

Cognitive biases in forensic psychiatry: A scoping review

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A B S T R A C T

Forensic psychiatry plays a critical role in legal contexts but is highly susceptible to cognitive biases that can undermine the accuracy and objectivity of evaluations. This scoping review, guided by the Arksey and O'Malley framework, aims to identify and analyze cognitive biases within forensic psychiatric practice across criminal, civil, and testimonial domains.

A comprehensive search across five databases yielded 7002 records, with 24 studies meeting the inclusion criteria. From these studies, ten distinct cognitive biases were identified, with the most frequently discussed being gender bias (29.2 %), allegiance bias (20.8 %), and confirmation bias (20.8 %), followed by hindsight, cultural, and emotional biases. Most studies focused on criminal settings, with only two addressing civil contexts.

Among the mitigation strategies reviewed, structured methodologies and the "considering the opposite" technique were the most positively evaluated and widely discussed approaches. Conversely, the self-awareness strategy was criticized for its limited effectiveness in reducing bias. Emerging tools, such as artificial intelligence, offer potential solutions but require robust ethical safeguards to prevent the perpetuation of systemic biases.

This scoping review provides a comprehensive overview of the current state of research on biases in forensic psychiatry, underscoring the need for further empirical studies to explore their prevalence, mechanisms, and effective mitigation strategies in greater depth.

1. Introduction

For centuries, forensic science has played a crucial role in criminal investigations and legal proceedings (Found, 2015). Nevertheless, recent studies and government reports highlight growing concerns regarding the lack of rigorous scientific research in this field (Dror, 2023; *Forensic science in criminal courts: Ensuring scientific validity of feature-comparison methods*, 2016; Forensic Science Regulator, 2015). The influence of cognitive bias on interpreting forensic science evidence has emerged as a significant concern across various forensic disciplines (Cooper & Meterko, 2019). Cognitive biases affect every stage of the forensic science process, including data collection, analysis, evidence interpretation, and courtroom presentation (Dror, 2015).

Notably, cognitive biases in forensic experts' decisions can lead to variability in inter-rater agreement, significantly influencing the levels of agreement observed in evaluations (Murrie et al., 2013) (Dror, 2016, 2018). For instance, a high inter-rater agreement was found when experts evaluated the same case from the same procedural standpoint,

raising concerns about the potential influence of "My Side" bias on assessment (Large et al., 2010; Murrie et al., 2008, 2009). Such bias can arise when the legal process role potentially compromises the objectivity of the experts, who may inadvertently align themselves with the procedural side that hired them for consultation (Murrie et al., 2013).

Elevated inter-rater agreement in cases involving instrumental evidence raises concerns regarding "Technological Protection," bias, or the tendency of forensic experts to over-rely on technological outputs (Dror, 2023). Dror's research on DNA mixture interpretation (Dror & Hampikian, 2011) highlights the limitations of assumed objectivity in forensic technologies. In this study, 17 experienced DNA examiners review data from an adjudicated criminal case, revealing significant inconsistencies in their conclusions (Dror & Hampikian, 2011). The disagreement among "context-free" experts with the lab's original interpretation underscores the vulnerability of forensic evaluations, including DNA analysis, to cognitive biases (Dror, 2023).

Empirical research has demonstrated that these vulnerabilities are not restricted to a singular domain; rather, analogous issues of cognitive

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<https://doi.org/10.1016/j.ijlp.2025.102083>

Received 4 June 2024; Received in revised form 8 December 2024; Accepted 17 February 2025

Available online 5 March 2025

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bias have been identified across various disciplines within the forensic sciences (Cooper & Meterko, 2019; Dror et al., 2006, 2018; Dror et al., 2021; Dror & Hampikian, 2011; Kukucka & Kassin, 2014; Nakhaeizadeh et al., 2018; Norris, 2021), including forensic psychiatry (Escolà-Gascón et al., 2023; Meyer & Valença, 2021).

The inherent limitations of forensic psychiatry contribute to the emergence of cognitive biases (Arboleda-Flórez, 2006). Specifically, psychiatric evaluations, including forensic assessments, rely heavily on patients' self-reports and subjective interpretations of symptoms, making them particularly prone to cognitive biases. Furthermore, cognitive biases at various levels can create a "cascade" effect, progressively shaping the assessment process (Dror et al., 2017; Scarpazza & Ghidini, 2023).

In comparison to other clinical and forensic fields, psychiatry lacks objective diagnostic markers or tests, which severely limits opportunities for independent verification and increases reliance on the evaluator's expertise and judgment (Lozupone et al., 2019; Park et al., 2018; Perlis, 2011).

The complexity is further amplified by the challenge of distinguishing genuine psychiatric conditions from feigned or exaggerated ones, as patients may consciously or unconsciously manipulate their symptoms (Rosenhan, 1973). At the same time, forensic experts may unintentionally focus selectively on specific aspects of the evaluation, influenced by contextual information (Valadas & Freitas, 2021). These factors and the inherent subjectivity of psychiatric evaluations make forensic psychiatry especially vulnerable to contextual influences, contributing to inconsistencies and low inter-rater reliability (Jeremy Matuszak, 2012) (Neil Gowensmith et al., 2017).

However, the impact of cognitive biases in forensic psychiatric assessment has only recently begun to be systematically assessed (Meyer & Valença, 2021; Neal et al., 2022).

Meyer and Valença (2021) focused on identifying factors contributing to biases in forensic psychiatry within criminal matters, such as inconsistencies between legal and psychiatric terminologies, variability in examiner training, and limitations of psychometric tools (Meyer & Valença, 2021). On the other hand, Neal et al. (2022) conducted a systematic review of studies published between 2000 and 2020, utilizing two databases to investigate cognitive biases in forensic psychiatry and debiasing strategies to propose a general model of cognitive bias in human judgment (Neal et al., 2022). Although their work encompassed forensic contexts, it was not restricted to the forensic field. Moreover, the temporal scope of the review was limited, resulting in significant gaps in our understanding of how cognitive biases are addressed explicitly within forensic settings in psychiatry.

To date, no study has thoroughly examined cognitive biases across all forensic psychiatric settings, which include criminal, civil, and testimonial contexts. Significant gaps remain in our understanding of the methodologies employed to investigate these biases, the specific biases that are most frequently addressed, and their broader implications for forensic evaluations. This study aims to address these gaps through a scoping review designed to identify and analyze cognitive biases within forensic psychiatric practice across criminal, civil, and testimonial domains. The review aspires to enhance forensic psychiatric assessments' accuracy, rigor, and objectivity by providing a comprehensive overview of these biases and their influence on forensic psychiatric judgment, ultimately contributing to more equitable and reliable practices within the field.

2. Material and methods

This scoping review was conducted using the Arksey and O'Malley framework (Arksey & O'Malley, 2005), incorporating recent methodological updates to ensure rigor and comprehensiveness (Bradbury-Jones et al., 2021; Levac et al., 2010; Westphal et al., 2021).

Search strings were developed and agreed upon by the review team (Table 1). A search strategy and inclusion criteria guided the review, and

Table 1
Database search.

	Search terms
S1	bias OR biases OR cognitive bias OR cognitive biases OR prejudice OR influence OR distortion OR cognitive distortion OR fallacy OR fallacies OR heuristic
S2	forensic OR legal OR judicial
S3	psychiatry OR psychiatrist OR psychopathology OR psychopathologist OR psychology OR mental-health
S4	criminal OR criminal responsibility OR sanity OR insanity OR dangerousness OR testimonial OR witness OR civil
S5	evaluation OR assessment OR defense
S6	S1 + S2 + S3 + S4 + S5

the research was conducted across five databases: PubMed, Scopus, Taylor & Francis, and PsycINFO, until October 2024. The search words were used in 'title' and 'abstract.' searches utilizing Boolean operators 'OR' and search strings were combined using Boolean operators 'AND'. All citations were exported to EndNote 20 Library to identify and remove duplicates (LB/FM).

Study selection was performed by two reviewers—one forensic psychiatrist and one forensic pathologist with experience in forensic psychiatry—who independently screened the papers to identify those that met the selection criteria (Table 2). Full texts of potentially eligible articles were assessed for final inclusion. Both reviewers screened all the papers listed, and the inter-rater reliability coefficient was calculated using Cohen's Kappa (κ) through the Statistical Package for the Social Sciences (SPSS) version 25.0. In cases of uncertainty or discrepancies, consultation was held with a senior investigator (GM) to reach a final consensus.

Data from the included studies were extracted systematically, focusing on the author, year of publication, title, country, aim, methodology, key findings, and cognitive biases investigated.

3. Results

The scoping review process identified 7002 records through database searches (Fig. 1). After removing 3339 duplicate entries, 3363 records were subjected to title and abstract screening. Of these, 3309 records were excluded because they did not meet the predefined inclusion criteria. Subsequently, 54 full-text articles were assessed for eligibility. Thirty articles were excluded because they did not meet specific eligibility requirements, resulting in 24 studies being included in the final review (Table 3). The inter-rater reliability coefficient, determined using Cohen's Kappa (κ), was measured at 0.852, demonstrating strong agreement among the reviewers. Discrepancies mainly stemmed from including studies that, while not explicitly stating a forensic context, suggested through their design or objectives that they were conducted within forensic settings.

These studies were conducted across various geographical regions, with the majority originating from the United States ($n = 11$; 45.8 %) and Europe ($n = 11$; 45.8 %), followed by China ($n = 1$; 4.2 %) and Brazil ($n = 1$; 4.2 %). Most of these studies were published after 2010.

The designs of the studies varied, including review ($n = 7$; 29.1 %), case vignette studies ($n = 5$; 20.8 %), cross-sectional surveys ($n = 4$; 16.7 %), original studies ($n = 4$; 16.7 %) and retrospective analyses ($n =$

Table 2
Inclusion and exclusion criteria.

Inclusion Criteria	Exclusion Criteria
Publications from 1974 to October 31, 2024	Papers published outside the search timeframe
Roman alphabet	References not written in the Roman alphabet
Peer-reviewed papers	Books, book sections, conference proceedings, newspaper articles, commentary, replies, unpublished works

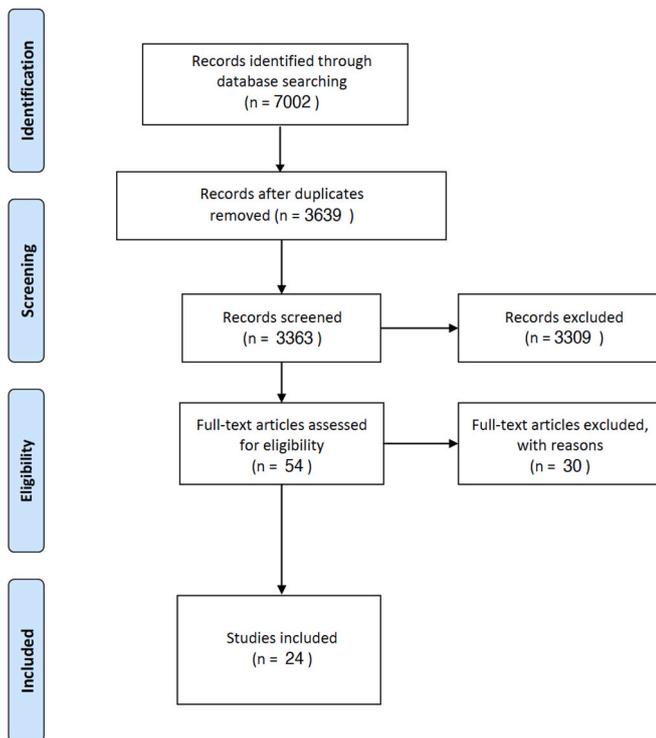


Fig. 1. PRISMA Flow Diagram for the scoping review process.

4; 16.7 %).

Participants predominantly consisted of forensic psychiatrists and psychologists in 18 studies (75 %), with the remaining studies ($n = 6$; 25 %) involving mixed participants, such as legal professionals, judges, or laypersons. Sample sizes ranged from 26 participants to surveys with over 1000 respondents.

Gender bias was the most frequently addressed, being the focus of 7 studies (20.7 %). Allegiance bias and confirmation bias were each examined in 5 studies (14.7 %). Hindsight bias, cross-cultural and racial biases, and bias blind spots were each addressed in 4 studies (11.8 %). Countertransference bias was investigated in 2 studies (5.8 %), while availability bias, ingroup bias, and time bias were each the focus of 1 study (2.9 %).

All studies were conducted in forensic contexts, with the majority classified as general forensic settings or where the specific context was not explicitly defined by the authors ($n = 15$; 62.5 %). Of the remaining studies, 6 were conducted in criminal settings (25 %), 2 in combined civil and criminal contexts (8.3 %), and 1 in a clinical and forensic context (4.2 %).

4. Discussion

The findings of this scoping review offer a comprehensive analysis of the studies addressing cognitive biases in forensic psychiatry, detailing the methodologies employed, the settings examined—predominantly criminal contexts—and the results obtained, with a specific focus on the types of biases investigated. The earliest included paper that explores cognitive biases in forensic psychiatry dates back to 1989, focusing on both civil and criminal contexts (Otto, 1989). This original study introduced the concept of “*side of retention*,” later recognized as allegiance bias, by analyzing two hypothetical cases assessed by 32 advanced graduate students. As defined by Neal (2014), allegiance bias “occurs when experts’ opinions or findings are unintentionally influenced by their allegiance to the party that has retained them, potentially undermining the neutrality required in their role” (Neal & Grisso, 2014); this bias was investigated by five of the 24 studies.

Although the allegiance bias was considered the most prominent in forensic contexts (Neal et al., 2022), in this scoping review, the most frequently studied bias was gender bias, examined in seven studies. Gender bias is any one of a variety of stereotypical beliefs or biases about individuals based on their gender (APA Dictionary of Psychology, 2025).

Gender bias can significantly influence expert evaluations, and the earliest included research, conducted in 2008 in Sweden, presented participants with a hypothetical homicide scenario, randomly assigning a gender to the perpetrator (Yourstone et al., 2008). The results indicated a tendency to view female offenders as more likely to be insane compared to their male counterparts. Another Swedish vignette study from 2017, which involved 26 forensic psychiatrists and psychologists, found no gender-based differences in diagnosing severe mental disorders but reported that women with intellectual disabilities were perceived as more socially dangerous (Sygel et al., 2017).

Similarly, a 2022 retrospective study in Denmark revealed that female offenders were 2.5 times more likely to receive treatment recommendations, particularly for minor crimes (Schjøth et al., 2022). Women are generally perceived as victims rather than aggressors (Friedman, 2023).

A 2023 conceptual review in the UK underscored how violent women are subject to stereotypes, leading to the underdiagnosis of antisocial personality disorder and the overdiagnosis of mental illness (Ali & Adshead, 2022). These disparities may generally stem from cultural and ethical factors (Ali & Adshead, 2022). In line with this, a historical analysis examining Swedish forensic reports from the 1930s revealed a morally charged depiction of women, often described as “emotionally unstable” or “hysterical,” highlighting the interplay of cultural and moral biases in forensic assessments (Karlén & Nilsson, 2023).

In the present study, cultural biases were addressed in four of the 24 studies, emphasizing issues of racism and cultural misunderstanding (Friedman, 2023). For example, Caucasian patients were more frequently diagnosed with antisocial personality disorder than African Caribbean patients (Mikton & Grounds, 2007). Additionally, psychotic symptoms in non-White individuals are often misinterpreted as malingering, underscoring the need for culturally informed principles to account for diverse expressions of psychosis (Rogers et al., 2024).

Five of the 24 included papers explored confirmation bias, a pervasive cognitive distortion in forensic assessments. As Wason defines it, it “refers to the tendency of people to seek evidence that confirms their current hypothesis rather than evidence that might disprove it.” This can further entrench misjudgments when evaluators selectively focus on information aligning with preconceived notions (Wason, 1960).

Four of the 24 papers focused on hindsight bias, defined as “the tendency for persons equipped with knowledge of an outcome to exaggerate their ability to predict the inevitability of the outcome” (LeBourgeois et al., 2007). In an original study conducted in 2007, 235 psychiatrists were tasked with assessing the suicide risk of a hypothetical patient with identical clinical and descriptive characteristics. However, one group was informed that the patient had ultimately died by suicide, while the other was told that the patient had not. The findings revealed significant differences in risk evaluations between the two groups, demonstrating the influence of hindsight bias. Notably, forensic psychiatrists appeared less susceptible to this bias than general psychiatrists (LeBourgeois et al., 2007). Building on these findings, a subsequent study utilized a case vignette methodology to investigate whether experience level moderated susceptibility to hindsight bias (Weber et al., 2024). The results indicated that the known outcome influenced younger forensic psychiatrists more than their more experienced counterparts (Weber et al., 2024).

But, while expertise appears to protect against hindsight bias (Weber et al., 2024), it does not safeguard against blind-spot bias, defined as “the cognitive bias that allows individuals to identify biases in others’ judgments and behaviors while failing to see those same biases in their own thinking” (MacLean et al., 2019; Pronin et al., 2002; Zapf et al., 2018).

A study conducted in 2018 highlighted the prevalence of blind-spot

Table 3
Data extraction table of the included studies ($n = 24$).

Title, Author(s), Year, Country	Study design	Aims	Methodology	Setting	Key findings	Investigated Bias(es)
Bias and expert testimony of mental health professionals in adversarial proceedings: A preliminary investigation; (Otto, 1989), U.S.A.	Original study	To investigate how bias affects the expert testimony of mental health professionals in adversarial legal proceedings.	Preliminary investigation through a review of expert testimony in legal cases, analyzing how mental health professionals' biases could shape their testimony and influence the trial outcome.	Civil and Criminal	Mental health professionals' testimony in adversarial proceedings may be influenced by bias, such as confirmation bias or personal beliefs, leading to inconsistencies and potentially biased assessments. Psychiatrists informed of adverse outcomes (hindsight group) assessed suicide and violence risk as significantly higher than the control group. However, hindsight bias did not substantially affect judgments regarding adherence to standards of care. Forensic psychiatrists exhibited lower susceptibility to hindsight bias compared to general psychiatrists. Caucasian patients were significantly more likely to be diagnosed with antisocial personality disorder compared to African Caribbean patients. No bias was detected in the diagnosis of borderline personality disorder. Additionally, the ethnicity of the clinician impacted diagnosis patterns, with non-White psychiatrists diagnosing personality disorders more frequently overall. Female perpetrators were more likely to be judged legally insane compared to male perpetrators despite identical case information. Cultural gender stereotypes influenced clinicians and students, while judges showed an in-group bias, favoring defendants of their gender.	Adversarial allegiance
Hindsight Bias Among Psychiatrists; (LeBourgeois et al., 2007), U.S.A.	Original study	To investigate the impact of hindsight bias on psychiatrists' assessments of suicide or violence risk and their evaluations of adherence to care standards.	An experimental study involving 235 U.S. psychiatrists. Participants were divided into hindsight (informed of adverse outcomes) and control (uninformed) groups and assessed two hypothetical cases involving suicide or violence risk.	Clinical and Forensic		Hindsight
Cross-cultural clinical judgment bias in personality disorder diagnosis by forensic psychiatrists in the UK: a case-vignette study; (Mikton & Grounds, 2007), U.K.	Case-vignette	To investigate cross-cultural clinical judgment bias in diagnosing personality disorders by UK forensic psychiatrists, focusing on African Caribbean versus Caucasian patients.	Case-vignette study with 220 forensic psychiatrists. Two vignettes describing patients meeting DSM-IV criteria for borderline personality disorder and antisocial personality disorder were presented with ethnicities (African Caribbean vs. Caucasian) randomized.	Forensic		Cross-cultural
Evidence of gender bias in legal insanity evaluations: a case vignette study of clinicians, judges and students; (Yourstone et al., 2008), Sweden	Case-vignette	To investigate gender bias in legal insanity evaluations across three groups: forensic psychiatric clinicians, judges, and psychology students.	Case vignette study involving 171 participants. Each participant was presented with a hypothetical homicide case, where the perpetrator's gender was randomized and asked to evaluate legal insanity using standardized criteria.	Forensic		Gender
Are forensic experts biased by the side that retained them? (Murrie et al., 2013), U.S.A.	Original study	To investigate whether and how forensic experts are influenced by the side that retained them in adversarial legal proceedings, exploring the effect of adversarial allegiance.	One hundred eight forensic psychologists and psychiatrists were recruited, provided 2-day training on risk assessment tools (PCL-R and Static-99R), randomly assigned participants to believe they were working for either the defense or prosecution, had participants assess four sex offender cases using standardized tools, and compared risk scores across groups to identify adversarial allegiance effects.	Forensic	Prosecution-aligned experts assigned significantly higher risk scores than defense-aligned experts. Bias effects were stronger for subjective tools (PCL-R) compared to structured tools (Static-99R). Allegiance effects were not explained by preexisting differences in attitudes or experience.	Adversarial allegiance
The cognitive underpinnings of bias in forensic mental health evaluations; (Neal & Grisso, 2014), U.S.A.	Review	To conceptualize and elucidate the cognitive underpinnings of bias in forensic mental health assessments, integrating insights from psychological science to enhance the understanding and management of these biases.	The study utilizes a theoretical and conceptual literature review across cognitive, social, methodological, and clinical psychology. It incorporates empirical findings and theoretical frameworks to analyze the impact of biases	Forensic	Forensic mental health assessments are susceptible to cognitive biases, including representativeness bias, availability bias, confirmation bias, and anchoring bias. These biases can distort evaluators' judgments and undermine	Availability Confirmation Adversarial allegiance

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Table 3 (continued)

Title, Author(s), Year, Country	Study design	Aims	Methodology	Setting	Key findings	Investigated Bias(es)
Static-99R reporting practices in sexually violent predator cases: Does norm selection reflect adversarial allegiance? (Caroline et al., 2015), U.S.A.	Cross-sectional survey	To examine the reporting practices of Static-99R scores in Sexually Violent Predator (SVP) cases and explore whether these practices reflect adversarial allegiance.	on forensic evaluators' judgment and decision-making. One hundred nine forensic evaluators who conduct SVP evaluations were surveyed, collecting data on their use and interpretation of Static-99R scores. The survey addressed reporting practices, the selection of normative comparison groups, and the influence of adversarial roles (state, prosecution, defense). A single-blinded, randomized vignette-based experimental study. Participants included 26 forensic psychiatric professionals (psychiatrists, psychologists, and social workers) assessing six detailed fictional cases with gender randomized. The cases represented various diagnoses, such as schizophrenia, borderline personality disorder, and antisocial personality disorder.	Forensic	the accuracy of forensic conclusions. To mitigate these effects, it is recommended to use structured methodologies and evidence-based practices and cultivate an awareness of implicit biases. Reporting practices differed significantly based on adversarial roles. Prosecution evaluators reported practices suggesting higher risk, while defense evaluators favored practices suggesting lower risk. State agency evaluators' practices fell between the two but leaned closer to prosecution. No significant gender differences were observed in the judgments regarding severe mental disorders. However, a female offender with mental retardation was more likely to be assessed as having a high risk of criminal recidivism compared to her male counterpart. Additionally, the gender, profession, or experience of the forensic expert did not significantly influence these findings. Eighty-six percent of participants believed that cognitive bias is a concern in forensic sciences, and 79 % expressed this concern in specific forensic evaluations. However, only 52 % acknowledged that bias affects their own judgments. Evaluators who received bias training were more likely to recognize bias in their work compared to those who did not receive such training. Additionally, more experienced evaluators were less likely to admit to bias in their evaluations. This created a "bias blind spot," where evaluators were more apt to recognize bias in others than in themselves. Most psychologists were aware of common biases and differentiated them from false biases, yet many supported ineffective mitigation strategies like introspection.	Adversarial allegiance
The effect of gender on the outcome of forensic psychiatric assessment in Sweden: A case vignette study; (Sygel et al., 2017), Sweden	Case-vignette	To investigate whether gender influences forensic psychiatric assessments, specifically regarding judgments of severe mental disorders and risk of criminal recidivism.		Forensic		Gender
Cognitive bias in forensic mental health assessment: Evaluator beliefs about its nature and scope; (Zapf et al., 2018), U.S.A. & U.K.	Cross-sectional survey	To explore forensic mental health evaluators' awareness and beliefs about cognitive bias in their work compared to their peers and assess the impact of training and experience on bias recognition.	A survey of 1099 forensic mental health professionals was conducted. Questions addressed perceived levels of bias in one's work and that of peers, the influence of bias training, and professional experience.	Forensic		Blind-spot
Forensic Clinicians' Understanding of Bias; (MacLean et al., 2019), U.S.A.	Cross-sectional survey	To investigate forensic psychologists' familiarity with cognitive biases and strategies to mitigate bias.	A national survey was conducted involving 120 licensed forensic psychologists, utilizing a structured questionnaire to gather comprehensive data.	Forensic		Blind-spot
The factors associated with forensic psychiatrists' decisions in criminal responsibility and social dangerousness evaluation; (Mandarelli et al., 2019), Italy	Retrospective	To analyze the sociodemographic, psychopathological, and criminological factors that influence forensic psychiatrists' decisions about criminal responsibility and social dangerousness.	A comprehensive analysis was conducted on 302 forensic psychiatric reports from 16 psychiatrists across Northern, Central, and Southern Italy. The defendants' psychiatric symptoms were retrospectively evaluated using the Brief Psychiatric Rating Scale (BPRS), the	Criminal	Defendants deemed not criminally responsible showed more severe positive and negative psychiatric symptoms, as well as signs of manic excitement and disorganization, than criminally responsible defendants, at the time of evaluation. These individuals were more likely to be	Time

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Table 3 (continued)

Title, Author(s), Year, Country	Study design	Aims	Methodology	Setting	Key findings	Investigated Bias(es)
Factors related to bias in forensic psychiatric assessments in criminal matters: A systematic review; (Meyer & Valença, 2021), Brazil	Review	To identify and categorize factors contributing to bias in forensic psychiatric assessments in criminal cases to improve evaluation practices and standardization.	Systematic review conducted following PRISMA guidelines, analyzing 30 papers published between 1998 and 2019.	Criminal	<p>diagnosed with schizophrenia spectrum disorders or bipolar disorders, and they typically had a more extensive history of psychiatric treatment. Evaluations regarding social dangerousness were influenced by the presence of schizophrenia spectrum and personality disorders, along with additional factors such as prior criminal convictions and higher victim counts. Furthermore, the time interval between the crime and the evaluation raised concerns about time bias, as forensic assessments were influenced by the defendant's mental state at the time of evaluation rather than at the moment of the offense.</p> <p>Legal Factors: Disparities between legal and psychiatric terminologies lead to inconsistencies in evaluations. Legal elements, such as insufficient definitions of "capacity," contribute to disagreements among experts.</p> <p>Psychometric Instruments: Tools like checklists and structured vignettes were found useful for standardizing evaluations but also susceptible to interviewer bias.</p> <p>Forensic Techniques: Variability in examiner training, lack of standardization in report writing, countertransference, and overreliance on subjective impressions were identified as major sources of bias. Disagreement among examiners (inter-rater reliability) was a persistent challenge.</p> <p>Practitioners demonstrate a strong commitment to using Structured Risk Assessment Instruments, which many view as effective tools for enhancing objectivity in risk evaluations. Although they recognize the presence of cognitive biases, their levels of concern regarding the impact of these biases vary. No significant bias blind spot was observed; respondents displayed comparable levels of concern about biases in their own assessments as well as in those of others. Effective strategies for mitigating bias included structured evaluation methods and peer consultations, while</p>	Confirmation Countertransference
Forensic Mental Health Practitioners' Use of Structured Risk Assessment Instruments, Views about Bias in Risk Evaluations, and Strategies to Counteract It; (Kamorowski et al., 2022), Netherlands	Cross-sectional survey	To investigate the use of Structured Risk Assessment Instruments (SRAIs), forensic mental health practitioners' awareness of cognitive biases in risk evaluations, and the perceived effectiveness of strategies designed to mitigate bias.	One hundred and ten forensic mental health practitioners in the Netherlands were surveyed. Data were collected on SRAI usage, views on cognitive biases, and effectiveness of debiasing strategies using structured questionnaires. The analysis included a quantitative examination of participants' experiences, education, and viewpoints.	Forensic	<p>diagnosed with schizophrenia spectrum disorders or bipolar disorders, and they typically had a more extensive history of psychiatric treatment. Evaluations regarding social dangerousness were influenced by the presence of schizophrenia spectrum and personality disorders, along with additional factors such as prior criminal convictions and higher victim counts. Furthermore, the time interval between the crime and the evaluation raised concerns about time bias, as forensic assessments were influenced by the defendant's mental state at the time of evaluation rather than at the moment of the offense.</p> <p>Legal Factors: Disparities between legal and psychiatric terminologies lead to inconsistencies in evaluations. Legal elements, such as insufficient definitions of "capacity," contribute to disagreements among experts.</p> <p>Psychometric Instruments: Tools like checklists and structured vignettes were found useful for standardizing evaluations but also susceptible to interviewer bias.</p> <p>Forensic Techniques: Variability in examiner training, lack of standardization in report writing, countertransference, and overreliance on subjective impressions were identified as major sources of bias. Disagreement among examiners (inter-rater reliability) was a persistent challenge.</p> <p>Practitioners demonstrate a strong commitment to using Structured Risk Assessment Instruments, which many view as effective tools for enhancing objectivity in risk evaluations. Although they recognize the presence of cognitive biases, their levels of concern regarding the impact of these biases vary. No significant bias blind spot was observed; respondents displayed comparable levels of concern about biases in their own assessments as well as in those of others. Effective strategies for mitigating bias included structured evaluation methods and peer consultations, while</p>	Blind spot

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Table 3 (continued)

Title, Author(s), Year, Country	Study design	Aims	Methodology	Setting	Key findings	Investigated Bias(es)
Gender differences vs gender bias in forensic psychiatric assessment of non-psychotic mentally disturbed violent defendants in Denmark; (Schioth et al., 2022), Denmark	Retrospective	To investigate the role of gender differences and gender bias in forensic psychiatric assessments of violent non-psychotic defendants in Denmark.	A retrospective register-based study analyzing data from 678 defendants assessed at the Clinic of Forensic Psychiatry in Copenhagen (2007–2016)	Forensic	introspection was found to be ineffective in addressing bias. Female offenders were 2.5 times more likely to be recommended for treatment compared to male offenders, especially for less serious crimes. There were no significant interactions between the gender of the psychiatrist and the treatment recommendations. Diagnoses of emotionally unstable personality disorder were more prevalent among females, while dissocial personality disorder was more common in males. These differences in diagnoses may influence perceptions of the feasibility of treatment. Female Offenders: Women who commit violent acts often encounter stereotypes that portray them as mentally ill or coerced, which can lead to different forensic and clinical outcomes compared to men.	Gender
Just Like a Woman: Gender Role Stereotypes in Forensic Psychiatry, (Ali & Adsheed, 2022); U.K.	Review	To explore the impact of gender role stereotypes on forensic psychiatric practices, including the assessment of female violent offenders, patients in secure psychiatric care, and female professionals in forensic settings.	A conceptual review exploring the impact of gender role stereotypes on violence formulation, diagnosis, risk assessment, and treatment in forensic psychiatry. Analyzed historical, sociocultural, and legal influences on the perception of gender and its impact on professional practice and outcomes.	Forensic	Diagnosis: Gender plays a role in diagnostic trends, such as the underdiagnosis of antisocial personality disorder in women. Risk Assessment: Many risk assessment tools are validated primarily on male populations, which means they may not adequately address the relational violence that is more common among women. Forensic psychiatric investigations are inherently flexible and iterative, designed to align with the unique specifics of each case. While they support individualized assessments, they also heighten the risk of biases, such as anchoring and confirmation bias.	Gender
The decision-making process in Swedish forensic psychiatric investigations; (Svensson et al., 2022), Sweden	Original study	To investigate the decision-making processes within forensic psychiatric investigations in Sweden, including how experts process information, utilize resources, and manage constraints. Identify strengths and potential biases in these processes.	Semi-structured interviews were conducted with 38 professionals, including forensic psychiatrists, psychologists, and social workers from the Swedish Department of Forensic Psychiatry. Thematic analysis was utilized to examine decision-making practices, particularly emphasizing essential elements of assessments, the collaborative role of teamwork, and systemic factors.	Forensic	Collaborating in teams can enhance information sharing but may also unintentionally strengthen biases due to group dynamics. Moreover, time constraints and high cognitive demands can detrimentally impact the quality of decision-making, often leaving experts feeling pressured. The dependence on guidelines and professional traditions introduces variability in decision-making processes, which are further shaped by individual preferences and areas of expertise.	Confirmation Hindsight Ingroup
A general model of cognitive bias in human judgment and systematic review	Review	To develop a descriptive model of how cognitive biases influence human judgment in forensic mental	A systematic review of 23 empirical studies published between 2000 and 2020. Studies were identified	Civil and Criminal	Identified Biases: The most frequently studied bias was adversarial allegiance, followed by the bias blind	Adversarial Allegiance Confirmation Hindsight

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Table 3 (continued)

Title, Author(s), Year, Country	Study design	Aims	Methodology	Setting	Key findings	Investigated Bias(es)
specific to forensic mental health; (Neal et al., 2022), U.S.A.		health and to systematically review empirical research on cognitive biases and debiasing strategies in this field.	through searches in PsycINFO, Google Scholar, and reference lists. Data were extracted on study design, participants, types of biases, and outcomes.		spot, hindsight bias, and confirmation bias. Effects of Bias: Out of the 17 studies examining these biases, 10 (58.8 %) found significant effects, and 4 (23.5 %) reported partial effects. Debiasing Strategies: Few studies focused on debiasing, but one effective strategy was “consider the opposite.” In contrast, introspection was found to be ineffective. Limitations: Most studies were cross-sectional, and there was a lack of longitudinal evidence to demonstrate the sustainability of debiasing interventions. Cultural and gender biases play a significant role in shaping forensic evaluations, ultimately contributing to disparities in legal outcomes. The overrepresentation of minority individuals within forensic populations is intensified by systemic racism and cultural misunderstandings. Gender stereotypes, which often portray women as victims rather than aggressors, distort risk assessments and influence legal determinations. Misguided concepts of beneficence, such as “chivalry justice,” can lead to unequal treatment and compromise objectivity. Unprocessed emotions, such as vicarious trauma and countertransference, can significantly influence the opinions of forensic mental health evaluators. These emotional responses can affect interviews, the formulation of findings, and the dynamics of adversarial situations. Evaluators’ emotional reactions may arise from their personal histories, past trauma, or interactions with the individuals being evaluated and their attorneys. To improve the reliability and fairness of forensic assessments, it is essential to manage these emotional biases through self-awareness, supervision, and psychotherapy. Training programs should focus on developing emotional reflexivity in FMHEs and adequately prepare them for the emotional challenges associated with forensic work.	Race Gender Blind spot
Searching for the Whole Truth: Considering Culture and Gender in Forensic Psychiatric Practice; (Friedman, 2023), U.S.A.	Review	To explore the intersection of culture and gender in forensic psychiatry, addressing biases that affect evaluations, diagnoses, and risk assessments, and propose methods to improve objectivity and fairness in the field.	Conceptual review synthesizing historical and contemporary issues in forensic psychiatry. The article draws on empirical research, legal cases, and cultural frameworks to analyze systemic biases and propose ethical and practical solutions.	Forensic		Racial Cultural Gender
Forensic Mental Health Evaluators’ Unprocessed Emotions as an Often-Overlooked Form of Bias; (Goldenson & Gutheil, 2023), U.S.A.	Review	To examine how forensic mental health evaluators’ (FMHEs) unacknowledged and unprocessed emotions, including countertransference, influence forensic evaluations and recommendations. Propose strategies for managing emotional biases to enhance objectivity.	An analysis of psychodynamic literature alongside forensic mental health practices, examining the effects of transference, countertransference, and vicarious trauma on experts’ decision-making processes in forensic mental health settings.	Forensic		Emotional biases (including countertransference)
Influencing factors for assessment of	Retrospective	To analyze factors influencing forensic	A retrospective analysis was performed on 437 forensic	Criminal	Demographic Factors: Most cases involved young, male,	Diagnostic Contextual

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Table 3 (continued)

Title, Author(s), Year, Country	Study design	Aims	Methodology	Setting	Key findings	Investigated Bias(es)
criminal responsibility in patients with mental disorders: A forensic case analysis between 2010 and 2020; (Sun & Wang, 2023), China		assessments of criminal responsibility in patients with mental disorders to provide recommendations for improving accuracy and objectivity.	psychiatric assessments conducted between 2010 and 2020 at the East China University of Political Science and Law. The cases were classified based on legal accountability into three categories: criminal irresponsibility (CIR), diminished capacity (DCR), and full responsibility (FCR). The analysis incorporated various variables, including demographic profiles, clinical presentations, criminological factors, and specific forensic characteristics.		and unemployed defendants. Psychiatric Diagnoses: Schizophrenia was the most common diagnosis among cases classified as CIR. Crime Location: Crimes in public places or residences influenced judgments of responsibility. Forensic Diagnoses: Patients with personality disorders and anxiety disorders were more likely to retain responsibility compared to those with intellectual disabilities. Crime Type: Theft and public safety offenses often influenced diminished or full responsibility assessments. Gender Bias: Gender stereotypes influenced FPIs, with women often described in ways emphasizing emotional instability and hysterical traits, while men were evaluated for a lack of masculinity or virility. Moral Judgments: Historical FPIs included explicit moralizing comments tied to gender roles and social norms, which shaped diagnoses and conclusions. Methodological Differences: Modern FPIs focus more on standardized assessments and empirically founded conclusions, reducing individual evaluators' subjective influence. Change Over Time: Contemporary FPIs have moved away from personal narratives and moral judgments, emphasizing team-based assessments and evidence-based practices.	Demographic Procedural Forensic Context
Possibly mad? Marital murder in the early twentieth century: a matched-case gender analysis of forensic psychiatric investigations in Sweden; (Karlén & Nilsson, 2023), Sweden	Retrospective	To examine the impact of time-specific scientific theories, moral norms, and gender stereotypes on forensic psychiatric investigations (FPIs) in Sweden during the 1930s. Compare historical practices with contemporary ones to identify biases and their evolution.	A comparative analysis of two matched cases from the 1930s involving a male and a female perpetrator who murdered their respective spouses. Forensic psychological assessments (FPIs) were analyzed to evaluate assessment procedures, focus areas, and potential biases from a gender perspective. Furthermore, contemporary practices from the 2020s were compared to historical methods to identify both consistencies and shifts in approaches.	Criminal	Modern FPIs focus more on standardized assessments and empirically founded conclusions, reducing individual evaluators' subjective influence. Change Over Time: Contemporary FPIs have moved away from personal narratives and moral judgments, emphasizing team-based assessments and evidence-based practices. A significant hindsight bias was observed in novices, but not in experts. A cognitive debiasing intervention, known as "consider-the-opposite," effectively reduced hindsight bias in novices. Experts showed greater resilience to hindsight bias, likely due to their professional training and consistent exposure to feedback in forensic contexts. Additionally, experts were significantly more aware of cognitive biases in forensic settings compared to novices.	Gender
Hindsight Bias in Forensic Mental Health Novices and Experts: An Exploratory Study; (Weber et al., 2024), Switzerland	Case-vignette	To examine hindsight bias in novices and experts in forensic mental health and assess the effectiveness of a cognitive debiasing strategy.	A quantitative experimental study using a forensic case vignette about a young offender. Participants were randomly assigned to baseline, biased, or debiased conditions and rated the risk of reoffending. The study involved 52 novices (psychology undergraduates) and 49 experts (licensed forensic mental health professionals).	Criminal	Experts developed several diagnostic hypotheses and adjusted them as new information became available. There was no strong evidence of confirmation bias; instead, the experts demonstrated flexibility in updating their hypotheses. Over time,	Hindsight
Experts' decision-making processes in Swedish forensic psychiatric investigations: A case vignette study; (Svensson et al., 2024), Sweden	Case-vignette	To investigate how Swedish forensic psychiatric experts formulate and revise diagnostic hypotheses and opinions regarding severe mental disorders (SMD) during the decision-making process and assess potential biases and variability in their decisions.	A case vignette study was conducted involving 27 forensic experts from Sweden, including psychiatrists, psychologists, and social workers, to simulate a forensic psychiatric investigation (FPI). The participants were presented with staged	Criminal		Confirmation

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Table 3 (continued)

Title, Author(s), Year, Country	Study design	Aims	Methodology	Setting	Key findings	Investigated Bias(es)
			information at four distinct decision points. Throughout the study, they were tasked with formulating hypotheses, evaluating their opinions regarding SMD, and rating their certainty concerning their assessments.		confidence in their opinions about SMD increased, even though ambiguity around the cases remained. Notably, experts' opinions on SMD diverged greatly, especially at the final decision point, highlighting difficulties in achieving inter-expert reliability.	
Forensic Assessments of Racial-Ethnic Differences in Genuine and Malingered Psychotic Presentations (Rogers et al., 2024); U.S.A.	Review	To investigate the impact of racial and ethnic identities on forensic assessments, specifically focusing on the differentiation between genuine and malingered psychotic presentations.	Conceptual review synthesizing existing literature on racial-ethnic differences in psychosis, the role of cultural factors in forensic evaluations, and systemic biases in the assessment of malingering and psychotic disorders.	Forensic	Cultural differences in the expression of psychotic symptoms are frequently misinterpreted as malingering among non-White individuals. African Americans and Latinx individuals are often judged as feigning psychosis due to cultural stereotypes and linguistic bias. Additionally, variations within these cultural groups are commonly overlooked, resulting in homogenized and inaccurate assessments of minority populations.	Cultural/Race

bias among forensic psychiatrists (Commons et al., 2004; Zapf et al., 2018), with more experienced practitioners showing greater difficulty in recognizing their own biases (MacLean et al., 2019).

An intriguing cognitive bias affecting forensic psychiatric practice, highlighted in an Italian study, involves the tendency to align forensic evaluations with the patient's current clinical condition, even in cases where assessments should focus on the individual's mental state at the time of the offense (Mandarelli et al., 2019). This bias, often termed "time bias," suggests that forensic psychiatrists may unconsciously allow the current condition of the patient to influence judgments about their past mental state unduly (Mandarelli et al., 2019). Such a tendency risks undermining the retrospective nature of forensic evaluations, designed to establish criminal responsibility and dangerousness as they were at the time of the offense, not as they appear in the present.

Additionally, as explored by two included studies, emotional bias may further compound these distortions. Personal experiences, such as unresolved trauma or strong emotional reactions, can subtly infiltrate forensic evaluations (Goldenson & Gutheil, 2023). These emotional biases manifest through heightened empathy, over-identification with certain individuals, or unconscious aversion to specific cases, further threatening the objectivity required in evaluations of past mental states and assessments of social dangerousness (Goldenson & Gutheil, 2023; Meyer & Valença, 2021). Despite the increasing recognition of emotional biases in forensic practice, no included studies have investigated their potential impact on victim assessments, highlighting a crucial area for further investigation.

Given the pervasive influence of cognitive and emotional biases in forensic evaluations, developing and implementing debiasing strategies have emerged as a critical area of focus. Promising approaches, such as "considering the opposite," encourage evaluators to challenge their initial assumptions actively, fostering more balanced and objective assessments (Neal et al., 2022; Weber et al., 2024). Additionally, structured, evidence-based methodologies with some limitations have effectively mitigated bias by standardizing evaluation processes (Kamorowski et al., 2022; Neal & Grisso, 2014). However, introspection, often suggested as a self-regulatory mechanism, has proven largely ineffective, underscoring the need for more robust interventions (Kamorowski et al., 2022; MacLean et al., 2019).

Emerging technologies offer intriguing prospects for advancing debiasing strategies. Artificial intelligence systems, including large language models (LLMs) like ChatGPT, are being explored for their applications in healthcare and forensic settings. While these technologies show promise, they also carry inherent risks, such as perpetuating racial and gender biases embedded in training data (Zack et al., 2023). Rigorous validation and ethical safeguards will be essential before integrating these tools into forensic practice, ensuring that technological advancements enhance rather than compromise evaluative accuracy and fairness.

5. Limitations

We encountered some limitations in our study. First, we conducted searches only in the Romanian alphabet and excluded grey literature to keep the process manageable. Second, we did not conduct supplementary searches, such as citation tracking, which may have caused us to overlook valuable insights, particularly theoretical perspectives in book chapters. Third, as this was a scoping review, we did not evaluate the quality of the included studies. Therefore, our scoping review should be considered illustrative rather than definitive.

6. Conclusion

This scoping review emphasizes the emerging and unfinished nature of research on biases in forensic psychiatry, as only ten specific biases have been identified and examined so far. The limited research to date underscores a significant gap in understanding how cognitive, emotional, and systemic biases impact critical evaluative stages in forensic psychiatric evaluations, particularly in specific forensic contexts that are underrepresented in the present study, such as civil cases or absent, such as those involving victims. Given the profound consequences of these evaluations on individuals and society, it is essential to prioritize rigorous empirical studies that explore the prevalence, mechanisms, and mitigation of these biases. Transparency in evaluation procedures, semi-structured interviews, and the integration of evidence-based methodologies represent immediate steps toward addressing these challenges. Promising debiasing strategies, such as "considering

the opposite,” encourage evaluators to actively challenge their initial assumptions by seeking evidence that disproves their hypotheses rather than confirming them. At the same time, emerging technologies such as large language models (LLMs) and advanced neurotechnological tools offer innovative opportunities but must be cautiously approached, as their inherent biases could undermine fairness if not rigorously validated. Developing tailored debiasing strategies and deepening our understanding of how biases influence judgments hold great promise for improving the quality and reliability of forensic psychiatric decisions.

CRedit authorship contribution statement

L. Buongiorno: Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **F. Mele:** Writing – original draft, Investigation. **G. Petroni:** Writing – review & editing. **A. Margari:** Writing – review & editing. **F. Carabellese:** Supervision. **R. Catanesi:** Supervision, Conceptualization. **G. Mandarelli:** Writing – review & editing, Methodology, Data curation, Conceptualization.

Declaration of competing interest

No financial support was provided to the authors for the research, authorship, or publication of this article.

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