisingly, cross-examination had no significant impact on evaluations of eyewitness accuracy and failed to safeguard against the way in which feedback can distort a witness' memory for the original event and the identification decision.

Panuccio et al. focused on an under-researched area - life after exoneration. Through semi-structured, in-depth interviews, they explored the experiences of 26 exonerated people, and constructed a powerful picture of the challenges they faced re-entering communities, along with strategies for success that have led, in some cases, to extraordinary, transformative personal growth. The post-traumatic growth uncovered in this research is an important demonstration of exoneree strength. This research also revealed the heterogeneity of exoneree experiences, with some different patterns among men and women (with male respondents describing growing more patient and calm and female respondents describing becoming more vocal and tougher in a positive way) and the need for further research exploring differences by other identities (e.g., race, ethnicity).

These studies amplify the need to explore recurring themes underlying wrongful convictions: the role of personal biases of system actors, the various ways in which the trial penalty surfaces in the life of a case, structural racism, differences across race/ethnicity and gender, and the substantial needs of people who have been wrongfully convicted who are re-entering society. It is our hope that this research encourages scholars to contact the Innocence Project for guidance on empirical endeavors that will yield impactful change to the criminal legal system, thereby reducing the prevalence of wrongful convictions. Please receive this as your call to action and invitation to collaboration as we strive to provide sound scientific evidence that advances meaningful transformation. And lastly, we end on a note of gratitude for the Wrongful Conviction Law Review's Editor-in-Chief - Dr. Myles McLellan - for this special issue that highlights the work of social scientists exploring wrongful convictions.

References

Samuel R Gross, Barbara O'Brien , Chen Hu , & Edward H Kennedy "Rate Of False Conviction of Criminal Defendants Who Are Sentenced to Death", (2014) 111:20 Proceedings of the National Academy of Sciences of the United States of America 7230.

Identifying Patterns Across the Six Canonical Factors Underlying Wrongful Convictions

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Research has established six "canonical" factors underlying wrongful convictions including: mistaken witness identification (MWID), false confession (FC), perjury or false accusation (P/FA), false or misleading forensic evidence (F/MFE), official misconduct (OM), and inadequate legal defense (ILD). While we know these factors do not occur in isolation, researchers have yet to examine the patterns across these six factors. In the present article, we apply latent class analysis to explore how these six factors might co-occur across known exonerations. Using data from the National Registry of Exonerations, we identify four latent classes by which the incidence rates across these six factors can be categorized. Among our noteworthy findings: 1) P/FA and OM often co-occur, 2) when MWIDs are high, the incidence of other factors is relatively low, and 3) false guilty pleas had the highest prevalence in a class that was generally associated with Failures to Investigate. Further implications are discussed.

I Introduction

Scholars have long-recognized six "canonical factors" that contribute to wrongful convictions: mistaken witness identification, perjury or false accusations, false confessions, false or misleading forensic evidence, official misconduct, and inadequate legal defense.[1] Wrongful conviction scholarship has relied largely upon real exoneration cases to examine these six factors in context, whereas more "specialized literature" has focused on variables that are related to each of these individual factors.[2] Although these approaches offer some insight into the origins and characteristics of wrongful convictions, they can also be overly simplistic because they cannot illuminate patterns or comorbidities across the six canonical factors. In an attempt to address this gap in knowledge, we apply latent class analysis to identify systematic patterns among the six canonical factors in recorded wrongful convictions from the National Registry of Exonerations ("NRE"). We then examine individual and case factors that are associated with these classes. By doing so, we advance our current understanding of how wrongful convictions occur via a systematic observation of the patterns and relationships across the six canonical factors and other relevant factors.

We begin this paper with a brief discussion about the current state of wrongful conviction research, the history of exonerations in the United States and the identification of the six canonical factors. We know that these factors do not occur in isolation, and that they can have a distinct

[1] Acker, James R & Allison D Redlich. *Wrongful Conviction: Law, Science, and Policy*, 2nd ed (Durham, North Carolina: Carolina Academic Press, 2019).

[2] Gould, Jon B & Richard A Leo. "One Hundred Years Later: Wrongful Convictions After a Century of Research" (2010) 100:3 J Crim L & Criminology 825; Leo, Richard A. "The Criminology of Wrongful Conviction: A Decade Later" (2017) 33:1 J Contemporary Crim Just 82, https://doi.org/10.1177/1043986216673013.

impact on the trajectory of a wrongful conviction.[3] Indeed, there are myriad sociopolitical, organizational, and cognitive factors that govern criminal procedure.[4] To demonstrate how these factors might co-occur to produce a wrongful conviction, we briefly summarize a recorded exoneration, and then provide an overview of each of the six factors. We then discuss what is currently believed about the interactions among some of these six canonical factors and the importance of taking a comprehensive approach to this investigation.

A. The State of Wrongful Convictions & Exonerations

A wrongful conviction refers to a case in which a factually innocent individual has been convicted either by trial or via a guilty plea.[5] While the operational definition of "wrongful convictions" varies dramatically, the term generally means that a person was convicted for a crime they did not commit. Specifically, an innocent person may be wrongfully convicted for a crime committed by someone else (i.e., "wrong-person" cases) or a crime that did not actually occur (i.e., "no-crime" cases).[6]

Exonerations included in the NRE occur post-conviction and are official acts (e.g., pardon, acquittal, dismissal, certificates of innocence, posthumous exonerations) that relieve an individual of all criminal responsibility for the crime for which they were previously convicted.[7] Exonerations are typically based on "new" evidence of innocence that was not available at the time of conviction, or that officials failed to disclose to the court.[8] In essence, exonerations are the antithesis of a conviction. Specifically, while a conviction is a formal judgement of "guilty", an exoneration is a formal judgement of "not guilty".[9]

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[3] *Ibid*; Redlich, Allison D et al, eds. *Examining Wrongful Convictions: Stepping Back, Moving Forward* (Durham, North Carolina: Carolina Academic Press, 2014).

[4] Acker & Redlich, *supra* note 1.

[5] Zalman, Marvin. "Wrongful Convictions" in J Mitchell Miller, ed, *21st Century Criminology: A Reference Handbook* (Thousand Oaks, CA: Sage, 2009) 842; Zalman, Marvin & Robert J Norris. "Measuring Innocence: How to Think About the Rate of Wrongful Conviction" (2021) 24:4 New Crim L Rev 601, https://doi.org/10.1525/nclr.2021.24.4.601.

[6] See Henry, Jessica S. *Smoke but No Fire: Convicting the Innocent of Crimes that Never Happened* (Oakland, CA: University of California Press, 2020).

[7] Gross, Samuel R & Michael Shaffer. *Exonerations in the United States, 1989–2012: Report by the National Registry of Exonerations* (2012), https://dx.doi.org/10.2139/ssrn.2092195; *Glossary and Criteria for Exoneration*, online: National Registry of Exonerations https://www.law.umich.edu/special/exoneration/Pages/glossary.aspx; Nowotny, Jordan, Amy Shlosberg & Thomas McAndrew. "Understanding Public Views of Wrongful Conviction Frequency and Government Responsibility for Compensation: Results from a National Sample" (2022) 34:2 Crim Just Pol'y Rev 140, https://doi.org/10.1177/08874034221106747; Redlich et al, *supra* note 3.

[8] Colvin, Eric. "Convicting the Innocent: A Critique of Theories of Wrongful Convictions" (2009) 20:2-3 Crim LF 173, https://doi.org/10.1007/s10609-009-9100-6.

[9] Gross, Samuel R et al. "Exonerations in the United States 1989 through 2003" (2005) 95:2 J Crim L & Criminology 523.

The "modern era" of wrongful conviction scholarship began in 1989 with the first DNA exoneration in the U.S.[10] DNA evidence can offer relative scientific certainty that a defendant is factually innocent of the convicted crime.[11] As of August 2022, the Innocence Project reports 375 exonerations in which DNA testing exculpated a wrongly convicted person.[12] The most recent report of exonerations published by the NRE found that roughly 37% of exonerations were, at least in part, due to post-conviction DNA testing.[13] However, DNA evidence is rare, present in roughly 10% of felony conviction cases;[14] DNA is likely to be present in even fewer misdemeanor cases, which represent the vast majority of criminal convictions.[15] Thus, examining exoneration cases that both involve DNA and those that do not will provide a more representative picture of wrongful convictions.[16]

The National Registry of Exonerations, which catalogues all known exonerations (both DNA and non-DNA) since 1989, is the largest available sample of wrongful convictions. As of November 2022, the NRE provides a detailed account of 3,290 exonerations including the causes and characteristics of each case. While exonerations are certainly unrepresentative of *all* wrongful convictions, the NRE's dataset is the most frequently cited source in the quantitative study of wrongful convictions.[17] Studying exonerations as a "proxy" has allowed researchers to better understand the causes and correlates of wrongful convictions and continues to be the most promising method available to develop evidence-based policy recommendations.[18]

As the number of exonerations reported by the NRE continues to increase, questions regarding the effectiveness and integrity of our criminal justice system grow.[19] One thing is for certain: there is a profound difference between the imperfect and infrequent measure of recorded exonerations and the true incidence of wrongful convictions.[20] In the last three decades, scholars

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[10] Gross & Shaffer, *supra* note 7; Norris, Robert J et al. "Thirty Years of Innocence: Wrongful Convictions and Exonerations in the United States, 1989-2018" (2020) 1:1 Wrongful Conviction L Rev 2, online: https://wclawr.org/index.php/wclr/article/view/11.

[11] Medwed, Daniel S. *Wrongful Convictions and the DNA Revolution* (Cambridge: Cambridge University Press, 2017), https://doi.org/10.1017/9781316417119.

[12] *DNA Exonerations in the United States*, online: Innocence Project <https://innocenceproject.org/dna-exonerations-in-the-united-states/>.

[13] Gross & Shaffer, *supra* note 7.

[14] *Ibid*.

[15] Gross, Samuel R. "Errors in Misdemeanor Adjudication" (2018) 98:3 B U L Rev 999.

[16] Leo, *supra* note 2.

[17] Gross, Samuel R. "Convicting the Innocent" (2008) 4:1 Ann Rev L & Soc Sci 173, https://doi.org/10.1146/annurev.lawsocsci.4.110707.172300.

[18] *Ibid*; Gross, Samuel R, & Barbara O'Brien. "Frequency and Predictors of False Conviction: Why We Know So Little, and New Data of Capital Cases" (2008) *5*:4 JELS 927, https://doi.org/10.1111/j.1740-1461.2008.00146.x; Gould & Leo, *supra* note 2; Norris et al (2020), *supra* note 10.

[19] Gross & Shaffer, *supra* note 7; Zalman, Marvin. "Criminal Justice System Reform and Wrongful Conviction: A Research Agenda" (2006) 17:4 Crim Just Pol'y Rev 468, https://doi.org/10.1177/0887403406292740.

[20] Gross & Shaffer, *supra* note 7.

have put forth great effort to better understand the causes of wrongful conviction in an attempt to minimize and remedy their detrimental impact on innocent individuals, as well as the justice system. Yet, there is still much work to be done and as we move forward, we rely on datasets cataloguing exonerations as a proxy to gain insight into how and why these miscarriages of justice occur.[21]

B. The Six Canonical Factors

Case studies have consistently and persistently revealed six "canonical" factors related to wrongful convictions.[22] These factors include: mistaken witness identification (MWID), false confession (FC), perjury or false accusation (P/FA), false or misleading forensic evidence (F/MFE), official misconduct (OM), and inadequate legal defense (ILD).[23] Because the pervasiveness of wrongful convictions remains a "dark figure", our ability to determine the degree to which these factors necessarily "cause" wrongful convictions is limited.[24] Nevertheless, the frequency with which these factors appear in exoneration cases suggests that identifying solutions to minimize their impact would inevitably reduce wrongful conviction rates.[25]

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[21] Norris et al (2020), *supra* note 10.

[22] *Ibid*; Gross & Shaffer, *supra* note 7.

[23] Bonventre, Catherine L. "Wrongful Conviction and Forensic Science" (2020) WIRES Forensic Science, online: https://wires.onlinelibrary.wiley.com/doi/epdf/10.1002/wfs2.1406; Fessinger, Melanie B et al. "Informants v Innocents: Informant Testimony and Its Contribution to Wrongful Convictions" (2020) 48:2 Cap U L Rev 149; Garrett, Brandon. *Convicting the Innocent: Where Criminal Prosecutions Go Wrong* (Cambridge, MA: Harvard University Press, 2011), https://doi.org/10.4159/harvard.9780674060982; Gross, Samuel R et al. "Government Misconduct and Convicting the Innocent: The Role of Prosecutors, Police, and Other Law Enforcement" (2020), University of Michigan Public Law Research Paper No. 21-003, https://doi.org/10.2139/ssrn.3698845; Leo, Richard A. "Rethinking the Study of Miscarriages of Justice: Developing a Criminology of Wrongful Conviction" (2005) 21:3 J Contemporary Crim Just 201, https://doi.org/10.1177/1043986205277477; Norris et al (2020), *supra* note 10; Pezdek, Kathy. "Fallible Eyewitness Memory and Identification" in Brian L Cutler, ed, *Conviction of the Innocent: Lessons from Psychological Research* (Washington: American Psychological Association, 2012) 105, https://doi.org/10.1037/13085-005; Scherr, Kyle C, Allison D Redlich & Saul M Kassin. "Cumulative Disadvantage: A Psychological Framework for Understanding How Innocence Can Lead to Confession, Wrongful Conviction, and Beyond" (2020) 15:2 Perspectives on Psych Sci 353, https://doi.org/10.1177/1745691619896608; Stenzel, Carla. "Eyewitness Misidentification: A Mistake that Blinds Investigations, Sways Juries, and Locks Innocent People Behind Bars" (2016) 50:3 Creighton L Rev 515; Yaroshefsky, Ellen, & Laura Schaefer. "Defense Lawyering and Wrongful Convictions in Allison D Redlich, James R Acker, Robert Norris & Catherine L Bonventre, eds, *Examining Wrongful Convictions: Stepping Back, Moving Forward* (Durham, North Carolina: Carolina Academic Press, 2014); Zalman (2009), *supra* note 5.

[24] Norris, Robert J, Catherine L Bonventre & James R Acker. *When Justice Fails: Causes and Consequences of Wrongful Convictions* (Durham, North Carolina: Carolina Academic Press, 2018); Poveda, Tony G. "Estimating Wrongful Convictions" (2001) 18:3 JQ 689.

[25] Zalman (2009), *supra* note 5.

The goal of most scholars engaged in the study of wrongful convictions is primarily to improve the reliability of evidence, minimize the opportunities for error, and effectuate meaningful changes to policy and procedure.[26] To do so, many studies on the six canonical factors isolate the impact of a particular factor on the path to wrongful conviction.[27] However, most wrongful convictions are the result of an agglomeration of the six canonical factors and these factors do not usually occur in isolation.[28] While each can have a distinct impact on the trajectory of a wrongful conviction, not one of the canonical factors is "independently sufficient" to cause these massive failures of the criminal justice system on their own.[29] In the following section, we demonstrate how critical the relationships across the six canonical factors can be in producing a wrongful conviction outcome.

II Investigating the Six Canonical Factors

A. The Factors in Context: The Case of Frederick Clay

On November 19th, 1979, Frederick Clay was arrested and charged with first-degree murder for the shooting of cab driver Jeffrey Boyajian. Around 4AM three days prior, another cab driver named Richard Dwyer saw three men cross the street and climb into Boyajian's taxi, which was parked directly in front of Dwyer's cab. Dwyer watched as the cab drove away. Boyajian drove the three men to the Archdale Housing Development, a public housing community in which Clay and Phillippa Sweatt resided. Phillippa was in her kitchen making coffee for her son, Neal, when she heard a commotion in the parking lot. From 80 feet away, Phillippa allegedly saw Boyajian being pulled out of his taxi by three assailants. Relying on the dim light of a single streetlamp, she could barely make out the shadowy figures, though unmistakably she heard five shots.

Official (police) misconduct, false forensic science, and mistaken identifications. The three critical eyewitnesses, Dwyer, Phillippa, and Neal, were only able to provide height estimates for the three men given their limited visual exposure to the culprits. Over the course of three days, they were shown the same photographic lineup more than three times: it included twelve boys the detective knew to reside or spend time around Archdale. None of the witnesses were able to make an initial identification.

Both Dwyer and Neal were asked to undergo hypnosis to enhance their memories. In recordings of the session, the "investigative hypnologist" is heard asking the witnesses to "zoom in" and "slow the frames down" as if their memories were like high-definition videos (a common

[26] Leo (2005), *supra* note 23; Norris et al (2020), *supra* note 10; Norris et al (2018), *supra* note 24.

[27] Poveda, *supra* note 24.

[28] Gould & Leo, *supra* note 2; Redlich et al, *supra* note 3.

[29] Doyle, James M. "An Etiology of Wrongful Convictions: Error, Safety, and Forward-Looking Accountability in Criminal Justice" in Julia Carrano & Marvin Zalman, eds, *Wrongful Conviction and Criminal Justice Reform* (New York: Routledge) 70, https://doi.org/10.4324/9780203066997-11.

misconception that has been repeatedly debunked).[30] After his first hypnosis session, Dwyer immediately identified Frederick Clay as the shorter man who had shot Jeffrey Boyajian. Although Neal Sweatt's hypnosis session failed to result in a positive identification of Clay, police were convinced that he had witnessed what happened on the morning of the murder. Two days later, on their third and final visit to the Sweatt residence, police made Neal a promise: if he cooperated, they would move his family out of Archdale. The Sweatts were the only white family living in Archdale at the time. The neighborhood was also in the vicinity of racial riots resulting from the desegregation of public schools in Boston. Following the officers' promise, Neal Sweatt also identified Frederick Clay as the gunman.

Perjury, official (prosecutorial) misconduct, and an inadequate legal defense. On the eve of the trial, Diane Moses, a potential defense witness, was subpoenaed as a witness for the prosecution. At trial, she corroborated Clay's alleged guilt by claiming to have witnessed him confess. However, Moses had been interviewed early during the initial investigation, and at that time, she told police she heard that two other men had confessed to the crime. Police returned later and told Moses that if she did not assist them with their case, she would be arrested for prostitution and her children would be placed in foster care. The prosecution did provide Clay's defense lawyer with the police reports mentioning Moses' initial interview, but the attorney chose not to investigate whether these other two men from Archdale were actually responsible for the murder of Jeffrey Boyajian. Clay was ultimately found guilty and was sentenced as an adult to life-without-parole.

Compounding factors. The case of Frederick Clay was complex and involved five of the six factors that have been shown to underlie wrongful convictions: false or misleading forensic evidence, mistaken witness identifications, perjury or false accusations, official misconduct, and inadequate legal defense (the one omitted factor is false confessions). The way in which prosecutors (and law enforcement) stitched together a case against Clay clearly illustrates how one of these factors can lead to another. When faced with a serious case for which there was little evidence, police relied on questionable forensic "science" techniques to build evidence. With the help of an investigative hypnologist, police were able to record one positive, but mistaken, identification of a suspect—Clay. This emboldened them to encourage perjured testimony, a form of official misconduct, from a second eyewitness as well as Moses. Compounding these mistakes, Clay's legal defense was ineffective as his attorney failed to pursue other potential leads (just as the police failed to do).

B. Mistaken Witness Identification (MWID)

In 26% of the exonerations listed by the NRE, mistaken witness identification (MWID) contributed to the wrongful conviction of an innocent person.[31] The Innocence Project found MWID was present in approximately 69% of DNA exoneration cases, of which 77% involved multiple identification procedures (i.e., witnesses were shown a photo more than once) and 42%

[30] Winter, Alison. "The Rise and Fall of Forensic Hypnosis" (2013) 44:1 Studies in Hist & Phil of Sci Part C: Studies in Hist & Phil of Biological & Biomedical Sci 26, https://doi.org/10.1016/j.shpsc.2012.09.011.

[31] *Detailed Case View* (2022) [Data set], online: National Registry of Exonerations https://www.law.umich.edu/special/exoneration/Pages/detaillist.aspx.

were cross-race misidentifications (i.e., the witness and the culprit were of different ethnicities).[32] Eyewitness evidence is frequently used to identify, charge, and convict suspects, and can be especially critical in cases that lack physical evidence.[33] Just the same, both scholars and the courts recognize the fallibility of eyewitness identification.[34] Put simply, mistaken witness identification (MWID) occurs when a witness misidentifies an innocent suspect as the perpetrator of the crime and can contaminate several stages of criminal procedure.[35]

Explanations of eyewitness error often point to the general fallibility of human memory,[36] which can be exacerbated by other factors (e.g., cross-race identifications),[37] as well as suggestive identification procedures by police.[38] Take for example the case of Frederick Clay. The suggestive and manipulative identification procedures employed by investigators included repeated photo lineups, as well as "forensic" hypnosis. Both potential identifications were also being made cross-race. At trial, eyewitness testimony can have a strong impact on jurors' decision making.[39] Specifically, while research suggests the relationship between accuracy and confidence can be weak, the confidence of an eyewitness remains a strong predictor of jurors' verdict decisions.[40]

During Clay's trial, one of the key witnesses told jurors that he was still 80% confident in his identification, despite not being able to provide an identification during the first lineup. Other than the two MWIDs, the prosecution had very little evidence against Clay, further demonstrating just how compelling eyewitness evidence can be. The topics of eyewitness memory, identification

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[32] Innocence Project, *supra* note 12.

[33] Wells, Gary L, Amina Memon & Steven D Penrod. "Eyewitness Evidence: Improving Its Probative Value" (2006) 7:2 Psych Sci in the Public Interest 45. https://doi.org/10.1111/j.1529-1006.2006.00027.x.

[34] Acker & Redlich, *supra* note 1; Wells, Gary L et al. "Policy and Procedure Recommendations for the Collection and Preservation of Eyewitness Identification Evidence" (2020) 44:1 Law & Hum Behav 3, https://doi.org/10.1037/lhb0000359.

[35] Jackson, Kaitlin & Samuel R Gross, *Tainted Identifications* (22 Sept 2016), online: National Registry of Exonerations <https://www.law.umich.edu/special/exoneration/Pages/taintedids.aspx>; NRE, *supra* note 31.

[36] Loftus, Elizabeth F. "Planting Misinformation in the Human Mind: A 30-year Investigation of the Malleability of Memory" (2005) 12:4 Learning & Memory 361.

[37] Brigham, John C et al. "The Influence of Race on Eyewitness Memory" in Rod C L Lindsay et al, eds, *The Handbook of Eyewitness Psychology, Vol. 2: Memory for People* (Mahweh, New Jersey: Lawrence Erlbaum Associates Publishers, 2007) 271, https://doi.org/10.4324/9780203936368.

[38] Wells, Gary L & Deah S Quinlivan. "Suggestive Eyewitness Identification Procedures and the Supreme Court's Reliability Test in Light of Eyewitness Science: 30 Years Later" (2009) 33:1 Law & Hum Behav 1, https://doi.org/10.1007/s10979-008-9130-3.

[39] Cutler, Brian L, Steven D Penrod & Hedy R Dexter. "Juror Sensitivity to Eyewitness Identification Evidence" (1990) 14:2 Law & Hum Behav 185, https://doi.org/10.1007/BF01062972; Stenzel, *supra* note 23.

[40] Cutler et al, *supra* note 39; Slane, Crystal R & Chad S Dodson. "Eyewitness Confidence and Mock Juror Decisions of Guilt: A Meta-Analytic Review" (2022) 46:1 Law & Hum Behav 45, https://doi.org/10.1037/lhb0000481; Wells et al (2020), *supra* note 34.

procedures, perceived witness credibility, etc. have been studied for nearly 50 years in the modern era.[41]

C. Perjury or False Accusation (P/FA)

Of course, not all witness misidentifications occur purely by accident. Remarkably, 62% of exonerations documented by the National Registry of Exonerations involved perjury or false accusations.[42] Perjury or false accusations (P/FA) refer to cases in which a witness *intentionally* misidentifies or misrepresents statements from an innocent person with the specific intention of incriminating them.[43] Jailhouse informants can be a regular source of P/FA via alleged secondary confessions, claiming that the defendant disclosed involvement in the crime while incarcerated with them.[44] P/FA is often rewarded with something (e.g., leniency, sentence/charge reductions, retracting threatened charges, etc.), which challenges the overall reliability of this type of testimony.[45] Nevertheless, jurors find secondary confessions (via jailhouse informants) to be more important to their verdicts than other types of testimony and evidence (e.g., eyewitness, character, etc.)[46] At Frederick Clay's trial, Diane Moses provided a secondary confession on the stand. It would take nearly thirty years for her to recant her testimony, claiming it was borne out of fear due to threats from the police.

D. False Confessions (FC)

False *primary* confessions, as opposed to false secondary confessions, have been involved in approximately 12% of all known exonerations, and about 28% of DNA-based exonerations according to the NRE.[47] A false confession (FC) is a verbal admission of guilt by an innocent person.[48] There are several reasons why an innocent person might confess to a crime they did not commit: as a result of an extreme interrogation, to protect someone else, as a result of mental

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[41] As such, the literature is vast; for overviews, we refer readers to Wells, Gary L. "Eyewitness Identification: Probative Value, Criterion Shifts, and Policy Regarding the Sequential Lineup" (2014) 23:1 Current Directions in Psych Sci*:* J Am Psych Soc'y 11, https://doi.org/10.1177/0963721413504781; Wells, Gary L. "Psychological Science on Eyewitness Identification and Its Impact on Police Practices and Policies" (2020) 75:9 American Psychologist 1316, https://doi.org/10.1037/amp0000749; Wells, Gary L et al. "Eyewitness Identification Procedures: Recommendations for Lineups and Photospreads" (1998) 22:6 Law & Hum Behav 603, https://doi.org/10.1023/A:1025750605807; Wells et al (2020), *supra* note 34.

[42] NRE, *supra* note 31.

[43] Gross & Shaffer, *supra* note 7.

[44] Fessinger et al, *supra* note 23.

[45] Neuschatz, Jeffrey S et al. "The Effects of Accomplice Witnesses and Jailhouse Informants on Jury Decision Making" (2008) 32:2 Law & Hum Behav 137, https://doi.org/10.1007/s10979-007-9100-1.

[46] Wetmore, Stacy A, Jeffrey S Neuschatz, & Scott D Gronlund. "On the Power of Secondary Confession Evidence" (2014) 20:4 Psych, Crime & L 339, https://doi.org/10.1080/1068316X.2013.777963.

[47] NRE, *supra* note 31.

[48] See generally Kassin, Saul M et al. "Police-Induced Confessions: Risk Factors and Recommendations" (2010) 34:1 Law & Hum Behav 3, https://doi.org/10.1007/s10979-009-9188-6.

illness, etc.[49] A false confession can also adversely affect subsequent investigatory procedures, escalating biases and governing the way in which successive case information is interpreted.[50]

E. False or Misleading Forensic Evidence (F/MFE)

Roughly 23% of known exonerations have involved false or misleading forensic science (F/MFE).[51] Forensic science as a whole has an arguably paradoxical relationship with exonerations. On one hand, forensic DNA testing has been used to help exonerate over 500 innocent people.[52] On the other hand, forensic science has contributed to hundreds of wrongful convictions through unreliable methods, testing errors, or the misapplication of findings.[53] F/MFE is often used by the prosecution to bolster its cases. In fact, investigations finding issues with forensic evidence typically indicate that these errors favored the prosecution. An investigation into testimony provided by an elite FBI forensic unit found that these examiners overstated the findings of their hair and clothing analyses almost universally (over more than twenty years before 2000)—100% of these errors favored the prosecution.[54] Further, many previously-accepted forensic techniques used to acquire convictions lacked the scientific validity to be retained in court today (e.g., bite mark analysis[55] and hypnosis.)[56] In fact, many states have banned the use of hypnosis to enhance eyewitness memory. Research has shown that hypnosis actually *reduces* memory accuracy, and can artificially inflate eyewitness confidence, as clearly illustrated in Frederick Clay's case.[57]

F. Official Misconduct (OM)

Official misconduct (OM) has contributed to 57% of known exonerations. OM occurs when a government official contributes to the wrongful conviction of an innocent person by violating accepted protocols or laws.[58] OM typically involves officials constructing false evidence

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[49] Kassin, Saul M. "The Psychology of Confession Evidence" (1997) 52:3 Am Psychologist 221, https://doi.org/10.1037/0003-066X.52.3.221.

[50] Leo, Richard A. "The Justice Gap and the Promise of Criminological Research" (2014) 15:3 Criminology, Crim Just, L & Soc'y 1; Scherr et al, *supra* note 23.

[51] NRE, *supra* note 31.

[52] *Ibid*.

[53] Bonventre, *supra* note 23; Garrett, Brandon L & Peter J Neufeld. "Invalid Forensic Science Testimony and Wrongful Convictions" (2009) 95:1 Va L Rev 1.

[54] Hsu, Spencer S. "FBI admits flaws in hair analysis over decades", *Washington Post* (18 Apr 2015), online: <https://www.washingtonpost.com/local/crime/fbi-overstated-forensic-hair-matches-in-nearly-all-criminal-trials-for-decades/2015/04/18/39c8d8c6-e515-11e4-b510-962fcfabc310_story.html>.

[55] Saks, Michael J et al. "Forensic Bitemark Identification: Weak Foundations, Exaggerated Claims" (2016) 3:3 JLB 538, https://doi.org/10.1093/jlb/lsw045.

[56] Norris et al (2018), *supra* note 24; Winter, *supra* note 30.

[57] Mazzoni, Giuliana & Steven J Lynn. "Using Hypnosis in Eyewitness Memory: Past and Current Issues" in Michael P Toglia, J Don Read, David F Ross, Rod C L Lindsay, eds, *The Handbook of Eyewitness Psychology. Vol I: Memory for Events* (London: Taylor and Francis Group, 2017) 321.

[58] NRE (Glossary), *supra* note 7.

of guilt, or concealing evidence of innocence.[59] In Frederick Clay's case, OM converged and interacted with MWID through suggestive identification procedures (e.g., showing witnesses the same photographic lineup up to five times), threatening a witness to provide perjured testimony (i.e., Diane Moses), and concealing substantive evidence of innocence (i.e., information regarding an alternative suspect). It is important to note that in many cases, officials justify their misconduct in "benevolent" ways—believing that their actions will ensure that a truly guilty person does not escape a guilty verdict.[60]

G. Inadequate Legal Defense (ILD)

Approximately 26% of exonerees had an inadequate legal defense (ILD). ILD occurs when a defendant's attorney fails to uphold constitutional standards of zealous representation.[61] post-conviction, defendants can attempt to appeal based on ineffective assistance of counsel. Defendants must, however, be able to demonstrate their representation was (1) reasonably deficient and (2) had an adverse effect on the conviction[62]—a notoriously difficult standard to meet.

ILD is also intrinsically related to the other canonical factors. Zealous representation could challenge the admissibility of questionable evidence, arguing that unreliable witness identifications or questionable forensic evidence should be inadmissible at trial. Frederick Clay's trial might have gone differently had his attorney attempted to suppress the identification resulting from hypnosis, and to investigate alternative suspects.

H. Shifting the Paradigm: The Relationships Across the Six Canonical Factors

Researchers have recently started to identify the interactions that might exist across these canonical factors, though these investigations are typically limited to examining two factors at a time. For example, Garrett and Neufeld examined the prevalence of F/MFE in exonerations and found that most of these convictions were also supported with MWID.[63] They also found that OM was present in approximately 17% of MWID exonerations and 57% of FC exonerations. They also hypothesized that ILD may exacerbate the impact that unreliable forms of evidence (i.e., MWID, P/FA, F/MFE) have in wrongful convictions. Theoretically, effective lawyering could be an antidote for many of these other factors—an effective and zealous attorney could help to prevent wrongful convictions by invalidating false forensic evidence, challenging unreliable witnesses, or fighting to exclude unreliable confessions. Yet Gould et al. found that innocent defendants were more vulnerable to an ILD, having either a lack of experience or conflicts of interest.[64] Further,

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[59] Gross & Shaffer, *supra* note 7; Gross et al (2020), *supra* note 23.

[60] Covey, Russell. "Police Misconduct as a Cause of Wrongful Convictions" (2013) 90:4 Wash U L Rev 1133.

[61] Norris et al (2018), *supra* note 24.

[62] *Strickland v Washington*, 466 U.S. 668 (1984), online: https://supreme.justia.com/cases/federal/us/466/668/.

[63] Garrett & Neufeld, *supra* note 53.

[64] Gould, Jon B et al. "Predicting Erroneous Convictions" (2014) 99:2 Iowa L Rev 471.

Garrett and Neufeld examined DNA exoneration cases involving F/MFE and discovered that the defense rarely obtained their own experts to challenge the validity of this evidence.[65]

Similarly, in a study of DNA exonerations, Kassin et al. discovered that FCs were often the first type of evidence obtained in multiple-error convictions, and were often accompanied by F/MFE, MWID, and P/FA.[66] Confession evidence was significantly more likely to be corroborated by F/MFE (~67%), followed by MWID (45%) and P/FA (24%).[67] These findings suggest FCs may have a powerful influence over subsequent investigations and increase the risk of a wrongful conviction.[68] Emerging research on "forensic confirmation biases"[69] further makes clear that these six factors do not exist in isolation. Thus, we presume that certain factors are more likely to co-occur and that some can lead to others.

III The Present Study

To date, no work has systematically examined the relationships across *all* six canonical factors underlying wrongful convictions. While scholarship on the individual factors has substantially improved our understanding of errors in criminal procedure, it has been primarily limited to their isolated impact. The goal of the present study is to build upon current wrongful conviction literature by taking a more comprehensive approach, examining patterns across these six canonical factors that pave the path to a wrongful conviction. We apply latent class analysis (LCA) as a data-driven approach to identifying underlying subgroups (or latent classes) of exonerations. Each class possesses a distinct pattern across the six canonical factors underlying wrongful convictions and exonerations are assigned to the class to which they are most likely to belong. LCA can provide a more nuanced understanding of the heterogeneity underlying wrongful convictions by taking into account all six canonical factors simultaneously. By identifying the patterns across these factors (i.e., latent classes), we can examine whether these patterns correspond to other variables (e.g., exoneree demographics, measures of case severity). By so doing, we achieve a better understanding of the relationships between the canonical factors and case/exoneree characteristics. By identifying exoneration latent classes, as opposed to relying on analyses that would be limited to examining one or two canonical factors at a time, we can determine if individual and/or case factors are more or less present in the classes.

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[65] Garrett & Neufeld, *supra* note 53.

[66] Kassin, Saul M, Daniel Bogart & Jacqueline Kerner. "Confessions that Corrupt: Evidence from the DNA Exoneration Case Files" (2012) 23:1 Psych Sci 41, https://doi.org/10.1177/0956797611422918.

[67] *Ibid*.

[68] See also Scherr et al, *supra* note 23, describing how false confessions cumulatively disadvantage individuals across multiple stages.

[69] Dror, Itiel E, Saul M Kassin & Jeff Kukucka. "New Application of Psychology to Law: Improving Forensic Evidence and Expert Witness Contributions" (2013) 2:1 J App Res in Memory & Cognition 78, http://dx.doi.org/10.1016/j.jarmac.2013.02.003.

IV Method

A. Sample

The NRE is widely regarded as the most comprehensive list of known exonerations in the United States. The database includes exonerations from 1989 to the present and is frequently referenced in wrongful conviction scholarship. Exonerations are recorded after a post-conviction review of new evidence by a court or government official. After receiving a pardon, acquittal, or dismissal, the individual is relieved of all criminal responsibility for the original conviction.[70]

The analysis was based on data from the National Registry of Exonerations that was downloaded on November 3, 2021. At that time, there were a total of 2,880 exonerees.[71]

B. Variables

We relied largely on the variables included within the NRE dataset. In addition to the six canonical factors, the NRE also provides information regarding exoneree demographics, measures of case severity, and process/evidence-related variables.

Latent Class Indicators. Our latent class indicators consisted of the six canonical factors related to wrongful convictions: mistaken witness identification (MWID), false confession (FC), perjury or false accusation (P/FA), false or misleading forensic evidence (F/MFE), official misconduct (OM), and inadequate legal defense (ILD). The six canonical factors were treated (within the NRE data) as dichotomous variables (0 = absent; 1 = present). The official definitions of each factor provided by the NRE are presented in Table 1.

Covariates. One of the advantages of accessing the NRE repository to study wrongful convictions is the considerable detail provided in their dataset. In addition to the six canonical factors, the NRE includes several other variables. We used these variables to examine whether they were significantly associated with any of the patterns across the six canonical factors (i.e., the classes).[72] Thus, exoneree demographics, measures of case severity, and process/evidence-related variables were included as covariates. *Exoneree demographics* included juvenile status (coded as adult [18 years of age or older] = 0, juvenile = 1), race/ethnicity (Black, Hispanic, White, or Other), and sex (female = 0, male = 1). *Measures of case severity* included: life or death sentence (neither = 0, yes = 1), misdemeanor (no = 0, yes = 1), federal case (no = 0, yes = 1), homicide (no = 0, yes = 1). We also examined the minimum and maximum sentence the defendant received (coded continuously). *Process/evidence-related variables* included: co-defendant confession (no = 0, yes = 1), jailhouse informant (no = 0, yes = 1), innocence organization (no = 0, yes = 1), guilty plea case (no = 0, yes = 1), and no crime case (no = 0, yes = 1). We also included time to conviction, which provided a number in years for the time to conviction (i.e., date of conviction minus the date

[70] Gross & Shaffer, *supra* note 7; NRE, *supra* note 31; Nowotny et al, *supra* note 7; Redlich et al, *supra* note 3.

[71] This dataset can be accessed here: https://osf.io/wvyfb/.

[72] Rossmo, Kim K & Joycelyn M Pollock. "Confirmation Bias and Other Systemic Causes of Wrongful Convictions: A Sentinel Events Perspective" (2014) 11:2 Northeastern U L Rev 790.

that the crime occurred). Time to exoneration provided a number in years for the time to exoneration (i.e., date of exoneration minus the date of conviction). Table 1 provides more detailed definitions and criteria for the covariate tags.

Table 1

Variable Definitions

Variable	Definition
Latent Class Indicators	
False Confession (FC)	"A confession is a statement made to law enforcement at any point during the proceedings which was interpreted or presented by law enforcement as an admission of participation in or presence at the crime, even if the statement was not presented at trial. A statement is not a confession if it was made to someone other than law enforcement. A statement that is not at odds with the defense is not a confession. A guilty plea is not a confession"
False or Misleading Forensic Evidence (F/MFE)	"Faulty or misleading expert or forensic evidence may have led to a factually erroneous conclusion, at any stage of the investigation or adjudication, that contributed to the defendant's false conviction"
Inadequate Legal Defense (ILD)	"The exoneree's lawyer at trial provided obviously and grossly inadequate representation"
Mistaken Witness Identification (MWID)	"At least one witness mistakenly identified the exoneree as a person the witness saw commit the crime"
Official Misconduct (OM)	"Police, prosecutors, or other government officials significantly abused their authority or the judicial process in a manner that contributed to the exoneree's conviction"
Perjury or False Accusation (P/FA)	"A person other than the exoneree committed perjury by making a false statement under oath that incriminated the exoneree in the crime for which the exoneree was later exonerated, or made a similar unsworn statement that would have been perjury if made under oath"
Covariates	
Exoneree Demographics	
Sex	The exoneree's sex (male, female)
Juvenile status	Exoneree was a juvenile (i.e., 17 years of age or younger) at the time of conviction

Race	The race of the exoneree was recoded as Black, Hispanic, White and Other (consisting of a small percentage of Native American, Asian, and NRE's 'other')
Case Severity	
Federal Case (FC)	Exoneree was convicted in a federal case
Homicide (H)	"Exoneree was convicted of either murder or manslaughter"
Life or death sentence	Whether the exoneree had received a life (with or without parole) sentence, death sentence, or neither
Minimum sentence	The low-end range of the Exoneree's possible sentence or, if no range was provided, the actual sentence
Maximum sentence	The high-end range of the Exoneree's possible sentence or, if no range was provided, the actual sentence
Misdemeanor	Exoneree was convicted of a misdemeanor
Processing/Evidence-related	
Co-defendant confession (CDC)	"A codefendant of the exoneree, or a person who might have been charged as a codefendant, gave a confession that also implicated the exoneree"
Guilty Plea (P)	The exoneree falsely pled guilty to original charges
Innocence organization (IO)	"An innocence organization helped secure the exoneration. This only includes innocence organizations that are independent of government bodies - it does not include CIUs or Innocence Commission"
Jailhouse informant (JI)	"A witness who was incarcerated with the exoneree testified or reported that the exoneree confessed to him or her"
No Crime (NC)	"The exoneree was convicted of a crime that did not occur, either because an accident or a suicide was mistaken for a crime, or because the exoneree was accused of a fabricated crime that never happened"
Time to conviction	The time (in years) from exoneree's charge to conviction
Time to exoneration	The time (in years) from exoneree's original conviction to exoneration

Note. The definitions in quotations come directly from the NRE's *Glossary* (2022). For more information and other definitions, see https://www.law.umich.edu/special/exoneration/Pages/glossary.aspx

C. Data Analysis

Latent class analysis (LCA) was used to identify and distribute exonerations into latent classes based upon distinct patterns across the six canonical factors (i.e., latent class indicators). LCA uses categorical indicator variables to identify unobserved patterns, also known as latent classes.[73] Given that the number of latent classes is unknown, a series of LCA models with varying numbers of latent classes were fitted with statistical software program M*plus* 8.4.[74] The fit of these models was compared based on multiple information criteria, including Akaike's information criterion (AIC),[75] Bayesian information criterion (BIC)[76] and sample-size-adjusted BIC (saBIC).[77] The model with the smallest values for the information criteria was considered the best-fitting model. In addition, we also adopted the Lo-Mendell-Rubin (LMR) likelihood ratio test,[78] adjusted LMR, and the bootstrap likelihood ratio test (BLRT)[79] to evaluate model fit. These tests compare the fit of a *k*-class model versus a (*k*-1)-class model; *p*-values that are below the employed alpha value (e.g., .05) indicate that the *k*-class model has significantly better fit than the (*k*-1)-class model.

Based on the best-fitting model, LCA estimated the probability of case membership for each class and categorized cases into the most likely latent class. The probability of endorsing each indicator (i.e., canonical factor) was reported by latent class. Finally, chi-square analyses and analyses of variance (ANOVA) were used to examine whether the identified latent classes differed by exoneree demographics, case severity, and processing/evidence-related variables (i.e., covariates). The goal of this step was to examine if particular latent classes were significantly associated with particular covariates.[80]

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[73] Weller, Bridget E, Natasha K Bowen & Sarah J Faubert. "Latent Class Analysis: A Guide to Best Practice" (2020) 46:4 J Black Psych 287, https://doi.org/10.1177/0095798420930932; Wu, Shiyou et al. "Patterns and Social Determinants of Substance Uses Among Arizona Youth: A Latent Class Analysis Approach" (2020) 110 Child & Youth Serv Rev 104769, https://doi.org/10.1016/j.childyouth.2020.104769.

[74] Muthén, Linda K & Bengt O Muthén. *Mplus User's Guide. Eighth Edition* (Los Angeles: Muthén & Muthén, 1998-2017).

[75] Akaike, Hirotogu. "Information Theory and an Extension of the Maximum Likelihood Principle" in B N Petrov & F Csaki, eds, *Second International Symposium on Information Theory* (Budapest, Hungary: Akademiai Kiado, 1973) 267; Akaike, Hirotogu. "Factor Analysis and AIC" (1987) 52:3 Psychometrika 317, https://doi.org/10.1007/BF02294359.

[76] Schwarz, Gideon. "Estimating the Dimension of a Model" (1978) 6:2 Annals of Statistics 461.

[77] Sclove, Stanley L. "Application of Model-Selection Criteria to Some Problems in Multivariate Analysis" (1987) 52:3 Psychometrika 333, https://doi.org/10.1007/BF02294360.

[78] Lo, Yungtai, Nancy R Mendell & Donald B Rubin. "Testing the Number of Components in a Normal Mixture" (2001) 88:3 Biometrika 767.

[79] McCutcheon, Allan L. *Latent Class Analysis* (Thousand Oaks, CA: Sage, 1987).

[80] Weller et al, *supra* note 71.

V Results

A. Latent Class Analysis of the Six Canonical Factors

A four-class model provided the best overall fit statistics for the patterns identified across the six canonical factors in this dataset (N = 2,880).[81] Specifically, the four-class LCA model had the smallest BIC value. Although the five-class model was shown to have best fit according to AIC, saBIC, LMR, aLMR, and BLRT, the improvement in fit from the four-class to the five-class model was relatively small (e.g., saBIC only decreased by 8 as opposed to 114 from the three-class to the four-class model). Therefore, the four-class model was considered the best-fitting model.

Table 2

Results of Model Fit Comparisons

Model	AIC	BIC	saBIC	LMR	aLMR	BLRT	Mixing Proportions
1-Class	19975	20011	19992				
2-Class	18954	19032	18990	<.001	<.001	<.001	.39/.61
3-Class	18794	18913	18850	.0116	.0123	<.001	.50/.19/.31
4-Class	18661	18822	18736	<.001	<.001	<.001	.30/.19/.19/.32
5-Class	18634	18836	18728	.0023	.0026	<.001	.29/.17/.08/.30/.17

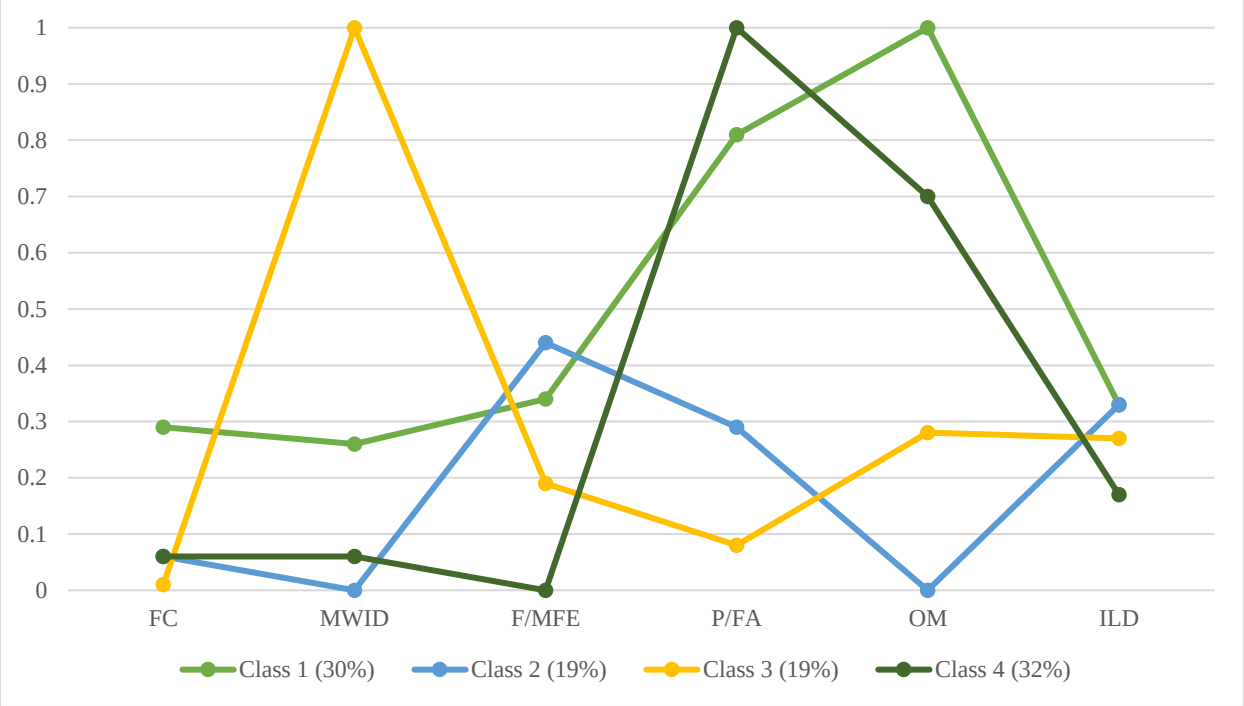
Note. AIC = Akaike's information criterion; BIC = Bayesian information criterion; saBIC = sample size adjusted BIC; LMR = the Lo-Mendall-Rubin test; aLMR = the adjusted LMR test; BLRT = bootstrap likelihood ratio test. *P*-values were reported for LMR, aLMR, and BLRT. Mixing proportions were based on the most likely latent class membership.

The distinct patterns across the six canonical factors in known exonerations for all four latent classes are shown in Figure 1. The largest proportion of cases were classified into Class 4 (32%), followed closely by Class 1 (30%). Class 2 and Class 3 equally accounted for the remaining cases (19% for each). Each of the four classes were labeled to reflect our interpretation of their profiles. The following is our substantive interpretation of the four latent classes.

[81] See Table 2 for model fit statistics.

Figure 1

Patterns Across the Six Canonical Factors Among Known Exonerations in Four Latent Classes



Note. Class 1 = Investigative Corruption; Class 2 = Failures to Investigate; Class 3 = Witness Mistakes; Class 4 = Intentional Errors.

Investigative Corruption. Class 1 accounted for 30% of exonerations. This class is characterized by a very high probability of OM followed by a high probability of P/FA. Class 1 also had a higher probability of FC than all the other classes (though the overall probability of FC was relatively low). Additionally, these cases had the second-highest probability of ILD, F/MFE, and MWID overall. Class 1 was labeled *Investigative Corruption* as these cases were largely compromised by government officials abusing their powers in blind pursuit of the "truth".

Failures to Investigate. Class 2 accounted for 19% of exonerations. Overall, this class was characterized by relatively low probabilities across the six factors and had the lowest probability of OM and MWID. However, these cases had the highest probability of F/MFE and were tied for the highest ILD relative to the other classes. Class 2 was labeled *Failures to Investigate* as it is characterized by the highest probability of ineffective counsel in conjunction with a tendency to rely on unreliable forensic evidence.

Witness Mistakes. Class 3 accounted for 19% of exonerations. This class was characterized by the highest probability of MWID and relatively low probabilities for all other factors. Thus, Class 3 was labeled *Witness Mistakes*.

Intentional Errors. Class 4 accounted for 32% of exonerations. This class was primarily characterized by the highest probability of P/FA and the second-highest probability of OM across all the classes. Class 4 had the lowest probability of ILD and F/MFE. Class 4 was labeled

Intentional Errors given the prevalence of P/FA and OM (i.e., intentional acts that contribute to wrongful convictions), accompanied with relatively low probabilities for the other four (typically less intentional) factors.

B. Covariates Associated with Class Membership

Chi-square analyses and ANOVA were conducted with covariates by class membership. All associations between latent class membership and exoneree demographics, measures of case severity, and process/evidence-related variables were significant at $p < .05$. While the universal significance of the covariate analyses could be due, in part, to the size of the study sample (i.e., N = 2,880 cases), we also observed significant variations in class membership by these covariates.

Associations between exoneree demographics and latent class membership. Juvenile status significantly differed across the four latent classes, X^2 (3, N = 2880) = 29.05, p <.0001. However, the effect size for this association, Cramer's V, was relatively weak, = .10.[82] Nevertheless, a greater proportion of juvenile exonerees were associated with the *Investigative Corruption* (42.11%) class than adult exonerees (28.23%). Sex also had a moderate effect on latent class membership, X^2 (3, N = 2880) = 123.92, p <.0001, V = .21. Specifically, a greater proportion (43.03%) of female exonerees were classified within the *Failures to Investigate* class (16.96% male). In contrast, male exonerees (20.92%) had a stronger association with *Witness Mistakes* than female exonerees (2.39%). Next, we examined the association of exoneree race with class membership. Again, the results were statistically significant with a small to medium effect size, X^2 (9, N = 2879) = 123.06, p <.0001, V = .12. Black (24.86%) and Hispanic (24%) exonerees were more strongly associated with *Witness Mistakes* than white exonerees (10.72%). When compared to the proportion of white exonerees (24.76%) and exonerees classified as "Other" (36%), a smaller percentage of cases involving Black (15.06%) and Hispanic (23.14%) exonerees were associated with *Failures to Investigate*.

Associations between measures of case severity and latent class membership. Federal court cases were significantly associated with class membership, though the effect size was small, X^2 (3, N = 2880) = 25.92, p <.0001, V = .09. A larger proportion (49.21%) of federal cases were associated with *Intentional Errors*. Homicide cases also had a significant association with latent class membership, X^2 (3, N = 2880) = 354.91, p <.0001, and had a strong effect size, V = .35. As such, a larger percentage of homicide cases (47.83%) were classified as *Investigative Corruption* compared to non-homicide cases (16.07%). There was also a statistically significant association between misdemeanor crimes and class membership (p <.0001[83]) with approximately 68.63% of cases being classified within *Failures to Investigate* as opposed to 17.42% of non-misdemeanor cases classified within the same class. Life or death sentencing was significantly associated with latent class membership, X^2 (3, N = 2876) = 157.67, p <.0001, with a medium to strong effect size, V = .23. Specifically, there were more life sentences identified in cases that fell within the *Investigative Corruption* class than the other classes. Cases of exoneration based on *Failures to Investigate*, and *Intentional Errors* had fewer life sentences. Finally, *Investigative Corruption* and

[82] Cohen, Jacob. *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed (New York: Routledge, 1988), https://doi.org/10.4324/9780203771587.

[83] Fisher's Exact test was adopted given that two out of eight cells had an observed frequency below 5.

Witness Mistakes have a higher mean minimum and maximum sentence than *Intentional Errors*. Further, *Intentional Errors* had higher mean minimum and maximum sentence than *Failures to Investigate.*

Associations between process/evidence-related variables and latent class membership. The following process/evidence-related variables were significantly associated to class membership with a medium to large effect size: no crime case (p <.0001), jailhouse informant (X^2 (3, N = 2880) = 84.07, p <.0001, V = .17), innocence organization (X^2 (3, N = 2880) = 100.38, p <.0001, V = .19), co-defendant confession (X^2 (3, N = 2880) = 216.16, p <.0001, V = .27), and guilty plea case (X^2 (3, N = 2880) = 370.69, p <.0001, V = .36). Greater proportions of no-crime cases were associated with *Failures to Investigate* (36.92%) and *Intentional Errors* (46.57%). *Investigative Corruption* was associated with a greater proportion of cases that involved innocence organizations (39.34%), a co-defendant confession (54.18%), and a jailhouse informant (53.55%). A greater proportion of guilty plea cases were associated with *Failures to Investigate* (43.81%) as opposed to cases that did not involve guilty pleas (12.80%). Finally, exonerations classified as *Investigative Corruption* had a longer time to conviction than *Failure to Investigate* and *Witness Mistakes* and time to conviction for *Intentional Errors* was longer than *Witness Mistakes.* All class comparisons were significant (p <.0001) for time to exoneration. Classes with the longest to shortest time to exoneration were as follows: *Investigative Corruption, Witness Mistakes, Intentional Errors,* and *Failures to Investigate.*

VI Discussion

In this paper, we used latent class analysis to evaluate patterns across the six canonical factors related to wrongful conviction in known exoneration cases. While a small body of research has examined the relationship between some of the six canonical factors,[84] none have looked at the patterns across all six factors simultaneously. Thus, to our knowledge, this is the first study to systematically examine the ways in which these six factors can interact to pave the road to a wrongful conviction. In addition, we were able to identify the relationships across defendant and case characteristics and each latent class. Below, we present our major findings:

1. We identified four latent classes, across the six factors, with a total of 2,880 wrongful convictions. We labeled each class to reflect our interpretation of their profiles given the patterns exhibited: *Investigative Corruption* (Class 1), *Failures to Investigate* (Class 2), *Witness Mistakes* (Class 3), and *Intentional Errors* (Class 4).
2. The *Investigative Corruption* and *Intentional Errors* classes revealed that OM and P/FA often co-occur. Specifically, where there is official misconduct, there is often perjury or false accusations (and vice versa). *Investigative Corruption* had the highest means for minimum and maximum sentences, the most life or death sentences, and the longest average times to conviction and exoneration.
3. The *Witness Mistakes* class demonstrated that when mistaken witness identifications have been recorded, little else is needed for a wrongful conviction. This class was defined by the highest probability of MWID and low probabilities across the remaining five factors.

[84] Garrett & Neufeld, *supra* note 53; Gould et al, *supra* note 63; Kassin et al, *supra* note 65.

4. *Failures to Investigate*, which accounted for 19% of exonerations, had relatively low probabilities across all six factors. This class was significantly and strongly associated with false guilty pleas; it was also significantly associated with no-crime cases and misdemeanors.

A. Differential Characteristics and Consequences of Misconduct During Investigations and Adjudication

In an overwhelming proportion of cases, we identified patterns indicating that OM and P/FA often co-occur. Specifically, in two of the classes that emerged in our latent class analysis, *Investigative Corruption* and *Intentional Errors*, OM and P/FA had high rates of incidence. These findings are consistent with previous literature on the mechanisms associated with misconduct and perjury.[85] In many ways, the responsibility of officials and the function of false accusation are intrinsically linked. For instance, police and prosecutors can procure perjury, permit perjury, and commit perjury.[86] Consistent with the structure of these classes, the highest proportion of cases involving jailhouse informants and co-defendant confessions were associated with *Investigative Corruption* and *Intentional Errors*; both of these tags had a relatively negligible association with the other two classes. However, we uncovered several differences between *Investigative Corruption* and *Intentional Errors*, which have important implications for identifying potential targets for reform.

Several differences in the pattern of these two classes encompassing misconduct imply that they emerge at different stages of criminal procedure. During initial investigatory stages, if police or prosecutors lack the evidence needed to issue an arrest or secure a conviction, they may feel compelled to commit misconduct in order to isolate a suspect.[87] During this stage, interrogations can be a go-to tool to identify a suspect, and certain defendants (as well as potential witnesses) are especially susceptible to interrogative techniques.[88] For instance, Redlich and Goodman found that certain procedures (i.e., presenting false evidence) increased the likelihood that juvenile participant-defendants would falsely confess.[89] Roughly 42% of exonerees who were under the age of 18 at the time of their conviction were associated with *Investigative Corruption*, which included the highest rate of FC. Thus, consistent with prior literature, it may be that juvenile defendants are disproportionately affected by misconduct in interrogations.[90] *Investigative Corruption* also included the second-highest rate of F/MFE, another tool on which police can rely to isolate a suspect early in the investigatory process.

Our results also suggest that *Investigative Corruption* is associated with the most serious crimes accompanied by the most severe sentences; 47% of homicides and 41% of life-or-death

[85] Gross et al (2020), *supra* note 23.

[86] *Ibid*.

[87] *Ibid*.

[88] Kassin, Saul M. "False Confessions: Causes, Consequences, and Implications for Reform" (2008) 17:4 Current Directions in Psych Sci: J Am Psych Soc'y 249, https://doi.org/10.1111/j.1467-8721.2008.00584.x.

[89] Redlich, Allison D & Gail S Goodman. "Taking Responsibility for an Act Not Committed: The Influence of Age and Suggestibility" 27:2 Law & Hum Behav 141, https://doi.org/10.1023/A:1022543012851.

[90] Gross et al (2020), *supra* note 23; Kassin, *supra* note 84.

sentences were associated with this class. Additionally, cases associated with *Investigative Corruption* also had the longest time to conviction and exoneration. At the same time, support from innocence organizations was also most common for the *Investigative Corruption* class. Thus, the silver lining regarding the complexity of these cases might be that they invite outside assistance to disentangle the *Investigative Corruption*.

The highest proportion of cases, however, was associated with *Intentional Errors* (32%) in which the highest rate of P/FA was accompanied by the second-highest rate of OM. But, interestingly, unlike *Investigative Corruption*, *Intentional Errors* included few other factors with the lowest or second-lowest rates of ILD, F/MFE, FC, and MWID.

Intentional Errors accounted for a majority of federal and no-crime cases. The most common type of misconduct associated with federal and no-crime exonerations is concealing exculpatory evidence.[91] While prosecutors have a constitutional duty to disclose evidence that might negate the defendant's guilt, even repeated requests from the most diligent and zealous defense attorney might not be enough to prevent a wrongful conviction.[92] Given that ILD did *not* contribute to a vast majority of the wrongful convictions within *Intentional Errors*, it is possible that both the prosecution and perjuring witnesses lied to the defense. Indeed, many individuals who commit P/FA will deny the existence of incentives to appear more trustworthy and reliable in their testimony.[93] Although the intention of an adversarial system is to level the playing field, the prosecution and defense primarily operate to undermine the other, possibly burying adversarial evidence in the process. While there are many reasons why an individual might falsify their testimony, P/FA and OM seem to operate in conjunction here. Overall, with regard to OM, it appears as though constitutional protections, such as the *Brady* rule, may not be sufficient to protect innocent defendants from being wrongfully convicted.

B. The Remarkable Eyewitness and Critical Concerns with Cross-Racial Identifications

Witness Mistakes included the highest incidence of mistaken witness identifications (by a ~70% margin), with relatively low rates for the remaining five factors. The dominance of MWID in distinguishing this class is consistent with the idea that confident eyewitness identifications can be compelling even in the absence of other evidence. The prevalence of eyewitness errors has led to the development of a series of recommendations to improve the integrity of eyewitness identification procedures; these recommendations attempt to address potential social influences and possible sources of memory contamination.[94]

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[91] Gross et al, *supra* note 23.

[92] *Brady v Maryland*, 373 U.S. 83 (1963), online: https://supreme.justia.com/cases/federal/us/373/83/; Uphoff, Rodney J. "Convicting the Innocent: Aberration or Systemic Problem?" (2006) 2006(2) Wis L Rev 739; Yaroshefsky, *supra* note 23.

[93] Kirchmeier, Jeffrey L et al. "Vigilante Justice: Prosecutor Misconduct in Capital Cases" (2009) 55:3 Wayne L Rev 1327.

[94] Wells et al (1998), *supra* note 41; Wells et al (2020), *supra* note 34.

The racial disparity in *Witness Mistakes* was striking. A larger proportion of Black and Hispanic exonerees were associated with *Witness Mistakes*, relative to white exonerees; further, Black defendants accounted for 63% of all the cases associated with *Witness Mistakes*. Witness race is one of the strongest demographic predictors of eyewitness accuracy.[95] Specifically, witnesses are less accurate in identifying cross-race suspects from a lineup[96] and it appears that individuals with darker complexions can be objectively more difficult to identify, even outside the context of cross-racial identifications.[97] Certainly, there are times at which cross-race identifications are necessary. As such, it is critical that the system be aware of these errors; if, for no other reason, to further encourage that investigators build significantly more evidence against a defendant than a confident eyewitness identification (e.g., reasonable suspicion),[98] particularly in cross-race cases.

C. Underlying Associations with *Failures to Investigate*

Failures to Investigate, which accounted for 19% of exonerations, had relatively low probabilities across the six factors. However, there was a significant relationship between *Failures to Investigate* and several of the examined covariates including: female exonerees, misdemeanor cases, no-crime cases and, importantly, false guilty pleas.

The finding that no-crime cases are more prevalent in *Failures to Investigate* should, perhaps, be unsurprising. It is hard to imagine a well-executed investigation incorrectly concluding a crime occurred when it did not. Instead, no-crime cases often stem from initial suspicions from law enforcement that a victim of fate is actually a criminal (e.g., an accidental fire was due to arson, a child's injury was due to abuse). Although men are more likely to be enmired into the justice system, no-crime cases are one of the few criminal categories dominated by women. Specifically, women are more likely to be wrongfully convicted of no-crime cases than men. Thus, when women are accused of crimes, their cases are more likely to be under-investigated or poorly investigated.

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[95] Dodson, Chad S & David G Dobolyi. "Misinterpreting Eyewitness Expressions of Confidence: The Featural Justification Effect" (2015) 39:3 Law & Hum Behav 266, https://doi.org/10.1037/lhb0000120; Malpass, Roy S & Jerome Kravitz. "Recognition for Faces of Own and Other Race" (1969) 13:4 J Personality & Soc Psych 330, https://doi.org/10.1037/h0028434; Pezdek, Kathy, Matthew O'Brien & Corey Wasson. "Cross-Race (But Not Same-Race) Face Identification is Impaired by Presenting Faces in a Group Rather than Individually" (2012). 36:6 Law & Hum Behav 488, https://doi.org/10.1037/h0093933; Wells et al (2006), *supra* note 33.

[96] Dodson & Dobolyi, *supra* note 91; Meissner, Christian A & John C Brigham. "Thirty Years of Investigating the Own-Race Bias in Memory for Faces: A Meta-Analytic Review" (2001) 7:1 Psych, Pub Pol'y & L 3, https://doi.org/10.1037/1076-8971.7.1.3; Pezdek et al, *supra* note 91.

[97] Kleider-Offutt, Heather M, Alesha D Bond & Shanna E A Hegerty. "Black Stereotypical Features: When a Face Type Can Get You in Trouble" (2017) 26:1 Current Directions in Psych Sci: J Am Psych Soc'y 28, https://doi.org/10.1177/0963721416667916.

[98] Wells, Gary L, Yueran Yang & Laura Smalarz. "Eyewitness Identification: Bayesian Information Gain, Base-Rate Effect Equivalency Curves, and Reasonable Suspicion" (2015) 39:2 Law & Hum Behav 99, https://doi.org/10.1037/lhb0000125.

The finding that *Failures to Investigate* are more likely to involve false guilty pleas and misdemeanors supports the contention that plea negotiations can replace criminal investigations; for example, why investigate a defendant when you can convince him to plead guilty? While guilty pleas are, theoretically, supposed to be substantiated by a "factual basis of guilt", a defendant's guilty plea can often be considered sufficient to meeting this criterion.[99] The hearings in which judges review the outcome of plea negotiations (i.e., plea colloquies) have been described as "boilerplate."[100] They rarely require more than 15 minutes, and defendants are often expected to provide obvious and "perfunctory" responses to typically-scripted questions from a judge to indicate that the plea is being made knowingly, intelligently, and voluntarily.[101] At these hearings, evidence is rarely reviewed (particularly in juvenile court), and when evidence is submitted, it often involves little more than the unsubstantiated police report.[102]

Given the efficiency and certainty that guilty pleas offer, prosecutors will often allow defendants to negotiate for lowered charges, even reducing felony-level charges to misdemeanors. In fact, when the popular podcast *Serial* spent its third season profiling a "typical" American courthouse (in Cleveland, OH), a defense attorney recalled a judge telling him, "… in this county, innocence is a misdemeanor." Clearly, the expectation is that someone facing felony-level charges will negotiate down to a misdemeanor or two, whether that person is guilty or innocent. The prevalence of both false guilty pleas and misdemeanors among *Failures to Investigate* clearly supports this long-standing contention. Given the growing prevalence of guilty pleas in general, this finding is particularly troubling.[103]

D. Conclusions

This paper offers a novel framework for evaluating the patterns among the six canonical factors across known exonerations. Findings reveal four distinct patterns of exonerations: *Investigative Corruption*, *Failures to Investigate*, *Witness Mistakes*, and *Intentional Errors*. *Investigative Corruption* and *Intentional Errors* accounted for more than half of exonerations, revealing distinct and fatal patterns between OM and P/FA. *Witness Mistakes* further supported what was already suspected: eyewitness evidence is a particularly potent form of evidence. While this class had relatively low rates of the other five canonical factors, there was a significant association between the race of the exoneree and class membership. The differences among these classes and *Failures to Investigate* was quite apparent. *Failures to Investigate* had relatively low rates of all six canonical factors but was associated with a majority of guilty-plea cases and

[99] Redlich, Allison D & Asil Ali Özdoğru. "Alford Pleas in the Age of Innocence" (2009) 27:3 Behav Sci & L 467. https://doi.org/10.1002/bsl.876.

[100] Redlich, Allison D, Miko M Wilford & Shawn Bushway. "Understanding Guilty Pleas Through the Lens of Social Science" (2017) 23:4 Psych, Pub Pol'y & L 458, https://doi.org/10.1037/law0000142.

[101] Redlich, Allison D et al. "Guilty Plea Hearings in Juvenile and Criminal Court" (2022) 46:5 Law & Hum Behav 337, https://doi.org/10.1037/lhb0000495.

[102] Turner, Jenia I & Allison D Redlich. "Two Models of Pre-Plea Discovery in Criminal Cases: An Empirical Comparison" (2016) 73:1 Wash & Lee L Rev 285.

[103] Wilford, Miko M & Brian H Bornstein. "The Disappearing Trial: How Social Scientists Can Help Save the Jury From Extinction" (2021) Psych, Crime & L, advance online publication. https://doi.org/10.1080/1068316X.2021.1984482.

misdemeanor cases, potentially revealing the differences among false guilty pleas and wrongful convictions at trial. It is our hope that these results will help scholars better examine the causes and correlates of wrongful conviction through empirically identified "classes", rather than theoretically defined subgroups. Armed with an increased understanding of wrongful convictions, we may be better equipped to prevent them from occurring.

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Wrongful Conviction in England and Wales: An Assessment of Successful Appeals and Key Contributors

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This paper presents an analysis of 88 criminal convictions that have since been quashed on the basis of error of fact (wrongful convictions) that have occurred in England and Wales since 2007, in the context of a wider set of 389 wrongful convictions that have occurred in England and Wales since 1970. Based on this analysis, three key contributors of concern are identified as having been influential in leading to wrongful convictions recently - digital evidence, guilty pleas, and misleading testimony. Cases involving each of these factors are discussed, including cases from the Post Office Scandal, which make up many of the identified wrongful convictions during this period. In considering each factor, failings in the criminal justice system that leave defendants vulnerable to wrongful conviction are discussed. The paper concludes with brief initial suggestions for reform to provide greater protection against highlighted vulnerabilities.

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I Introduction

A. Setting the Scene: Criminal Appeals in England and Wales

In England and Wales, a significant number of recognised wrongful convictions demonstrate the potential for factually innocent people to be convicted of crimes.[1] Some existing work has analysed potential causes of these wrongful convictions, in order to provide

[1] Sam Jones, "Long-standing miscarriages of justice in the UK" (18 Mar 2019), online: *The Guardian* <https://www.theguardian.com/uk/2009/mar/18/miscarriages-justice-history>.

recommendations as to how reform might stop such convictions occurring in the future.[2] Importantly, lessons learned from wrongful convictions have led to important reform in the criminal justice system, including the *Police and Criminal Evidence Act* 1984, which contains (among other things) procedural and evidential requirements seeking to reduce the risks of wrongful conviction caused by unreliable confession evidence, and the introduction of the Criminal Cases Review Commission (CCRC), an independent statutory body tasked with reviewing alleged wrongful convictions.[3] However, regulations have not addressed all causes of wrongful conviction, and developments in evidence and in the criminal justice system more broadly mean that new problems may be increasingly significant in leading to wrongful convictions. Examining factors associated with wrongful convictions today is important. This task is especially important because funding shortages in the criminal justice system have led to particularly difficult conditions in which the risk of wrongful conviction might be heightened.[4] In this context, several factors relating to the state of the criminal law profession and criminal justice investigations generally have been linked to reduced protections from a wrongful conviction for defendants. These include, but are not limited to, poor legal representation and lawyer-client relationships,[5] reductions in the rights of suspects,[6] and the outsourcing of forensic science work to private bodies following the closure of the government-owned forensic science service in 2012.[7]

In order to understand wrongful convictions in England and Wales, it is first necessary to understand the current processes by which wrongful convictions are recognised. Convictions can occur either in the magistrates' court or the Crown Court. The magistrate's court handles less serious cases, which are heard by either two or three magistrates (lay judges) or a district judge.[8] The Crown Court handles more serious cases, which are normally heard by a jury (who

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[2] See, for example, Tom Bingham, "Justice and injustice" in *The Business of Judging: Selected Essays and Speeches* (Oxford: Oxford University Press, 2000); Rebecca K Helm, "The anatomy of factual error miscarriages of justice in England and Wales: A fifty year review" (2021) 5 Crim LR 351; Nadine M Smit, Ruth M Morgan & David A Lagnado, "A systematic analysis of misleading evidence in unsafe rulings in England and Wales" (2018) 58:2 Science and Justice 128.

[3] *Criminal Appeals Act 1995* (UK), s 8.

[4] For more information, see Law Society, *Crisis in the Criminal Justice System* (2021), online: https://www.lawsociety.org.uk/campaigns/criminal-justice/. Rosa Ellis, "Behind the numbers: The demise of legal aid" (3 Feb 2020), online: *The Times* <https://www.thetimes.co.uk/article/crisis-in-the-courts-behind-the-numbers-the-demise-of-legal-aid-r5zcm6dwm>; Holly Greenwood, "Rethinking innocence projects in England and Wales: Lessons for the future" (2021) 60:4 The Howard J of Crime & Justice 459; Dan Newman & Jon Robins, "The demise of legal aid? Access to justice and social welfare law after austerity" (2022) 3:3 Amicus Curiae (2nd) 448.

[5] Daniel Newman, *Legal Aid Lawyers and the Quest for Justice* (Oxford: Hart Publishing, 2013).

[6] Rachel Gimson, "The mutable defendant: From penitent to rights-bearing and beyond" (2019) 40:1 LS 113; Mark George QC, "Everyone knows the criminal justice system is in a state of crisis" (9 Mar 2018), online: *The Justice Gap* <https://www.thejusticegap.com/everyone-knows-criminal-justice-system-state-crisis/>.

[7] Carole McCartney & Stephanie Roberts "Building institutions to address miscarriages of justice in England and Wales: mission accomplished?" (2013) 80:4 U Cin L Rev 1333; Tim J Wilson & Angela M C Gallop, "Criminal justice, science and the marketplace: The closure of the forensic science service in perspective" (2013) 77:1 JCL 56.

[8] See Ed Johnston & Tom Smith, *Criminal Procedure and Punishment*, 2nd ed (Hall & Stott Publishing, 2020), ch 9.

make the ultimate determination of guilt) and a judge (who makes determinations of law, and issues a sentence).[9] People convicted in the magistrate's court have an automatic right of appeal to the Crown Court, where the case is fully reheard by a Crown Court judge, usually sitting with two magistrates (although note that this right is restricted where the person pleaded guilty).[10] People convicted in the Crown Court must make an application for leave to appeal, and leave to appeal can be granted by the Court of Appeal or the original trial judge.[11] Permission to appeal will only be given where it is determined that the case is "reasonably arguable."[12] Where leave to appeal is given, the appeal is heard by the Court of Appeal. There are restrictions on the evidence that can be considered by the Court of Appeal. For example, the court will generally only consider fresh evidence where it was not or could not have been made available at the time of trial.[13] The appeal will be allowed where it is deemed that the conviction is "unsafe."[14] In cases involving new evidence, this now typically involves a determination that the new evidence would have impacted the decision of the jury.[15] In convictions from both the magistrates' court and the Crown Court, defendants may also apply to the CCRC where they allege they have been wrongfully convicted. The CCRC can refer cases to the Court of Appeal where it believes that there is a "real possibility" that the relevant conviction will be overturned by the Court of Appeal,[16] primarily where other avenues of review have been exhausted.

This appeals system has been described as successful in correcting wrongful convictions, since appeals can be allowed in relatively broad circumstances (specifically when compared with the United States).[17] However, it should be noted that the system also has important potential weaknesses. For example, the reluctance of the Court of Appeal to consider fresh evidence makes it hard to appeal for those who may have had evidence of innocence at the time of trial but not presented it (e.g., due to lawyer error), and the fact that the CCRC can only refer where there is a "real possibility" the Court of Appeal would overturn a conviction "handcuffs" the CCRC to rules and procedures of appeals courts.[18] Relatedly, it is important to recognise that an analysis of recognised wrongful convictions is "handcuffed" to current appeals procedures. Recognised cases likely represent the tip of the iceberg in terms of wrongful convictions, that tell us only the wrongful convictions that the courts are picking up on, given current procedures.

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[9] *Ibid.*

[10] *Ibid*, ch 11.

[11] *Ibid.*

[12] *Ibid.*

[13] *Ibid.*

[14] For example, *R v A (D),* (14 Mar 2000), [unreported] CA, "the Court is in no position to declare that the appellant is innocent … Our function is to consider whether in the light of all the material before us this conviction is unsafe" (Lord Bingham).

[15] *R v Pendleton,* [2001] UKHL 66.

[16] *Criminal Appeals Act 1995* (UK), s 13(1)(a).

[17] Lissa Griffin, "Correcting injustice: Studying how the United Kingdom and the United States review claims of innocence" (2009) 41 U Toledo L Rev 107.

[18] Michael Naughton, "Appeals against wrongful conviction" in Karen Corteen et al, eds, *A Companion to Crime, Harm, and Victimisation* (Bristol: Bristol University Press, 2016) 10.

B. The Miscarriages of Justice Registry

This paper presents an analysis of data contained in a new Miscarriages of Justice Registry (the registry), documenting and categorising convictions since 1970 that have been overturned by appeals courts in England and Wales on the basis of factual error, meaning errors as to facts or their interpretation (as opposed to errors relating to law or procedure).[19] In this paper these cases will be referred to as wrongful convictions. Although courts in England and Wales do not make judgments about whether defendants are factually innocent (only of whether a conviction is "unsafe," as discussed above), the hesitancy of courts to overturn convictions in the absence of compelling evidence means that the overturning of a conviction is a strong (although not conclusive) indication of factual innocence.[20] Cases for inclusion in the registry were identified using media searches, communications with organisations involved in work relating to wrongful conviction, searches of legal databases, and searches of the CCRC website. Cases were selected for inclusion where (i) a defendant was convicted of a criminal offence which was subsequently overturned as a result of factual error at the original trial, (ii) the conviction was not substituted for another conviction (either for a different offence or as the result of a retrial), (iii) there was at least one year between the initial conviction and the successful appeal, and (iv) sufficient information was available about the case for it to be included. All cases in the registry are categorised by cause(s) and a range of other factors, including whether the defendant initially pleaded guilty.[21] Note that the inclusion criteria used mean that not all convictions of innocent people will be picked up. Importantly, wrongful convictions will be missed in a number of circumstances, including where they have not been overturned by appeals courts and where there was insufficient coverage for them to be picked up by searches. It is also possible that the search picked up cases in which factually guilty defendants had their convictions overturned, although in many cases there was strong evidence of innocence. Thus, the registry should best be viewed as a set of cases involving convictions that were likely wrongful convictions, and that can provide insight into evidential factors that are likely to be associated with wrongful convictions.

This paper analyses cases in the registry as of November 11, 2022.[22] At that time the registry included 389 cases in England and Wales dating from convictions in 1970 to convictions in 2018 (a 48-year period). Of those 389 cases, 166 occurred between the beginning of 1970 and the end of 1994 (the first half of the period) and 223 occurred between the beginning of 1995 and the end of 2018 (the second half of the period). An existing analysis of data in the registry has highlighted the persistence of wrongful convictions despite changes in legislation, but also the changing nature of wrongful convictions over time.[23] For example, recognised wrongful convictions resulting from false or unreliable confessions are less common and different in nature now than they were in the 1980s, perhaps as a result of successful implementation of provisions contained in the *Police and Criminal Evidence Act* 1984.

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[19] "Miscarriages of Justice Registry" (nd), online: *Evidence-Based Justice Lab* <https://evidencebasedjustice.exeter.ac.uk/miscarriages-of-justice-registry/>.

[20] See Kate Malleson, "Appeals against conviction and the principle of finality" (1994) 21 J L & Soc'y 151.

[21] For more information on categorisation, see Helm, *supra* note 2.

[22] Note that a previous analysis of cases in the registry, with a different focus, was conducted in 2021. See Helm, *supra* note 2.

[23] *Ibid*.

Given the potential for the landscape of wrongful convictions to change, it is important to consider closely the factors that have been associated with wrongful convictions in the recent past that can provide insight into where interventions designed to target wrongful convictions might be targeted today. This paper focuses on wrongful convictions from the registry that have occurred over the last 15 years (since 2007) to provide insight into important factors associated with wrongful convictions in England and Wales today, particularly when compared to older cases in the registry (convictions occurring prior to 2007).

II Current Causes and the Post Office Scandal

As noted above, the registry contains 389 wrongful convictions that have occurred in England and Wales since 1970. Eighty-eight of these convictions have occurred in the last 15 years. Note that although many of these cases (n= 59) were related to the "Post Office Scandal" (which will be discussed below), themes from the Post Office Scandal can also be seen in the broader set of registry cases. An initial examination of the 88 cases revealed four key factors associated (between them) with wrongful convictions in all but five of the cases: misleading digital evidence, false guilty pleas, inadequate disclosure, and discredited witness testimony. The prevalence of the first three of these factors was heavily influenced by Post Office Scandal cases, however each cause could also be seen in the data more broadly. A full list of cases coded by contributing factor present and with case citations, where available, is contained in Appendix 1. The remainder of this article will focus on discussing three of these factors: misleading digital forensic evidence, false guilty pleas, and discredited witness testimony.[24] As the Post Office Scandal contributes so significantly to the wrongful convictions during this period, it will be briefly introduced before turning to consider the factors themselves. It is important to note that appellants appealing convictions relating to the Post Office Scandal were part of a large group, and were well-mobilised (e.g., through the Justice for Sub-Postmasters Association). As a result, they were able to successfully appeal convictions in a way that individual defendants are unlikely to be able to. The cases can therefore provide insight not only into the scandal itself, but also factors that are likely present in other wrongful convictions, including those that have yet to be recognised.

A. The Post Office Scandal

The Post Office Scandal primarily refers to action taken by the Post Office in relation to shortfalls that were flagged in the accounts of sub-postmasters and sub-postmistresses (SPMs) from around 2000 up until 2021. These shortfalls were flagged by an accounting system known as Horizon, which had been introduced by the Post Office in 1999, and which was managed by a sub-contractor, Fujitsu.[25] Between 2000 and 2014, more than 700 SPMs and other Post Office employees were prosecuted for offences including theft, fraud, and false accounting, on the basis of the Horizon-flagged shortfalls (an important note is that the majority

[24] For discussion of issues surrounding disclosure, see Ed Johnston & Tom Smith, eds, *The Law of Disclosure: A Perennial Problem in Criminal Justice* (London: Routledge, 2022); Hannah Quirk, "The significance of culture in criminal procedure report: Why the revised disclosure scheme cannot work" (2006) 10:1 E&P 42.

[25] Richard Moorhead, Karen Nokes & Rebecca K Helm, "The Conduct of Horizon Prosecutions and Appeals" (2021) Post Office Project Working Paper 3 online: *Evidence-Based Justice Lab* <https://evidencebasedjustice.exeter.ac.uk/wp-content/uploads/2022/10/WP3-Prosecutions-and-Appeals-Oct-2021-2.pdf>.

of these prosecutions were brought by the Post Office themselves, as a private prosecutor). It is now acknowledged that the Horizon system was not reliable, meaning there was no basis for the prosecutions (at least in many cases).[26] In 2021, following referrals by the CCRC, the convictions of SPMs on the basis of Horizon evidence began to be overturned, and to date 81 defendants who had been convicted on the basis of Horizon evidence have been acquitted.[27]

Importantly, evidence suggests that there were difficulties with the Horizon system from its introduction.[28] SPMs raised questions about shortfalls that they did not understand but queries were not investigated or not well investigated. Even when the Post Office were clearly aware of problems with the Horizon system (e.g., a Receipts and Payments mismatch bug was explicitly discussed between the Post Office and Fujitsu) they continued to blame SPMs for these shortfalls, and to prosecute them for related offences. Concerns relating to the Horizon system were not disclosed to SPMs or their legal teams. As was stated in the first Court of Appeal judgment overturning convictions that had been based on Horizon data: "Defendants were prosecuted, convicted, and sentenced on the basis that the Horizon data must be correct, and cash must therefore be missing, when in fact there could be no confidence as to that foundation."[29] In fact, failures in investigation and disclosure in the cases lead the Court of Appeal to describe prosecutions based on Horizon data as an "affront to the public conscience."[30] These prosecutions are now recognised as part of the most widespread miscarriage of justice in recent history, and a compensation scheme has been put in place to support victims of these miscarriages of justice as well as those who suffered harms from investigations that did not end in criminal conviction.

Two of the key factors that allowed the wrongful convictions in the Post Office Scandal to occur were vulnerabilities created by the use of digital evidence, and defendants pleading guilty. Those factors, alongside a third, lay witness testimony, and their role in leading to wrongful convictions (including in the Post Office Scandal cases) are discussed below.

B. Digital Evidence

Digital evidence refers to any evidence that comes from an electronic source, including evidence from mobile phones, evidence from computers (and computer systems), evidence from online platforms, cell site evidence, and evidence from closed-circuit television (CCTV). Advances in technology and the use of technology in recent years has led to increasing use of digital sources of evidence in the criminal justice system, and increasing complexity of digital evidence.[31] In fact, a recent empirical study suggested that digital forensic evidence is now

[26] *Hamilton & Ors v Post Office Ltd*, [2021] EWCA Crim 577 [*Hamilton*].

[27] See, for example, *Hamilton*, *ibid*; *Allen & Ors v Post Office Ltd*, [2021] EWCA Crim 1874; *Hawkes & Ors v Post Office Ltd*, [2022] EWCA Crim 1197; *White & Ors v Post Office Ltd*, [2022] EWCA Crim 435; *Ambrose & Ors v Post Office Ltd*, [2021] EWCA Crim 1443.

[28] *Bates and Others v Post Office No. 6* [2019] EWHC 3408 (QB) at para 455; Hamilton, *supra* note 26 at para 96.

[29] *Hamilton*, *supra* note 26 at para 136.

[30] *Ibid* at para 137.

[31] See, for example, Rick Muir and Stephen Walcott, 2021. *Unleashing the value of digital forensics* (London: The Police Foundation, 2021), online: <https://www.police-foundation.org.uk/publication/unleashing-the-value-of-digital-forensics/>; Eoghan Casey, "The chequered past and risky future of digital forensics" (2019) 51:6 AJFS 649; Jan

used more often than non-digital forensic evidence, and that mobile phone evidence is now the most commonly used forensic evidence (with defence practitioner participants reporting its use by the prosecution in over 50% of their caseload).[32] As existing work has noted, increasingly the legal community must be "prepared to deal with an increase of digital evidence in both volume and complexity."[33] However, case data from the registry suggests that the legal community is not prepared to deal effectively with digital evidence, and highlights ways in which the use of digital evidence make defendants vulnerable to wrongful conviction. Registry cases suggest a shift from more traditional forensic evidence (including medical, biological, chemical, and feature comparison) driving the majority of identified wrongful convictions in this area pre-2007, to digital evidence driving the majority of identified wrongful convictions in this area post-2007.

In terms of convictions occurring prior to 2007, the registry contains 79 cases classed as involving false or misleading forensic evidence. The majority of these cases involved medical, chemical, or biological evidence. Four cases (the cases of Mark Dallagher, Joseph Ottoo, Sirfraze Ahmed, and Mark Kempster) involved feature comparison evidence. Only one non Post Office case, the case of Aaron Bacchus, involved digital evidence.[34] In that case, Mr Bacchus was convicted of robbery after a group of men entered a woman's flat through a window and stole property from her. There was CCTV evidence showing the arrival of five men at the property, and the Crown Prosecution Service relied on expert evidence comparing this CCTV with footage of other robberies at which Mr Bacchus was present. On appeal, the prosecution conceded that this comparison was unreliable, and the conviction was overturned.

In terms of convictions occurring post 2007, the registry contains 65 cases classed as involving false or misleading forensic evidence. Excluding the Post Office Scandal cases (which represent 59 of the cases in this area, all of which involved digital evidence) the registry contains 6 cases classed as involving false or misleading forensic evidence, three (50%) of which involved digital evidence (two of the other cases involved medical evidence and the final case involved ballistics evidence). Examining the Post Office Scandal cases, and these three additional cases involving digital evidence, alongside relevant commentary, can provide insight into ways in which the utilisation of digital evidence may create vulnerabilities to wrongful conviction.

Digital evidence is often seen as objective and trustworthy evidence, and thus might be seen as sufficient to substantiate a conviction without significant amounts of other evidence, potentially due to beliefs that technology is more reliable and objective than it actually is in practice. This trust in digital evidence can be seen relating to computer evidence in the Law Commission recommendation that computers should be presumed to have operated correctly unless there is explicit evidence to the contrary (which commentary suggests is important in current legal proceedings).[35] In the Post Office cases, data from the Horizon computer system

Collie, "Digital forensic evidence—Flaws in the criminal justice system" (2018) 289 Forensic Science International 154.

[32] Dana Wilson-Kovaks, and Rebecca K Helm, "Digital evidence in defence practice: Prevalence, challenges, and expertise" (in preparation).

[33] Hans Henseler and Sophie van Loenhout, "Educating judges, prosecutors and lawyers in the use of digital forensic experts" (2018) 24 Digital Investigation, March Supplement S76.

[34] See *R v Aaron Bacchus* [2004] EWCA Crim 1756.

[35] Peter B Ladkin, Bev Littlewood, Harold Thimbleby, and Martyn Thomas CBE, "The law commission presumption concerning the dependability of computer evidence" (2020) 17 DE & ESLR 1.

was seen as sufficient for prosecutors to pursue criminal charges against SPMs, despite the fact that, as the Court of Appeal noted in *Hamilton*, "…there was no proof of an actual loss as opposed to a Horizon-generated shortfall.[36]" Although many SPMs pleaded guilty, this evidence from Horizon was also seen as sufficient by judges and jurors to convict SPMs in some of the cases that did go to trial despite conflicting with evidence from SPMs. This bias towards believing computer systems even where the evidence they provide contradicts accounts given by humans has been described as *user error bias*, and also as a *dangerous* way to approach investigations.[37] Importantly, the perceived objectivity and trustworthiness of digital evidence stands in contrast to the realities underlying this evidence. One recent study examining expert evaluations of the same 3GB evidence file demonstrated that digital evidence relied on in court can be inherently uncertain and prone to bias and error.[38] In the Post Office cases trust in digital evidence certainly did prove to be dangerous. The Horizon system was faulty, this trust was misplaced, and innocent people were convicted.

The extent to which digital evidence is prone to bias and error is made more problematic where defence teams do not effectively scrutinise digital evidence; including through accepting evidence presented by the prosecution without detecting flaws in that evidence, and not hiring opposing experts. The cases in the registry show that even in cases involving relatively simple digital evidence, defence lawyers may sometimes struggle to critique digital evidence effectively. Consider, for example, the case of Danny Kay.[39] Mr Kay was accused of rape. At his trial, jurors were shown Facebook messages between Mr Kay and the complainant, which were an exhibit at trial. An issue at trial was which messages had been deleted from a message thread by the complainant, and why. This issue was discussed through the examination of the complainant and defendant as witnesses, but not through scrutinising digital sources effectively to identify deleted messages. It was only after Mr Kay had been in prison for a number of years that his sister-in-law discovered that she could access an archive on his Facebook account containing further messages that had been deleted by the complainant and showed that significant and misleading impressions had been given by the complainant at trial. As a result, the conviction was overturned.

Another example of weak scrutiny of digital evidence is the case of Jodie Rana.[40] Ms Rana was accused of arson, and key evidence at her trial was expert evidence in the form of a report written by a cell site expert (who was not called to give evidence at trial), which was interpreted to mean that Ms Rana was within 25 meters of the scene of the crime as a result of having connected to a particular router. This was agreed expert evidence despite the fact that Ms Rana did not accept that she was this close to the scene of the crime, and despite the fact that the report was based on router marketing rather than any testing. It was only on appeal

[36] *Hamilton, supra* note 26 at para 261.

[37] James Christie, "The Post Office Horizon IT scandal and the presumption of the dependability of computer evidence" (2020) 17 DE & ESLR 49.

[38] Nina Sunde and Itiel Dror, "A hierarchy of expert performance applied to digital forensics: Reliability and bias ability in digital forensics decision making" (2021) 37:1 Forensic Science International: Digital Investigation 301175. See also Jon Robins, "Digital forensic evidence relied upon in court is prone to 'bias and error,' says report" *The Justice Gap* (12 Jul 2021), online: <https://www.thejusticegap.com/digital-forensic-evidence-relied-upon-in-court-is-prone-to-bias-and-error-says-report/>.

[39] *Kay v Regina* [2017] EWCA Crim 2214. [Kay]

[40] *Rana v Regina* [2018] EWCA Crim 725.

when a report was obtained by a new expert (who had conducted testing) that it became clear that Ms Rana could have been 72-160 meters away and still have had service from the router. The Court of Appeal noted that this new evidence rendered the conviction unsafe, and so quashed the conviction.[41]

The reasons for this lack of effective defence scrutiny may partly relate to difficult conditions in the criminal justice system following funding cuts for criminal defence work.[42] These cuts have put pressure on defence lawyers to process cases more quickly, something which may be particularly problematic in cases involving digital evidence due to the complexity and volume of that evidence.[43] In addition, because of the relatively rapid rise in the use of digital evidence, defence lawyers may not have sufficient training in scrutinising that evidence, leading to weaknesses in evaluating evidence themselves and, relatedly, in knowing when to hire an expert. A recent empirical study found that many defence lawyers did not feel that they had the technical competence to fully understand digital evidence and reported little to no training in digital evidence.[44] Commentators have called for more training to be offered to legal practitioners to address these deficits and improve the ability of defence lawyers to scrutinise and utilise digital evidence.[45]

However, it should be noted that the risks of wrongful conviction resulting from digital evidence do not entirely lie with the defence. As a result of resources and access to original digital sources, the defence can be dependent on thorough police and prosecution investigation of digital sources and on appropriate disclosure from the prosecution. Disclosure guidelines do require the police to pursue all reasonable lines of inquiry pointing towards or away from a suspect, and to disclose relevant evidence to the defence.[46] However, research suggests that in practice, both generally, and in the specific context of digital forensic evidence, current disclosure systems may not be effective.[47]

The Post Office cases demonstrate how failings in investigation and disclosure can hamper the ability of defence teams to defend their clients in cases involving digital evidence (and in cases

[41] Another case in which misleading prosecution expert evidence led to wrongful conviction based on digital evidence was the case of Amilton-Nicolas Bento. In that case, an expert at trial gave evidence to suggest that CCTV footage indicated the victim was walking with a bag that was discovered in the defendant's apartment. On appeal, evidence from experts suggested this "bag" was actually a shadow on the film.

[42] Jon Ungoed-Thomas, "Barristers to be balloted on possible walkouts in row over legal aid rates" *The Guardian* (11 Jun 2022), online: The Guardian <https://www.theguardian.com/law/2022/jun/11/barristers-to-be-balloted-on-possible-walk-outs-in-row-over-legal-aid-rates>.

[43] Henseler and van Loenhout, *supra* note 33.

[44] Wilson Kovacks et al, *supra* note 32.

[45] See, for example, Aaron Alva and Barbara Endicott-Popovsky, "Digital evidence education in schools of law" (2012) 7:2 The Journal of Digital Evidence, Security and Law 75.

[46] *Criminal Procedure and Investigations Act* 1996 s 23(1), Code of Practice, online: <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/447967/code-of-practice-approved.pdf>.

[47] Quirk, *supra* note 24; Philip Anderson, Dave Sampson, and Seanpaul Gilroy, "Digital investigations: relevance and confidence in disclosure" (2021) 22 ERA Forum Journal of the Academy of European Law 587.

more broadly; although note failings in investigation and disclosure in the Post Office cases do not relate to the police). In those cases, ineffective investigation processes and ineffective disclosure made it extremely difficult for defence teams to identify and understand potential flaws in the Horizon system. Where problems with Horizon were reported by SPMs, through the Horizon helpline, there is evidence to suggest that Fujitsu, who managed the system, mischaracterised them as user-error rather than unexplained errors or Horizon errors. As a result, potential problems with Horizon were not recorded or examined. Where potential problems were uncovered, these were not disclosed to the defence. For example, discussions relating to a "receipts and payments mismatch bug" were not disclosed at the trial of one SPM, which took place only a matter of days after those discussions had happened.[48] This lack of appropriate investigation and disclosure meant that defence teams had little indication of potential problems in the system that it might have been worth pushing to investigate further.

The quality and reliability of digital evidence cannot be reliably improved only by training defence practitioners. Improvements are likely needed in the investigation and disclosure of digital evidence to facilitate effective scrutiny of that evidence, particularly where defence access to an original digital source is limited.

C. Guilty Pleas

Guilty pleas are often equated with admissions of guilt by guilty people. When a defendant pleads guilty, that plea is effectively accepted as proof beyond a reasonable doubt of the allegations against them.[49] As background, in England and Wales, sentence reductions where a defendant pleads guilty are awarded by judges in line with sentencing guidelines.[50] These guidelines provide for a maximum of a 1/3 sentence reduction where a defendant pleads guilty at the earliest possible opportunity, which can change sentence type, for example resulting in the imposition of a community sentence when a custodial sentence would be faced if convicted at trial.[51] In addition, prosecutors can drop more serious charges against a defendant where the defendant agrees to plead guilty to a lesser charge.[52] These reductions are regulated by the Code for Crown Prosecutors.[53] Although these regulations do not allow for "fictional pleas," where the plea becomes detached from the alleged behaviour,[54] charge reductions can still be significant in terms of reducing sentence length and type.[55]

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[48] *Hamilton*, *supra* note 26 at para 206.

[49] Jeremy Horder, *Ashworth's Principles of Criminal Law*, 9th ed (Oxford: Oxford University Press) 11.

[50] See Sentencing Council, *Reduction in Sentence for a Guilty Plea: Definitive Guideline* (2017), online: <https://www.sentencingcouncil.org.uk/wp-content/uploads/Reduction-in-Sentence-for-Guilty-Plea-definitive-guideline-SC-Web.pdf>.

[51] See *ibid* at part E.

[52] For more information, see Rebecca K Helm, "Constrained waiver of trial rights? Incentives to plead guilty and the right to a fair trial" (2019) 46:3 Journal of Law and Society 423.

[53] Crown Prosecution Service, *Code for Crown Prosecutors* (2018), online: <https://www.cps.gov.uk/publication/code-crown-prosecutors>.

[54] See, Thea Johnson, "Fictional Pleas" (2019). 96 Ind LJ 855.

[55] Helm, *supra* note 52.

In this context, approximately 70% of defendants plead guilty (although rates vary between the magistrate's court and Crown Court).[56] Research in England and Wales has shown that, despite sentence reductions awarded for guilty pleas being more modest than those offered in the USA, incentives to plead guilty are likely to be leading (and creating pressure for) innocent defendants to plead guilty.[57] Examining the data from the registry shows some recognised wrongful convictions in cases in which the defendant pleaded guilty, with recent evidence of significant pressures to plead guilty being provided by the Post Office Scandal cases.

Excluding the Post Office Scandal cases, the registry contains eight cases in which defendants initially pleaded guilty (involving seven convictions occurring prior to 2007, and one conviction occurring since 2007). What these cases have in common is that they involve very strong (even conclusive) evidence of actual innocence, which is seen in relatively few other cases in the registry. For example, consider the case of Michael Holliday who was convicted of robbery in 1996.[58] He pleaded guilty on the advice of his lawyer after having confessed while under the influence of drugs and alcohol, but his conviction was overturned on appeal when clear evidence showed that somebody else had committed the offence. In terms of post-2007 cases, the case of Thomas Smart provides another example of someone who had pleaded guilty being acquitted in the face of overwhelming evidence of innocence. Mr Smart was convicted of possessing live ammunition following a bullet keyring being found at his home.[59] He reported feeling "forced" to plead guilty to the crime. His conviction was quashed when the now-disbanded Government Forensic Science Service (who had conducted initial testing) admitted that their testing had been based on the wrong exhibit.

The Post Office cases, representing 54 of the 55 wrongful convictions via guilty plea in the registry since 2007, are important because the significant number of appellants involved means wrongful convictions were recognised when they may not have been otherwise, and because appellants have spoken about their experiences and reasons for pleading guilty. Of the 59 Post Office Scandal cases in the registry involving convictions since 2007 (representing about 73% of acquittals related to that scandal to date, the others having related to convictions prior to 2007), at least 54 of those convicted had initially pleaded guilty to the charges against them. Interviews with those who pleaded guilty and have now been widely recognised as innocent suggest that they often pleaded guilty because by doing so they could have charges against them (usually for theft) dropped and / or could avoid the risk of a custodial sentence. In the Post Office cases, charges of theft or fraud were frequently dropped or left to "lie on the file" where defendants agreed to plead guilty to false accounting.[60] These charge reductions as well as reductions outlined in the sentencing guidelines meant that defendants could face a

[56] "The Disappearing Trial*", Fair Trials International*, (2017), online: <https://www.fairtrials.org/app/uploads/2022/01/The-Disappearing-Trial-report.pdf.>

[57] See, for example, Rebecca K Helm, Roxanna Dehaghani, & Daniel Newman, "Guilty plea decisions: Moving beyond the autonomy myth", (2022) 85:1 MLR 133; Helm, *supra* note 52; Rebecca K Helm, "Guilty pleas in children: legitimacy, vulnerability, and the need for increased protection" (2021) 48:2 Brit JL& Soc'y 179; John Baldwin and Michael McConville, *Negotiated Justice: Pressures to Plead Guilty* (London: Martin Robertson, 1977).

[58] *R v Michael Shaun Holliday* [2005] EWCA Crim 2388. [Holliday]

[59] "Forensic staff 'knew live bullet conviction was wrong,' court hears", *BBC News* (2 Jul 2013), online: BBC <https://www.bbc.co.uk/news/uk-england-merseyside-23150487>.

[60] Moorhead et al., *supra* note 25, pg. 16-18.

custodial sentence if convicted at trial which they could avoid by pleading guilty, and thus led defendants to plead guilty despite believing they were innocent. This motivation has been described explicitly by some of those whose cases are included in the registry. David Thomas Hedges stated that he pleaded guilty due to being "petrified of the prospect of jail." Josephine Hamilton stated that she pleaded guilty "to avoid prison." Wendy Buffrey stated that she was advised to plead guilty "to avoid jail."[61]

Importantly, the fact that many defendants in Post Office cases pleaded guilty was likely important in allowing the miscarriage of justice to become as widespread as it did. Evidence from Horizon was not fully scrutinised in court as often as it should have been, and guilty pleas enhanced the impression that users, rather than Horizon, were to blame for shortfalls. This was exacerbated by the fact that in some cases the Post Office threatened to pursue charges of theft if defendants did not agree to forego criticism of the Horizon system.[62] Thus, criticism of the system was stifled, further preventing wrongful convictions from coming to light.

The cases discussed here are notable due to the fact that it is difficult to appeal a conviction occurring via guilty plea in England and Wales.[63] The vast majority of defendants who plead guilty because of a fear of time in custody will never be able to successfully appeal their conviction, and the cases discussed are very likely representative of a much wider phenomena, as highlighted in interviews with defendants themselves who have pleaded guilty and the lawyers who have represented them.[64] Psycho-legal experimental work examining the plea system in England and Wales has also provided support to suggest both that innocent defendants will plead guilty and that being able to obtain a non-custodial sentence by pleading guilty when a custodial sentence will be faced at trial is a key cause triggering them to do so.[65]

D. Witness Testimony

Another class of cases clearly apparent in data on convictions since 2007 in the registry are cases where convictions have been overturned due to the discrediting of witness evidence that was influential at trial. This factor was the most common one identified as being involved in wrongful convictions when not including the Post Office Scandal cases. The majority of these cases (n = 13) involve the discrediting of accounts provided by complainants. The

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[61] Rebecca K Helm, "False Guilty Pleas and the Post Office Scandal" *Evidence Based Justice Lab Blog* (28 Apr 2021), online: <https://evidencebasedjustice.exeter.ac.uk/false-guilty-pleas-and-the-post-office-scandal/>

[62] Hamilton, *supra note* 26 at paras 116-117.

[63] Richard Nobles, and David Schiff, "The Supervision of Guilty Pleas by the Court of Appeal of England and Wales–Workable Relationships and Tragic Choices" (2010) 31:4 Crim LF 513; See also *R v Jones* [2019] EWCA Crim 1059 (para 25: 'It is of course very rare to admit an appeal against conviction where an unambiguous guilty plea has been entered').

[64] See, for example, Helm, *supra* note 52; Fair Trials International, *Young Minds Big Decisions* (2022), online: <https://www.fairtrials.org/app/uploads/2022/10/Young-minds-big-decisions.pdf>; "Incentivized Legal Admissions in Children*" Evidence Based Justice Lab,* (2021), online: <https://evidencebasedjustice.exeter.ac.uk/wp-content/uploads/2021/09/ChildGuiltyPleas_FullReport.pdf>.

[65] Rebecca K Helm "Cognition and incentives in plea decisions: Categorical differences in outcomes as the tipping point for innocent defendants" (2022) 28:3 Psychology, Public Policy, and Law 344.

remainder involve discrediting eyewitness accounts (n = 6; 5 of which involved the same crime and witness), or witness evidence that could not be categorised based on information available (n = 2). Notably, all successful appeals seem to have been based on concerns about complainant or eyewitness honesty, rather than memory accuracy.[66] These difficulties are unsurprising due to the significant difficulty involved in the task of determining whether a person's account is truthful and correct in the absence of independent verification (e.g., corroborating evidence). Importantly, it should be noted that the cases in the registry primarily involve relatively fortuitous events for those convicted of criminal offences, such as a complainant telling others that they made up accusations and explaining why. These types of event will not frequently occur and be reported, and as a result many wrongful convictions in this area are likely to go undetected (also note that even these events do not always conclusively indicate innocence, and so in some cases convictions may be overturned where defendants are factually guilty).

In cases involving accounts provided by complainants, which will be focused on here as the larger group of cases, many of the identified wrongful convictions (n = 10) were in cases involving sexual offences. It is unsurprising that wrongful convictions turning on inaccurate assessment of complainant testimony are most common in these types of case, since they frequently require legal decision-makers to evaluate the evidence of a defendant and a complainant and to determine who is telling the truth, with little, if any, corroborating evidence (e.g., where it is agreed that sexual activity occurred between the complainant and defendant in private, and the relevant issue is consent). The fact these cases often primarily involve consideration of testimony itself is recognised by current Crown Prosecution Service guidance, which states: "Many RASSO [Rape and Serious Sexual Offences] cases will feature limited or no corroborative evidence."[67] Prior to the enactment of the Criminal Justice and Public Order Act 1994, there was a mandatory requirement to warn juries about the dangers of convicting on the uncorroborated evidence of complainants in sexual assault cases. This requirement was abrogated by that act.[68] Now Crown Prosecution Service Guidance sates: "One person's word can be sufficient to provide a realistic prospect of conviction. A jury can and does convict in such cases.[69]" It should be noted that despite the dropping of the corroboration requirement, commentary suggests that the Crown Prosecution Service are not pursuing a sufficient number of claims in these cases.[70] There is a significant challenge in these cases in accounting for and recognising the fact that the vast majority of accusations are true,[71] while trying to identify the minority of accusations that are false.

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[66] This is in contract to data from the US suggesting that there mistaken identity is a more common cause of wrongful conviction in sexual offence cases involving adult complainants than perjury or false allegations. See "Percentage Exoneration by Contributing Factor and Type of Crime", *National Registry of Exonerations*, online: <http://www.law.umich.edu/special/exoneration/Pages/ExonerationsContribFactorsByCrime.aspx>.

[67] "Rape and Sexual Offences: Applying the Code for Crown Prosecutors to Rape and Serious Sexual Offences," Crown Prosecution Service, (2021), online: <https://www.cps.gov.uk/legal-guidance/rape-and-sexual-offences-chapter-2-applying-code-crown-prosecutors-rape-and-serious>.

[68] *Criminal Justice and Public Order Act*, 1994, s 32.

[69] Crown Prosecution Service, *supra* note 66.

[70] See, for example, Rajeev Syal & Alexandra Topping, "Rape victims 'systematically failed' in England and Wales, report finds" *The Guardian* (25 Feb 2022), online: <https://www.theguardian.com/society/2022/feb/25/victims-systematically-failed-in-england-and-wales-report-finds>

[71] Liz Kelly, Jo Lovett, & Linda Regan, *A Gap or Chasm? Attrition in Reported Rape Cases* (Home Office Research, 2005).

An important question in this context is how a jury decides whether to convict or not convict in cases where the evidence against a defendant is the account of the complainant, particularly since research suggests there are no reliable cues in testimony itself (i.e., absent corroboration) that can indicate truthfulness or accuracy.[72] Experimental research can provide some insight here. Recent work has found that in the absence of helpful objective cues indicating truthfulness or accuracy, people may be driven more by their perceptions of the prevalence of true and false reports, in addition to instincts and surrounding context.[73] Perhaps most importantly, research suggests that people generally perform very poorly (not much better than chance) in assessing whether a speaker is honest and the statement that they are making is correct.[74]

It is therefore unsurprising that commentary has noted that in the current system accurate complainants are not believed and guilty defendants are not convicted.[75] Relatedly, cases in the registry suggest that the reverse is also true (although likely less common) – deceptive complainants are believed and innocent defendants are convicted. One such case is that of Nadeed Aslam.[76] Mr Aslam was convicted of multiple counts of rape of his wife based on allegations made by her. On appeal, two witnesses gave evidence that the complainant had admitted to them that she had lied at the trial. One said that she had done this because she wanted to stay in the United Kingdom, contrary to Mr Aslam's wishes. The court concluded that this new evidence suggested the accusation had been false (despite having been believed by the jury), and Mr Aslam's conviction was overturned. Another example is the case of Omar Bryan. Mr Bryan was convicted of rape based on testimony from the complainant who claimed she had been raped by a stranger. Mr Bryan claimed that himself and the complainant knew each other and had consensual sexual intercourse. On appeal evidence showed that the complainant and Mr Bryan were not strangers (she had his telephone number saved on her phone), and that she had lied about where she had been on the day of the incident, and Mr Bryan's conviction was overturned.

Importantly, a broader look at registry cases, examining identified wrongful convictions from 1970 onwards, shows that wrongful convictions based on discredited complainant evidence in cases involving sexual offences have become significantly more common since 1994, when the Criminal Justice and Public Order Act abrogated corroboration requirements. Only eight identified wrongful convictions occurring between 1970 and 1994 were categorised

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[72] See, for example, Maria Hartwig & Charles F Bond, "Why do lie catchers fail? A lens model meta-analysis of human lie judgments" (2011) 137:4 Psychological Bulletin 643.

[73] Rebecca K Helm & Bethany Growns, "Prevalence estimates as priors: Juror characteristics, perceived base rates, and verdicts in cases reliant on complainant and defendant testimony" 36:4 Applied Cognitive Psychology 891. More generally, see Nadia M. Brashier and Elizabeth J. Marsh, "Judging Truth" (2020) 71 Annual Review of Psychology 499.

[74] Charles F Bond Jr & Bella M DePaulo, "Accuracy of Deception Judgments" (2006) 10:3 Personality and Social Psychology Review 214; see also Holly K Orcutt, Gail S Goodman, A E Tobey, J M Batterman-Faunce, & S Thomas, "Detecting deception in children's testimony: Factfinders abilities to reach the truth in open court and closed-circuit trials" (2001) 25 Law & Hum Behav 339.

[75] See, for example, Alexandra Topping & Caelainn Barr, "Revealed: Less than a third of young men prosecuted for rape are convicted" *The Guardian* (23 Sep 2018), online: <https://www.theguardian.com/society/2018/sep/23/revealed-less-than-a-third-of-young-men-prosecuted-for-are-convicted>.

[76] *Aslam v Regina* [2014] EWCA Crim 1292. [Aslam]

as being of this type (about 5% of the total wrongful convictions during that period; note all occurred after 1980). From 1995 to 2016, 40 wrongful convictions were categorised as being of this type (about 18% of the total wrongful convictions during that period, and about 28% of wrongful convictions during that period that were not related to the Post Office Scandal). This information is not given to suggest that corroboration requirements or warnings should be introduced, but to flag the need for consideration to be given to the vulnerable minority of those accused of sexual offences who are actually innocent. While false allegations represent only a small fraction of allegations, these and other cases suggest that they do happen and that they can result in wrongful conviction. This possibility, and the associated harm that is likely to be suffered by individuals who are wrongly convicted of sexual offences in particular,[77] needs to be considered in debates as policy-makers seek to better handle cases involving sexual offences.[78]

III Discussion and Conclusion

Examining recognised wrongful convictions can provide insight into underlying causes of convictions of the innocent and also into the types of factors that appeals courts are recognising as undermining the safety of criminal convictions. This work has highlighted three factors which appear important in contributing to wrongful convictions over the last 15 years: digital evidence, guilty pleas, and misleading lay testimony. An important question having identified these factors, is how they might realistically be addressed in the context of a criminal justice system that is in a relatively vulnerable state as the result of funding cuts,[79] and which is dealing with a significant case backlog.[80] Below are some brief suggestions intended to contribute to a discussion about how problems in each of the areas identified might begin to be targeted in relatively easy ways given this context. These suggestions are not intended to be exhaustive, or to solve any problems entirely.

First, education has the potential to be important in increasing the ability of all participants in the legal process to effectively handle and scrutinise digital evidence. Although existing regulations require digital forensic experts providing services in the criminal justice system to be accredited,[81] this accreditation is only useful when lawyers are confident about when they need to retain an expert and that they can secure funding for that expert. Increased

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[77] See, for example, Naomi-Ellen Speechley and Ros Burnett, "The plausibility of being wrongly convicted for a sexual offence: Accounts from former prisoners" (2022) 3:1 WCLR 1.

[78] See "End-to-End Rape Review Report on Findings and Actions*", HM Government*, (2021), online: <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1001417/end-to-end-rape-review-report-with-correction-slip.pdf>.

[79] See, for example, George QC, *supra* note 6; Tom Smith & Ed Cape, "The rise and decline of criminal legal aid in England and Wales" in Asher Flynn and Jaqueline Hodgson, *Access to Justice & Legal Aid* (London: Bloomsbury, 2017).

[80] See, for example, Law Society, *Crown Court Backlog Increases* (2021), online: <https://www.lawsociety.org.uk/contact-or-visit-us/press-office/press-releases/crown-court-backlog-increases>.

[81] Forensic Science Regulator, *Codes of Practice and Conduct for Forensic Science Providers and Practitioners in the Criminal Justice System Issue 5* (2020), online: <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/880708/Codes_of_Practice_and_Conduct_-_Issue_5.pdf>.

judicial scrutiny and intervention, accompanied by appropriate education, may also be helpful in identifying cases in which expert advice should have been, but was not, sought, or where possible disclosure failings are raised. The myth that digital evidence can be presumed to be objective and reliable must be dispelled for all participants in the criminal justice process.

In the case of guilty pleas, increased judicial scrutiny has the potential to provide some support to defendants feeling pressure to plead guilty. This scrutiny has the potential to be particularly important when it comes to charge reductions, currently only clearly regulated by Crown Prosecution Service guidance. Careful attention should be given to what initial charges were brought, and whether the presence of those charges undermined the voluntariness of the plea decision (although note the current threshold for a decision to be involuntary is high).[82] Creating easier avenues for appeal in cases where incentives to plead were strong may be one promising intervention in this area. Perhaps even more importantly, serious consideration should be given to removing the provision in the sentencing guidelines allowing a guilty plea to change the type of sentence imposed, which clearly has the potential to create pressure for innocent people to plead guilty.

The difficulties created by lay testimony, particularly in cases involving sexual offences, represent the biggest challenge, one that it is beyond the scope of this paper to meaningfully address. It is important to consider what finders of fact should be doing in such cases, given that their ability to detect lies (in both defendants and complainants) is, in reality, limited. It is also important to question how current attempts to improve investigation and prosecution in these cases can improve outcomes for complainants while also providing appropriate protections against wrongful conviction in this area.

[82] See *McKinnon v Government of the United States and Another* [2008] UKHL 59. [McKinnon]

Appendix 1

Name	Most serious offence	Inadequate disclosure	Discredited witness testimony	Misleading digital forensic evidence	Guilty plea	Other	Neutral citation (if available)
Amilton-Nicolas Bento	Murder			X (CCTV)			
Anthony Gant*	False Accounting	X		X (computer)	X		
Bryan Tong	Sexual Assault		X (complainant)				
David Hughes*	Forgery	X		X (computer)	X		
Gail Ward*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Janet Skinner*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Margaret White*	False Accounting	X		X (computer)	X		[2022] EWCA Crim 435
Mohammed Aslam*	False Accounting	X		X (computer)	X		
Mohammed Rasul*	Theft	X		X (computer)	X		[2021] EWCA Crim 577
Omar Bryan	Rape		X (complainant)				[2009] EWCA Crim 2291
Abiodun Omotoso*	Theft	X		X (computer)			[2021] EWCA Crim 1443
Adam Joof	Murder	X	X (eyewitness)				[2012] EWCA Crim 1477
Alexander Peppernell	Indecent Assault		X (complainant)				[2009] EWCA Crim 1327
Antonio Christie	Murder	X	X (eyewitness)				[2012] EWCA Crim 1477
Dawn O'Connel*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577

Gareth Jones	Sexual Assault					X	[2018] EWCA Crim 2816
Harjinder Butoy*	Theft	X		X (computer)			[2021] EWCA Crim 577
Janine Powell*	Theft	X		X (computer)			[2021] EWCA Crim 1874
Jasmin Schmidt	Grievous bodily Harm					X	[2009] EWCA Crim 838
Josephine Hamilton*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Levi Walker	Murder	X	X (eyewitness)				[2012] EWCA Crim 1477
Michael Osborne	Murder	X	X (eyewitness)				[2012] EWCA Crim 1477
Owen Crooks	Murder	X	X (eyewitness)				[2012] EWCA Crim 1477
Pauline Stonehouse*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 1874
Thomas Smart	Possessing Ammunition				X	X	
Barry Capon*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Claire Thompson	Grievous Bodily Harm		X (other)			X	
Duranda Clarke*	Fraud	X		X (computer)	X		[2022] EWCA Crim 1197
Ian Warren*	Theft	X		X (computer)	X		[2021] EWCA Crim 577
Julian Wilson*	Fraud	X		X (computer)	X		[2021] EWCA Crim 577
Marissa Finn*	False Accounting	X		X (computer)	X		[2021] EWCA

							Crim 1874
Peter Holmes*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Sajid Ali	Rape		X (complainant)				
Sami Sabet*	Fraud	X		X (computer)	X		[2021] EWCA Crim 1443
Sanjeev Dhir	False Imprisonment / Kidnap					X	[2010] EWCA Crim 1939
Susan Rudkin*	Theft	X		X (computer)	X		Crown Court (No. A20200057)
William Graham*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Allison Henderson*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Geoffrey Long	Sexual Assault		X (complainant)				
Greg Harding*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 1874
Jacqueline McDonald*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Jerry Hosi*	Theft	X		X (computer)			[2021] EWCA Crim 1443
Julie Cleife*	Fraud	X		X (computer)	X		Crown Court (No. A20200057)
Kashmir Gill*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Nadeem Aslam	Rape		X (complainant)				[2014] EWCA Crim 1292

Nicholas Clark*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Pauline Thomson*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Rubina Shaheen*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Scott Darlington*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Seema Misra*	Theft	X		X (computer)	X		[2021] EWCA Crim 577
Siobhan Sayer*	Fraud	X		X (computer)	X		[2021] EWCA Crim 577
Timothy Brentnall*	Fraud	X		X (computer)	X		[2021] EWCA Crim 1443
Vijay Parekh*	Theft	X		X (computer)	X		[2021] EWCA Crim 577
Wendey Buffrey*	Fraud	X		X (computer)	X		[2021] EWCA Crim 577
Alison Hall*	Fraud	X		X (computer)	X		[2021] EWCA Crim 577
Damien Owen*	Theft	X		X (computer)			[2021] EWCA Crim 577
David Hedges*	Theft / Fraud	X		X (computer)	X		[2021] EWCA Crim 577
Gillian Howard*	Fraud	X		X (computer)	X		[2021] EWCA Crim 577
Gurdeep Dhale*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 1443
Hasmukh Shingadia*	Fraud	X		X (computer)	X		[2021] EWCA Crim 1443
Tim Burgess*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Vipinchandra Patel*	Fraud	X		X (computer)	X		Crown Court (No.

							A20200057)
Amanda Barber*	Fraud	X		X (computer)	X		
Ched Evans	Rape		X (complainant)				[2016] EWCA Crim 452
Della Robinson*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Jasvinder Barang*	Fraud	X		X (computer)	X		Crown Court (No. A20200057)
John Dickson*	Fraud	X		X (computer)	X		[2021] EWCA Crim 1443
Lynette Hutchings*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 577
Margery Williams*	Fraud	X		X (computer)	X		[2021] EWCA Crim 577
Norman Barber*	Fraud	X		X (computer)	X		
Robert Ambrose*	Fraud	X		X (computer)	X		[2021] EWCA Crim 1443
Robert Boyle*	Theft	X		X (computer)	X		[2022] EWCA Crim 1197
Trevor Gray	Rape		X (complainant)				
Angela Sefton*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 1874
Anne Nield*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 1874
Danny Kay	Rape		X (complainant)	X (social media)			[2017] EWCA Crim 2214
Grant Allen*	Fraud	X		X (computer)	X		[2022] EWCA Crim 1197

Jamie Dixon*	False Accounting	X		X (computer)	X		[2021] EWCA Crim 1874
Khayyam Ishaq*	Theft	X		X (computer)	X		[2021] EWCA Crim 577
Pervinder Swarnn	Assault		X (eyewitness)				
Jodie Rana	Arson			X (cell site)			[2018] EWCA Crim 725
Frances Avis	Harrassment and Criminal Damage		X (complainant)				
Patryk Pachecka	Murder					X	
AM	Rape		X (complainant)				[2020] EWCA Crim 1202
Rajeshkumar Mehta	Sexual Assault		X (complainant)				[2019] EWCA Crim 2332
Jonathan Price	Wounding with intent and attempting to cause grievous bodily harm		X (complainant)				[2015] EWCA Crim 2110
John Porch	Blackmail and assault		X (complainant)				[2020] EWCA Crim 1633
Adekunle Akanbi-Akinlade	Importing drugs		X (other)				[2012] EWCA Crim 2574

*Post Office Scandal case. Note that where a case is not marked as a guilty plea case it means either that the defendant pleaded not guilty or information on plea was not available.

Post-Traumatic Growth Among Exonerees: Exploring Transformative Experiences After Incarceration

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Exonerees face numerous barriers to reintegration following their release from wrongful imprisonment. To cope with the challenges they face after exoneration, they draw support from a wide range of external and internal resources, assisting them on their path towards self-sufficiency and resilience. In a study about life after exoneration through in-depth interviews with 26 exonerees, we explored the challenges of reentry for exonerees as well as strategies for success. Although none of the exonerees in our study reported finding closure (and most felt it was not attainable), some experienced what has been described in the academic literature as post-traumatic growth, indicating that although the damage wrought by the injustice of wrongful conviction and incarceration cannot be fully healed, some individuals have transformed their experiences into positive personal accomplishments. In this paper, we highlight the transformative experiences of exonerees as they re-established their lives post-release and consider how systems can provide the resources necessary to support post-traumatic growth.

I Introduction

According to the National Registry of Exonerations (2022), there have been more than 3,250 documented exonerations since 1989.[1] Research on the reentry experiences of exonerees indicates they face numerous obstacles to reintegration.[2] Spending time in prison disrupts educational attainment and work histories, fractures social bonds with family members and friends, disconnects individuals from a rapidly evolving society, and contributes to ongoing mental health challenges.[3] Furthermore, because expungement is not automatic following exoneration,[4] exonerees also face discrimination in the job market due to the conviction that remains on their record and doubt over their innocence.[5] Since they wait anywhere from several months to several years for their records to be expunged, the challenges of applying for jobs or public assistance are exacerbated.[6] While some exonerees receive compensation, not every state has automatic compensation laws, and in those that do, exonerees sometimes wait several years to receive compensation.[7] These financial barriers are made even worse because exonerees are often excluded from the supports received by other returning citizens through parole agencies and reentry organizations.

Individuals who are wrongfully convicted also experience the added effects of the miscarriages of justice. For one, exonerees are often released abruptly with little preparation compared to other formerly incarcerated individuals. In addition, many experience stigma after

[1] *National Registry of Exonerations*, online: <www.law.umich.edu/special/exoneration/Pages/ detaillist.aspx> retrieved June 20, 2020.

[2] Shlosberg, Amy et al. "They open the door, kick you out, and say 'go': Reentry challenges after wrongful imprisonment" (2020) 1:2 WCLR 151.

[3] Alexander-Bloch, Benjamin et al. "Mental health characteristics of exonerees: A preliminary explanation" (2020) 26:8 Psychol Crime Law 733; Brooks, Samantha K and Neil Greenberg. "Psychological impact of being wrongfully accused of criminal offences: A systematic literature review" (2021) 61:1 Med Sci Law 1; Campbell, Kathryn & Myriam Denov. (2004) "The burden of innocence: coping with a wrongful imprisonment" 46:2 Canadian J Criminology and Crim Just 101; Grounds, Adrian. "Psychological Consequences of Wrongful Conviction and Imprisonment" (2004) 46:2. Can. J Criminol. Crim. Justice 101; Konvisser, Zieva Dauber. (2015). 'What happened to me can happen to anybody'- women exonerees speak out" (2015) 3:2 Tex Law Rev 179; Wildeman, Jennifer, Michael Costelloe & Robert Schehr. "Experiencing Wrongful and Unlawful Conviction" (2011) 50:7 J Offender Rehabil 385.

[4] Cook, Kimberley J & Saundra D Westervelt. (2018). "Power and accountability: Life after death row in the United States" in Walter DeKeseredy and Molly Dragiewicz, eds, The Routledge Handbook of Critical Criminology, 2nd ed (Oxford: Routledge, 2018); Shlosberg et al, *supra* note 2.

[5] Kukucka, Jeff, Heather K Applegarth & Abby L Mello. "Do exonerees face employment discrimination similar to actual offenders?" (2020) 25:1 Legal Criminol Psychol 1; Shlosberg et al, *supra* note 2.

[6] Shlosberg et al, *supra* note 2.

[7] Cook & Westervelt, *supra* note 4; Norris, Robert J. "Assessing compensation statutes for the wrongly convicted" (2012) 23:3 Crim Justice Policy Rev 275.

exoneration,[8] and psychological trauma that might be different from what other returning citizens experience because they were removed from society for crimes they did not commit.[9]

Despite the obstacles, research suggests that exonerees are supported in a variety of ways and some are even able to find meaningful experiences after release from prison.[10] Positive transitions may also be affected by post-release social networks, including connections to family members and friends[11] and religious/spiritual affiliations.[12] Some exonerees also find it beneficial to talk about their experiences to cope with their trauma.[13] Attending exoneree meetings may provide opportunities for exonerees to form bonds and provide them a sense of community and belonging. In addition, they may learn how other exonerees overcame challenges after returning to the community.[14] Exonerees may also find meaning through their involvement in the innocence movement and in helping others through advocacy efforts. Prior studies found that some exonerees describe significant personal transformations because of their involvement in criminal justice reform, in supporting other exonerees, and in contributing to their communities.[15]

Meaningful experiences leading to positive change is a theme that emerged in our previous paper on exoneree coping strategies and provided a future direction for our research.[16] Although the exonerees we interviewed experienced many challenges after their return to the community,[17] there are also many exoneree success stories. In this paper, we expand on our previous work to further explore the personal transformations experienced by exonerees in our study. For some, the changes they described seem to be consistent with post-traumatic growth (PTG), which is a positive transformation that occurs following a traumatic event that alters an individual's core

[8] Clow, Kimberley A & Amy-May Leach. "After innocence: Perceptions of individuals who have been wrongfully convicted" (2015) 20:1 Legal Criminol Psychol 1; Clow, Kimberley A & Amy-May Leach. "Stigma and wrongful conviction: All exonerees are not perceived equal" (2015) 21:2 Psychol Crime Law 100.

[9] Brooks & Greenberg, *supra* note 3; Grounds, *supra* note 3; Westervelt, Saundra D & Kimberley J Cook. Life After Death Row: Exonerees' Search for Community and Identity (New Brunswick, New Jersey: Rutgers University Press, 2012).

[10] Nowotny, Jordan et al. "Survival, self-sufficiency, and repair: Reentry strategies and resources for wrongfully convicted people" (2022) 28:9 Psychol Crime Law.

[11] Konvisser, Zieva Dauber. "Psychological consequences of wrongful conviction in women and the possibility of positive change" (2012) 5 DePaul J Soc Just 179; Westervelt & Cook, *supra* note 9.

[12] DeShay, Rashaan A. "'A lot of people go insane behind that': Coping with the trauma of being wrongfully convicted" (2016) 29:3 Crim Justice Stud 179; Konvisser (2012), *supra* note 10.

[13] Konvisser, Zieva Dauber & Ashley Werry. "Exoneree engagement in policy reform work: An exploratory study of the innocence movement policy reform process" (2017) 33:1. J Contemp Crim 4; Konvisser (2012), *supra* note 10.

[14] DeShay, *supra* note 12; Szyszko, Adam T. (2018). Chronicles of A Death Row Exoneree: Life Prior, During, and After a Wrongful Conviction.

[15] *Ibid*; Konvisser (2012), *supra* note 10; Konvisser & Werry, *supra* note 12.

[16] Nowotny et al, *supra* note 10.

[17] See Shlosberg et al, *supra* note 2 for an in-depth exploration of reentry challenges for exonerees.

beliefs.[18] While other scholars found evidence of PTG among wrongfully convicted individuals,[19] research on this phenomenon is lacking. The current study aims to deepen our understanding of PTG for exonerees. Identifying the types of resources, supports, and experiences that promote positive transformations in exonerees could help to develop initiatives that promote sustainable change and opportunities for a better future for these individuals.

II Post-Traumatic Growth Literature Review

For many individuals, traumatic events lead to a series of negative outcomes and long-term difficulties including post-traumatic stress disorder, chronic anxiety, sleeplessness, isolation, and depression.[20] Others, however, use these experiences as catalysts for change with regard to personal improvement and development, a phenomenon known as post-traumatic growth (PTG). This concept was coined within the field of psychology and it is defined as a positive transformation that occurs following, and sometimes because of, traumatic events.[21] These positive effects may be attributed to overcoming a struggle that results when an individual has a change in beliefs about themselves and the greater world.[22] These could include, but are not limited to, a greater appreciation for life, closer relationships, increased personal strength, positive spiritual change, and recognition of new possibilities.[23] When this coping is positive, it may lead to a higher level of recovery and increased inner strength.[24] Some who experience PTG may develop a new understanding of themselves and the world they live in, relate to others differently, and have a new outlook for their future.[25] PTG tends to be associated with both social support and effective coping strategies.[26]

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[18] Tedeschi, Richard G & Lawrence G Calhoun. "The posttraumatic growth inventory: Measuring the positive legacy of trauma" (1996) 9:3 J Trauma Stress 405.

[19] Johnson, Gemma & David W Engstrom. "Judge Learned Hand's haunting: The psychological consequences of wrongful conviction" (2020) 47:1/2 J. Soc. Justice 1; Konvisser (2012), *supra* note 10; Konvisser (2015), *supra* note 3.

[20] Haney, Craig. "Mental health issues in long-term solitary and supermax confinement" (2003) 49:1 Crime Delinquency 1.

[21] Tedeschi & Calhoun (1996), *supra* note 16; Tedeschi, Richard G & Lawrence G Calhoun. "Posttraumatic growth: Conceptual foundations and Empirical evidence" (2004) 15:1 Psychol Inq 1.

[22] Dekel, Sharon, Christine Mandl & Zahava Solomon. "Shared and unique predictors of post-traumatic growth and distress" (2011) 67:3 J Clin Psychol 215.

[23] Jayawickreme, Eranda & Laura E R Blackie. "Post-traumatic growth as positive personality change: Evidence, controversies and future directions" (2014) 28:4 Eur J Pers 311.

[24] Schaefer, Jeanne A & Rudolph H Moos. "The context for posttraumatic growth: Life crises, individual and social resources, and coping" in Richard G. Tedeschi, Crystal L. Park & Lawrence G Calhoun, eds, Posttraumatic growth: Positive changes in the aftermath of crisis (Mahwah: Lawrence Erlbaum Associates Publishers, 1998).

[25] Tedeschi & Calhoun (1996), *supra* note 16.

[26] Brooks, Matthew et al. "I get knocked down, but I get up again" – A qualitative exploration of posttraumatic growth after multiple traumas" (2021) 25:1 Traumatology 244.

In 1996, Tedeschi and Calhoun developed the Posttraumatic Growth Inventory (PTGI) to assess both post-trauma growth and positive outcomes after a traumatic event. The inventory is a 21-item Likert scale that includes items related to five factors: (1) New Possibilities, (2) Relating to Others, (3) Personal Strength, (4) Spiritual Change, and (5) Appreciation for Life. While the PTGI was initially developed to measure favorable outcomes of a stressful life event, it has also become commonly used as a test that can provide guidance about participants' future actions.[27]

The concept of PTG has only recently been applied to criminal justice research. Some research has applied the PTGI to police officers and first responders.[28] Law enforcement officers are much more likely than the general population to be exposed to a high occurrence of traumatic incidents.[29] These studies typically focus on two main types of potentially traumatic events (PTEs): harm or threat to self or witnessing harm or threat to another individual.[30] Both positive and negative changes can occur after exposure to trauma and occur or co-exist at the same time.[31] Physical, psychosocial, and cultural effects may occur depending on the frequency, intensity, and timing of the trauma[32] or multiple PTEs.[33]

PTG has also been examined in currently and formerly incarcerated individuals. Prisoners are reported to experience trauma and life event stressors at much higher rates than the general population,[34] with up to 75 percent of prisoners documented as having had lifetime traumatic experiences.[35] The accumulated effects of trauma, from both before and during incarceration, are

[27] Cann, Arnie et al. (2010). "Posttraumatic growth and depreciation as independent experiences and predictors of well-being" (2010) 15:3 J Loss Trauma 151.

[28] See Leppma, Monica et al. "Stressful life events and posttraumatic growth among police officers: A cross-sectional study" (2018) 34:1 Stress Health 1.

[29] Karmen, Andrew. Crime Victims: An Introduction to Victimology, 9th ed (Pacific Grove: Cengage Learning, 2016); Ménard, Kim S & Michael L Arter. "Police officer alcohol use and trauma symptoms: Associations with critical incidents, coping, and social stressors" (2013) 20:1 Int J Stress Manag 1.

[30] Chopko, Brian A, Patrick A Palmieri & Richard E Adams. (2018). "Relationships among traumatic experiences, PTSD, and posttraumatic growth for police officers: A path analysis" (2018) 10:2 Psychol Trauma 131.

[31] Cann et al, *supra* note 25; Kunz, Simon, Carolina Fellinghauer & Claudio Peter. (2019). "Measuring posttraumatic growth and depreciation after spinal cord injury: A rasch analysis" (2019) 64:4 Rehabil Psychol 383; Taku, Kanako et al. "Posttraumatic growth (PTG) and posttraumatic depreciation (PTD) across ten countries: Global validation of the PTG-PTD theoretical model" (2020) 169 Pers Individ Differ 1.

[32] Papazoglou, Konstantinos. "Conceptualizing police complex spiral trauma and its applications in the police field" (2013) 19:3 Traumatology 171.

[33] Taku et al, *supra* note 29.

[34] Goff, Ashley et al. "Does PTSD occur in sentenced prison populations? A systematic literature review" (2007) 17:3 Crim. Behav. Men. Health 131.

[35] Pettus Davis, Carrie. "Social support among releasing men prisoners with lifetime trauma experiences" (2014) 37:5 Int J Law Psych 427.

associated with higher rates of mental distress and other negative outcomes.[36] There is, however, a growing body of literature that has identified positive psychological changes following traumatic events[37] that could be applied to this population. For example, Van Ginneken and colleagues examined coping strategies as predictors of PTG in a sample of 365 incarcerated individuals, finding that individuals who sought emotional support were involved in religion and/or tried to find meaning demonstrated PTG.[38]

In research with exonerees specifically, Konvisser discusses the potential for positive changes alongside the lasting effects of traumatization from the wrongful conviction, describing the concept of PTG.[39] Likewise, Johnson and Engstrom interviewed exonerees after release and found evidence of PTG in those they spoke with.[40] Specifically, these authors concluded that some wrongfully convicted people develop greater appreciation for life, stronger social relationships, increased personal strength, positive spiritual change, and recognition of new possibilities in life.

In our own previous qualitative work with exonerees, we discovered positive outcomes that might be described as PTG.[41] Many individuals used their personal struggles and hardships as motivations to become community leaders, pursue advanced college degrees, and share their experiences to raise awareness about justice reform. Many exonerees found meaning through their involvement in the innocence movement or in criminal justice reform, which has several potential benefits. As described by other researchers, exonerees involved in justice movements can become more confident and empowered,[42] form social ties,[43] and establish a sense of community and belonging.[44] For exonerees who become actively involved in criminal justice reform, there may be a greater potential to experience PTG. Here we highlight the ways in which exonerees experienced growth both during and after their incarceration that seem to reflect PTG. Our hope is that by concentrating on these specific narratives, we might better direct local and national support to improve post-prison life for exonerees.

III Data and Methods

The methodology described below is part of a broader project intended to explore and describe the reentry experiences of wrongfully convicted people. The interview protocol,

[36] E.g., Goff et al, *supra* note 32; Maruna, Shadd, Louise Wilson & Kathryn Curran. "Why God is often found behind bars: Prison conversions and the crisis of self-narrative" (2006) 3:2/3. Res Hum Dev 77.

[37] Linley, P. Alex & Stephen Joseph, eds. Positive psychology in practice (Hoboken: John Wiley & Sons, Inc, 2004).

[38] Van Ginneken, Esther FJC et al. "The Life in Custody Study: The quality of prison life in Dutch prison regimes" (2018) 4:4 J Criminol Res Policy Prac 213.

[39] Konvisser (2012), *supra* note 10; Konvisser (2015), *supra* note 3.

[40] Johnson & Engstrom, *supra* note 17.

[41] Nowotny et al, *supra* note 10.

[42] Konvisser & Werry, *supra* note 12; Szyszko, *supra* note 13.

[43] DeShay, *supra* note 11; Konvisser (2012), *supra* note 10.

[44] Konvisser & Werry, *supra* note 12; Szyszko, *supra* note 13.

description of analysis, and overview of sampling strategy can also be found in the previous publications.[45]

For this study, we conducted semi-structured, in-depth interviews with 26 wrongfully convicted people over approximately five years (November 2015 - June 2020). We started with broad qualitative questions to build rapport and then narrowed topics depending on the flow of the conversation.[46] Although the interview script was semi-structured, interviews were conversational, and the direction of the interviews were often guided by the respondents. Questions explored incarceration experiences, coping strategies, and preparation for release to explore pre-release experiences. For insight into life after prison, we asked about individual strategies and relationships that may have helped ease the burden of re-entry, involvement with innocence organizations or other support networks, and personal successes after incarceration. Finally, we inquired about processes related to reintegration, repair, and closure. Our goal was to describe understandings and events as richly as possible to arrive at "thick" descriptions of meaning.[47]

We recruited participants initially through professional contacts who are involved with innocence support organizations. After the first round of interviews, we used a snowball sampling approach; these participants recommended others who they believed might be interested in speaking with us. For all interviews, once we obtained contact information, a member of the research team called or emailed the potential respondent, explained the purpose of the study, and provided a consent form. If these individuals expressed interest in participating, a researcher scheduled and later interviewed them in-person or virtually. Each person received $100 for participating in the study. Individuals were included in the study if they were convicted of a crime and later cleared of those charges, or had been released and assumed innocent even though exoneration was not finalized.

All interviews were audio-recorded, transcribed verbatim, and assigned a confidential code number. Coding and analysis were conducted in four steps. In step one, a sub-group of interviews were reviewed to compile a close code outline – a list of concepts and themes represented in the data. In step two, all interviews were coded line by line, where sections of text were assigned descriptive labels and assigned open codes. Once open coding was complete, in step three, data were integrated by grouping open coded segments under the close code outline. Lastly, data were analyzed by comparing the material grouped together to identify patterns, dimensions and relationships among the identified concepts and themes.

When evaluating whether individuals have experienced growth after trauma, psychologists look for positive changes in five areas: (1) relationships with others; (2) seeing new possibilities in life; (3) personal strength; (4) spirituality; and (5) appreciation for life. While change in these areas is typically measured with the PTGI, the Inventory is limited in its ability to explain the process leading up to PTG. In other words, it does not provide an understanding of *why* or *how* individuals experience positive transformations following traumatic experiences. Few studies have

[45] See Nowotny et al, *supra* note 10; Shlosberg et al, *supra* note 2.

[46] Rubin, Herbert J & Irene S Rubin. *Qualitative Interviewing: The Art of Hearing Data*, 2nd ed (Thousand Oaks, CA: SAGE Publications, 2005).

[47] Geertz, Clifford. *The Interpretation of Cultures: Selected Essays* (New York, NY: Basic Books, 1973).

looked at PTG through a qualitative lens, particularly in formerly incarcerated individuals and in the wrongfully convicted population specifically. For this current study, we analyzed the interviews for themes related to the five indicators of PTG that are measured with the PTGI.

A. Sample Description

The 26 individuals who were interviewed for this study had been wrongfully convicted and incarcerated between 5 and 28 years, with an average of 18 years. Most participants are male (n = 18, 69.2%) and eight (30.8%) are female. The racial/ethnic breakdown of participants is diverse, with 12 (46.2%) participants who are White, nine (34.6%) who are African American or Black, and five (19.2%) who are Hispanic or Latinx. Most participants were wrongfully convicted of murder (n = 15, 57.7%); other charges included sexual assault, kidnapping, arson, and robbery. Three respondents were given a death sentence and five were sentenced to life without the possibility of parole. The remaining sentences ranged from seven years to life with the possibility of parole. Finally, respondents participated in interviews from across the U.S. with 10 from the Northeast, 4 from the Midwest, 9 from the South, and 3 from the West.

IV Findings

In our previous work that focused on barriers to reentry and coping strategies for exonerees, we found that many exonerees described positive changes that they experienced after surviving their trauma.[48] In this study, we explore these transformations in context of the five areas of PTG among exonerees through in-depth interviews. Furthermore, this research describes the factors related to personal transformation in this unique population. While we did not deliberately explore PTG in our original study, many of the participants described changes that are consistent with PTG concepts.

A. Factor 1 - Relating to Others

On the PTGI, the indicators of *Relating to Others* include, (1) knowing that you can count on people for support; (2) having a greater sense of closeness with others; (3) an increased willingness to express emotions; (4) having more compassion for others; (5) putting more effort into relationships; (6) learning how wonderful people are; and (7) better at accepting that you need others.[49] Many of the exonerees we interviewed discovered through their experience with wrongful conviction that they had people they could rely on for support. In addition, many acknowledged how critically important this support was to their well-being. As a result, they now believe they can count on others to get through difficult times, and they accept that they need others for assistance. In reflecting on the importance of his family and friends, Respondent 6 spoke about the fact that while he still struggles in life, he now knows that he can lean on his support system to get him through.

[48] See Nowotny et al, *supra* note 10; Shlosberg et al, *supra* note 2.

[49] Tedeschi & Calhoun (1996), *supra* note 16.

"I struggled and I still do. I think it would be very, very, wrong for me to sit here and say that I don't have any issues still, um, but I think for me I was lucky. I'll say lucky in a sense that there were a lot of individuals, whether it be on parole or exonerated who didn't have the sort of benefits that I had in terms of family support and friends supporting me while I was in [prison], and people actually helped me when I first got out. In terms of, I.D., identification, you know that kind of thing, so those kinds of things were very important to me. I had no idea how to do these things, so with their support, it really kind of came easy." [R6]

Respondent 6 acknowledged and accepted that he needed support from others, and he seemed confident that he could rely on others when needed. Respondent 9 elucidated on the importance of social support, particularly emotional support and offers of encouragement. "I have six sisters and three brothers… I have like 9 parole officers. My sisters, they monitor me, they call me, "Where you at?" I answer to them. Cause their thing is they wanna make sure I make it. They like the changes I made in life. They wanna make sure it's sustainable. And you know I have friends, my friend since we were 2, 3 years old, he's out here, he's always checking in, "How are you?" You know, a lot of guys I see, that I met while I was incarcerated, I see out here. We still keep each other's backs. But as far as like relationships, home, you know what I'm saying. Especially with my girlfriend, uhh that's amazing within itself. I could talk about that for hours. But…And it's just growth from there." [R9]

It is noteworthy that Respondent 9 used the terms "changes" and "growth" in his narrative as he described the importance of support in his life, suggesting that it had contributed to his personal transformation.

Establishing a sense of closeness with others seemed to contribute to positive transformative experiences for some of the exonerees. The shared experience of wrongful conviction fueled a powerful sense of connection for Respondent 13, who explained the bond she formed with other female exonerees at an event she attended. "There was a group of women, I think there were maybe 15 or 20 women exonerees who were guests there. We just kind of, we had fun, we bonded we, I don't know that a lot came out of it, other than just sort of camaraderie, but it let me see that I wasn't alone in the world [...], nobody will get us like we get each other." [R13]

Respondent 13 elaborated that she believes participating in the innocence movement helped her develop a community with people that share her experiences. Establishing a community with others through shared experiences was beneficial for Respondent 15 as well, who started a non-profit to assist others in accessing support. The respondent stated, "I thought, you know, we can build community and really make a difference."

It is perhaps their willingness to discuss their experiences and express their emotions that allowed some of the exonerees to establish a sense of closeness and build a community with others. Many of the exonerees we interviewed detailed the impact of speaking openly about their trauma. Respondents 14 and 21 both explained that even though it is difficult to talk about their convictions and they still get emotional sometimes, it is therapeutic for them and it gets easier with time. Other respondents agreed that they relive their trauma when they speak about it, but they also used the expressions "healing", "therapeutic", and "cathartic" to describe the positive effects of openly

discussing what they experienced. Additionally, some find it beneficial in that they can raise awareness and educate others.

Respondent 24 described how he struggled to discuss his experience initially, and still does at times, but it encourages his healing while informing others about the issues that contribute to wrongful convictions and helps illustrate what wrongfully convicted individuals endure.
"Well, at first, I used to have a difficult time talking about it. I still do, but I find that it's very healing and also that I want to educate people on what, you know, or my experiences or what I've been through and and how it happens and how, in just one statement, how someone's life can change, you know, and so I feel like, with that, it helps, but at the same time, it's like always reliving it, you know. [R24]

Other respondents agreed that regardless of how it affects them, they feel compelled to speak to others about their struggles. Respondent 7 explained, "I feel like I've got to do something. I know if I don't speak and people know my story, then we can't change anything. About all of us need to speak. But I can't say it ain't hard to my spirit, to me, you know, having to relive it and talk about my case and stuff like that. It's kind of hard, but I know I need to do it." [R7]

These narratives reveal that although it can be difficult to open up to others initially, exonerees who allow themselves to be vulnerable with others are able to access support in ways that are important to both their instrumental and emotional needs. Beyond that, expressing themselves and discussing their experiences may lead to a greater sense of closeness with others, supporting their healing and growth.

B. Factor 2 - New Possibilities

In the process of establishing a new identity, many individuals discover new possibilities that weren't available to them before. Several exonerees described finding new interests and opportunities as a result of their experience with the criminal justice system. The indicators of seeing *New Possibilities* on the PTGI include, (1) developing new interests; (2) establishing a new path; (3) doing better things with one's life; (4) seeing new opportunities that wouldn't have been possible before; (5) more likely to try to change things that need changing. Some exonerees discussed how they used their time behind bars to plan for their futures which opened the door for new opportunities. Respondent 14 utilized his time behind bars to further his education and develop a positive identity.

"I came out a completely different individual. I educated myself while I was in. Sure, they had picked me up from a community college I was attending when I was railroaded but, I was still part of the hood. I was still in the hood. I was still low riding, you know, I was still a crazy young man but, when I was inside, I made the decision. I'm going to do something with my time here. I'm not going to just allow the man, if you will, destroy me. So, I wasn't gonna let time do me, I did my own time, and I made the best of it. So, I came home a completely different individual to the point where some of the people that I grew up with were listening to me and they're like, dude, what happened to you in there? What do you mean? Well, you talk like a white boy. And I said, well, thank you. I'll take that as a compliment. They go, you don't talk the way you used to. I go, I don't want to talk the way I used to. I am grateful that I was able to educate myself." [R14]

Respondent 22 also took advantage of his time in prison to begin rebuilding his life and pave the way for new opportunities post-release. “I mean preparation is everything, I was prepared to rebuild my life inside. I was rebuilding while I was in, I mean, I didn't wait to come home and start rebuilding. I started rebuilding inside and put myself and putting plans together and doing things that I needed to do to to be in a position to put me where I am today. I focused on speaking; I focused on being a motivational speaker. I focused on coming home being a human rights activist, I focused on working for, you know, trying to get wrongfully convicted people’s cases addressed. I focused on trying to get rightfully convicted people's cases addressed and and just be, you know, the best type of advocate I could or activist I could be.” [R22]

Many respondents expressed their desire to participate in advocacy work upon their return to the community, and to use their experiences to fight for justice for others. This may represent a new possibility that is linked directly to the experience of wrongful conviction. The ability to advocate for others seems to provide exonerees with positive transformative opportunities. Respondent 16 detailed how he feels obligated to fight for others.

“I’m mandated. It's no ifs, ands, buts about it. Ah, me personally, yeah, I’m mandated. I have the ability, I guess, to an extent to articulate myself now, I mean, with a certain level of clarity and to be able, I have the story, of course, so I can't remain silent. I can't. I have to support you and the likes of you, and the mission…even if I don't get a chance to see it in my lifetime. Nonetheless, this is something that I have to do in regard to rolling my sleeves up and put my best foot forward, keeping an iron in the fire to try to dismantle and eradicate the injustice, as it pertains to our criminal justice system.” [R16]

In fact, several respondents stated they became interested in studying the law because of their experiences and intended to use their credentials to help others. Respondent 2 was a paralegal at the time of his interview but planned to pursue a law degree with the goal of opening a law firm to assist other exonerees. Respondent 3 was already pursuing a law degree when we interviewed him and plans to practice either constitutional or criminal law. Interestingly, Respondent 3 believes that the reason he is succeeding in school now is because of the focus and passion that he found through his experience with incarceration.

“When I came out, I had a lot of energy, just ready to burst at the seams, so I was able to dedicate myself to school a lot more than I think I would have if I was distracted with all of these other things going on in my life beforehand. Coming out, it was just a lot of energy. Full commitment. So, My GPA picked up. It picked up to a 4.0 for the next year and a half and it was 3.6 before. I came out with a lot more energy and a lot more dedication.” [R3]

In addition to pursuing legal careers, some respondents found other callings that resulted directly from their wrongful convictions. Respondent 12 explained, “I'm trying to get into some kind pf peer counseling where you help recovering addicts and recovering people that just got out of prison, and you help mentor and spend a couple hours with them a day or a week or whatever, and you help them get adjusted, you know, help them with their addiction… and that's something I want to do.” [R12]

C. Factor 3 - Personal Strength

The indicators of *Personal Strength* include, (1) having a greater sense of self-reliance; (2) knowing that you can handle difficulties; (3) better able to accept the way things work out; (4) discovering that you're stronger than you realized. There was a substantial evidence in the narratives of our exonerees that finding their personal strength was a critical aspect of healing and growth. For some, personal strength came from being self-reliant following their release from incarceration. Respondent 12 explained how finding employment after release led to a sense of self-worth, which people often lose when they are convicted and incarcerated. He further explained how finding self-worth opens the door to forgiveness, allowing one to accept their circumstances. "Finding employment gives you that that sense of worth because you're able to take care of yourself. And that's the biggest thing is finding that self-worth, cause you lose it, you lost it when you were found guilty. And you lose that self-worth while you're inside a prison. So, when you come home, you need to find that self-worth. Once you find it, then things become easier, and you've got to find that forgiveness in your heart for yourself. You know, you may hate the system, you may hate the cops. You may hate the prosecutor, your bad attorney, you know, the world for giving you such a raw deal. But again, you got to find that little bit of forgiveness in your heart, cause if you don't, it's going to tear you up inside and will destroy you. And you can't have that. That's the one thing in this world that I know without a shadow of doubt is you've got to get rid of some of that hatred..." [R12]

Others similarly described how the ability to come to terms with the experience of wrongful conviction and accepting the way things are is an important step towards a positive transformation. Respondent 20 explained that while losing 10 years of his life to prison cost him greatly, accepting that he lacked control over what happened in the past enables him to remain focused on the future. "I try to set a precedent as an individual who's positive, that it always doesn't be a negative behind what happened, I had no control over that. Those 10 years cost me, they cost me greatly, there's no monetary value that a person could give me to pay me for those 10 years I spent wrongfully in prison. That one thing that I took out of it is that I have to move forward if I want to live. If I want to, if I actually want to be able to be positive in life and move forward." [R20]

Respondent 2 similarly feels that it is important to leave the past behind in order to move forward. While he did not discuss feeling a sense of closure specifically, he explained that he is not bitter and he tries to accept his circumstances to avoid getting trapped in negative feelings. "Bitter? I'll be honest with you, like I said, most of this stuff I try to trash…I don't want to harp. I don't believe harboring ill feelings, harboring any ill feelings about anything is progressive or it's in anyone's best interest. I think in order for a person to move forward, and just move forward in life you have to kind of accept what happened, accept it and just continue." [R2]

For several respondents, it was evident that the experience of surviving their wrongful conviction, and securing their freedom, made them feel strong and empowered them to move forward and make meaningful life changes. Respondent 21 discussed how his experience taught him patience and transformed the way he interacts with others.

"Oh, I'm definitely a changed man because I used to, you know, I had a real bad temper, I used to snap at the drop of a dime, but I done learn to have patience and you got to have patience in order to get through what I just went through, because if you ain't got no patience, or if you don't

be strong, you through. But, uh, it done changed me a whole lot, I'm more laid back, I'm easier to deal with, I think." [R21]

While Respondent 21 described himself as more patient, it is interesting that two of the female respondents described becoming tougher and more vocal in advocating for themselves and for others. Respondent 11 talked about feeling stronger because of her experience and becoming a fighter for herself and for her family. "It's made me stronger. I don't take any crap from anybody anymore. I know how to fight for everything. When my husband had an aortic dissection on Christmas night 2017 and almost died, I had to be strong for my son… Just having to learn how to fight for everything, not being a pushover. Nobody will ever push me over being able to use the law." [R11]

Similarly, Respondent 17 explained, "I think it's actually made me a stronger person. It's made me be more vocal on things that are wrong. Whether in life, in the criminal justice system, just period, be more vocal on things that need to be changed and the strength I have now it's just, it's unbelievable. I mean, if you knew me when I was in high school, I was so timid, so neat, I never wanted to be seen. I just kind of wanted to be in the shadows and now you know coming out with the documentary and whatnot. I, I had to take on that role. I feel like that was my calling and so I continue that on for today." [R17]

While Respondent 21 indicated that he went from having a bad temper to demonstrating patience, female respondents 11 and 17 described adopting fiercer approaches in their interactions with others. They both explained, however, how they use their new sense of strength to advocate for others. Respondent 16 also discussed how the strength he found through his ability to survive empowered him to be a voice for others.

"I think about my life in the future looking ahead, I think that it's going to be a prosperous future and a prosperous life. I'm putting all of the toxic and negative things way behind me meaning, you know, the certain baggage that one would have collected being in that type of environment because, you know I mean, it's not a five-star hotel…. So, you know, you pick up certain habits and mentality. So, I was fortunate enough to be strong enough to not bring that type of stuff home and say, subject myself to that. I'm moving ahead. I'm looking forward, I'm going to be a voice for those who are voiceless. I'm not saying I'm going to change the world. But what I will do is, I'm going to play my part. And I'm going to try to incite and provoke those who do have the ability to bring about a real meaningful effective change." [R16]

For these respondents it seems that recognizing their personal strength was a catalyst for moving forward, for altering the way they interact with the social world, and for making meaningful life changes that led to transformative experiences.

D. Factor 4 - Spiritual Change

The indicators of *Spiritual Change* include a better understanding of spiritual matters and stronger religious faith. Not many of the exonerees spoke in depth about their faith, but some did believe that it played a role in their exonerations. For example, when asked why he thinks some

individuals get the opportunity to have their case heard (like he did), Respondent 16 attributed his experience to divine intervention.

"Literally, you know, they were just chosen. They were just chosen and that was their faith, that was their decree. That's my belief. Because I can't come up with another scientifically speaking answer other than to say this right here was miraculous. So, you were chosen, so do something about it. So that's why, you know, I take my situation and I use, instead of it being a crutch and a continuous disability for me, I use it as motivation. I use it as fuel, and I say this is God's work. I gotta because just a year ago, mind you, my reality was I supposed to be dying and succumbing to that reality, but I'm not, and then the path and road that I took to get here, it was, some say, the stars lined it up. I go a little further and call it, you know, act of mercy, divine mercy, and that's the only other way I can put it." [R16]

Not only does this respondent's faith help him make sense of how he got to where he is now, his belief that he was "chosen" to receive his freedom motivates him to continue fighting and doing "God's work."

Respondent 20 similarly described being granted his freedom by God, but in addition, he explained how the experience of wrongful imprisonment and fighting for his freedom strengthened his moral convictions.

"...once you are to a point where you in there…you are fighting to prove an injustice is done to you, you get a different mindset. You get a different set of values; you get your own set of morals and principles that you stand by and abide by and that's until the day you regain your freedom by the grace of God. I hope everybody, anyone, that has served a wrongful conviction has the opportunity to prove that they are innocent to the crime they are being accused of." [R20]

In this sense, perhaps the process of post-traumatic growth for exonerees begins before their exoneration if they lean on faith to make sense of their experience and find purpose in it.

E. Factor 5 - Appreciation for Life

The indicators of *Appreciation for Life* include, (1) changing priorities about what's important in life; (2) greater appreciation for the value of one's life; (3) better appreciating each day. While many participants indicated that closure was not something they believed was possible to achieve, they nonetheless were able to establish new priorities and find deeper appreciations for life. In reflecting on his journey after exoneration, Respondent 12 indicated that he overcame the odds in his estimation and achieved things that others wouldn't believe are possible. Furthermore he described himself as very successful.

"Oh, success. I mean, I own my own home. You know, we have newer vehicles in our driveway. You know, I got things that most people wouldn't imagine in the two and a half years. In two years of being home I was able to buy my first home ever. You know, so, successfully I've hit the ground running. I've never looked back, and I continue to want to strive to become better and do things better for myself, my family, for the community, and for other people. So, successfully what I've been doing is just continuing to become better and do better. Cause if I stop now, it will never, you know, I don't want to ever digress. I don't want to ever stop because, again,

I don't want to become one of them statistics that you see of other wrongful convictions. You see other exonerees, they ended up getting back to prison for stupid things, you know, drugs, or whatever. I don't want to be that statistic, you know, statistically, people who do over 15 years in prison, 70% of them go back. I'm never gonna. I don't want to be that statistic to go back to prison cause, again, I don't want to be that person." [R12]

While he clearly achieved some material success, Respondent 12 also seems to have developed a profound appreciation for his freedom, his life, and the value of his life to others. He explained how moving forward and making meaningful contributions to others was critical to avoiding negative coping mechanisms and helped him establish a positive post-release identity.

Other participants also felt a sense of responsibility to others despite the injustice they suffered and reported that stepping up to meet that responsibility allowed them to move forward. Returning citizens typically must re-negotiate their roles within their families which can be a source of stress;[50] however, for some exonerees we spoke with, taking on new roles and responsibilities within their families and communities provided opportunities to make valuable contributions, and might have been pivotal in establishing positive identities post-exoneration. Recognizing that he had to move on with his life because his family needed him, Respondent 21 explained:

"I just made my mind up. I wasn't going to just sit around. I gotta move on. I got kids, you know. Two of my kids, I have kids by different people, and both of their mothers passed away while I was locked up, so they didn't have anybody, so I had to come out here and I can't sit around and worry about what's going and how life done changed. I gotta move on. I got 18 grandkids." [R21]

Respondent 20 also discussed wanting to be strong and to keep fighting for his family in hopes to leave behind a positive legacy. He stated, "I'm a grandfather now, I have children. My children are grown now, you know, so, my legacy is for them." Other exonerees reported feeling a sense of responsibility to their communities in addition to their families and found purpose in giving back to others in need. Respondent 12 explained:

"I'm all about trying to help the community. I want to give back. So many people gave to me [since coming home and since first incarcerated], people have given me so much. I want to be able to give back to them. Because that's the proper thing to do because, in my mind, that's the right thing to do. So many people helped me. And there's other people that are in the same situation that I was in and will continue to be in, and I want to be able to support and help these people if it's in my community, I want to do more in my community. But again, across the country and across the world you know wrongful convictions happen every day. And people are being released almost on an everyday basis for a wrongful conviction. So, I want to be able to help these people as much as I can cause, again, I wouldn't be where I am today if I didn't have the support or the help that I got either. And that's what I want to do is help somebody else." [R12]

[50] Brown, Marilyn & Barbara Bloom. "Reentry and renegotiating motherhood: Maternal identity and success on parole" (2009) 55:2 Crime Delinquency 167.

In giving back to their families and communities, many exonerees have come full circle, finding ways to reciprocate the support they received when their journeys began, furthering their growth and post-exoneration transformations.

V Discussion and Conclusions

Individuals that are resilient can often bounce back after traumatic events because their core beliefs are not challenged by the difficulties they experienced. In contrast, individuals who experience PTG have survived events that challenged their worldviews and fundamental beliefs, triggering a reconsideration and renegotiation of who they are in relation to others and to the world (Tedeschi & Calhoun, 1996; 2004).[51] The exonerees we interviewed attached significant meaning to their traumatic experiences, giving them a new purpose as they move forward in life and allowing them to re-establish their identities as individuals who are making valuable contributions to society. We are not suggesting that wrongful conviction is a positive life event, but that some exonerees are able to experience growth following a terrible injustice.

Although the findings reported here were gathered as part of a broader study on exonerees' post-release experiences and not a study on PTG specifically, we believe that the positive changes described by many of the exonerees reflect the areas of growth assessed by the PTGI. There is evidence to suggest that PTG begins prior to release, with some individuals taking advantage of self-improvement opportunities while incarcerated. Beyond providing a way to cope with idle time, the programs they participated in helped them to look ahead and develop goals for the future. These were often goals which they hadn't previously considered. Some leaned on faith while incarcerated to make sense of their conviction and find purpose in their experience.

Leaning on others for support with both instrumental and emotional needs also seemed to be critical elements of healing and growth. While some of the exonerees struggled to reach out for assistance and open up about their experiences, those who did eventually developed a greater closeness with others, increasing their feelings of trust and safety. Prior research on formerly incarcerated individuals has shown that they are more likely to experience positive and sustained change as they become receptive to offers of support.[52] Becoming more expressive with others strengthens their surrounding support system, leading to more offers of assistance and encouragement. This sustained support then motivates the individual to keep forging ahead, but more importantly, helps the individual to establish a new identity.[53]

To facilitate PTG, the justice system, along with organizations that support exonerees, can help by providing opportunities for self-improvement both behind bars and after release.

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[51] Tedeschi & Calhoun (1996), *supra* note 16; Tedeschi & Calhoun (2004), *supra* note 19.

[52] Giordano, Peggy C, Stephen A Cernkovich & Jennifer L Rudolph. "Gender, crime, and desistance: Toward a theory of cognitive transformation" (2002) 107:4 Am J Sociol 859; Panuccio, Elizabeth A et al. "Social support, motivation, and the process of juvenile reentry: An exploratory analysis of desistance" (2012) 51:3 J Offender Rehabil 115.

[53] Chouhy, Cecilia, Francis T Cullen & Heejin Lee. (2020). "A social support theory of desistance" (2020) 6:2 J Dev Life-Course Cr 153; Giordano et al, *supra* note 45.

Furthermore, for some exonerees after a wrongful conviction it seems crucial to connect with other exonerees and bond over shared experiences, in order to build a sense of community and strengthen existing support systems.

Interestingly, our findings suggested that PTG might have different qualities for male and female exonerees. Notably, some of the male respondents indicated feeling calmer and more patient, while some female respondents described becoming tougher and more vocal in advocating for themselves and for others. For both the men and the women, these changes were framed in a positive light. Potentially, in the process of forming new identities, the gender stereotypes they had previously internalized were challenged. It is not possible to generalize these findings to the population of exonerees given the small sample size of this study, but this is an area worth exploring in future research.

Our study was retrospective; a significant amount of time passed since release for most participants. This fact limits our ability to fully explicate the process through which post-traumatic growth occurs. Longitudinal studies would allow closer examination of growth over time, and whether observable positive changes occur for respondents who describe post-traumatic growth. Future studies should also empirically test the relationship between post-traumatic growth and post-release success to identify specific factors that might predict PTG. This knowledge could help inform the efforts to support exonerees as they rebuild their lives after release from prison.

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Cross-Examination Fails to Safeguard Against Feedback Effects on Eyewitness Testimony

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The legal system relies heavily on eyewitness evidence to identify and prosecute criminal perpetrators, but wrongful convictions resulting from eyewitness misidentification have led many to conclude that eyewitness memory is unreliable. Advances in eyewitness identification research have produced a more nuanced understanding of eyewitness reliability, however. Whereas pristinely collected eyewitness identification evidence provides diagnostic information about a suspect's guilt or innocence, numerous contaminants of eyewitness memory can undermine the reliability of eyewitness identification evidence. One such contaminant is confirming post-identification feedback—feedback given to or inferred by an eyewitness that communicates that their identification decision was correct. Confirming feedback is inevitable in real cases involving eyewitness identification and compromises the diagnostic value of eyewitness memory to such an extent that it undermines evaluators' abilities to differentiate between accurate and mistaken eyewitnesses (Smalarz & Wells, 2014). The current research tested whether cross-examination, a fundamental legal safeguard for preventing wrongful conviction based on eyewitness misidentification, can help remedy the contaminating effects of feedback on eyewitness testimony. Evaluators (N = 128) viewed direct examination testimony or direct- and cross-examination testimony of accurate and mistaken eyewitnesses, some of whom had received confirming feedback following their identification. Although the majority of eyewitnesses admitted during cross-examination that some or all of their recollections may have been influenced by the feedback, viewing the cross-examination did not improve evaluators' abilities to differentiate between accurate and mistaken eyewitness testimony. Cross-examination appears to be an insufficient safeguard for preventing wrongful convictions based on contaminated eyewitness evidence.

I Introduction

It is relatively well-known that mistaken eyewitness identification is a leading cause of wrongful conviction (Innocence Project, n.d.). Examples of miscarriages of justice resulting from eyewitness misidentification abound in the popular media, from the Netflix series *Making a Murderer* (Ricciardi & Demos, 2015-2018) and *The Innocence Files* (Antinoro et al., 2020) to popular press books such as *Picking Cotton* (Thompson-Cannino et al., 2009) and *The Sun Does Shine* (Hinton et al., 2018), TED talks (e.g., Fraser, 2012; Loftus, 2013); podcasts (e.g., *Wrongful Conviction*, Flom & Wortis, 2020) and television shows with wide-reaching audiences such as Oprah, Dr. Phil, and 60 Minutes. These high-profile eyewitness errors have led to deep skepticism about whether eyewitness evidence can be trusted to effect justice in criminal cases. Fortunately, psychological research on eyewitness memory over the last 50 years has produced significant advances in scientific understanding of when eyewitness identification is likely to be reliable and when it creates a risk of wrongful conviction.

For decades, psychological researchers placed much of the blame for wrongful convictions involving eyewitness misidentification on triers of fact (e.g., jurors), who they criticized for having "nearly religious faith in the accuracy of eyewitness accounts" (Loftus et al., 2013, p. 274; see also Brigham & Bothwell, 1983; Lindsay et al., 1981; Wells et al., 1980). They also placed blame on eyewitnesses, whose confidence, they argued, bore little to no relation to the accuracy of their testimony (Brown et al., 1977; Clifford & Scott, 1978; Leippe et al., 1978)—a claim echoed by legal scholars, including by state courts (e.g., *State v. Guilbert*, 2012; *State v. Henderson*, 2011). Recent research, however, has shown that evaluators of eyewitness testimony can reliably differentiate between accurate and mistaken eyewitnesses (e.g., Smalarz & Wells, 2014; Kaminski & Sporer, 2017) and that eyewitness confidence can be highly informative of eyewitness identification accuracy (Wixted & Wells, 2017).

This sea change in the conclusions derived from scientific research on eyewitness identification stemmed largely from the important realization that eyewitness memory evidence, like physical trace evidence (e.g., fingerprints and biological evidence), is easily contaminated if not carefully collected, preserved, and analyzed (Wells, 1995; Wells & Loftus, 2003). Although police investigators have long exercised great caution in their handling of physical crime scene evidence—often bringing in specialized teams to search for and collect physical evidence—police have historically used far less pristine methods to collect memory evidence from crime eyewitnesses. As Wells noted, "police somehow feel perfectly free to fire poorly constructed questions at eyewitnesses on the spot, allow eyewitnesses to overhear other eyewitnesses, take spotty notes of eyewitnesses' answers (and not record the actual question asked), and generally not use any theory of a proper memory interview" (p. 727). The development of this *memory-as-trace-evidence* analogy and the corresponding recognition of the contaminability of eyewitness evidence shifted the blame for wrongful convictions based on eyewitness misidentification away from fact-finders and eyewitnesses and onto the legal system.

Fortunately, psychological scientists have identified several best practices that the legal system can use to avoid eyewitness memory contamination and maximize the reliability of eyewitness identification evidence (Wells et al., 1998, 2020). These practices include conducting a thorough interview with the eyewitness about what they witnessed as soon as practicable after the occurrence of the crime, testing the witness's recognition memory for the suspect using a single-suspect lineup with well-matched fillers, giving eyewitnesses proper pre-lineup instructions, administering the lineup in a double-blind fashion, and collecting a confidence statement from the eyewitness immediately following their lineup decision, among several others (see Wells et al., 2020). It is now generally accepted that, as long as scientific best practices are used, eyewitness identification decisions provide probative evidence of the suspect's guilt or innocence (e.g., Wells et al., 2015; Wade et al., 2018; Wixted et al., 2018) and eyewitness confidence can be relied on to assess the eyewitness's likely accuracy (Wixted & Wells, 2017; but see Smalarz, 2021 for a consideration of estimator suspect bias that can undermine eyewitness reliability).

Numerous law enforcement agencies across the country have adopted these best practice-procedures, whether through federal directive (Yates, 2017), court mandates, state legislation, or executive orders from state attorneys general (see Wells et al., 2020). Nevertheless, many jurisdictions have yet to implement procedural reforms, and some contaminants of eyewitness evidence are unavoidable even when best practices are used. In the current research, therefore, we tested whether a key legal safeguard for addressing unreliable eyewitness evidence—cross-examination of eyewitnesses—can help to remedy the problems associated with eyewitness memory contamination and facilitate evaluators' assessments of eyewitness identification accuracy in cases involving contamination.

A. Contaminants of Eyewitness Evidence

Eyewitness memory contaminants come in many forms, but the most harmful type of contamination is contamination that produces *suspect-specific bias* (Smalarz, 2021). In a properly conducted lineup, there is one person under suspicion (the suspect), and the rest of the lineup members are known-innocent individuals, typically called fillers. The purpose of including only a single suspect alongside known-innocent fillers is that the fillers siphon erroneous identifications away from the suspect, thereby protecting innocent suspects from misidentification (Smith et al., 2017; Wells & Turtle, 1986; Wells et al., 2015). Whereas an erroneous identification of the suspect typically results in the arrest and prosecution of that person, an erroneous identification of a filler is a less harmful error because fillers are not arrested or prosecuted.

The protective function of this single-suspect lineup model breaks down, however, in the presence of variables that produce suspect-specific bias. That is because *suspect-bias variables* increase the likelihood that an innocent suspect will be identified as opposed to one of the fillers (Smalarz, 2021). For example, a non-blind lineup administrator who knows which lineup member is the suspect (e.g., the case detective) is likely to exert influence—whether intentionally or unintentionally—on the eyewitness to identify that person (Kovera & Evelo, 2017). Conducting repeated identification procedures with the same eyewitness and the same suspect likewise increases the risk of misidentification. For example, testing the witness's recognition of the suspect using an initial photo lineup and then later using a live (in person) lineup with that same suspect and witness is prone to lead the witness to perceive the suspect as familiar in the live lineup, even

if the suspect was not the person who the eyewitness originally saw commit the crime (Hinz & Pezdek, 2001; Deffenbacher et al., 2006; Godfrey & Clark, 2010; Wixted et al., 2021). Building a lineup with low-similarity lineup fillers who make the suspect stand out likewise increases the chances that the witness will identify an innocent suspect (Fitzgerald et al., 2013). And perhaps obviously, using a single-suspect showup puts innocent suspects at grave risk of misidentification because there are no fillers to draw erroneous guesses away from the suspect (e.g., Wells et al., 2015; Smith et al., 2017).

Although concerns about eyewitness identification often center on whether or not an eyewitness is capable of mistakenly identifying an innocent individual, it has been argued that mistaken identifications per se are not what create a risk of wrongful conviction. Instead, it is when mistaken eyewitnesses are *highly confident* in their misidentification that the innocent suspect is at risk of being wrongfully convicted (Lindsay et al., 1981; Smalarz & Wells, 2013; Wells et al., 1979). After all, an unconfident eyewitness is unlikely to persuade a jury or a judge that the identified individual is guilty. Meanwhile, testimony from a confident eyewitness is highly persuasive to jurors (e.g., Cutler et al, 1988; Garrett, et al., 2020; Key et al., 2022; Lindsay et al., 1989; Slane & Dodson, 2022). Consequently, there is arguably an even more insidious effect of suspect-specific bias than increasing mistaken identification of innocent suspects: inflating confidence in innocent suspect identifications (Smalarz, 2021). Here, we review a number of suspect-bias variables that have been shown to inflate eyewitness confidence in mistaken identifications.

Non-Blind Lineup Administration

Non-blind lineup administration, in which the person administering the lineup knows which lineup member is the suspect, has been shown to not only increase the risk of misidentification but also inflate eyewitness confidence in a mistaken identification. Garrioch and Brimacombe (2001) randomly assigned pairs of participants to the role of eyewitness or lineup administrator. The eyewitnesses viewed a crime video and the lineup administrators were instructed that they would administer a photo lineup to the witness and ask the witness some questions about their memory of the crime. Some of the lineup administrators were told which lineup member was the suspect, whereas others were told nothing. The administrators then conducted the lineup procedure and interview, which concluded with administrators obtaining a confidence statement from the eyewitness about their identification. Eyewitnesses who identified the lineup member whom the administrator believed was the suspect were more confident in their identification than were witnesses whose administrator did not know which lineup member was the suspect.

Charman and Quiroz (2016) also compared blind (no knowledge of which lineup member was the suspect) and non-blind (knew which lineup member was the suspect) administrators' influence on witnesses' identification decisions and confidence. They had mock-eyewitnesses view a mock-crime video while they trained mock lineup administrators to conduct a photo lineup. They told half of the administrators who the suspect was and told the other half nothing about the identity of the suspect. The lineup procedure was videotaped for later analysis. At the conclusion of the procedure, eyewitnesses reported their confidence in their identification. Non-blind administration increased mistaken identifications of innocent suspects and inflated eyewitness

confidence in those mistaken identifications. Critically, non-blind lineup administration led to inflated eyewitness confidence *only* when the witness picked the suspect—not when the witness picked a filler or rejected the lineup, showing the suspect-specific nature of the administrator influence. Analyses of the lineup videotapes revealed a likely case of mistaken eyewitnesses' inflated confidence: Nonblind administrators were far more likely than blind administrators to smile at eyewitnesses when they identified the suspect.

Rehearsal and Repeated Questioning

Simply anticipating providing courtroom testimony has been shown to inflate eyewitnesses' confidence in their identification. Wells and colleagues (1981) had unsuspecting witnesses view a staged theft and then attempt to identify the thief from a culprit-present or a culprit-absent photo lineup. Half of the eyewitnesses were then briefed by a "prosecutor" who instructed the witnesses to rehearse their responses to potential questions that would be asked under cross-examination because the "defense attorney" would try to discredit them and catch any inconsistencies in what they said. The other half of eyewitnesses were not briefed about the cross-examination. All witnesses then participated in a cross-examination in which they were asked to describe what they saw and how confident they were in their identification of the thief. Mistaken eyewitnesses who had been told to prepare for cross-examination reported being significantly more confident in their identification than did mistaken eyewitnesses who had not been briefed on the cross-examination.

Repeatedly questioning eyewitnesses about an event—something bound to occur when witnesses are preparing to give courtroom testimony—can also inflate eyewitness confidence. Shaw and McClure (1996) staged a classroom interruption and then later questioned the students about what they had seen. The students were repeatedly questioned about some details of what they had witnessed, either once a week over a period of four weeks following the incident (Experiment 1) or three times over a period of five days following the incident (Experiment 2). The final questioning session always included a set of questions that had not been asked during the previous sessions as well as a set of questions that had been repeated across some or all sessions. In both experiments, confidence in responses to repeated questions was higher than confidence in responses to non-repeated questions, while the accuracy of the responses remained unchanged.

Post-Identification Feedback

Co-Witness Feedback. Luus and Wells (1994) investigated how co-witnesses to a crime might influence each other's confidence. Pairs of participants witnessed a staged theft and then were separated to attempt an identification of the thief's photo from a lineup. Critically, the photo of the thief was not present in the lineup, so all identifications were mistaken. Following their identification decision, each witness was led to believe that the other witness had already been shown the lineup. The researchers manipulated what they told each witness about the other witness's supposed decision. In one condition, witnesses were told that the other witness identified the same person from the lineup; in another condition, witnesses were told nothing. Following this co-witness feedback manipulation, the witnesses were interviewed by a uniformed police officer about what they saw and how confident they were in their identification. Eyewitnesses who were

told that their co-witness picked the same person reported being significantly more confident than did eyewitnesses who were not told about their co-witness's supposed choice. This basic co-witness feedback effect has been replicated in numerous studies using a variety of paradigms and participant samples (Charman et al., 2010; Erickson et al., 2016; Leippe et al., 2006; Semmler et al., 2004; Skagerberg, 2007; Skagerberg & Wright, 2009).

Administrator Feedback. Another major source of confidence contamination comes from information given to an eyewitness by the case detective, or lineup administrator, following an eyewitness's lineup decision. Noting that there were no legal restrictions against police officers telling witnesses whether or not they picked the actual suspect (Wells, 1993), Wells and Bradfield (1998) conducted the first test of how administrator feedback affects eyewitnesses. They showed security footage of a gunman entering a Target store to 352 mock-eyewitnesses and then presented the eyewitnesses with a five-person photographic lineup and asked the witnesses to identify the gunman. As in Luus and Wells (1994), the lineup did not contain the photo of the actual gunman, so all identifications were mistaken. Following their mistaken identifications, the experimenter told some witnesses "Good. You identified the actual suspect," and told others nothing. A short time later, witnesses were asked various questions analogous to questions typically asked of eyewitnesses at trial, including how certain they were at the time of their identification, how good of a view they got of the gunman's face, how much attention they were paying to the gunman's face in the video, and how willing they would be to testify about their identification in court, among others.

The findings revealed that the confirming feedback dramatically inflated witnesses' recollections of testimony-relevant judgments. Witnesses who received confirming feedback reported greater certainty in their mistaken identification, recalled having had a better view of the gunman during witnessing, recalled having paid more attention to the gunman's face, and were more willing to testify about their identification compared to witnesses who received no feedback. As stated by Wells and Bradfield (1998) "the confirming-feedback manipulation served to manufacture credible witnesses from a pool of inaccurate witnesses who were not particularly credible on their own" (p. 374).

This *post-identification feedback effect* has been widely replicated since it was first documented in 1998. A 2014 meta-analysis that combined data from more than 20 published articles representing 6,200 mock-witnesses from 10 different academic laboratories revealed the strength and breadth of the feedback effect (Steblay et al., 2014). Across these studies, only 6% of mistaken eyewitnesses reported very high confidence levels when they did not receive feedback. Among mistaken eyewitnesses who received confirming feedback, however, approximately 29% reported very high confidence levels. That is nearly a five-fold increase in the number of eyewitnesses who would potentially pass a "credibility threshold" and convince fact-finders of their accuracy—all as a result of receiving a simple confirmatory remark following their identification. Eyewitnesses' judgments about the quality of their view, degree of attention paid, basis for having made an identification, and others, are likewise strongly inflated by confirming feedback. This post-identification feedback effect has been shown to occur among college-aged adults as well as children (Hafstad et al., 2004), older adults (Neuschatz et al., 2005), and with actual eyewitnesses to serious crimes (Wright & Skagerberg, 2007).

The post-identification feedback effect is problematic for multiple reasons. First, post-identification feedback is unavoidable in real cases. Even in jurisdictions that have adopted double-blind lineup procedures in which feedback will not occur during the identification procedure, feedback is inevitable. Witnesses may receive feedback from a co-witness or media coverage of the case. Even in the absence of explicit feedback, witnesses will likely infer whether they identified the suspect based on how the case progresses. For example, if the witness is called to testify about their identification in a pretrial hearing, it is reasonable for them to assume that the person they picked is the person the police suspected. Smalarz and Wells (2020) recently demonstrated that simply being asked to provide testimony can inflate eyewitnesses' confidence in a mistaken identification.

The second reason why post-identification feedback is so problematic is that feedback has stronger effects on mistaken eyewitnesses than on accurate eyewitnesses (Bradfield et al., 2002; Steblay et al., 2014). If feedback inflated confidence to a similar extent for accurate and mistaken eyewitnesses, evaluators would still be able to tell the difference between accurate and mistaken eyewitnesses, even if the eyewitnesses all appeared more credible. However, because feedback has stronger effects on mistaken than on accurate eyewitnesses, it impairs evaluators' abilities to differentiate between accurate and mistaken eyewitnesses.

Smalarz and Wells (2014) demonstrated the consequences of this phenomenon for evaluations of eyewitness testimony. The researchers showed mock-eyewitnesses a simulated crime and manipulated whether eyewitnesses made accurate or mistaken identifications by giving witnesses either a culprit-present or a culprit-absent lineup. Following their identification, some eyewitnesses were given confirming feedback ("Good job! You got the guy.") and others were given no feedback. All the eyewitnesses then provided videotaped testimony about what they witnessed and who they identified, and a new sample of evaluators watched these testimony videos and judged the accuracy and credibility each eyewitness. Among eyewitnesses who were not given feedback, evaluators believed 70% of the accurate eyewitnesses and only 36% of the mistaken eyewitnesses, indicating that they were able to reliably—though not perfectly—differentiate between accurate and inaccurate eyewitnesses. When witnesses had received confirming feedback, however, evaluators believed accurate and mistaken eyewitnesses at nearly equal rates (about 63%). Hence, confirming feedback eliminated evaluators' abilities to discriminate between accurate and mistaken eyewitness testimony.

A limitation of Smalarz and Wells' (2014) study, however, is that evaluators did not have the benefit of viewing a rigorous cross-examination of the eyewitness about what they had been told and the extent to which the feedback may have influenced their testimony. Cross-examination is intended to aid jurors in their assessments of eyewitness evidence (*Greene v. McElroy,* 1959) and is considered a fundamental legal safeguard against wrongful conviction resulting from mistaken identification (Walters, 1985). Indeed, cross-examination has been regarded as the "greatest legal engine ever invented for the discovery of truth" (Wigmore, 1974, p. 32). Does cross-examination improve evaluators' abilities to differentiate between accurate and inaccurate eyewitnesses in cases involving testimony contamination?

B. Cross-Examination as a Safeguard Against Contaminated Eyewitness Testimony

An important caveat to Wigmore's (1974) claim that cross-examination is the greatest legal engine for the discovery of truth is that Wigmore's statement was about the capacity of cross-examination to sort between truth-tellers and liars. However, eyewitnesses who misidentify an innocent individual are genuinely mistaken, not intentionally lying. Thus, the standard function of cross-examination—to reveal inconsistencies and contradictions that undermine the witness's credibility—may not be as effective with an eyewitness who is honestly mistaken. The effectiveness of cross-examination for remedying contaminated eyewitness testimony rests on two key conditions (Devenport et al., 2002). First, witnesses (and/or police officers) must recognize, remember and be willing to report the presence of contaminants that may have affected the eyewitness. Second, jurors must be able to utilize information about the contaminants appropriately in their evaluations of the eyewitness's accuracy.

One test of whether witnesses can accurately report on the effects of a testimony contaminant was reported in the original article on the post-identification feedback effect (Wells & Bradfield, 1998). The researchers conducted a follow-up to their first experiment in which they tested whether witnesses were able to accurately report on how the feedback influenced them. Witnesses viewed surveillance footage of a gunman in a Target store and then made a mistaken identification from a culprit-absent lineup. Eyewitnesses then either received confirming feedback ("Good. You identified the actual suspect in the case.") or disconfirming feedback ("Oh. You identified number __. The actual suspect is number __.") Witnesses then completed the testimony-relevant measures, after which they were asked whether the experimenter told them anything about the person identified (yes, no) and, if so, to indicate what was said. Finally, witnesses were asked whether the feedback influenced their reports of their confidence, the quality of their view during witnessing, degree of attention paid during witnessing, and other testimony-relevant judgments.

A majority (90%) of the eyewitnesses who received feedback accurately reported the feedback that they had received. However, for the most part, eyewitnesses did not believe that the feedback had influenced them. For each measure, most witnesses denied that the feedback influenced their responses (52% to 90%). Moreover, witnesses who reported that they had *not* been influenced by the feedback were no less likely to have been influenced, suggesting that even though witnesses were aware that they had received feedback, they were unaware of whether their recollections have been affected by the feedback. These findings cast doubt on the efficacy of the cross-examination safeguard for remedying contaminated eyewitness testimony.

Although no research, to our knowledge, has tested whether cross-examination improves evaluations of eyewitness accuracy in cases involving eyewitness memory contamination, Wells and colleagues (1979) conducted an early test of whether cross-examination facilitates evaluators' abilities to differentiate between accurate and inaccurate eyewitness testimony more generally. The researchers subjected accurate and mistaken eyewitnesses to cross-examination about what they witnessed and about their identification. For half of the eyewitnesses, the cross-examination was flimsy: it consisted of open-ended questions that were not intended to elicit contradictions from the eyewitness. For the other half of the eyewitnesses, the cross-examination was carried out in an adversarial style that included questions that yielded short answers, questions intended to elicit contradictions, and occasional assertions of a false premise (e.g., "The person you saw had a jacket on, didn't she?" when the culprit had not in fact worn a jacket). The authors found that the

adversarial cross-examination facilitated evaluators' abilities to discriminate between accurate and inaccurate eyewitnesses, suggesting that perhaps a rigorous cross-examination of witnesses who received feedback may prove useful to evaluators.

In the current research, we tested whether cross-examination improves evaluators' abilities to differentiate between accurate and inaccurate eyewitness testimony in cases involving contamination. Mock-eyewitnesses were randomly assigned to view a culprit-present or culprit-absent lineup, thereby enabling us to secure both accurate and mistaken identifications. Half of the witnesses received confirming post-identification feedback following their identification, whereas the other half were told nothing. All eyewitnesses were then videotaped responding to direct examination questions about what they witnessed and who they identified, after which they were cross-examined. The cross-examination consisted of first asking witnesses whether they had received feedback about their identification from the lineup administrator. Witnesses who reported having received feedback were then further questioned and challenged about the influence of the feedback on their testimony.

A new sample of participant-evaluators then watched these eyewitness testimony videos and evaluated the eyewitnesses' accuracy. Critically, half of the evaluators saw only the direct examination of the eyewitness; the other half saw both the direct and cross-examination. Consistent with past research, we predicted that feedback would undermine evaluators' abilities to differentiate between accurate and mistaken eyewitnesses during direct examination (Smalarz & Wells, 2014). However, if cross-examination is an effective safeguard, then the detrimental effects of post-identification feedback on evaluations of eyewitness accuracy should be reduced among evaluators who view the cross-examination of the eyewitnesses.

II Method

A. Design

This research utilized a 2 (Identification Accuracy: Accurate vs. Mistaken) x 2 (Post-identification Feedback: Confirming feedback vs. No feedback) x 2 (Cross-examination: Present vs. Absent) mixed-factorial design in which Identification Accuracy and Post-identification Feedback were within-subjects factors and Cross-examination was a between-subjects factor. The experiment consisted of two phases: a witness phase (Phase 1) and an evaluator phase (Phase 2) and used many of the same materials and procedures as Smalarz and Wells (2014).

B. Phase 1: Witness Identifications, Testimony, and Cross-Examination

Participant-witnesses (hereafter called witnesses; $N = 128$) were undergraduate students at a large midwestern university who received course credit for their participation. To start, an experimenter told the witness that the study was designed to investigate the way people form impressions of others. Witnesses then viewed a one minute 28 second video of a simulated crime in which the culprit's face was clearly visible from multiple angles. In the video, the culprit switched his bag with another passenger's bag at an airport check in line. After viewing the video, an experimenter told the witness that the bag belonging to the man in the video contained a bomb and that they would now view a photo lineup to see if they could identify him.

We manipulated identification accuracy by presenting witnesses with either a culprit-present or culprit-absent lineup (e.g., Bradfield et al., 2002; Smalarz & Wells, 2014). The culprit-present lineup contained a photo of the culprit in addition to five filler photos (i.e., photos of other people who matched the description of the culprit), while the culprit-absent lineup contained only the five filler photos. The lineup procedure was designed to encourage witnesses to make an identification by implying that the culprit was present (regardless of whether he was present or not) and by having no explicit "not there" option. If the witness did not immediately identify someone, the experimenter stated, "Just do your best to try to identify the person from the video." Using this procedure, we secured a subset of both accurate (n = 64) and mistaken (n = 64) identifications. After making their identification, witnesses were randomly assigned to either receive confirming feedback ("Good job! You got the guy") or no feedback from the experimenter. Witnesses then responded to a set of self-report measures on the computer (Table 1).

Table 1

Witnesses' Self-Report Questions

Measure	Question	Scale
Certainty	How certain were you when you made the identification that the person you identified from the photo lineup was the person you saw in the video?	10% (not at all certain) to 100% (totally certain), in 10% intervals
View	How good a view did you get of the person in the video?	1 (very poor) to 10 (very good)
Attention	How much attention were you paying to the face of the person in the video while viewing the tape?	1 (none) to 10 (my total attention)
Face	How well were you able to make out specific features of the person's face from the video?	1 (not at all) to 10 (very well)
Basis	To what extent do you feel that you had a good basis to make an identification?	1 (no basis at all) to 10 (a very good basis)
Ease	How easy or difficult was it for you to figure out which person in the photo lineup was the person from the video?	1 (extremely difficult) 10 (extremely easy)
Time	From the time the lineup started, how much time do you estimate it took you to make an identification?	1 (I needed almost no time) to 10 (I had to look at the photos for a long time)
Willing	On the basis of your memory of the person in the video, how willing would you have been to testify in court that the person you identified was the same person you saw in the video?	1 (not at all willing) to 10 (totally willing)
Strangers	Generally, how good is your recognition memory for faces of strangers you have encountered on only one prior occasion?	1 (very poor) to 10 (excellent)
Image	How clear is the image you have in your memory of the person you saw in the video?	1 (not at all clear) to 10 (very clear)

Note. Due to a data recording error, self-report data were missing from one eyewitness.

After the eyewitnesses finished responding to the self-report measures on the computer, the experimenter directed them to a second room where a different experimenter, who was blind to the witness's experimental condition, greeted them and explained that "in this part of the study, we are interested in how witnesses might appear as they testify in court." The second experimenter then gave the witness a video consent form and asked if they would agree to be videotaped during a testimony interview. All witnesses consented to being videotaped.

The testimony interview consisted of a series of scripted questions and experimenters were trained to allow the witness to respond in their own words and never cut off the witnesses' answers. The experimenter began the direct examination by asking the witness to describe what they witnessed in the video in as much detail as possible. Witnesses generally provided narrative descriptions with details about the setting, bystanders, the culprit's actions throughout the video, and the physical appearance of the culprit. The experimenter then asked the witness to describe the quality of their view of the culprit, how much attention they paid to the culprit while watching the video, and how certain they were in their identification, as well as other testimony-relevant questions (the full testimony script is available at online: https://osf.io/78svc/?view_only=0a08cdaf360248cdacc34787c49d8372.

Finally, the experimenter began the cross-examination. The experimenter first asked the witness whether the experimenter who administered the lineup told the witness anything about the identification they made. If the witness said no, the experimenter then asked, "So you weren't told anything about whether or not you picked the right person?" For witnesses who admitted to having received feedback (all eyewitnesses who received feedback correctly reported so), the experimenter proceeded to question witnesses about whether the feedback might have distorted their testimony. Specifically, the experimenter asked the eyewitnesses, "Do you think that being told you were right may have influenced your answers to any of the questions I've asked you?" and, if the witness said yes, the experimenter asked them to explain how. The experimenter then asked the witness whether their reports of their certainty, view, and attention might have been influenced by the feedback (e.g., "Do you think that being told you were right may have influenced your answer to the question about how certain you were at the time of the identification?"). Witnesses who said yes were asked to explain how their responses might have been influenced. Witnesses who said no were further challenged about their responses (e.g., "So you don't think that being told you were right may have made you recall having been more confident than you actually were at the time of the identification?"). After these lines of questioning about witnesses' reports of confidence, view, and attention, the experimenter stated:

> Scientific research on eyewitness identifications has shown that witnesses who are told that they picked the right person tend to report that they were more certain, that they had a better view, and that they paid more attention than witnesses who are not told whether or not their decision was correct. Do you think it's possible that the same thing happened to you?

For witnesses who said no, the experimenter added, "Isn't it possible that you might have reported that you were more certain, had a better view, and paid more attention than you would have if you hadn't been told your decision was correct?" Finally, all witnesses, including those who did not report having received feedback, were asked to rate their identification confidence

one final time. Once the interview was complete, the experimenter debriefed the witness about the purpose of the research.

C. Phase 2: Evaluator Judgments of Testimony

Participant-evaluators (hereafter called evaluators, $N = 128$) viewed four of the videotaped eyewitness testimonies, one from each of cell of the 2 (Identification accuracy) ×2 (Post-identification feedback) design, in a random order. Specifically, they viewed videos of one mistaken witness who did not receive confirming feedback, one mistaken witness who received confirming feedback, one accurate witness who did not receive confirming feedback, and one accurate witness who received confirming feedback. Half of the evaluators viewed the full testimony, including both the direct and the cross-examination ($n = 64$), whereas the other half of evaluators viewed only the direct examination ($n = 64$).

Evaluators were instructed that they would be viewing a total of five videos, that the accuracy of the witnesses in the videos was unknown, and that the videos were randomly selected. These instructions were designed to deter evaluators from attempting to strategically guess the accuracy of the witnesses. Evaluators were not told that some witnesses received confirming feedback. After viewing each of the four eyewitness videos, evaluators responded to a series of questions on the computer in which they indicated whether they believed the witness had made an accurate or a mistaken identification and evaluated other aspects of the witness's testimony (see Table 2)[1]. Once they finished responding to all measures for each of the four videos, evaluators were debriefed and dismissed.

Table 2

Evaluators' Testimony Judgment Questions

Measure	Question	Scale
Belief	Do you think that the witness' identification from the photo lineup of the man who switched the bags was an accurate identification or an inaccurate identification?	Accurate or Inaccurate
Convincing	How convincing was the witness?	1 (Not at all convincing) to 10 (Totally convincing)
Confidence felt	How confident do you believe the witness felt that the person s/he identified was the person who switched the bags?	1 (Not at all confident) to 10 (Totally confident)
Confidence portrayed	How confident do you think the witness portrayed him or herself to be?	1 (Not at all confident) to 10 (Totally confident)

[1] We also intended to include a measure of evaluators' perceptions of the accuracy of the witness's description of what they witnessed in the video. Due to a programming error, however, this measure was not collected from one condition and was thus excluded from analysis.

View of culprit	How good of a view do you think the witness got of the man who switched the bags?	1 (Very poor view) to 10 (Very good view)
Mental image of culprit	How clear of a mental image do you think the witness had in memory of the person who switched the bags?	1 (Not at all clear) 10 (Very clear)
Attention paid	How much attention do you think the witness was paying when s/he witnessed the event?	1 (No attention) to 10 (Total attention)
Ability to recognize strangers	How good do you think the witness is at remembering faces of strangers?	1 (Very poor) to 10 (Excellent)
Additional evidence (reverse coded as evidence sufficiency)	If you were a juror at trial, how much additional evidence would you need to convict the person who was identified by the witness as the man who switched the bags?	1 (No additional evidence) to 10 (A lot of additional evidence)
Accuracy (scale)	Do you think the witness' identification was…	1 (Definitely inaccurate) to 10 (Definitely accurate)
Confidence reported	During the witness' testimony, how confident did the witness report having been in his/her identification?	1 (Not at all confident) to 10 (Totally confident)

III Results

A. Eyewitnesses' Self Reports

We first analyzed eyewitnesses' self-report data by averaging across all ten testimony-relevant judgments (Table 1) to create a single composite measure of witnesses' self-reported reliability. We examined this composite self-reported reliability variable using a two-way ANOVA in which identification accuracy and feedback were included as predictors of the composite self-reported reliability variable. There was a significant main effect of identification accuracy, such that accurate witnesses rated their reliability significantly higher (M = 7.65, SD = 1.48) than mistaken witnesses (M = 6.32, SD = 1.42), $F(1, 123) = 28.90$, $p < .001$, $d = 0.95$, 95% CI [0.58, 1.32]. There was also a significant main effect of feedback, such that witnesses who received confirming feedback rated their reliability significantly higher (M = 7.43, SD = 1.40) than did witnesses who did not receive feedback (M = 6.55, SD = 1.66), $F(1, 123) = 12.31$, $p < .001$, d = 0.62, 95% CI [0.27, 0.98]. The two-way interaction between identification accuracy and feedback was not significant, $F(1, 123) = 1.49$, $p = .225$.

In addition to the composite reliability measure, we conducted univariate ANOVA analyses for each of the individual self-report measures (see Table 3 for means and standard deviations). We found significant main effects of identification accuracy for all ten measures, with accurate eyewitnesses reporting higher levels than mistaken eyewitnesses, Fs ≥ 7.68, ps $\leq .006$, ds ≥ 0.49, 95% CI [0.14, 0.84]. There were also significant main effects of feedback for the certainty, attention, face, basis, ease, willing, and strangers self-report measures, with witnesses reporting higher levels on these measures when they received confirming feedback than when they did not,

*F*s ≥ 4.46, *p*s ≤ .037, *d*s ≥ 0.38, 95% CI [0.02, 0.73] The main effect of feedback was not significant for the view, time, and image measures, *F*s ≤ 3.37, *p*s ≥ .069. There were no significant two-way interactions between identification accuracy and feedback for any of the self-report measures, *F*s ≤ 3.11, *p*s ≥ .080.

Table 3

Means and Standard Deviations for Witness Self-Report Measures by Condition

	Mistaken Eyewitnesses		Accurate Eyewitnesses	
	No Feedback	Confirming Feedback	No Feedback	Confirming Feedback
Certainty	5.06 (2.14)	6.61 (1.98)	7.53 (2.16)	8.38 (1.52)
View	7.63 (1.98)	8.48 (1.88)	8.91 (1.65)	9.22 (1.66)
Attention	6.06 (2.41)	7.61 (2.01)	7.72 (1.94)	8.09 (2.29)
Face	6.47 (1.98)	7.23 (2.36)	7.78 (2.18)	8.63 (1.86)
Basis	5.78 (2.25)	7.52 (1.98)	8.06 (2.45)	8.72 (1.97)
Ease	4.75 (1.87)	6.94 (2.03)	7.47 (2.29)	8.50 (1.63)
Time	5.88 (1.91)	4.84 (2.08)	3.88 (2.03)	4.16 (2.37)
Willing	3.94 (2.30)	5.58 (2.61)	7.03 (2.69)	8.13 (2.18)
Strangers	6.03 (2.27)	7.42 (2.17)	7.72 (2.22)	7.94 (1.90)
Image	5.84 (2.25)	6.84 (1.86)	7.56 (2.09)	7.53 (2.34)

Note. Mean (SD)

B. Eyewitnesses' Responses to Cross-Examination

Two coders who were blind to whether the witness made an accurate or a mistaken identification coded witnesses' responses to the cross-examination questions; disagreements were resolved by a third coder. Specifically, we coded eyewitness's responses to each question about whether the feedback had influenced their responses as "yes," "no," or "maybe" based on whether the witness at any point acknowledged the possibility of influence. For example, a witness who initially said that their response to the certainty question was not influenced but ultimately admitted that their response may have been influenced by the feedback was coded as "maybe."[2] We first

[2] One witness who responded "I don't know" to the question about whether her recollection of her view was influenced by the feedback was coded as "maybe." Additionally, our coding revealed that no follow-up was asked for two witnesses who claimed their response regarding their view was not influenced, for

present descriptive data for eyewitnesses' responses to the cross-examination questions (Table 4). We then present an analysis of the extent to which witnesses' self-reports of having been influenced reflected the actual influence of the feedback on their responses.

Recall that all eyewitnesses were initially asked whether the first experimenter told them anything about their identification and, if yes, what they were told. Witnesses who said that they weren't told anything were then prompted with, "So you weren't told anything about whether or not you picked the right person?" All witnesses who received feedback reported so either in response to the first (n = 59) or second (n = 5) prompt. When asked if the confirming feedback may have influenced any of their answers to the testimony questions, 65.6% responded yes or maybe. When asked if the feedback influenced their reports of their certainty, view, and attention, 78.1%, 48.4%, and 53.1% of witnesses responded yes or maybe, respectively. Finally, when responding to the statement about scientific research findings showing the effects of feedback on witnesses' reports of the certainty, view, and attention, 92.2% of witnesses acknowledged that this same thing may have happened to them.

Table 4

Witnesses' Responses to Cross-examination Questions

	Yes		Maybe		No	
Measure	*n*	%	*n*	%	*n*	%
Initial General Question	31	48.4	11	17.2	22	34.4
Certainty	36	56.3	14	21.9	14	21.9
View	20	31.3	11	17.2	33	51.6
Attention	24	37.5	10	15.6	30	46.9
Final General Question	45	70.3	14	21.9	5	7.8

Could witnesses accurately report the extent to which they were influenced by the feedback?

Next, we examined the extent to which witnesses' self-reports of the influence of the feedback aligned with the actual influence of the feedback. Using a series of one-way ANOVAs, we compared the self-reported certainty, view, and attention of witnesses who reported that they had been influenced by feedback (i.e., witnesses who responded yes or maybe to the relevant measure), witnesses who claimed not to have been influenced by feedback, and witnesses who did not receive

one witness who claimed their response regarding their attention was not influenced, and for three witnesses who claimed the cross-examiner's statement about scientific research findings showing the effects of feedback on witnesses' reports of the certainty, view, and attention did not apply to them. These witnesses' initial responses to each question were coded for analysis.

feedback (see Figure 1 for means). Specifically, we tested whether witnesses who denied having been influenced reported levels of certainty, view, and attention that were greater than or similar to those reported by witnesses who did not receive feedback.

For eyewitnesses' certainty in their identification, witnesses who received feedback reported being significantly more certain in their identification than did witnesses who did not receive feedback, regardless of whether the eyewitnesses who received feedback denied or admitted to having been influenced; no feedback versus denied influence $t(124) = 2.48$, $p = .015$, $d = 0.73$, 95% CI [0.14, 1.31]; no feedback versus admitted influence $t(124) = 2.57$, $p = .011$, $d = 0.49$, 95% CI [0.11, 0.86]. Moreover, the identification certainty of witnesses who admitted to and denied having been influenced by feedback did not significantly differ, $t(124) = -0.80$, $p = .426$.

The results were different for witnesses' reports of influence on their view and attention. Although witnesses who admitted that their reports of their view may have been influenced by the feedback reported having a better view than witnesses who did not receive feedback, $t(124) = 2.11$, $p = .037$, $d = 0.47$, 95% CI [0.03, 0.90], the reported view of witnesses who denied having been influenced by feedback did not significantly differ from that of witnesses who received no feedback, $t(124) = 0.86$, $p = .384$. The reported view of witnesses who denied having been influenced by feedback also did not significantly differ from that of witnesses who admitted being influenced by the feedback $t(124) = 1.13$, $p = .263$.

Similarly, although witnesses who admitted that their reports of their attention may have been influenced by feedback claimed to have paid closer attention to the culprit than witnesses who did not received feedback, $t(124) = 2.26$, $p = .025$, $d = 0.48$, 95% CI [0.06, 0.90], the reported attention of witnesses who denied having been influenced by feedback did not significantly differ from that of witnesses who received no feedback, $t(124) = 1.66$, $p = .100$. The reported attention of witnesses who denied having been influenced by feedback also did not significantly differ from that of witnesses who admitted being influenced by the feedback, $t(124) = 0.43$, $p = .665$.

Thus, it appears that witnesses who denied the influence of feedback on their reports of their view and attention did not exhibit as much inflation on these measures as witnesses who admitted the influence of feedback on these reports. Even so, their reports on these measures were not significantly lower than those of witnesses who admitted the influence of feedback on those questions, suggesting that there was still some lack of awareness of the influence of feedback on their self-reports.

Figure 1

Witnesses Self-Reports for Certainty, View, and Attention by Feedback and Influence

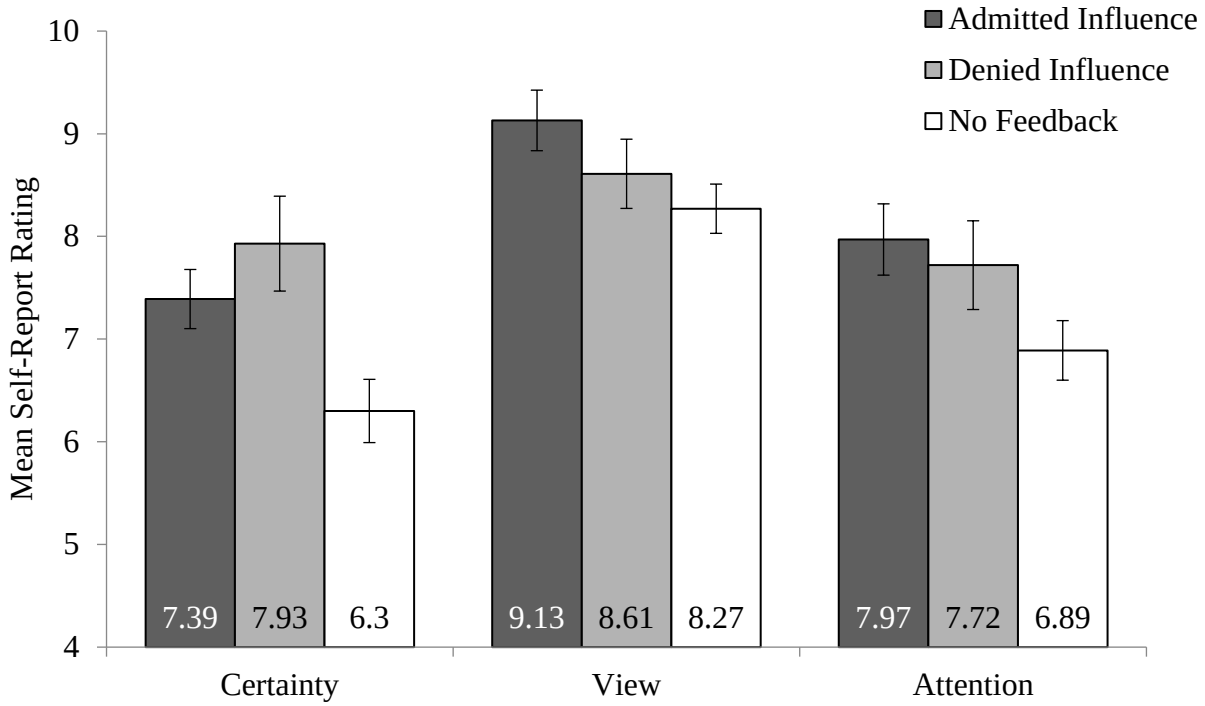

Figure 1. Mean self-report ratings of certainty, view, and attention among witnesses who received feedback and admitted having been influenced, received feedback and denied having been influenced, and did not receive feedback. Error bars denote standard error.

C. Evaluators' Judgments of Eyewitnesses' Testimonies

We first analyzed evaluators' judgments of whether they believed witnesses made an accurate identification using a generalized linear mixed-effects model in R (using lme4 and lmerTest) to account for the random effects of evaluators. Eyewitness identification accuracy, feedback, and cross-examination were included as fixed-effect predictors of evaluators' accuracy judgments. If cross-examination assists evaluators in differentiating between accurate and mistaken eyewitnesses in cases involving feedback, then we would expect to observe a significant three-way accuracy × feedback × cross-examination interaction.

The three-way interaction was not significant, $B = 0.70$, $SE = 0.76$, $z = -0.92$, $p = .356$. In fact, there were no significant effects involving cross-examination (see Figure 2), $zs \leq 1.36$, $ps \geq .175$. Accordingly, we reduced the model by removing the cross-examination term and examined the main and interactive effects of eyewitness accuracy and feedback. Replicating prior research (Smalarz & Wells, 2014), there were significant main effects of accuracy, $B = -0.72$, $SE = 0.19$, $z = -3.77$, $p < .001$, and feedback, $B = -1.00$, $SE = 0.26$, $z = -3.83$, $p < .001$, which were superseded by a significant accuracy × feedback interaction, $B = -1.11$, $SE = 0.38$, $z = -2.95$, $p = .003$. Follow-up comparisons revealed that, when no feedback was given to the witness, evaluators were significantly more likely to believe accurate than mistaken eyewitnesses (70.4% vs 32.7%

respectively), $z = -5.74$, $p < .001$, odds ratio (OR) = 0.21, 95% CI (OR) = [0.12, 0.35]. However, when feedback was given to the witness, evaluators believed accurate and mistaken eyewitnesses at similar rates (68.0% vs. 57.1% respectively), $z = -1.80$, $p = .071$, $OR = 0.62$, 95% CI (OR) = [0.37, 1.04].

Figure 2

Evaluators' Belief Judgments

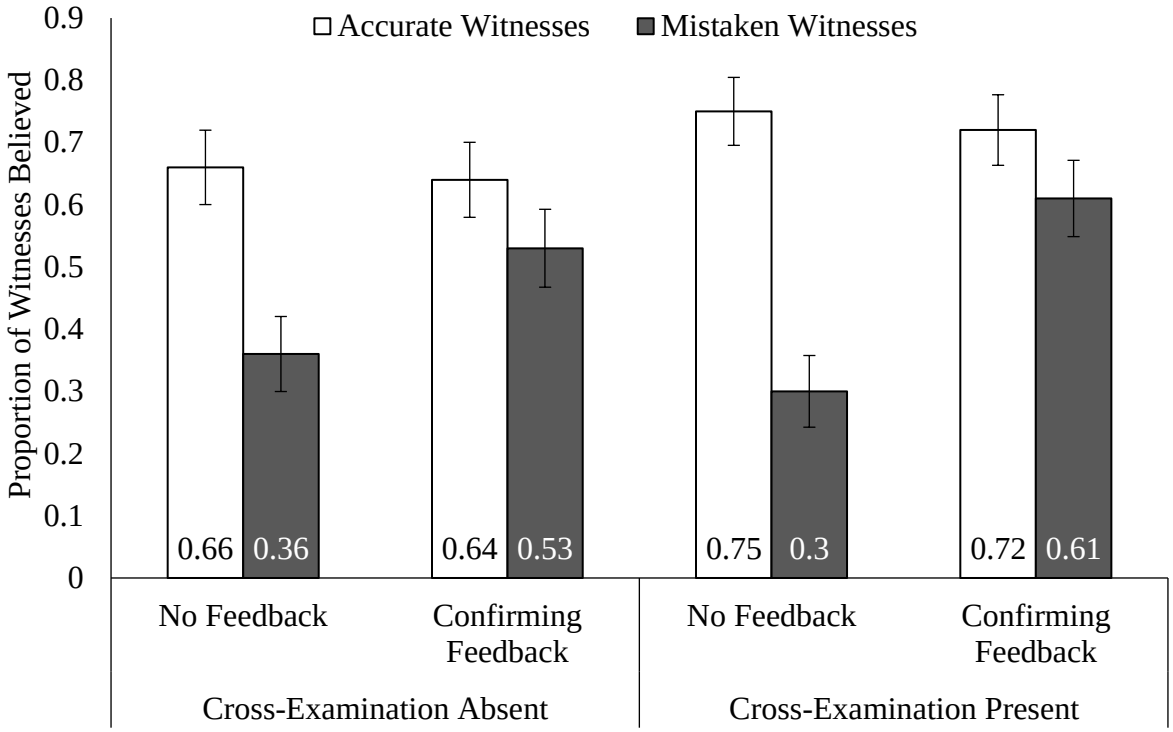

Figure 2. Proportion of witnesses evaluators believed made an accurate identification in each cell of the 2 (Identification Accuracy: Accurate vs. Mistaken) x 2 (Post-identification Feedback: Confirming feedback vs. No feedback) x 2 (Cross-examination: Present vs. Absent) design. Error bars denote standard error.

We also analyzed evaluators' other judgments of the witnesses' testimonies by creating a composite measure that averaged across all of the testimony judgments, with the additional evidence measure reverse-coded. Accordingly, higher values on the composite testimony measure correspond to more favorable evaluations of the eyewitness's testimony. We conducted the analysis in R using a linear mixed-effects model (again using lme4 and lmerTest) that included feedback, identification accuracy, and cross-examination as fixed-effect predictors of the composite measure. Evaluators were included as a random effect.

Consistent with the findings for evaluators' belief judgments, the three-way interaction was not significant, $B = 0.29$, $SE = 0.65$, $t(378) = 0.44$, $p = .658$, nor were any effects involving cross-examination, ts ≤ 0.62, ps $\geq .538$. We again reduced the model by removing the cross-examination term and examined the main and interactive effects of eyewitness accuracy and feedback. As with

the belief measure, there were significant main effects of accuracy, $B = 2.11$, $SE = 0.23$, $t(381) = 9.20$, $p < .001$, and feedback, $B = 1.13$, $SE = 0.23$, $t(381) = 4.93$, $p < .001$, which were superseded by a significant accuracy × feedback interaction, $B = -1.39$, $SE = 0.32$, $t(381) = -4.29$, $p < .001$. Follow-up comparisons revealed that, when no feedback was given to the witness, evaluators judged the testimonies of accurate witnesses as significantly more credible (M = 6.59, SD = 1.97) than those of mistaken witnesses (M = 4.49, SD = 1.80), $t(381) = -9.20$, $p < .001$, $d = 1.14$, 95% CI = [0.90, 1.39]. When feedback was given to the witness, evaluators still judged the testimonies of accurate witnesses as more credible (M = 6.33, SD = 1.79) than those of mistaken witnesses, but to a lesser extent (M = 5.62, SD = 1.80), $t(381) = -3.12$, $p = .002$, $d = 0.39$, 95% CI = [0.15, 0.63].

IV Discussion

Prior research has shown that confirming post-identification feedback undermines evaluators' abilities to differentiate between accurate and mistaken eyewitnesses by disproportionately inflating the believability of mistaken eyewitnesses (Smalarz & Wells, 2014). In the current work, we replicated the detrimental effect of feedback on evaluations of eyewitness testimony and further demonstrated that cross-examination does not remedy the issue. Even though the cross-examination led most eyewitnesses who received feedback to acknowledge that their recollections may have been influenced by the feedback, evaluators' belief of the eyewitnesses held steadfast. This finding reinforces a concern that has long been expressed by eyewitness scientists: Cross-examination is an insufficient safeguard against wrongful conviction based on mistaken eyewitness identification (Devenport et al., 2002; Epstein, 2007; Valentine & Maras, 2011; Wells et al., 1998).

As has now been shown in dozens of studies (Steblay et al., 2014), a simple confirmatory remark following an eyewitness's identification inflated their recollections of their identification confidence, degree of attention paid during witnessing, and other testimony-relevant recollections. Somewhat surprisingly, feedback effects on eyewitnesses' self-reports were not stronger among mistaken eyewitnesses than they were among accurate eyewitnesses, as indicated by the non-significant feedback × accuracy interaction on eyewitnesses' self-reports. This finding is at odds with much of the prior post-identification feedback research (Steblay et al., 2014), but is consistent with the findings from Smalarz and Wells (2014), who likewise found no significant interaction for eyewitnesses' self-reports but *did* observe an interaction for evaluators' belief judgments. In their research, as in the current experiment, feedback had stronger effects on evaluators' belief of mistaken than of accurate eyewitnesses despite not showing that same pattern for witnesses' own responses. Smalarz and Wells speculated that confirming feedback might have dynamic effects on eyewitnesses that are not always captured by the standard scale-rating measures of eyewitness confidence and other testimony-relevant judgments. The findings from the current research provide further support for that idea.

A. Eyewitnesses' Awareness of the Presence and Influence of Feedback

As in Wells and Bradfield's (1998) original post-identification feedback research, eyewitnesses in our study were quite capable of accurately reporting *whether* they had received feedback: All eyewitnesses who received feedback correctly reported so when asked. However,

we caution readers against presuming that real-world eyewitnesses who receive feedback would show such high rates of accurate responding. In our study, witnesses provided their testimony mere minutes after they made their identification. In real cases, eyewitnesses may not be asked whether they received feedback until months or even years after the lineup took place. Under such conditions, witnesses may not remember what they were told following their identification decision. Moreover, as discussed previously, there are a variety of contaminants of eyewitness confidence that do not involve explicit confirmation (e.g., feedback inferred from the case progression, repeated questioning), and witnesses might not recognize the presence of these sources of contamination.

When it came to witnesses accurately reporting *how* the feedback influenced their testimony, eyewitnesses in our study performed more poorly. Specifically, witnesses who admitted that the feedback may have influenced their confidence and witnesses who denied that the feedback influenced confidence showed similar levels of confidence inflation. In other words, witnesses who received feedback recalled having been more confident in their identification than did witnesses who did not receive feedback, and this was true regardless of whether the witnesses believed they had been influenced by the feedback. This pattern of results is revealing: It suggests that eyewitnesses' self-reports of whether feedback influenced their confidence cannot be relied on to determine whether confidence contamination occurred.

Witnesses' reports of the influence of feedback on their recollections of the quality of their view and the degree of attention paid to the culprit during witnessing yielded different results. On those measures, witnesses who denied that their recollections were influenced by the feedback did not show significant distortion on those measures, whereas witnesses who admitted that their recollections may have been influenced by the feedback did. Although these patterns suggest that witnesses who denied the influence of feedback on their view and attention were uninfluenced by the feedback, it is important to recognize the fact that these witnesses did *not* show significantly lower self-reported view and attention compared to witnesses who admitted having been influenced by feedback. In other words, witnesses who denied the influence of feedback could not be statistically differentiated from either group (no-feedback witnesses or admitted-influence witnesses). Indeed, an inspection of Figure 1 shows that witnesses who denied the influence of feedback on these reports fell in between the other two groups on self-reported view and attention, suggesting that they were influenced to some extent, but perhaps to a lesser extent than witnesses who admitted to the influence of feedback.

There are multiple potential interpretations of the discrepant findings regarding witnesses' awareness of the influence of feedback on their recollections of their confidence versus their recollections of their view and attention. One possibility is that witnesses are more able to accurately report on the effects of feedback on their testimony about the degree of attention paid and the quality of their view than they are to accurately report on the effects of feedback on their identification confidence. We are skeptical of this interpretation, however, in part because we can think of no psychological theory that predicts more accurate introspection regarding the effects of an external contaminant on recollections of view and attention than on recollections of confidence.

We think that a more likely explanation is that people do not have direct introspective access to the mental processes that occur in response to a stimulus (Nisbett & Wilson, 1977).

Therefore, instead of being able to accurately assess the influence of a stimulus (e.g., feedback) on their responses, people use implicit causal theories about the extent to which a particular stimulus is a plausible cause of a given response to estimate the effects of the stimulus. Research on the post-identification feedback effect shows that witnesses' recollections of their view and attention paid during witnessing tend to be less influenced by feedback than witnesses' recollections of their identification confidence (Steblay et al., 2014). Thus, to the extent that witnesses apply the same implicit causal theory about how feedback might influence their responses to these questions, it would lead witnesses to underestimate the effects of the feedback on their confidence and to more appropriately estimate the effects of the feedback on their self-reported view and attention. Future research could investigate this possibility. Nevertheless, for legal purposes, it is important to remember that, even if witnesses in our study did somewhat accurately report on the influence of feedback on some of their judgments, this did not improve evaluators' abilities to differentiate between accurate and mistaken eyewitnesses.

B. The Lack of Impact of Cross-Examination

A somewhat surprising finding in our research was that the cross-examination had no significant impact on evaluations of eyewitness accuracy. Evaluators were no less likely to believe eyewitnesses who had been rigorously cross-examined than they were to believe eyewitnesses who had not been cross-examined. This may have been because, although the cross-examination revealed that eyewitnesses had received feedback, evaluators are unaware of how damaging post-identification feedback can be. Indeed, a number of studies have shown that jurors fail to recognize the effects of variables that influence eyewitness accuracy and testimony (e.g., Desmarais & Read, 2011). It may be necessary, therefore, to supplement cross-examination with testimony from an expert who can inform fact-finders about the contaminating effects of feedback on eyewitness testimony (Benton et al., 2007; Cutler & Wells, 2009). However, expert testimony is not a panacea, and the extent to which it improves evaluators' assessments of eyewitness accuracy is not yet well established (e.g., Martire & Kemp, 2009).

There is another possible reason for the null effects of cross-examination on evaluations of eyewitness accuracy. Recent research suggests that informing fact-finders of a suspect-bias variable can backfire. In a recent study, Kulak and Smalarz (2022) examined evaluators' reactions to administrator suggestion in a videotaped lineup procedure. Evaluators in their study viewed a videotape of an eyewitness providing testimony about a witnessed event and identification. Half of the evaluators watched the testimony and the identification procedure; other evaluators watched the testimony only. Critically, half of the eyewitnesses had been exposed to administrator influence during the identification procedure, which was apparent to evaluators who saw the lineup procedure videos. Although viewing a video of an identification procedure sensitized the evaluators to procedural suggestion, which was in turn associated with decreased belief of the eyewitness, viewing the video also had the unintended effect of directly *increasing* evaluators' belief of the eyewitness, presumably because evaluators made inferences about the eyewitness's accuracy from the administrator's suggestive behavior. In the current study, mock-jurors might themselves have been persuaded of the witness's accuracy by learning that the witness was told they identified the correct person. Future research should investigate whether there are ways of informing evaluators of the presence of contamination without also directly biasing evaluators.

C. Implications for Trial Judges' Admissibility Determinations

There are important legal consequences of the current findings for cases involving post-identification feedback and other forms of eyewitness memory contamination. The legal system has a safeguard in place specifically for dealing with suggestively obtained eyewitness identification evidence. If a defendant standing trial can demonstrate that there was impermissible suggestion involved in the eyewitness's identification (e.g., the witness saw a photo of the suspect before viewing the lineup; the witness was presented with a single-suspect showup when a lineup could have been conducted; the eyewitness was given confirming post-identification feedback), and, as a result, there are sufficient concerns about the reliability of the eyewitness's identification, the trial judge can suppress the identification evidence, preventing the eyewitness's testimony from being heard by a jury at all.

The basic justification for this "reliability" approach to determining the admissibility of suggestively obtained identification evidence is that, in some cases, an eyewitness's identification is based on such a strong memory that it is invulnerable to suggestive influences. While this reasoning is logical, the unfortunate reality is that defendants' attempts to suppress suggestively obtained eyewitness identification evidence are almost never successful, even when the identification procedures were egregiously suggestive (Wells et al., 2012). The reason for the inefficacy of the evidence-suppression safeguard stems from a fundamental defect in the legal framework for determining reliability. In most states across the U.S., trial court judges use a framework set forth in the U.S. Supreme Court case *Neil v. Biggers* (1972), which was later affirmed in *Manson v. Brathwaite* (1977). The many shortcomings of the so-called Manson admissibility standard have been detailed elsewhere (e.g., Smalarz et al., 2016; Wells & Quinlivan, 2009). But the crux of the issue is to determine whether the suggestion produced a substantial enough threat to the reliability of the eyewitness's identification to warrant suppression of the identification evidence, the trial court judge is instructed to consider five factors: the eyewitness's confidence in their identification, the quality of the view the eyewitness had during witnessing, the degree of attention paid during the event, the quality of the witness's description of the culprit, and the amount of time between the witnessed event and the identification procedure.

What is hopefully immediately apparent to readers is that three of the five criteria that trial court judges use to evaluate eyewitness reliability—the witness's reports of their confidence, view, and attention—are themselves distorted by suggestive procedures. As a result, witnesses subjected to procedural suggestion, such as a heavy-handed detective who tells the witness who the suspect is and praises the witness's identification of the suspect, are likely to earn a very high standing on these reliability criteria. Yet, it is precisely *because* of the suggestion that these eyewitnesses have the illusion of reliability.

The findings from the current research demonstrate that, once an eyewitness's memory has been contaminated by suggestive influences such as feedback, there is little that the legal system can do to remedy the issue. It is not possible to "undo" contamination that has already occurred (Smalarz & Wells, 2013). And, as the current findings show, witnesses are ill equipped to report on the extent to which their testimony has been influenced by the suggestion. A trial court judge, therefore, has little recourse for determining whether the seeming reliability of a highly confident eyewitness who was exposed to suggestive procedures is attributable to the suggestion or the witness's original memory.

V Conclusion

The present findings support the criticism that cross-examination is an insufficient safeguard against wrongful conviction based on mistaken eyewitness identification. In our study, cross-examination was unable to correct for feedback's distorting effects on eyewitness testimony. One of the shortcomings of cross-examination is that it relies on witnesses' abilities to assess whether and how feedback influenced them, which witnesses struggle to do (Wells & Bradfield, 1998). These findings underscore the importance of a three key best-practice reforms for collecting eyewitness evidence. First, suspect bias must be controlled (Smalarz, 2021). Suspect bias (e.g., low-similarity lineup fillers, administrator influence, post-identification feedback), puts innocent suspects at increased risk of wrongful conviction because suspect bias increases the risk of confident mistaken identifications of innocent suspects. Second, eyewitness confidence and other self-reports that are relevant to assessing eyewitness accuracy must be recorded before contamination can occur (Steblay et al., 2014; Wells et al., 2020). Eyewitnesses' recollections related to the witnessed event (e.g., reports of what they witnessed, the quality of their view, degree of attention paid) should be documented as soon as practicable after the crime. Similarly, eyewitness's judgments related to their identification decision (e.g., identification confidence, willingness to testify against the suspect), should be documented immediately at the time of the identification procedure, before witnesses are exposed to inevitable contaminants such as post-identification feedback. Third, all interviews of eyewitnesses should be videotaped for later review (Kassin, 1998; Wells et al., 2020; National Research Council, 2014). Videotaping establishes a clear record of the eyewitness's recollections, which can be used later to help differentiate between genuine recollections and contaminated memory. Videotaped identification procedures can also help reveal procedural suggestion and prevent frivolous claims of suggestion when an identification procedure was conducted pristinely. Perhaps most importantly, proper records of eyewitnesses' uncontaminated memory reports provide diagnostic information upon which evaluators can rely to assess the eyewitness's likely accuracy. By treating eyewitness memory with the care and meticulousness that it treats other forms of contaminable trace evidence, the legal system can prevent wrongful convictions.

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Virtual Searches: Regulating the Covert World of Technological Policing

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Virtual Searches is a timely and well-written addition to the widespread debate on how surveillance technologies should be regulated and by whom. It explores police investigatory techniques carried out technologically rather than via physical intrusion, as well as how the Fourth Amendment and the regulatory landscape is dealing with many of these new police abilities. Potentially most interesting about Slobogin's book is that it takes a different stance from some elements of the present thought surrounding topics such as predictive policing. It resists the typically prevailing abolitionist perspectives and instead putting forward, with evidence from case law and notable use case examples, the idea that there is a non-zero-sum game in which both government and the public can regulate these new technologies to gain their benefits with mitigations in place against potential drawbacks. The book concludes with a list of concrete suggestions for regulation of novel policing technologies in a way designed to harness their anti-crime power whilst protecting against many of the negative social and ethical repercussions surveillance brings with it. How effective these would be is likely to be the subject of fruitful future discussion in this area. In all, Virtual Searches is a great addition to ongoing police technology debates, likely to be of use to legal scholars from both the U.S. and abroad due to the universality of its themes and the clear way that U.S. legal concepts are explained and explored throughout.

I Review

Virtual Searches provides a deep and thorough exploration of how the Fourth Amendment of the U.S. Constitution and its prohibition of unreasonable searches and seizures impacts, presently and in the future, many of the new technologies in the surveillance world which are arising thanks to both technological and social changes in wider society. The book covers many of the same themes as Slobogin's 2007 book *Privacy at Risk* but is updated for the modern nascent technologies which are arising in everyday law enforcement such as facial recognition, geofencing, and big data. In addition, significant Supreme Court decisions since 2007 have been highlighted along with their impact on the surveillance landscape since his last book, as well as how social changes and interpretations of the law have shaped regulation of these technologies.

Despite being focused on the Fourth Amendment of the U.S. Constitution and dealing primarily with U.S.-centric topics, many of the themes translate well to international examples across North America, Europe, and further afield as many of the challenges explored in the book are also being grappled by other legal systems globally. The themes are presented in a way in which non-U.S. legal scholars will find the book easy to read and understand, despite not specialising in U.S. law, due to the author's obviously great effort to explore potentially complicated U.S. legal concepts in a clear, easily translatable, and well explained way to an interdisciplinary and multinational audience. Though an understanding of U.S. Constitutional law is obviously beneficial, it is by no means required to understand the arguments made in the book.

II Structure

Slobogin's book is structured around 3 chapters of foundation-building exploration of the Fourth Amendment and privacy, exploring case law and some historical grapples with new technologies, as well as a chapter on proportionality analysis. This sets the background for many of the arguments made later.

It begins with an overview of the legislative struggle surrounding virtual searches in the modern age and spends time covering the constitutional constraints on searches and seizures, along with why modern technologies provide challenges in both defining what is or is not a search or seizure in the digital age and how case law has dealt with these questions in the past.

The third of these chapters, Proportionality Analysis, then explores how elements such as reasonable suspicion and probable cause have been treated historically and the challenges posed by new technologies.

The book then follows a chapter-per-search structure in which the core themes are divided into the type of search, such as *Suspect-Driven*, *Profile-Driven*, *Event-Driven*, *Program-Driven*, and *Volunteer-Driven* virtual searches.

Suspect-Driven Virtual Searches, such as those covered in Slobogin's earlier work, focus on the use of technology to digitally search or seize in relation to an already identified suspect.

New to the exploration in this book are *Profile-Driven* searches (algorithms detecting yet undiscovered crime or suspects), *Event-Driven* searches (matching crime scene data or other information to particular individuals), *Program-Driven* searches (surveillance and data infrastructure which supports searches) and finally the rapidly growing area of *Volunteer-Driven* searches (private parties undertaking searches on behalf of government in a way that may class them as government searches).

The book concludes with a chapter giving concrete suggestions for regulators including government, private entities, and the public on how the themes from the book could be implemented to regulate many of these technologies. It also addresses directly some of the criticisms the author has faced for these ideas in the past, offering arguments to mitigate against many of the criticisms offered from traditionally abolitionist stances.

III Main Themes

Though much of the book is dedicated to exploring the legal difficulties surrounding applying the Fourth Amendment to various new types of searches or seizures, one of the primary underlying themes is that the decisions of how this regulation occurs should not be left to the judiciary but should be reached via a democratic, somewhat public-led process. Though this isn't strictly a break from tradition due to algorithmic transparency standards[1] and similar being trialled in other countries, the focus on a non-judiciary solution as a main benefit instead of a mere mechanism is relatively novel here.

Slobogin argues that though the judiciary is useful for putting into place 'guardrails' via constitutional and administrative law, it is ultimately the legislative branches along with community-led grassroots input from the public which are the best entities for contextually deciding which technologies should be regulated and how. This is not a new argument, but the book puts forward detailed frameworks surrounding how such a concept would function in practice, which is more in depth than similar works.

The book bases this on the idea that whether a community or area wants to be regulated, and to what extent, can be decided contextually by utilising the aforementioned 'Proportionality Principle' along with inspiration from search and seizure case law (in particular *Terry*,[2] *Jones*,[3] and *Carpenter*[4]) to ensure that the government must justify any attempt to monitor its citizens in line with the degree of intrusion. Slobogin states his belief that the job of policing accountability is in many ways the job of the public and not the courts, and that this can be achieved via transparent reporting of policing capabilities amongst other methods.

Slobogin states in his book that the government's enhanced surveillance abilities with modern technology should not automatically be considered a bad thing, particularly when the impacts on privacy and autonomy are minimised. He argues that the rights of citizens to be secure from their government and the government's duty to keep its citizens safe can conceivably be reconciled in this manner by balancing the potential good with the degree of intrusion instead of relying on a blanket probable cause for any and all digital searches or seizures.

Interestingly, the author diverges from the opinions of many similar scholars in not outright writing off predictive policing but suggesting that such efforts should have to justify both its use and any searches or seizures that result via police observation corroborating results. He also suggests that algorithms should not consider certain factors (such as minor crime) in this manner

[1] *Algorithmic Transparency Recording Standard Hub* (January 2023), online: <https://www.gov.uk/government/collections/algorithmic-transparency-recording-standard-hub#:~:text=The%20Algorithmic%20Transparency%20Recording%20Standard,how%20algorithmic%20tools%20support%20decisions>.

[2] *Terry v Ohio*, 392 US 1 (1968).

[3] *United States v Jones*, 565 US 400 (2012).

[4] *Carpenter v United States*, 138 S Ct 2206 (2018).

to avoid racialized policing - yet how effective this would be given past failures[5] in attempting to remove biased data classes is not explored in much depth and is open to challenge.

Despite this dissenting opinion, much of Slobogin's work is in line with prevailing thought including his view that police uses of technology should be governed by rational policies informed by community participation and an acceptable level of transparency.

The book's exploration of hybrid regulation, where a combination of criminal and civil remedies to police overreach along with accountability mechanisms is the most effective way to regulate new technologies given its success in Title III's protective rules, is another area the author appears to agree with other scholars in this area.

One of the major differences between this book and many others on the topic, and one which may split opinion, is that the book generally does not deeply discuss or critically explore either accuracy/efficacy or underlying social issues such as racial bias except in the later stages of the book where it is particularly salient to the discussion. This appears to be a purposeful decision by the author wherein he chooses to focus specifically on the administrative and functional issues posed by the technologies instead of getting bogged down in philosophical and ethical explorations of wider social problems, but the argument could be made that discussing these topics without this added social justice context paints only half of a picture.

However, this choice to focus largely on the constitutional and administrative issues of the technologies does help to keep the book both clear and to a reasonable page count. In this vein, *Virtual Searches* is very specific in its scope and those unfamiliar with these technologies would likely need to pick up additional books covering these issues in order to fully appreciate the reasoning behind some of Slobogin's arguments. This in no way detracts from the overall aim of the book and its exploration of the topic, but means it is not an 'all you need to know' like some lesser specialised books on these technologies and their regulatory challenges.

This focus on specific issues does the book justice in the end, due to how detailed and married to administrative reality many of its ideas are compared to many other contemporary books which take a more philosophical ethics-focused and privacy-centric approach to exploring many of the given themes. Its difference in approach compared to other, similar, texts such as essay anthologies like *Algorithmic Regulation*[6] or novel technology focused criminal law framework books such as Quattrocolo's *Artificial Intelligence, Computational Modelling and Criminal Proceedings*[7] works well to set it apart in both its ideas and how they are presented. There are a large number of specific use cases on regulation across a number of U.S. cities, with detail on the debates and the reasoning behind decisions - as well as what this means for the wider surveillance landscape.

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[5] Obermeyer, Ziad et al. "Dissecting racial bias in an algorithm used to manage the health of populations" (2019) 366:6464 Science 447.

[6] Yeung, Karen & Martin Lodge, eds. *Algorithmic Regulation* (Oxford: Oxford University Press, 2019).

[7] Quattrocolo, Serena. *Artificial Intelligence, Computational Modelling and Criminal Proceedings: A Framework for A European Legal Discussion* (New York: Springer, 2020).

The only potential improvement to the book which stood out was that future editions may want to explore how the technology works in greater detail and link these to why they pose the challenges to regulation that they do. Techno-social concepts seemingly core to the discussion such as algorithmic bias and real-world efficacy are alluded to but not explained in functional detail to the reader.

IV Concluding Thoughts

Christopher Slobogin's *Virtual Searches* explores well how the U.S. Constitution's Fourth Amendment grapples with new technologies, including how interpretations and impacts have changed since his last book, and writes in a way accessible to scholars both in the U.S. and internationally. The book would be useful to both policing and privacy scholars interested in how modern technologies and their challenges to fair and well-regulated law enforcement could be managed by government, law, and society. The specific use case examples and recommendations do much to lay out a potential framework for future regulation of technologies which are governed by the Fourth Amendment and similar laws. The author's opinions on the potential merits of controversial areas of technology and crime such as predictive policing when restrained correctly are also a fresh perspective on this area which is sure to generate further discussion from both legal scholars and ethics scholars alike.