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Arnett, C., Neal, T.M.S., & Irvin-Vitela, M. (in press). The legal intersection of psychosis and substance use: A mixed-methods investigation of settled insanity. *Law and Human Behavior.*

Preprint: https://osf.io/v6kjb/
https://osf.io/preprints/psyarxiv/5qd8f_v5

The Legal Intersection of Psychosis and Substance Use:

A Mixed-Methods Investigation of Settled Insanity

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The data reported herein were collected as part of the first author's doctoral dissertation (available on ProQuest). The preregistration, materials, data, and code are available on the Open Science Framework (https://osf.io/v6kjb/). The case law review advice and case history coding were significantly aided by Pamela N. Sandberg, J.D., M.S.: thank you, Nicky! We thank graduate supervisory committee members Drs. William Corbin, Karey O'Hara, and Jinni Su for their guidance and encouragement throughout this project. And we are grateful to the many members of the Clinical and Legal Judgment Lab who, over time, helped create and update the participant database used in Study 2. Results from this project were presented at the 2025 annual conference of the American Psychology-Law Society in San Juan, Puerto Rico. We have no known conflicts of interest to disclose.

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Abstract

Substance use and psychosis frequently co-occur and are complexly interrelated. Nevertheless, the legal system sometimes requires conclusions regarding the causal effects of substance use on psychosis (e.g., to determine insanity defense eligibility — including "settled" insanity from chronic substance use). **Objectives**: We sought to understand how courts and mental health professionals conceptualize and resolve settled insanity claims. **Hypotheses**: Study 1 had no *a priori* hypotheses. Study 2 hypothesized a successful insanity defense would be seen as most possible for defendant when no substance use was implicated and least possible for defendants acutely intoxicated at the time of crime, with settled insanity falling between. **Method**: We conducted a case law review (Study 1: N=51 settled insanity cases), coding history and outcomes, substances involved, viability from a clinical science perspective, and qualitative reasons for case outcomes. And we conducted an experiment to evaluate the perspectives of mental health experts on the legal intersection of substance use and mental illness across three types of cases (Study 2: N=310 U.S. licensed psychologists, 52% female, M_{age}=37.66, $M_{experience}$=18.71 years). **Results**: In Study 1, 29.41% of the settled insanity cases were potentially viable on clinical science grounds, whereas only a single legal case (1.96%) was actually successful. Qualitative analyses showed courts often disallow settled insanity based on the very characteristics that define it. Study 2 found mental health experts evaluate evidence of permanent mental illness similarly, regardless of whether a legal defense of insanity is general or settled in nature. And they largely opine defendants who are actively and voluntarily intoxicated at the time of the crime are *not* legally insane, consistent with the law. **Conclusions**: The legal doctrine of settled insanity does not map well onto clinical reality and complicates the

intersection of intoxication and mental illness by prompting insoluble questions about the etiology of mental illness.

Keywords: insanity, substance use, intoxication, psychosis, forensic, etiology

Public Significance Statement: Courts could abandon attempts to answer inscrutable questions about the cause of mental illness (i.e., the *settled* insanity doctrine). Rather, consistent with the traditional insanity doctrine, they could consider evidence of a permanent mental disease or defect and its impact on a defendant's mental state — regardless of the cause of the illness. Eligibility for an insanity defense can continue to hinge on whether the defendant was acutely, voluntarily intoxicated at the time of the crime.

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Christopher Brennauer, a man diagnosed with several psychotic, mood, and substance-use disorders throughout his life, had regular interaction with both the mental health and legal systems. In 2018, he threatened self-harm while expressing psychotic symptoms after having been administered his antipsychotic medication several weeks late. His girlfriend, with whom he lived, called 911. Upon police arrival, Brennauer resisted cooperation and brandished a knife, resulting in a struggle during which both he and an officer were seriously wounded.

During the trial, which took place in Nebraska, Brennauer raised a defense of not responsible by reason of insanity. Mental health experts agreed that Brennauer had psychotic and substance use disorders and was actively psychotic at the time of the crime. Evidence suggested he had consumed two shots of alcohol sometime before the police arrived and had used a quarter gram of methamphetamine approximately two days before the offense. Ultimately, he was found guilty of four felony charges (possession of a deadly weapon by a prohibited person, second degree assault on an officer, first degree attempted assault on an officer, use of a deadly weapon to commit a felony) because substance use could not be ruled out as the cause of his insanity.

On appeal, the court determined the jury was not adequately instructed on “settled insanity,” which distinguishes temporary from fixed conditions caused by intoxication, and refers to the phenomenon in which individuals engaged in chronic substance use can develop persistent psychosis in the absence of acute intoxication (Mathias et al., 2008; Murrie et al., 2020; Starzer et al., 2018). The appellate argument was that this omission led the jury to believe

that Brennauer's prior drug use automatically excluded a finding of insanity. The court concluded the error was not harmless and reversed for retrial. It is still ongoing (*State v. Brennauer*, 2023).

Brennauer's case, and many others, highlight the complex intersection of substance use and psychosis from both a legal and psychological perspective. In a set of two complementary studies relying on different methods, we answer key questions about how courts define settled insanity, the process by which courts analyze and resolve cases involving these issues, and how mental health experts approach the legal intersection of substance use and mental illness.

Psychosis: A Primer

Psychosis is a mental health condition characterized by a disconnect from reality, marked by distorted thoughts, perceptions, and behaviors. Psychotic symptoms can include hallucinations (e.g., hearing or seeing things that are not there); delusions (i.e., false beliefs that persist despite evidence to the contrary); disorganized thinking, speech, and behavior (e.g., incoherent syntax or abnormal movements); and social deficits (e.g., impaired problem-solving and interpersonal struggles). Psychosis typically begins by early adulthood (APA, 2022). Risk factors for psychosis include genetic liability, low socioeconomic status, adverse childhood events, social competence, and prenatal complications (McDonald & Murray, 2000; Stilo & Murray, 2019). Treatment typically involves a combination of antipsychotic medications, psychotherapy, and support services aimed at managing symptoms and improving quality of life.

Substance Use

Substance use refers to the consumption of psychoactive substances, including alcohol, drugs, and medications, for their mind-altering effects. Notably, substances commonly perceived as innocuous can have adverse effects under certain circumstances (e.g., Chaplin, 1991; Muench

& Hamer, 2010), and individual differences in genetic, metabolic, environmental, and psychological factors impact how a substance is processed (e.g., Bardo et al., 2013). While some substances are used recreationally or medicinally, excessive or prolonged use can lead to substance abuse or addiction, characterized by a loss of control over consumption despite negative physical, psychological, and social consequences (APA, 2022; NCHS, 2023).

Factors contributing to substance use disorders include genetic predisposition, environmental influences, and co-occurring mental health conditions (Silberg et al., 2003). A recent survey by the Substance Abuse and Mental Health Service Administration found that nearly half of Americans aged 12 or older drank alcohol (48.7%) and 8.3% used an illicit drug in the past month (SAMHSA, 2023). Further, 24.9% used illicit drugs within the past year. Of note, approximately 48.7 million people (17.3%) met criteria for a substance use disorder.

Psychosis and Substance Use as Co-Occurring Phenomenon

Psychosis and substance use highly co-occur. In fact, roughly one in two people with psychosis have comorbid substance use (Hunt et al., 2018). Though psychosis can develop independently of substance use, it is at least as common for substance use to be implicated in psychosis development (Hunt et al., 2018; Stinson et al., 2006). People who engage in illicit substance use experience significantly more psychotic symptoms than those who do not (Lechner et al., 2013; Smith et al., 2009), and substance use, particularly early in the course of psychotic illness, leads to increased hallucinations, paranoia, violence, and worse prognosis (Bourget, 2013). In addition to the increased acuity of psychotic symptoms, engagement in substance use also decreases the age of psychosis onset (Addington & Addington, 2007; De Hert et al., 2011).

Some substances can induce psychotic symptoms, such as hallucinations, delusions, paranoia, and/or grossly disorganized speech and behavior. These substances are referred to as psychotomimetic drugs, as they "mimic" a psychotic state (Bell, 1965; Cole & Katz, 1964). For example, lysergic acid diethylamide (LSD), psilocybin ("mushrooms" or "shrooms"), and mescaline (the active ingredient in peyote) can all be psychotomimetic (Cole & Katz, 1964; Hofmann, 1959). When someone ingests a psychotomimetic substance, they typically experience relatively innocuous intoxication effects (e.g., sleepiness, euphoria, relaxation, disinhibition), which wear off once the substance has been metabolized (e.g., Gonzalez, 2007; Schmid et al., 2015). Though there are instances in which unanticipated intoxication effects can occur (e.g., sensory disturbances, hallucinations, delusions, depersonalization, paranoia, disorientation), these symptoms usually subside once the substance has been metabolized (APA, 2022). But some substances can induce symptoms for months after ingestion before completely resolving, such as phencyclidine (PCP; Fauman & Fauman, 1978). PCP is stored in body fat and can be reactivated, causing "flashbacks" that may persist despite discontinued use (Fauman & Fauman, 1978; *McNeil v. US*, 2007; *People v. Conrad*, 1986; *State v. Johnson*, 2002).

There are other instances in which psychotic symptoms may not only be unanticipated, but may also persist beyond what would be expected as a result of acute intoxication (Carroll et al., 2008; D'Souza et al., 2004; Mathias et al., 2008). For example, some substances can induce symptoms that last days or weeks. This reaction is considered "disordered," as most substances are metabolized within a few hours or days after ingestion/injection (APA, 2022). It is also possible for prolonged intoxication effects to manifest in the form of an independent mental illness that develops as a result of chronic substance use and persists even in its absence. As a

result, it can be extremely difficult to determine the etiology of psychotic symptoms and establish whether they are a result of acute intoxication, an independent psychotic/mental disorder, prolonged intoxication effects, or some combination of the three (Appelbaum, 2022; Bourget, 2013; Feix & Wolber, 2007).

Causality

The specific mechanisms of the association between psychosis and substance use are intensely debated. Because substance use typically begins in adolescence and psychosis usually develops in the mid-to-late twenties, the natural course of development favors the idea that when an individual is experiencing both psychosis and substance use, substance use precedes — and may even cause — the onset of psychosis. It is, of course, also possible for individuals to develop psychosis prior to substance use and/or concurrently with substance use.

Psychotomimetic drugs, particularly if used chronically or in high doses, can induce psychotic symptoms that last well beyond expected intoxication periods and may even become permanent (Arseneault et al., 2002; Murrie et al., 2020). But psychosis is also a risk factor for substance use (Bourque et al., 2018; Ferdinand et al., 2005). Some research even suggests that psychosis plays a *causal* role in the formation of substance use, whether due to genetics or as a part of a diathesis-stress model, whereby psychosis acts as the precipitating trigger of substance use (e.g., Gage et al., 2017; Johnson et al., 2021; Ferdinand et al., 2005). Moreover, there is the possibility that the two phenomena co-occur due to common factors (trauma, genetic liability, etc.), or that they are bidirectional in nature (Ferdinand et al., 2005; McGrath et al., 2016).

First episode psychosis is often diagnosed as Substance/Medication-Induced Psychotic Disorder (SMIPD; also referred to as substance-induced psychosis); between 7% and 25% of

people presenting with first episode psychosis are diagnosed as having SMIPD (APA, 2022). SMIPD can also occur in the absence of an acute intoxication event (*Fields v. State*, 2022). However, "even a prior history of primary psychotic disorder does not rule out the possibility of a substance-induced psychotic disorder" (APA, 2022). Consequently, it can be extremely difficult to distinguish between an independent psychotic disorder and SMIPD (Bourget, 2013).

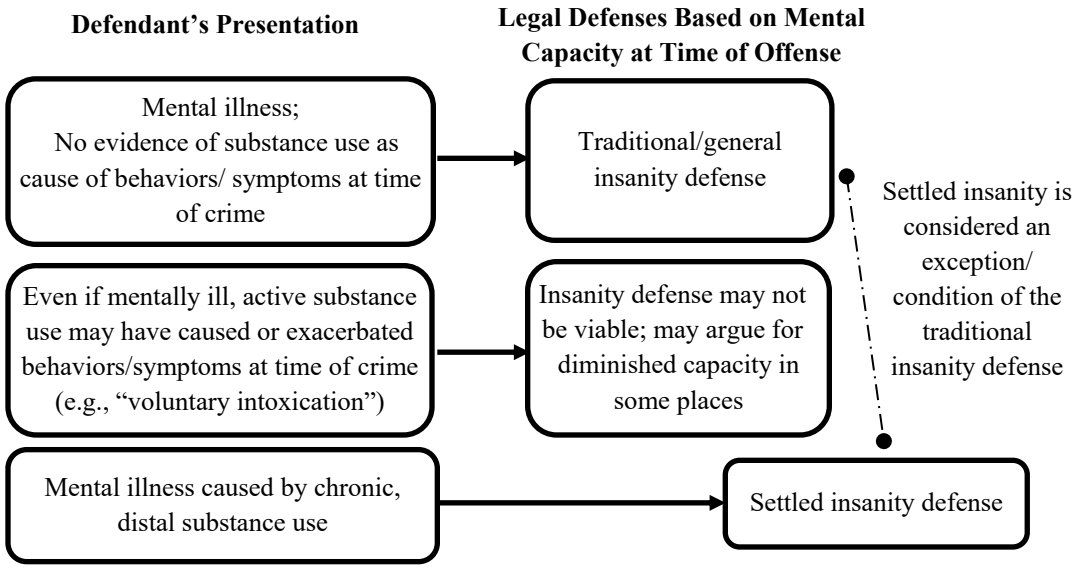
SMIPD can be easily misdiagnosed or missed altogether (Szuster et al., 1990), and when it is diagnosed, it is unstable: estimates show that transition rates from SMIPD to schizophrenia are as high as 44%-66% (Arendt et al., 2005; Addington et al., 2006). Clinicians are often cautious, offering provisional diagnoses and multiple hypotheses to explain differing presentations and manifestations of symptoms. Further, clinical science recognizes that both phenomena wax and wane throughout their illness course and the complexity of human nature suggests many permutations in which these two phenomena can occur across the lifespan. As such, diagnoses can and often do change, and one clinician's diagnosis and interpretation of a given individual at a specific point in time does not always mirror another's.

In clinical practice, discrete categorization and causation of these phenomena is somewhat irrelevant, as the course of treatment is generally the same: stabilize the patient and encourage continued monitoring and/or treatment for their psychosis. And clinical scientists are not yet able to definitively say that one of the phenomena causes the other (e.g., Masroor et al., 2021). As a result, many researchers have concluded that harm reduction and prevention models, as well as unified and bidirectional hypotheses, are paramount (though efforts to better understand causality are ongoing; Khokhar et al., 2018; Volkow et al., 2016).

Legal Approaches to Cases Involving Mental Illness and/or Substance Use

The law relies on categorization and assumptions of causation, and there are distinct legal pipelines for different types of cases involving mental illness and/or substance use. For example, a defendant with a mental disease or defect may pursue an insanity defense in jurisdictions that recognize it. But, a defendant voluntarily intoxicated during a crime is generally precluded from the insanity defense (although a diminished capacity claim may be possible). A defendant who develops a settled mental illness as a result of remote substance use may claim "settled insanity," which serves as an exception to the voluntary intoxication rule. This third pipeline is related to the first; however, it is distinct from the second in that the defendant may have to prove that they were not acutely and voluntarily intoxicated at the time of the crime (see Figure 1).

Figure 1. *Three Legal Pipelines Related to Mental Illness and Substance Use*



The Insanity Defense and Diminished Capacity

In many jurisdictions, a person can only be convicted of a crime if the government can prove the defendant committed the criminal act and also that it was done intention, or with a "guilty mind" (Melton et al., 2017). When there is a question of a defendant's mental state at the

time of a crime, such that criminal intent may be difficult to prove, a defendant may claim insanity (a complete defense) or diminished capacity (a partial defense). The insanity defense has existed in some form for millennia (i.e., evolving from Roman jurisprudence and Christian ethics) and across Anglo-American jurisdictions for hundreds of years (Melton et al., 2017); though it continues to evolve (e.g., Insanity Defense Reform Act, 1984).

In the U.S., the logistics of the insanity defense vary greatly depending on jurisdiction (Melton et al., 2017). Generally, in those jurisdictions that recognize the defense, the defendant must have a "defect" or "disease" of the mind that renders them incapable of understanding their actions at the time of the crime. Notably, "defect or disease of the mind" is a legal concept — not a clinical one. The determination of whether a defendant has a mental defect or disease is a decision for the trier of fact (i.e., judge or jury). Furthermore, "insanity" is not a medical diagnosis. However, expert testimony from a clinician can often be helpful to the trier of fact in better understanding the defendant's mental state (Carroll et al., 2008; Feix & Wolber, 2007). In fact, clinical diagnosis (of psychotic disorders in particular) is an important factor for successful insanity defenses (McDermott et al., 2008).

A separate but related concept is diminished capacity, which is a partial defense based on the idea that defendants with mental impairments lack the required mental state to commit a crime and should therefore not be held fully criminally culpable, even if they were not "insane" (Arenella, 1977). As of 2024, approximately twenty U.S. states have provisions related to diminished capacity or negation of *mens rea* in their state law, although only three of those states (Iowa, New Mexico, and Oregon) recognize a traditional diminished capacity defense (Iowa Code § 701.4, 1978; New Mexico Code § 30.6.1, 1978; Oregon Criminal Code § 161.295, 1971).

Voluntary Intoxication

Voluntary intoxication — the knowing ingestion/ injection of a substance that brings on an intoxication effect — may mitigate the crime charged but is not permitted as a complete defense to criminal responsibility. As such, it cannot be used as the sole basis of an insanity defense. There is wide variability between jurisdictions in regard to a) how voluntary and involuntary intoxication are defined (if they are defined at all), and b) whether it is permitted as a diminished capacity defense for specific intent crimes (MacIntyre et al., 2021).

The mechanics of the insanity defense become more convoluted once voluntary intoxication is involved. The law often assumes a person has a "true" mental illness or their symptoms/disease were caused by voluntary intoxication (e.g., *Bloomfield v. State* 2016; Cal Pen Code § 25.5, 1994). But voluntary intoxication and mental illness are not mutually exclusive (Hunt et al., 2018). Furthermore, ample research demonstrates that substance-induced psychotic symptoms are indistinguishable from primary psychosis (e.g., Catts & Catts, 2010; Hofmann, 1959; Mathias et al., 2008). Nevertheless, voluntary intoxication is often excluded as a qualifying condition for an insanity defense — even if that intoxication induces unanticipated effects (Appelbaum, 2022; Bourget, 2013; Feix & Wolber, 2007; MacIntyre et al., 2021).

Settled Insanity

A relatively obscure exception to the voluntary intoxication rule, settled insanity, refers to the idea that an enduring or "settled" mental condition may result from chronic, voluntary substance use (Appelbaum, 2022; Feix & Wolber 2007; *Haile v. State*, 1850). The foundation of settled insanity is supported by clinical science: people engaging in chronic substance use,

particularly those using hallucinogenic substances, can develop psychosis that persists in the absence of acute intoxication (Mathias et al., 2008; Murrie et al., 2020; Starzer et al., 2018).

As of this writing, 29 states and the District of Columbia allow for settled insanity as the basis for a defense, although California has since limited it (Cal. Penal Code § 25, 2024). Colorado specifically disallows settled insanity as a defense (*Bieber v. People,* 1993), as do 9 other states. The remaining 11 states have not yet addressed it (Appelbaum, 2022; Carter-Yamauchi, 1998; *State v. Sexton*, 2006; *State v Brennauer*, 2023). Supplemental Table A on the Open Science Framework (OSF; https://osf.io/v6kjb/) provides information about state-specific allowances and restrictions regarding settled insanity, along with relevant case law and statute by state.

The settled insanity doctrine is controversial given its nexus between substance use, mental illness, and criminal responsibility. There are no clear or specific criteria for the insanity defense when substance use is involved, much less when settled insanity is a possibility, which makes for fragmentary, jurisdiction-specific case law and outcomes that are difficult to interpret and apply as precedent. Nevertheless, there is case law addressing the issue of settled insanity in many states across the U.S. Given that state and federal courts vary in their interpretation of whether, and under what circumstances, the effects of substance use qualify as a valid basis for an insanity defense, there is unsettled debate related to settled insanity.

The Current Study

The intersection of psychosis and substance use creates complex legal and psychological questions. Settled insanity has received limited attention in the research literature, leaving significant gaps in our understanding of its theoretical rationale, alignment with clinical science,

implementation in legal settings, and implications. The scarcity of research hampers efforts to develop informed policies and interventions that adequately address the needs of individuals affected by mental illness and substance use, and how those issues interact with the legal system. Thus, bridging this knowledge gap is crucial for ensuring fair and effective treatment for individuals navigating the legal intersection of psychosis and substance use.

The current project has two primary aims, each addressed in a separate study. First, we sought to understand through case-law analysis how courts conceptualize settled insanity and the process by which courts analyze and resolve these cases. Second, we aimed to experimentally evaluate the perspectives of forensic mental health experts on issues surrounding the legal intersection of substance use and mental illness. This project is the first of its kind to integrate qualitative and quantitative methods to empirically analyze settled insanity, providing a holistic understanding of this complex phenomenon. Our preregistration, materials, data, and code are available on the Open Science Framework (Arnett et al., 2025; https://osf.io/v6kjb/).

Study 1: Case Law Analysis

We conducted a case law analysis to better understand how claims of settled insanity are analyzed and resolved in legal cases. We refrained from *a priori* hypotheses, as we aimed to uncover new insights rather than testing specific predictions. The quantitative portion of this case law analysis yielded descriptive information about the cases. The qualitative analysis portion aided in understanding two research concerns that emerged through engagement with the data: 1) how does the criminal legal system analyze settled insanity, and 2) why are there inconsistent outcomes in these cases?

Study 1 Method

To find cases related to settled insanity, we used Nexis Uni, an academic legal search engine that indexes legal content including administrative codes and regulations; administrative materials; briefs, pleadings, and motions; cases; law reviews and journals; legal news; and statutes and legislation (Knapp, 2018). U.S. federal and state cases since 1984 (the year of the Insanity Defense Reform Act) were searched using "settled insanity" or "fixed insanity" that appeared in the summary, syllabus, or overview sections of cases. The reason for using 1984 as a starting point was simply to have a clear decision rule for where to begin with some limit.

The initial search yielded 96 cases, each carefully reviewed for relevance (see Supplemental Figure A on the OSF (https://osf.io/v6kjb/). During the review, 5 additional cases were discovered from case citations found in the original 96 cases. As such, a total of 101 cases were fully reviewed for relevance. Of these, 83 were distinct from one another (i.e., the defendant was not featured in another case); if a case was related to others through prior or subsequent history, all cases were reviewed and the case most focused on settled insanity was selected. Often, it was clear which case should be considered “primary,” as related cases either briefly mentioned settled insanity and/or repeatedly referred to the primary case for a more in-depth review of the settled insanity claims. However, if there were two or more cases with the same defendant and those cases included a similar amount of settled insanity discussion, then the most recent case was retained. After a full-text review of these 83 cases, 32 were excluded on relevance grounds; uncertainties related to whether a case should be included were addressed through discussions between the first and second authors (see Supplemental Figure B on the OSF, https://osf.io/v6kjb/). Ultimately, 51 distinct cases were included (see Table 1 for the

citations to all 51 cases coded, as well as the subset of 22 highlighted cases in bolded text that were subsequently analyzed qualitatively).

Table 1. *List of Cases Included in the Case Law Review for Study 1*

Case Name & Legal Citation (*N* = 51 coded quantitatively, *n* = 22 analyzed qualitatively **[bolded]**)
Alexander v. United States, 2020 U.S. Dist. LEXIS 108092
Baxter v. State, 2024 Ark. App. 9
***Berry v. State*, 969 N.E.2d 35**
***Bieber v. People*, 856 P.2d 811**
***Bloomfield v. State*, 61 N.E.3d 1234**
Bowman v. Martin, 2019 U.S. Dist. LEXIS 220698
***Brand v. State*, 2020 Md. App. LEXIS 1191**
***Commonwealth v. Dunphe*, 485 Mass. 871**
Crutsinger v. Thaler, 2012 U.S. Dist. LEXIS 14710
Dixon v. State, 668 So. 2d 65
***Fields v. State*, 2022 Md. App. LEXIS 664**
Gomez v. Busby, 2011 U.S. Dist. LEXIS 101271
Hill v. Warden, 2013 U.S. Dist. LEXIS 84418
***Irick v. Bell*, 2010 U.S. Dist. LEXIS 112425**
Jones v. Stephens, 157 F. Supp. 3d 623
Lickliter v. Commonwealth, 142 S.W.3d 65
Logan v. State, 164 Md. App. 1
Mangan v. State, 2012 Ind. App. Unpub. LEXIS 928
***McNeil v. United States*, 933 A.2d 354**
***Morgan v. Commonwealth*, 50 Va. App. 120**
People v. Ceja, 106 Cal. App. 4th 1071
***People v. Conrad*, 148 Mich. App. 433**
People v Course, 2003 Cal. App. Unpub. LEXIS 6983
People v Curran, 2003 Cal. App. Unpub. LEXIS 3769
People v. Gomez, 2010 Cal. App. Unpub. LEXIS 7293
People v. Grant, 174 P.3d 798
***People v. Grenier*, 200 P.3d 1062**
People v Gross, 2004 Cal. App. Unpub. LEXIS 3650
People v. Hill, 934 P.2d 821
***People v. Pelfrey*, 2011 Cal. App. Unpub. LEXIS 158**
People v. Randolph, 20 Cal. App. 4th 1836
People v. Robinson, 72 Cal. App. 4th 421
People v. Rocha, 48 Cal. App. 4th 1060
***People v. Skinner*, 185 Cal. App. 3d 1050**
People v. Welling, 2021 IL App (2d) 170944
People v. Williams, 44 Cal. 3d 883
***People v Wright*, 2005 Cal. App. Unpub. LEXIS 8043**
Preston v. Sec'y, Dep't of Corr., 2012 U.S. Dist. LEXIS 60586
Pryor v Rose, 787 F.2d 592
***Sprouse v. Thaler*, 2013 U.S. Dist. LEXIS 45332**
***Stangel v. Wead*, 2023 U.S. Dist. LEXIS 104100**
***State v. Abion*, 148 Haw. 445**
***State v. Brennauer*, 314 Neb. 782**
***State v. Johnson*, 143 Md. App. 173**
***State v. Sexton*, 2006 VT 55, 904 A.2d 1092**
State v. Young, 93 Haw. 224
Tisdale v. Commonwealth, 65 Va. App. 478
United States v. Garcia, 94 F.3d 57
Valdez v. Runion, 2010 U.S. Dist. LEXIS 93450
***White v. Commonwealth*, 272 Va. 619**
***Yeager v. State*, 2017 Md. App. LEXIS 955**

Quantitative Method for Coding Full Set of Cases

All 51 cases were double-coded for 15 variables: case type (state or federal); location of crime; court/jurisdiction; dissent; sex of defendant; year of current appellate case; year(s) of crime(s); crime(s); substance(s) related to clinical presentation; disposition; depth of treatment of settled insanity; viability of settled insanity claims from a clinical science perspective; whether the settled insanity defense was ultimately effective; prior relevant case history; and subsequent relevant case history. A codebook featuring further details is on the OSF (https://osf.io/v6kjb/).

Two coders (both clinically-trained doctoral students in psychology who were PhD candidates at the dissertation stage of training) coded the first two cases together, discussing their process toward shared application of the coding schema. Once agreement was reached for the first two cases, each coder independently coded two additional cases before meeting again to discuss. The codes matched at 100% agreement, and thus the coders proceeded to review and code all the remaining cases independently prior to reconvening to identify and resolve discrepancies by consensus. Interrater reliability could not be calculated for 3 of the 15 double-coded variables (prior relevant case history, subsequent relevant case history, and ultimate effectiveness of the settled insanity defense) because a licensed attorney helped us code them for each case, discussing as we coded (i.e., the codes for these 3 variables were reached through active collaboration and discussion, so there were not independent codes for calculating reliability). Despite the attorney's help, we were unable to find clear outcomes for four cases.

We used a bootstrapping algorithm to estimate the reliability distribution for the 12 independently double-coded variables by resampling hypothetical reliability data from pairs of values in the original data (Hayes & Krippendorff, 2007). We treated variables as nominal except for 3 treated as ordinal (i.e., disposition; depth of treatment; viability of settled insanity from a

clinical science perspective). On a scale in which 0 indicates no agreement, 1 perfect agreement, and -1 perfect disagreement (Krippendorff, 2011), interrater agreement between our coders prior to resolution was quite high (see Supplemental Table B on the OSF for specific values and 95% confidence intervals for all coded data, https://osf.io/v6kjb/). Specifically, agreement was near-perfect ($K\alpha > 0.8$; see Hughes, 2024 for interpreting values of agreement coefficients) for 7 of the coded variables (i.e., case type; location of crime; dissent; sex of defendant; year of current appellate case; year[s] of crime[s]; disposition). There was substantial agreement ($0.6 < K\alpha \leq 0.8$) for 4 of the coded variables (i.e., court/ jurisdiction; crime[s]; depth of settled insanity treatment; viability of settled insanity from a clinical science perspective). Though substances(s) varied from no to near-perfect agreement ($K\alpha = 0$ to $K\alpha > 0.8$), coders were able to reach consensus during the resolution process and noted discrepancies were due almost exclusively to infrequent errors in categorizing low-frequency substances (e.g., only one coder initially recognizing Antihistamines as an over-the-counter drug in a single case). The final coded data reflect the material available in the cases after independent coding and resolution of any disagreements through discussion.

Qualitative Method for Coding Subset of Cases

We subjected 22 cases for qualitative analysis (see Table 1): all of those out of the 51 cases that had been coded as "analyzed" with regard to depth of settled insanity treatment (i.e., the most in-depth category of analysis in which the document fully considered settled insanity, as per LexisNexis' Depth of Discussion Indicators). The depth of treatment of settled insanity variable was coded based on the amount of treatment or discussion the case gave to settled insanity, from "cited," to "mentioned," "discussed," or "analyzed" (see codebook on the OSF for

further details, https://osf.io/v6kjb/). We focused on these cases because we knew they would be exceptionally relevant to the study questions and also because research suggests that about 20 samples is often sufficient for achieving the theoretical saturation point for qualitative analysis, or when new ideas or themes are no longer synthesized from new cases (Auerbach & Silverstein, 2003).

The subset of 22 cases were qualitatively analyzed using the Constant Comparative Method of Grounded Theory Analysis (Glaser & Straus, 1967). The first step was to organize repeating ideas. The first author, with consultation from the second author, organized the text into as many repeating idea categories as necessary to fit the data about why judges decide these cases the way they do. To do so, each incident (data point) was compared with the previous incidents already coded under the category, and data entered in each category was compared with the data entered into new categories; new categories were created as warranted, with data moved into those newer categories as we went through this iterative coding procedure. This procedure was used to ensure each data point was "constantly compared" to other data points and categories so that each fit best under the applicable category, and so the data under each category "belonged together" (Glaser & Strauss, 1967; Harry et al., 2005). Once repeating ideas were organized, they often had some conceptual relation to one another and were organized into higher-order themes. Similar themes were grouped into theoretical constructs (Auerbach & Silverstein, 2003). Constant comparison was used through these processes as well.

The first and second authors met weekly during this inductive qualitative analysis process, discussing the coding and analysis as it unfolded and working through challenges as they arose. Google Docs and Google Sheets were used as organizational tools. Interrater

reliability data are not available for the qualitative analysis of the 22 cases, as most of the process was done by the first author (though some was with the aid and support of the second author).

We adhered to the Journal Article Reporting Standards for Qualitative Primary, Qualitative Meta-Analytic, and Mixed Methods Research in Psychology (JARS-Qual; Levitt et al., 2018) guidelines by: a) clearly defining our research questions and aims; b) selecting appropriate, empirically-supported qualitative methods; c) providing detailed descriptions of search criteria and data collection methods; d) including relevant quotations and summaries of data to support interpretation; e) promoting transparency in the limitations of our data collection process and interpretation of results; and f) seeking feedback from other researchers in the field.

Study 1 Results

Quantitative Descriptive Results from Full Set of Coded Cases

Of the 51 cases, 38 (74.45%) were state cases and 13 (25.49%) were federal (data are available on the OSF, https://osf.io/v6kjb/). Most defendants were male (96.08%); two (3.92%) were female. Most cases involved more than one crime (*n*=23, 45.10%); most were violent, including first-degree murder (*n*=21, 41.18%), assault and battery (*n*=12, 23.53%), and second-degree murder (*n*=10, 19.61%). California had the most settled insanity cases (*n*=13, 25.49%), followed by Virginia (*n*=6, 11.76%), and Maryland (*n*=5, 9.80%). Seven (13.73%) featured dissent, when one or more judges disagreed with the majority; however, in *Dixon v. State* (1994), the dissent was withdrawn and the judge recused. Regarding depth of settled insanity treatment, 9 cases (17.65%) mentioned it, 20 (39.22%) discussed it, and 22 cases (43.14%) analyzed it. No cases simply cited it, as those that had were already removed in the case selection process on relevance grounds.

Consistent with research on their psychotomimetic properties, PCP, LSD, amphetamines, cocaine, marijuana, and alcohol were the most common substances involved in settled insanity cases (see Table 2). Of the six PCP cases, five featured its use in isolation. This was uncommon, as a majority of cases involved more than one substance (*n*=32, 62.75%). Other cases involved unusual or unexpected substances, including diet pills (*Dixon v. State*, 1994; *People v. Williams*, 1988), antipsychotic medication (*People v. Randolph*, 1993), and antihistamines (*White v. Commonwealth*, 2006), although each of these cases involved additional substances.

Table 2. *Types of Substances Featured in Settled Insanity Cases*

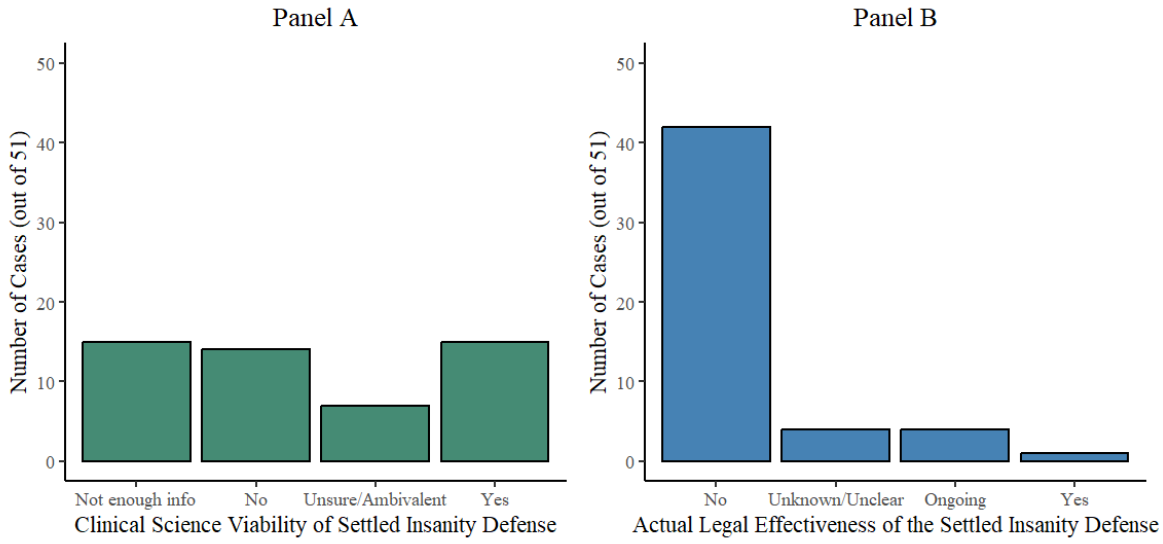
Substance	Number of Cases (% of 51)
Alcohol	**21 (41.18%)**
Cannabis	**16 (31.37%)**
Marijuana	15
Spice (synthetic cannabis)	1
Hallucinogens	**13 (25.49%)**
Lysergic acid diethylamide (LSD)	6
Mushrooms	1
Phencyclidine (PCP)	6
Jimsonweed	1
Ecstasy* (MDMA)	2
Stimulants	**23 (45.10%)**
Amphetamines/Methamphetamine	12
Speed	2
Cocaine/Crack	11
Over-the-Counter Medications	**1 (1.96%)**
Antihistamines	1
Prescription Medications	**9 (17.65%)**
Xanax (alprazolam)	4
Valium (diazepam)	5
Diet pills	2
Amitriptyline	1
Navane (thiothixene)	1
Cogentin (benztropine)	1
Artane (trihexyphenidyl)	1
Haldol (haloperidol)	1
Opioids	**5 (9.80%)**
Heroin	4
Methadone	1
Morphine	1

	Percocet (oxycodone)	1
	Suboxone (buprenorphine)	1
Other		**3 (5.88%)**
	Quaaludes	1
	"Drugs"/ "Drug abuse"	2

Note. Numbers in bold represent the total number of cases within a given category. Substances were not exclusive to one case, nor were they mutually exclusive between cases, as many cases featured more than one substance. Listed substances were any that 1) the defendant regularly ingested/injected at any point, and/or 2) were implicated in the defendant's presentation at the time of the crime. Categorization schema was adapted from the National Institute on Drug Abuse's Commonly Used Drugs Charts (NIDA, 2023). *NIDA notes ecstasy is "A synthetic, psychoactive drug that has similarities to both the stimulant amphetamine and the hallucinogen mescaline." As such, we grouped it under the hallucinogen category, though we recognize that it may also be considered a stimulant.

Regarding viability of settled insanity defense from a clinical science perspective, 15 cases (29.41%) did not have enough information, 14 (27.45%) were not viable, 7 (13.72%) were conflicting or unclear, and 15 (29.41%) had some viability (see Figure 2, panel A). Defendants typically failed in their attempts to use a settled insanity defense (n = 42 cases, 82.35%; see Figure 2, panel B). Only one case (1.96%; *Dixon v. State,* 1994) was ultimately successful in its use of an appeal featuring the settled insanity defense, although four other defendants (7.84%) had some measure of success in their appeals (i.e., had their cases remanded for retrial based on the argument that they should be allowed to try a settled insanity defense; *Commonwealth v. Dunphe*, 2020; *State v. Abion*, 2020) or their cases are otherwise pending (*Stangel v. Wead*, 2023; *State v. Brennauer*, 2023). Four are unknown or unclear (7.84%).

Figure 2. *Viability of Settled Insanity Defenses from a Clinical Science Perspective (Panel A) and Actual Legal Outcomes of the Cases involving Settled Insanity Claims (Panel B)*



Qualitative Analytic Results from Subset of 22 Cases

Results from the qualitative analytic process are presented in Tables 3 and 4, which detail a) the repeating ideas that emerged repeatedly across cases, b) how those repeating ideas clustered into higher-order themes (*italicized subheadings*), and c) the highest-order theoretical constructs that ultimately emerged (**bolded subheadings)**. The tables also include data about the prevalence of each theme across cases. Further summaries of repeating ideas, higher-order themes, and theoretical constructs, as well as many more direct quotes, are available on the OSF, https://osf.io/v6kjb/).

Our first research concern was how the legal system analyzes settled insanity (see Table 3). We were primarily interested in what triers of fact (e.g., judges and juries) and forensic mental health experts considered when determining if a defendant qualified for a settled insanity defense. These cases followed a similar format: first, courts addressed the question of insanity, typically citing the jurisdiction's standard. They considered evidence about mental disease or defect at the time of the crime (100% of cases did so, often relying on expert mental health

testimony – sometimes noting that the experts disagreed about diagnosis). Then, courts tended to conditionalize insanity, explaining that sometimes voluntary intoxication prohibits the use of an insanity defense. Then, the courts generally explained that in cases where chronic voluntary intoxication caused a fixed mental illness, settled insanity serves as an exception. Resolving these issues is not straightforward, and mental health and legal professionals often disagreed.

Most insanity defense statutes feature language related to a defendant's ability to either understand the wrongfulness of their actions or to conform their conduct to the law. As such, a majority of cases (59%) considered the defendant's ability/inability to do so, and at least three of those cases included explicit statements from the defense that argued the presence of a major mental health disorder precluded them from understanding or controlling their actions.

The question of whether a defendant can understand and/or control their actions is challenging, but becomes even more so with the presence of substance use. As such, many jurisdictions made it clear that a defendant's inability to understand or control their actions must *not* be due to substance use. The onus on the defendant, therefore, was twofold: they must not only prove inability to understand and/or control actions, but also that this inability was a result of a major mental health disorder and not voluntary intoxication. Consequently, there were instances in which experts/courts *agreed* that the defendant could not understand or control his/her actions, but because that inability was attributed to voluntary substance use, the courts/experts determined that they were still criminally responsible for their actions (see *People v. Conrad*, 1986; *State v. Johnson*, 2002; *Yeager v. State*, 2017). For example,

- "'A defendant is not criminally responsible for criminal conduct if, at the time of that conduct, the defendant, because of a mental disorder… lacks substantial capacity to: (1) appreciate the criminality of that conduct; or (2) conform that conduct to the requirements of law.' It 'does not include…an abnormality caused by a defendant's

> voluntary consumption of intoxicants, such as alcohol or illegal drugs.'" (*Yeager v. State*, 2017).

Eight cases (36%) featured disagreement related to the defendant's ability to understand and/or control their actions. In five of these cases, mental health expert opinions contradicted each other as to whether the defendant understood the wrongfulness of their actions (see *Bloomfield v. State*, 2016; *Commonwealth v. Dunphe*, 2020; *People v. Pelfrey*, 2011; *People v. Wright*, 2005; *State v. Brennauer*, 2023). There were other instances too, such as in *People v. Skinner* (1986) in which an expert opined the defendant was unable to appreciate the wrongfulness of their actions, but ultimately the court determined they could. Of note, *in People v. Skinner* (1986) four different experts agreed that the defendant could *not* appreciate the wrongfulness of his actions, but the court still ruled otherwise.

- "However, the experts disagreed on…whether Brennauer knew or understood the nature and consequences of his actions or knew the difference between right and wrong" (*State v. Brennauer*, 2023).
- "Dr. Apostle agreed that appellant had suffered a 'toxic cocaine psychosis' which would prevent deliberation or meaningful reflection or appreciation of the wrongfulness of his homicide." Then later, "…the court determined that appellant could distinguish right from wrong and/or understood the nature and quality of his act. …" (*People v. Skinner*, 1986).

Conversely, 23% of cases featured situations in which either all experts within a case agreed, or the court(s) agreed with the expert(s) about the defendant's ability to understand and/or control their actions. However, an important distinction is worth highlighting. There was at least once instance in which experts agreed as to whether or not the defendant could appreciate the criminality of his actions or conform his conduct to the law, but they disagreed as to the cause of this inability. One expert attributed this inability to a major mental health disorder, while others attributed it solely to substance use (see *Yeager v. State*, 2017).

Table 3. Settled Insanity in Legal Cases

Theoretical Constructs, *Themes,* and Repeating Ideas	Number of Cases (% of 22)
I. Consideration of general insanity defense criteria	
Considered existence/non-existence of mental disease or defect at time of crime Expert(s) diagnosed major mental health disorder (e.g., non-substance use disorder); Expert(s) diagnosed substance-related mental health disorder(s); Expert(s) aided in establishing existence of a mental disease/defect; Considered prior mental health diagnosis(es) in establishing existence of qualifying mental disease/defect	22 (100.00%)
Cited jurisdiction's insanity defense standard Model Penal Code; M'Naghten standard; irresistible impulse test; Disqualified repeated criminal or antisocial behavior	22 (100.00%)
General consideration of defendant's insanity Defense claimed defendant lacked ability/capacity due to a major mental disorder; Court determined defendant did not prove that their inability/lack of capacity was unrelated to voluntary intoxication/due to a major mental disorder	13 (59.01%)
Contention about defendant's insanity Experts disagreed with one another; Court disagreed with one or more experts	8 (36.36%)
Consensus about defendant's insanity Experts agreed with one another; Court agreed with one or more experts	5 (22.73%)
II. Addressed etiology of mental disease/defect	
Expert consideration of the role of substance use Recent substance use or withdrawal was primary cause (e.g., substance-induced psychotic disorder or acute intoxication); Distal substance use was primary cause; Substance use was unrelated/not primary cause	17 (77.27%)
Considered historical/medical information Family history; Trauma history; Neurological history; Academic history	9 (40.91%)
III. Characterization of substance use	
Nature of substance use Chronicity of use; Amount/frequency of use; Type(s) of substance	22 (100.00%)
Considered date/time of last use before crime Defendant denied recent use or acute intoxication; Defendant admitted recent use or acute intoxication; Expert(s) opined defendant was not intoxicated; Expert(s) opined defendant was intoxicated or in withdrawal; Collateral information suggested recent use; Collateral info did not suggest recent use; Collateral info was contradictory	18 (81.82%)
Lay witness testimony of substance use Characterized typical substance use (e.g., type, frequency, amount); Characterized typical behavior during/after use; Characterized use leading up to crime	8 (36.36%)
IV. Characterization of mental disease/defect	
Addressed permanence of mental disease/defect Court said mental disease/defect was temporary; Expert(s) opined mental disease/defect was temporary; Expert(s) opined mental disease/defect was permanent	13 (59.01%)
Identified specific symptoms Mania; Delusions; Paranoia; Grossly disorganized thoughts/behavior; Amnesia; Hallucinations; Depression	15 (68.18%)
Expert disqualified/ruled out diagnosis(es) Disqualified/ruled out past diagnosis(es); Disqualified/ruled out new hypothesized diagnosis(es); Disqualified/ruled out other experts' diagnosis(es)	7 (31.82%)
Expert(s) proffered diagnosis(es) related to mental state at time of crime Psychotic disorder(s); Mood disorder(s); Substance use/substance-related disorder(s); Personality disorder(s); Conduct disorder(s)	19 (86.36%)

Acknowledged prior mental health diagnosis(es) and/or treatment Considered prior mental health symptoms, diagnosis(es), and/or treatment, or lack thereof; Attributed presentation to prior diagnosis(es)	11 (50.00%)
Considered symptom resolution Symptoms persisted after crime; Symptoms resolved; Unclear symptom resolution; Defendant required continued psychiatric medication/treatment after crime	12 (54.55%)
Lay witness testimony regarding defendant's mental health Described mental health history; Described behavior/symptoms leading up to crime	8 (36.36%)
V. Considered behavior before and after crime	
Considered premeditation/intent to commit crime Suggested possibility of premeditation; Determined no premeditation	5 (22.73%)
Attempt(s) to hide crime and displays of remorse Defendant attempted to flee, hide, and/or destroy/cover up evidence; Defendant did not attempt to flee, hide, and/or destroy/cover up evidence; Defendant cooperated with law enforcement; Defendant did not show immediate remorse	9 (40.91%)
Attempt(s) to deny guilt Defendant freely admitted guilt; Expert considered possibility of malingering	8 (36.36%)

In determining the existence of a mental disease or defect that qualifies for an insanity defense in cases involving substance use, courts generally consider the etiology, history, and characterization of defendants' mental disease/defect and the nature and history of defendants' substance use (see Table 2). Careful attention is paid to mental state, substance use, and behaviors at the time of crime. However, how this information is interpreted varies widely.

Settled insanity inherently begs the question of what role substance use played in the etiology of the mental disease or defect; 77% of cases addressed this directly. Many of these cases had at least one expert opine that recent substance use or withdrawal was the primary cause of the defendant's mental state at the time of the crime. However, there were some cases in which the expert cited *distal* substance use (e.g., settled insanity) as the cause of the defendant's mental disease/defect at the time of the crime. Additionally, there were a small handful of cases in which at least one expert stated the defendant's presentation was unrelated to substance use.

- "As with Dr[s]. Rogers and Rustin before her, Dr. Anderson concluded that Sprouse's mental problems are related to his chronic drug abuse" (*Sprouse v. Thaler*, 2013).
- "Although appellant admitted past PCP use, Dr. Kleinman concluded that a mental illness was a better explanation for appellant's conduct and symptoms because: (1)

> appellant's behavior after the murder was not consistent with the usual signs of PCP intoxication; (2) there was no physical evidence that appellant had used PCP. …" Then later, "Dr. Patterson and Dr. Lally, while agreeing that appellant was psychotic, did not agree with Dr. Kleinman's traditional-insanity explanation for that condition; rather, they concluded that appellant's psychosis at the time of the killing was the result of intoxication" (*McNeil v. US*, 2007).

About 40% of the cases considered precipitating factors such as family, trauma, neuroimaging/neurological, and academic histories to form a better contextual understanding of the defendant and help pinpoint disease etiology, or lack thereof.

- "His father had a history of recurrent depression, alcohol and substance abuse, suicide attempts, and a personality disorder requiring years of mental health treatment. Defendant's mother also suffered from depression. Other extended family members had had 'nervous breakdowns' or had attempted suicide" (*State v. Sexton,* 2006).
- "On cross-examination, Fields confirmed he had no diagnosed issues with psychosis and no family history of psychosis prior to the stabbings" (*Fields v. State*, 2022).

Because the doctrine of settled insanity requires that chronic substance use has resulted in a settled/permanent/fixed mental disease/defect, the nature and characterization of both the defendant's typical use and also the date/time/nature of the defendant's last use before the crime must be investigated. Unless the defendant willingly admitted to substance use immediately prior to the offense, or there were objective/collateral measures to support these claims, cases noted it was difficult to determine if there was active intoxication during the crime.

All cases (100%) discussed either the chronicity, amount, frequency, and/or types of substance that the defendant was known to use. Some cases were very specific about the defendant's substance use, featuring details of when they started using, how often they used, periods of sobriety, and/or changes in use over time. However, other cases were much more ambiguous, simply stating that the defendant had a history of substance use, although there was always at least one reference to the specific substance in question.

- "He concluded defendant had…23 years of methamphetamine abuse… at the time of the attacks, defendant had been off methamphetamine for perhaps two weeks, which would cause depression, and had been ingesting Jimsonweed (datura stramonium) from the yard as a way of dealing with the withdrawal" (*People v. Pelfrey*, 2011).
- "Beginning with marijuana at age 14, Yeager's drug use escalated to heroin and cocaine by age 18. At times, he also abused crack, Xanax, Percocet, MDMA (also known as Ecstasy), and synthetic marijuana (known as K-2)" (*Yeager v. State*, 2017).

Most cases (82%) considered the defendant's last use before the crime. However, this was not always straightforward and sources were not always credible. There were cases in which the defense's expert opined the defendant had not used substances recently while the jjhgfprosecution's expert opined he did (e.g., *Berry v. State*, 2012). There were also cases (see *McNeil v. US*, 2007; *People v. Pelfrey*, 2011) in which collateral information (e.g., evidence of drug paraphernalia, toxicology reports, witness statements) contradicted one another. To form a more comprehensive picture of the defendant's substance use, 36% of cases featured lay witness testimony of the defendant's substance use, which provided information about the defendant's typical use, typical behavior when using, and characterization of use leading up to the crime.

- "Statements of appellant's boyfriend, Tyrone, were admitted without objection, revealing that appellant bought a $500 vial of PCP in late September or early October and that appellant had been 'regularly using, regularly dipping' at that time" (*McNeil v. US*, 2007).
- "Webb testified at trial that he and the defendant and other friends had smoked phencyclidine (PCP) or 'angel dust' about four and five times in the first two weeks of July. He testified that the substance was referred to as 'angel dust' in the defendant's presence and that he smoked it willingly. The last time Webb had seen the defendant smoking the drug was July 8" (*People v. Conrad,* 1986).

Many cases delved into the specific features of the defendant's proposed mental disease or defect. Not only did the cases consider presentation during the crime, but also leading up to and following the crime. Settled insanity requires the defendant's mental disease/defect be "settled" or permanent. More than half of the cases (59%) explicitly addressed permanence of

the disease/defect. However, assessment of defendants' mental state was a source of contention. In *Commonwealth v. Dunphe* (2020), for example, one expert opined the defendant's mental illness was permanent, but another expert – and ultimately, the court – said it was temporary.

- "Podboy, like Apostle, found the cause of that damage to be long-term abuse of drugs, particularly methamphetamine, and he stressed that it was permanent, untreatable damage" (*People v. Pelfrey*, 2011).
- "One examiner, Dr. Blinder, diagnosed Abion with '[m]ethamphetamine psychosis,' and noted that 'protracted use of methamphetamines causes permanent brain damage at a cellular level, its effects apparent long after an individual has been free of the drug'" (*State v. Abion*, 2020).

Sixty-eight percent of cases identified specific symptoms the defendant reported experiencing at the time of the offense. Many of these symptoms, including hallucinations and delusions, were consistent with psychosis, though some (e.g., mania, depression, amnesia) are consistent with other disorders (APA, 2022). About a third of cases (32%) mentioned mental health experts' differential diagnoses, which refers to the process by which experts distinguish between different mental health disorders that may share similar symptoms. Most cases (86%) featured experts who explicitly diagnosed the defendant with a mental health disorder. Of note, in the reviewed cases, if a defendant *only* had a substance-related disorder, a personality disorder, or a conduct disorder, with no evidence of another major mental health disorder, they did not qualify as meeting the mental disease/defect criterion of the insanity defense.

Half (50%) of the cases explicitly acknowledged the defendant's prior mental health history, or lack thereof. However, the information was sometimes inconsistent, and its source was often unclear. For example, in *State v. Sexton* (2006), one expert noted the defendant had no prior mental health disorder, but another expert later stated he had a long history of "mental and emotional dysfunction." Another theme that addressed the persistence of mental disease/defect

was the consideration of symptom resolution, mentioned in 55% of the cases (see *Brand v. State*, 2020; *Fields v. State*, 2022; *People v. Pelfrey*, 2011; *State v. Brennauer*, 2023; *Yeager v. State*, 2017). This theme also addresses the idea that the duration of the defendant's insanity may or may not have been confined solely to the time of the crime:

- "Dr. Tellefsen also disagreed with Dr. Blumberg's assessment that Yeager's history in the DOC indicated he had a mental disorder that endured in the absence of intoxicants" (*Yeager v. State*, 2017).
- "Dr. Klein also disagreed with Dr. Meltzer's conclusion that Mr. Brand's symptoms had continued for a significant length of time following his arrest, noting that his medical records specifically indicated that his mental status exams were normal on each of the two days after the murders occurred" (*Brand v. State*, 2020).

Some cases (36%) featured lay witness testimony about the defendant's mental health, which provided collateral information regarding the defendant's prior mental health history, including treatment, behaviors, and symptoms leading up to the crime.

Cases also considered ideas that did not directly map onto constructs of insanity, mental disease/defects, and/or substance use, but were still relevant in forming an understanding of the defendant's mental state around the time of the crime. These ideas and themes had to do with behaviors directly before and after the crime, which presumably provided some information about the defendant's psyche that was helpful in formulating opinions about settled insanity. For instance, 23% of cases explicitly considered the defendant's ability to premediate their crime. In several instances, the conclusions drawn seemed contradictory (see quote below; this contradiction can also be found in *People v. Skinner*, 1986).

- "Piecing those facts together with Dr. Blumberg's testimony, he argued in closing that, at the time of the murder, Johnson suffered 'a mental condition because of his ingestion of PCP' that precluded him from forming 'an intent and premeditation of killing a child.'" Then later, "I conclude from the evidence in this case that the defendant intended to kill and did so with premeditation and that it was a willful and deliberate act of the defendant at the time of the killing" (*State v. Johnson*, 2002).

Forty-one percent of cases considered whether the defendant attempted to flee, hide, or destroy/cover up evidence, cooperated with law enforcement, and/or failed to show immediate remorse. Often this information was reviewed in context of determining whether the defendant understood the nature/quality of the acts, often related to inferences about mental disease/defect.

- "Based on the defendant's active psychosis at the time of the assault…and his lack of any attempt to flee the scene or destroy evidence, I believe the defendant did not appreciate the wrongfulness of his actions at the time of the alleged offense" (*Berry v. State*, 2012).
- "…Officer Taua testified that when he approached Abion, Abion was not running and did not attempt to hide. Abion did not hide that he had a hammer and did not hesitate in providing a statement…Abion did not appear to have any guilt or regrets" (*State v. Abion*, 2020).

Our second research concern, which emerged through the iterative analysis process, addressed reasons for inconsistent outcomes in settled insanity cases. Inconsistency boiled down to three core issues: (1) mental health experts disagreed relatively often in their interpretation of defendants' mental health presentation as it intersects with substance use, (2) legal procedure varies, and (3) interpretation of the doctrine of settled insanity varies (see Table 4 and the OSF, https://osf.io/v6kjb/).

Table 4. Reasons for Inconsistent Outcomes in Legal Cases Involving Settled Insanity

Theoretical Constructs, *Themes,* Repeating Ideas	Number of Cases (% of 22)
I. Mental health experts often disagreed	
Overall impressions/conclusions differed	11(50.00%)
Disagreed about root cause of behavior during crime; Diagnosis(es) differed; Confidence/certainty regarding impressions/conclusions differed; Mental status exam/apparent psychosis during interview(s) diverged between experts and/or interviews; Expert(s) argued info that directly conflicted with other expert(s) info	
Potential Adversarial allegiance	12 (54.55%)
Defense used expert favorable to their position; Prosecution used expert favorable to their position; Expert(s) favored/accepted one side of conflicting evidence; More than one expert called to evaluate defendant and/or testify	
Divergent evaluative processes/No standardized protocol for insanity evaluations	9 (40.91%)

Vastly different amounts of time spent with defendant; Different number of contacts with defendant; Dates of contacts varied widely (e.g., months or years apart); Some expert(s) used collateral reporters while other expert(s) did not; Past evaluations were inaccurate/need updating	
Task is inherently difficult/complex/subjective	11(50.00%)
Expert(s) changed own diagnosis(es) at some point; Expert(s) could not say mental disease/defect at time of crime was wholly unrelated to substances; Expert(s) could not definitively rule out substance use near time of crime; Expert(s) acknowledged challenging/subjective nature of evaluation/testimony; Expert(s) expressed uncertainty about what role/amount drugs played in mental illness; Length of substances' effects is disputed/difficult to determine	
II. Legal reasons	
Legal precedent for settled insanity varied across cases	22 (100.00%)
Court cited jurisdiction's standard/statue/policy of settled insanity; Court cited jurisdiction-specific precedent case(s) regarding settled insanity; Court cite out-of-jurisdiction precedent case(s)/policies regarding settled insanity; Settled insanity had not been addressed in jurisdiction/establishing new precedent/policy; Jurisdiction does not allow/recognize settled insanity defense	
Sufficiency and weight of evidence	12 (54.55%)
Trier of fact favored one or more expert(s) over other(s) in original trial; Defendant did not meet standard of proof; No/insufficient evidence of insanity; Defendant did not establish *prima facie* defense of settled insanity/traditional insanity; Court precluded expert testimony	
Judge(s) dissented	4 (18.18%)
Argued statute/precedent did not apply/was misinterpreted; Argued defendant should have qualified for settled insanity defense; Argued defendant's mental illness existed before and after crime and while not intoxicated	
III. Interpretation of settled insanity doctrine varied	
Length of drug use and permanence of illness related to settled insanity is unresolved	10 (45.45%)
Defendant argued insanity need not be permanent/incurable to be settled insanity; Court rejected short-term/intermittent insanity as qualifying for settled insanity; Court accepted short-term/intermittent insanity as qualifying; Length of insanity not long enough to qualify; Length of substance use not long enough to qualify	
Clinical mental illness is not synonymous with legal insanity	10 (45.45%)
Undisputed that defendant was psychotic/mentally ill at time of crime; Presence of mental illness at time of crime is necessary but not sufficient for legal insanity	
Assumptions about defendant's potential knowledge of substance use consequences	3 (13.64%)
Defendant could/should have anticipated substance's effects; Defendant could/did not anticipate the potential magnitude or distal/prolonged effects of substance(s)	
Interpretation of substance-induced psychosis varied	10 (45.45%)
Expert/counsel argued it in context as a qualifying mental disease/defect under settled insanity defense; Expert/counsel argued it was not a qualifying mental disease/defect under settled insanity defense; Expert/counsel considered it synonymous with voluntary/temporary intoxication; Court permitted it as qualifying mental disease/defect under settled insanity defense; Court disqualified it as viable mental disease/defect under settled insanity defense	

In half (50%) of the cases, mental health experts reached different judgments regarding the defendant's mental capacity. Experts sometimes formed different conclusions due to inconsistent behavior/reporting by the defendant during interviews; though some experts formed different opinions based on relatively similar presentations while finding some behaviors/ statements more compelling than others. There were also instances in which an expert presented evidence that directly conflicted with another expert(s) information, such as in *People v. Pelfrey* (2011) in which each expert had a different impression of the defendant's level of intelligence. Courts often expected experts to be definitive in conclusions as to the cause of the defendant's behavior (e.g., substance use vs. an independent mental health disorder), or commented about the persuasiveness of an expert who "was able to form more definite conclusions on [defendant's] condition at the time of the offense" than another expert (*Berry v. State*, 2012).

Potential adversarial allegiance was found in 55% of cases. Despite attempts by experts to remain objective, research shows that experts' opinions are often swayed by the position of retaining counsel in ways that they are not aware (Murrie & Boccaccini, 2015). There were several instances in which defense expert(s) argued that the defendant's psychosis persisted well beyond the time of the crime, whereas the prosecution's expert(s) said it was remitted. In these cases, the courts often failed to acknowledge that both experts may be correct. Particular symptoms, statements, or behaviors were sometimes interpreted as support for one expert's conclusions, while another expert used the same information to support their conclusions.

- "At that hearing, Mr. Brand and the State both called experts in the field of forensic psychiatry, each of whom examined Mr. Brand and offered different opinions as to whether he was responsible for his criminal conduct" (*Brand v. State,* 2020).
- "Dr. Kelly Goodness was the consulting psychologist and mitigation expert for the defense. She believed that Sprouse's history warranted a diagnosis of schizophrenia and amphetamine dependence in institutional remission…Dr. Clayton, a psychiatrist

> who testified for the State at trial that she observed no psychosis when she evaluated Sprouse, believed Sprouse was intoxicated on methamphetamine at the time of the offense" (*Sprouse v. Thaler*, 2013).

Another theme that shed light on why experts disagreed was the divergent evaluative processes by mental health experts when examining the defendant (41% of cases). Not only is the task of evaluating a person's mental status complex and subjective, insanity evaluations are not currently standardized (Melton et al., 2017; Murrie & Warren, 2005; Neal & Grisso, 2014). Experts spent varied amounts of time with defendants and often used different measures and/or sources of information to write their reports and provide opinions. And evaluations sometimes took place weeks or even months apart from one another, during which time biological and environmental factors likely changed, all of which can impact the defendant's functioning and symptomatology. In half (50%) of the cases, experts explicitly acknowledged the challenging nature of insanity evaluations, with particular emphasis on the difficulty of parsing apart what symptoms were related to psychosis and what symptoms were related to substance use.

- "[The expert] acknowledged: '[It's] been extremely difficult for me to sort the thing out in my own mind and if I'm sounding like I'm equivocal. I just don't know…I cannot accurately interpret the functioning of such a badly disordered brain and by that I'm referring to Mr. Skinner's state of mind at that time'" (*People v. Skinner*, 1986).
- "[The expert] also reported that it was impossible to ferret out how much, if any, of Sprouse's psychosis was the result of methamphetamine abuse and that this determination would require presumptions of fact that are best left to the triers of fact" (*Sprouse v. Thaler*, 2013)

The "Legal Reasons" theoretical construct captured the legal and technical themes that affected settled insanity case outcomes. Legal precedent clearly varied, and sometimes judges dissented with the majority opinion. But once precedent restricting settled insanity was established, appellate courts generally upheld it, as demonstrated in cases from Colorado and

California. All cases cited the specific settled insanity defense language they used as the basis for their judgments. In some instances, cases cited jurisdiction-specific cases that established settled insanity precedent. Other cases cited out-of-jurisdiction cases as their precedent/reasoning related to settled insanity. A small handful of jurisdictions had established legal statutes/policies related to settled insanity, which were cited either in place or in addition to precedent cases. Additionally, for some jurisdictions, this was the first case in which they considered settled insanity, establishing precedent (see e.g., *Bieber v. People,* 199). There were also cases which established/recognized that the jurisdiction does/did not permit settled insanity as a defense.

Over half (55%) of the cases featured ideas related to the sufficiency and weight of evidence brought forth by the defendant. This theme captured ideas related to a) courts are permitted to favor one or more experts' testimonies over others, b) the defense must convince the trier of fact beyond the standard of proof, c) in some jurisdictions, the defense must not only *prove* insanity, but must also *persuade* the trier of fact that this insanity existed and influenced his/her behavior at the time of the crime, d) the defendant did not establish *prima facie*, or at the outset, that they had insanity or settled insanity, and/or e) the court is permitted to exclude expert testimony. There were several cases in which the courts asserted that though the defendant produced evidence to support settled insanity, the courts were not persuaded by the evidence, and thus the appeals were denied/dismissed (*Brand v. State*, 2020; *Fields v. State*, 2022; *Morgan v. Commonwealth*, 2007; *Yeager v. State*, 2017).

- "Our supreme court has stated that '[t]he strongest showing of an evidentiary conflict occurs where the experts disagree as to whether the defendant was insane at the time of the offense.' Therefore, where a credible expert opines that a defendant was sane when committing an offense, despite other expert opinions to the contrary, the evidence will support the trier of fact's rejection of a defendant's insanity defense" (*Bloomfield v. State*, 2016).

- "That being the stated, the Court is in a state of equipoise as to the two positions that have been put forward. Either could have been the case, but neither [is] more likely than the other. This being the case, the Court finds that the defense has not met its burden by a preponderance of the evidence, thus the defense of . . . not criminally responsible fails" (*Yeager v. State*, 2017)

Four of the 22 cases (18%) featured a dissenting opinion by one or more judge(s). Appellate cases are sometimes heard by panels of multiple judges, with dispositions based on a majority; however, judges are permitted to disagree with the majority opinion and offered the opportunity to explain their reasoning (Niblett & Yoon, 2015). One repeating idea that emerged in these dissents was the argument that the majority opinion either misinterpreted or misapplied the settled insanity defense used in the respective jurisdiction. Other repeating ideas were that, given the evidence, the defendant *should* have qualified for a settled insanity defense, and relatedly, that the defendant's mental illness existed independently of substance use.

- "However, White proffered the evidence of numerous lay witnesses, including his mother, his roommate, a licensed clinical social worker, and prison personnel, that he displayed psychotic symptoms both before and after he committed the crimes when he was not taking drugs... For these reasons, I would reverse the majority decision of the Court of Appeals, and remand the case for a new trial in which the jury is allowed to decide whether or not White was legally insane at the time he committed the crimes in question" (*White v. Commonwealth*, 2006).
- "Consequently, I am not persuaded that any similarity between temporary insanity and the condition that the defendant in this case alleged requires preclusion of his assertion of settled insanity as a defense" (*Bieber v. People*, 1993).

The final construct that emerged for this research concern captured the disparities found in interpreting the settled insanity doctrine. Particularly challenging were the meanings of "chronic" substance use and "permanent" mental illness. For instance, about half (45%) of the cases addressed unresolved issues related to the defendant's length of substance use and/or permanence of insanity. In some cases, a defendant's insanity "need not be permanent" to qualify for settled insanity (based on the findings of *Berry v. State*, 2012; *Morgan v. Commonwealth*,

2007; *People v. Conrad*, 1986; *People v. Kelly,* 1973; *People v. Skinner*, 1986; *State v. Sexton*, 2006). However, other cases explicitly rejected this idea and determined that the defendant's mental illness must be permanent to qualify for settled insanity (*McNeil v. US*, 2007; *Morgan v. Commonwealth,* 2007; *People v. Skinner*, 1986; *Stangel v. Wead*, 2023). There were further cases in which the courts simply determined that the defendant's drug use was not long enough to quality for settled insanity (*State v. Sexton*, 2006; *White v. Commonwealth*, 2006) or that the defendant's length of insanity was not long-standing enough for settled insanity (*Bieber v. People*, 1993; *People v. Skinner*, 1986; *People v. Wright*, 2005). While demarcating a specific length of time to qualify for "chronic" substance use or "permanent" mental illness is not a rational solution, we point this out to emphasize the difficult questions settled insanity raises and to help better explain reasons for diverging case outcomes.

- "We are not persuaded, however...that defendant's mental illness resulted from 'long-term,' 'habitual,' or 'chronic' drug or alcohol abuse do not, of course, establish any specific time frames relative to the offense, nor is it possible to do so. Yet, by any measure, the circumstances here do not begin to approach the prolonged abuse leading to a fixed insanity that the common law recognized as sufficiently attenuated to excuse the crime" (*State v. Sexton*, 2006).
- "The court held that "a 'settled condition of insanity' caused by drug abuse, even if temporary in nature, may nevertheless be legal insanity if the condition was not limited merely to periods of intoxication...Our Barrett decision and our other cases, read together, can be understood as rejecting this approach" (*McNeil v. US*, 2007).

In 45% of cases, it was explicitly noted that there was no disagreement between experts as to whether or not the defendant was psychotic at the time of the crime; rather, the disparity was found in the idea that the presence of clinical psychosis (or another qualifying mental illness) is necessary but not sufficient for a person to be deemed legally insane. Most prohibitive of this was the issue of substance use; if there was a possibility that the defendant was intoxicated at the time of the crime, regardless of the existence of a qualifying mental illness, the

defendant was not found legally insane. Some cases explicitly acknowledged the difference between clinical and legal insanity, as highlighted by the quotes below.

- "While it is true that the expert witnesses, whose testimony we have summarized above, unanimously agreed that appellant was insane at the time of the incident, this is not determinative" (*People v. Skinner*, 1986).
- "And obviously, there's a substantial difference between someone who's medically insane and someone who's legally insane" (*People v. Pelfrey*, 2011).

Three cases (14%) featured an analysis of the defendant's presumption of knowledge of potential consequences of their substance use. These cases either alluded to the idea that the defendant could/should have anticipated the substance's effects given that they had used them before, or the contrary, that they could not have anticipated the potential magnitude or distal/ prolonged effects of their substance use (i.e., the defendant cannot foretell the distant future).

- "His multiple hospitalizations gave him much opportunity to understand his disorder and the importance of taking his medication and the danger of using substances and alcohol with his disorder" (*Berry v. State*, 2012)

The last theme was featured in 45% of cases and addressed the different interpretations of substance-induced psychosis. Some of the specific language related to this diagnosis varied based on what version of the *Diagnostic and Statistical Manual* (DSM) or *International Classification of Disease* (ICD) the expert followed. For example, some experts referred to specific substances in their diagnosis (e.g., "amphetamine delusional disorder" or "cocaine-induced psychotic disorder") while others used the more general "substance-induced psychosis/psychotic disorder" or "toxic psychosis." Regardless, the interpretation of this diagnosis varied such that some experts/courts considered it a qualifying mental illness under the settled insanity defense whereas other experts/courts did not.

- "...posed the question of whether a substance-induced psychotic disorder should be recognized as a mental disease under our insanity-defense statute. The court

concluded that generally it should not unless the defendant was not under the immediate influence of drugs at the time of the alleged offense and could not have known that his prior drug consumption would cause insanity by activating a medically recognized latent mental disease" (*State v. Sexton*, 2006)

- "The Commonwealth's expert testified that, at the time of the killing, the defendant suffered from a 'substance-induced psychotic disorder and a cannabis withdrawal condition' that resulted in hallucinations; the expert further testified that the defendant did not have a mental disease or defect" (*Commonwealth v. Dunphe*, 2020).

Study 1 Discussion

Findings from this study shed light on discrepancies between legal and clinical science approaches to cases involving mental illness and substance use. Perhaps most conspicuous was the finding that only one defendant (~2% of cases) was actually acquitted through the use of a settled insanity defense (*Dixon v. State*, 1994). Even in cases in which multiple mental health experts agreed with one another that the defendant was psychotic and unable to appreciate their actions at the time of the crime – including experts called by both the prosecution and the defense – the defendants' guilt was nevertheless affirmed (*Berry v. State*, 2012; *Fields v. State*, 2022; *People v. Pelfrey*, 2011; *State v. Johnson*, 2002; *State v. Sexton*, 2006; *White v. Commonwealth*, 2006; *Yeager v. State*, 2017).

In comparison, from a clinical science perspective, we thought the defendant had a viable settled insanity claim in nearly 30% of the cases. The difference seemed to revolve around questions of causality of mental illness; when the focus was instead on evidence of acute intoxication at the time of the crime, legal and clinical judgments were more aligned. That is, for cases that did *not* involve acute intoxication at the time of the crime but *did* involve mental illness that impacted thoughts and behavior at the time of the crime (in effect, traditional insanity), the law tended to focus on whether the cause of that illness was due to distal substance

use. In contrast, the coders with backgrounds in clinical science focused on mental illness as it impacted behavior at the time of the crime without trying to infer its distal cause(s).

Dixon v. State (1994) is an outlier that aligns more with clinical science than other legal cases involving claims of settled insanity. The *Dixon* court ruled that the cause of the defendant's insanity can be disregarded so long as they are proven insane, but many other cases hinged on this very factor. If there was a remote possibility that the defendant's mental illness was "caused" by substance use — even if the defendant's substance use had abated — the defendant's convictions were upheld. Furthermore, in some jurisdictions, a defendant cannot use an insanity defense if substance use exacerbates an underlying mental illness (e.g., *State v. Sexton*, 2006; *Commonwealth v. Herd*, 1992). Inconsistent approaches contribute to confusion as to what qualifies as settled insanity. It is troubling that the basis for the defendant's acquittal in this case was often the reason for conviction in others.

The qualitative analysis of Study 1 revealed ideas, themes, and theoretical constructs concerning how the legal system analyzes and treats settled insanity. Determining eligibility for an insanity defense when substance use is involved is a multifaceted process: the courts generally try to answer whether the defendant was knowingly and acutely intoxicated at the time of the crime, but also whether voluntary intoxication was the causal force of the defendant's behavior during the crime (in addition to considering the evidence of mental illness at time of crime).

It became clear while examining the cases that mental health experts often disagreed with one another in some capacity. Sometimes experts disagreed about their overall conclusions or impressions related to the defendant; other times, these disagreements were more specific, such as which symptoms the defendant exhibited during evaluation. Experts were asked to opine not

only about the defendant's state of mind at the time of the crime, but also to synthesize their knowledge about the defendant's past and continued mental health status and/or substance use. Through this process, the courts often asked what caused the defendant's behavior at the time of the crime, with the intent to parse whether the defendant's behavior was a result of an independent mental illness or substance use. However, the answer was not always clear; in fact, it was often the main point of contention.

In most cases, for every expert who testified on behalf of the defendant, the prosecution countered with an opposing expert. These opposing opinions usually brought into question the role of substance use in the defendant's insanity. Mental health experts who attempted to remain open in their conclusions were often either prompted to make decisive statements and/or their testimonies were seen as unpersuasive or equivocal (especially if there was an opposing expert who made stronger claims). Experts often explicitly recognized the difficult nature of making conclusive statements about a person's mental status; however, if an expert was more confident in their conclusions (or expressed them in a more confident manner), their testimony seemed to hold more weight with tiers of fact (see *Berry v. State,* 2012; *Sprouse v. Thaler*, 2013). This adversarial process does not align well with the scientific process by which clinicians address differential diagnoses, during which time clinicians often collaborate, proffer provisional diagnoses, and understand that their opinions may change as they learn more about the individual and/or as time passes and symptoms fluctuate. However, the courts typically desire more definitive conclusions so that they categorically resolve particular cases at hand.

Another notable finding was that some courts expected defendants to know that their substance use could result in a lasting, severe mental illness and thus attributed blame to the

defendant for the illness (see e.g., *Bieber v. People*, 1993; *State v. Brennauer*, 2023). Expecting individuals to have prescient knowledge that their substance use could trigger an underlying severe mental illness is inconsistent with clinical science. Substance-induced mental disorders often arise from complex interactions between genetic predispositions, neurobiological vulnerabilities, and environmental stressors (McDonald & Murray, 2000; Stilo & Murray, 2019). Most people are likely unaware of their epigenetic predisposition to mental illness or the specific mechanisms by which substance use can precipitate psychotic symptoms (Appelbaum, 2022).

Study 1 Limitations

A limitation of the Study 1 case-law analysis is that we relied on a legal database to source our cases for review. The text of cases available on legal databases are not necessarily representative of all cases, which has attendant limitations both to the potential validity as well as generalizability of our results. While written opinions are often analyzed to understand how the law functions and how judges reason, they are generally only written during appellate review and represent a small number of cases: estimates suggest only ~1% of appeals are reviewed and ~9% of those result in reversals (U.S. Courts, 2016). There are likely systematic differences between cases that go to trial and those that do not, which cases are appealed (e.g., more severe crimes, charges, sentences) and which appeals are accepted (e.g., error or abuse of discretion; complex issues with precedential value; Waters et al., 2015). Thus, the patterns we found in these cases may not generalize across all cases and it is possible that other validity limitations to using the appellate case data from Nexis Uni could have affected our findings. As such, further research with broader sources is needed to better understand how settled insanity cases unfold at trial.

Additionally, the written case opinions are filtered through the perspective and style of the judge-writers, as we did not have access to original trial documents or recordings of the trials themselves. For the purpose of coding, we treated the information as if it were accurate. For example, if the case author summarized statements made by a forensic mental health expert, we assumed that these statements were an accurate paraphrase of the expert's opinion. It is possible that original documents and testimony may have provided information from other perspectives. Beyond this limitation is the fact that state-specific case law and statutes are contextual factors that might have impacted the state-level cases and outcomes. We did not attend carefully to how state-specific laws might have affected these findings, but future work could focus on this issue.

Regarding reflexivity in the qualitative analysis of the subset of 22 cases, the analysts (i.e., first and second authors) are both women, both trained in clinical psychology, both American, and both White. People are shaped by their backgrounds, experiences, and perspectives that influence how they interpret and understand the world – and researchers are people. As such, the qualitative analyses almost certainly were shaped by the perspectives and experiences of the analysts – and their worldviews may be more similar to one another than other people or researchers might be given their similar backgrounds and identities. As such, it is possible that analysts with other perspectives, training, and backgrounds might reach a different pattern of qualitative results. All qualitative analyses are subject to potential subjectivity and assumptions of the researchers; however, we aimed to bolster the credibility of our data by transparently explaining our process such that it could be replicated by others, carefully sharing the details of our analytic findings, and reflecting on our identities as researchers.

Despite these limitations, our findings provide valuable insight into aspects of settled insanity that have never been empirically investigated. We were able to synthesize information related to the ways that courts, triers of fact, attorneys, and mental health experts make sense of settled insanity, as well as collect data regarding case outcomes and the rate of success of settled insanity defenses. Furthermore, we were able to assess whether and how legal procedures regarding the intersection of substance use and insanity/psychosis align with clinical science.

Study 2: Survey of Forensic Mental Health Experts

When insanity issues arise, forensic mental health experts (FMHEs) are often called upon to provide expert opinions about the mental state of the defendant (Melton et al., 2017). They perform assessments of defendants' thought processes and behaviors before, during, and after an offense by drawing on a variety of sources, including interviews with defendants, specialized assessment measures, and collateral reports (e.g., criminal records, substance use, medical history, educational transcripts; Glancy et al., 2015; Melton et al., 2017; Neal & Grisso, 2014).

Establishing a clear case conceptualization when substance use and mental illness are involved is difficult — particularly in individuals with limited reality orientation, such as those with psychosis. As a result, experts frequently disagree (Guarnera et al., 2017). Although it is ultimately up to the trier of fact (e.g., judge or jury) as to how a defendant is found and sentenced, they rely heavily on the opinion of forensic mental health experts (Melton et al., 2017; Redding et al., 2001; Redding & Murrie, 2010; Zapf et al., 2004). As such, understanding forensic experts' approaches is worthwhile.

Study 2 investigated forensic mental health experts' decision-making processes related to cases featuring psychosis and substance use. We utilized multiple brief case vignettes involving

defendants with psychosis, substance use, or a combination of the two in a within-subjects design to increase power as compared to a between-subjects design (Lakens, 2016). We hypothesized a successful insanity defense would be seen as most possible for defendants when no substance use was implicated at all and least possible for defendants acutely intoxicated at the time of the crime, with settled insanity falling between. Further, based on the literature about blame attributed to people who chronically use substances (e.g., Room, 2005; Witte et al., 2019), we thought defendants with distal substance use but no intoxication at the time of the crime would be perceived as more blameworthy (and participants would be more confident in their insanity opinion) as compared to defendants in insanity cases with no substance use at all, and as compared to defendants who were intoxicated at the time of the crime. Our hypotheses were preregistered prior to collection of data (https://osf.io/jtncz/). All materials and methods were approved by the Arizona State University Institutional Review Board.

Study 2: Method

Participants

A database of mental health practitioners with forensic interests is maintained by the first author's research lab and has been used for participant recruitment in prior research (e.g., Neal & Line, 2022; Neal et al., 2024). All individuals with a listed email address were invited to participate (3,731 people). While 583 people completed portions of the study (16% response rate), we excluded from analyses those who were not licensed to practice psychology in the United States, such as being licensed in another country (n =25) or generally not being licensed to practice (n =35). The 213 people who did not respond to this item at the end of the survey were also excluded from analyses. All participants included in analyses (N=310) were 18 years

or older, licensed as psychologists in the US, finished the study in full, and passed an attention check (i.e., responded "yes" to an item that asked whether they had read the instructions). Note that when we ran the analyses on the entire sample collected, the pattern of results was the same.

Both men (48.22%) and women (51.78%) participated, with a mean age of 37.66 (*SD* = 14.08) and an average of 18.71 years of experience conducting forensic evaluations (*SD* = 12.63). The highest level of education was almost uniformly doctoral-level, with just 1.94% of participants having a master's degree (66.67% PhD, 29.77% PsyD, 0.97% EdD, 0.64% other — one person reported board certification and another reported a postdoc, both of which require a doctoral-level degree). Roughly a third of the sample completed a formal postdoctoral fellowship in forensic psychology (31.39%) and 12.05% were board-certified by the American Board of Forensic Psychology. With regard to their primary place of employment, participants worked in private practice (53.42%), an institution or agency (29.64%, e.g., hospital, prison, court clinic), a university (11.73%), and other (5.21%, e.g., consulting, corporate, government, military, retired). Participants responded from 43 of the 50 United States and from the District of Columbia.

Procedure and Materials

Participants received an email inviting them to participate in a brief survey hosted on Qualtrics. After informed consent, participants were provided with and advised to follow the M'Naghten standard of insanity during the survey (see materials on the OSF, https://osf.io/v6kjb/). Participants then read through three randomly-assigned written case vignettes (more detail to follow) and determined whether the defendant's case met the criteria for an insanity defense in each. Within each case, participants were given a list and asked to rank the top three factors that influenced their decision (adapted from Feix & Wolber, 2007; codebook on

the OSF, https://osf.io/v6kjb/). In addition, participants were asked to rate their confidence and defendant blameworthiness, each on a scale from 0% to 100%. Finally, we asked participants about the insanity-relevant policies in their respective jurisdictions and collected demographic information and professional experience data.

Each fictional vignette featured a defendant whose case details mapped onto one of the three legal pipelines for those involving mental illness and substance abuse (see Figure 1): a defendant 1) with mental illness without comorbid substance use (i.e., could fit traditional insanity); 2) with comorbid mental illness and substance use with apparent acute voluntary intoxication at time of crime; and 3) with settled insanity and no acute voluntary intoxication at the time of crime. In total, nine vignettes were crafted (three per pipeline) that meaningfully varied on the features we cared about (i.e., toxicology reports/collateral reports of intoxication, psychosis history, substance use history, and persistence of symptoms) but also varied on non-central information (e.g., manner of death [stabbing, shooting, or blunt force trauma]; name of victim; substance used [methamphetamine, cocaine, cannabis, hallucinogen(s), alcohol]; mental health disorder [schizophrenia, schizoaffective disorder, an unspecified psychotic disorder]; age of defendant [18-65] — see materials on the OSF, https://osf.io/v6kjb/). We used this stimulus sampling approach and randomized distractor information in each vignette (e.g., description of the physical location of the crime such as behind a local restaurant, near a local gym, near an apartment's flight of stairs, near a shopping mall, outside a convenience store, in the parking lot of a motel, in a psychiatric hospital, in the victim's home, and near a hiking path) to increase the generalizability of our results and minimize context effects, sensitization, and demand

characteristics (see Greenwald, 1976; Judd et al., 2012; Lambdin & Shaffer, 2009; Wells & Windschitl, 1999).

The survey was programmed to randomly and evenly present one of the three vignettes per participant per case-type (i.e., each participant saw three of the nine vignettes). Each vignette featured information about the crime and the victim's manner of death, the defendant's reports/ perception of the crime, defendant's mental health diagnosis, toxicology reports from time of crime, collateral reports about defendant's behavior around time of crime, psychosis history, and substance use history. Victim relation to the defendant was kept intentionally vague; unisex victim names were used to reduce bias related to sex. Additionally, defendants were consistently referred to with male pronouns, but their names and age were purposefully excluded.

The first two vignettes were assigned in random order, but all participants saw the settled insanity vignette third. Because we were unsure whether special settled insanity instructions should be given to mental health expert participants, we made it a variable to determine whether it made a difference. As such, participants were randomly and evenly assigned to one of two groups within Vignette 3: Vignette 3a, which featured a settled insanity vignette but did *not* have any special instructions (i.e., the participants followed the same procedure as Vignettes 1 and 2), or Vignette 3b, which featured the same vignettes as those in Vignette 3a but was followed by instructions informing participants about settled insanity and how to follow settled insanity defense criteria when responding to subsequent questions.

Specifically, Vignette 3b said "In some jurisdictions, cases in which long-term voluntary substance use has resulted in a 'fixed' or 'settled' mental illness, a settled insanity defense can be used," and "Most jurisdictions that allow settled insanity defenses use the following rule to

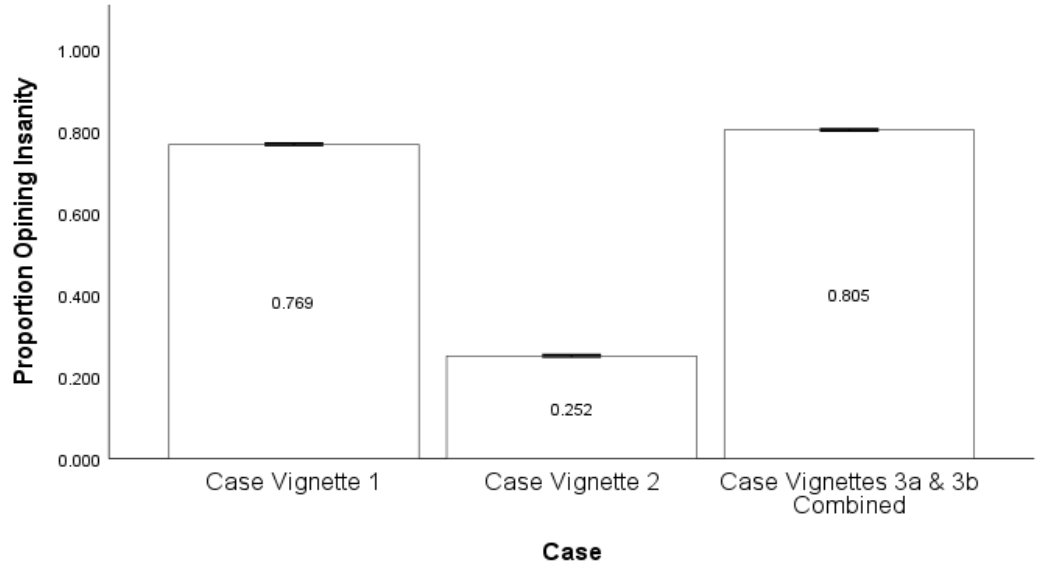
determine whether or not a defendant meets criteria for a settled insanity defense: the defendant's presentation must 1) be fixed and stable; 2) last for a reasonable duration of time; 3) not be solely dependent upon the recent injection or ingestion and duration of the effects of the drug; and 4) meet the jurisdiction's legal definition of insanity. For the purposes of this study, please assume that the jurisdiction's legal definition of insanity is the same as the definition outlined in previous questions (presented again here below for your reference): 'It must be clearly proved that, at the time of the committing of the act, the party accused was laboring under such a defect of reason, from disease of the mind, and not to know the nature and quality of the act they were doing; or if they did know it, that they did not know they were doing what was wrong.'"

Study 2 Results

Insanity Opinion

No significant difference emerged between people randomly exposed to Vignettes 3a and 3b on insanity opinion ($\chi^2[1, 307] = 0.10$, $p = 0.75$, Cramer's $V = 0.018$), so for the generalized logistic mixed effects regression modeling of insanity opinion across vignettes, we combined Vignettes 3a and 3b into Vignette 3(Combined). Model results revealed that the probability of psychologists opining the defendant met the insanity defense criteria differed between the case vignettes, $F(2, 922) = 107.78$ $p < 0.001$ (see Figure 3 and Table 5). The pattern partially supported our hypotheses: while participants were less likely to opine the defendant insane in Vignette 2 (voluntary intoxication; 25%) than in Vignette 1 (traditional insanity; 77%) and 3 (settled insanity; 81%), opinions did not differ between Vignettes 1 and 3 (see Table 5). There was no significant random effect of psychologist-participant in the model, indicating the pattern of reaching an insanity opinion in these cases applied similarly across the experts (see Table 5).

Figure 3. *Proportion of Psychologist-Participants Opining the Defendant Met Insanity Defense Criteria in Each of the Three Vignettes in Study 2*



Note. Generalized logistic mixed effects model with case vignette as predictor and random intercept for psychologist-participant; error-bars represent the 95% confidence intervals for the predicted probability of an insanity opinion. Vignette 1 featured a defendant with mental illness only and no evidence of substance use near the time of crime (i.e., a traditional insanity case). Vignette 2 featured a defendant with mental illness and probable substance use near the time of the crime (i.e., an acute voluntary intoxication case). Vignette 3(Combined) featured a defendant with mental illness and chronic, distal substance use but no active intoxication (i.e., settled insanity case).

Table 5. *Study 2 Generalized Mixed Effects Logistic Regression Model of Insanity Opinion Across the Three Case Vignettes*

	Coefficient	Standard Error	Test Statistic	*p*	Standardized Effect Size
Fixed Effects					Odds Ratio [95% CI]
Intercept	1.42 [1.13, 1.71]	0.15	$t = 9.70$	<0.001	4.14 [3.11, 5.52]
Case 1	-0.21 [-0.60, 0.18]	0.20	$t = -1.06$	0.289	0.81 [0.55, 1.20]
Case 2	-2.52 [-2.90, -2.13]	0.20	$t = -12.91$	<0.001	0.08 [0.06, 0.12]
Random Effects					Cohen's *d*
Participants (*N*=310)	0.10 [0.01, 2.69]	0.17	$Z = 0.60$	0.55	0.03 (very small)

Note: Generalized logistic mixed effects regression model with case as predictor (three vignettes) and random intercept for psychologist-participant on probability of opining the defendant met the criteria for an insanity defense. Case 3 was the reference category. Values in brackets are 95% confidence intervals.

Confidence of Insanity Opinion

An independent samples *t*-test showed no difference between groups exposed to Vignettes 3a ($M = 69.11$, $SD = 23.22$) and 3b ($M = 67.09$, $SD = 20.36$) on confidence $t(301) =$

0.94, $p = 0.35$, Cohen's $d = 0.11$, so we combined the groups for repeated measures general linear model (GLM) analyses of confidence across Vignettes 1, 2, and 3(Combined). The model with a Greenhouse-Geisser correction revealed an overall significant difference in insanity opinion confidence between the three vignettes, $F(1.83, 548.22) = 4.83$, $p = 0.010$, $eta_p^2 = 0.02$. Contrary to our hypothesis that Vignette 3 would yield the highest confidence, Bonferroni-corrected post hoc tests revealed confidence did not differ between Vignettes 3 ($M = 68.31$, $SD = 20.89$) and 2 ($M = 65.72$, $SD = 23.52$), $p = 0.19$, nor between 3 and 1 ($M = 69.87$, $SD = 21.05$), $p = 0.51$. However, participants were significantly less confident in Vignette 2 ($M = 65.72$, $SD = 23.52$) than 1 ($M = 69.87$, $SD = 21.05$), $p = 0.018$.

Defendant Blameworthiness

An independent samples t-test showed no difference between groups exposed to Vignettes 3a ($M = 39.35$, $SD = 26.64$) and 3b ($M = 44.49$, $SD = 27.35$) on blameworthiness, $t(300) = -1.66$, $p = 0.10$, Cohen's $d = -0.19$, so we combined the groups for repeated measures general linear model (GLM) analyses of blameworthiness across Vignettes 1, 2, 3(Combined). The model with a Greenhouse-Geisser correction revealed an overall significant difference in defendant blameworthiness between the three vignettes, $F(1.89, 556.26) = 104.67$, $p < 0.001$, $eta_p^2 = 0.26$. Contrary to our hypothesis that Vignette 3 would yield the most blame, Bonferroni-corrected post hoc tests showed significantly higher ratings of blameworthiness in Vignette 2 (voluntary intoxication; $M = 62.58$, $SD = 24.77$) than Vignette 3 (settled insanity; $M = 41.54$, $SD = 26.89$) and Vignette 1 (i.e., traditional insanity; $M = 41.99$, $SD = 28.46$), both $p < 0.001$. No differences emerged between Vignettes 1 and 3, $p = 1.00$.

Rankings of Evidentiary Factors

For each vignette, participants were asked to rank a set of evidentiary factors they believed most influenced their opinions regarding the defendant's sanity (see Table 6). Consistent with the traditional insanity defense (Vignette 1), each of the three most highly-ranked factors addressed evidence of mental illness (i.e., symptoms consistent with mental illness, psychotic symptoms at times other than during the offense, prior mental health treatment). Consistent with voluntary intoxication (Vignette 2), two of the three most highly-ranked factors focused on substance use: evidence of intoxication at the time of the crime and symptoms typically associated with substance use. The third-highest ranked was whether presenting symptoms were consistent with mental illness. Finally, consistent with settled insanity, the three highest-ranked factors in Vignettes 3a and 3b concerned mental illness and intoxication in relation to the defendant's presentation during the crime. The highest-ranked factor for both was whether the presenting symptoms were consistent with mental illness, followed by psychotic symptoms relative to active intoxication, and then collateral information about timing and intensity of substance use in relation to the crime.

Table 6. *Top Three Highest-Ranking Evidentiary Factors by Case Vignette*

	Rank by Vignette			
Decision-Making Factors	1	2	3a	3b
1. Presenting symptoms (in)consistent with mental illness	1	3	1	1
2. Defendant was likely intoxicated at the time of the crime		1		
3. Presenting symptoms generally (in)consistent with ingested substance(s) (e.g., methamphetamine, cocaine, hallucinogens, inhalants, cannabis, opioids)		2		
4. Collateral sources (e.g., witness statements; blood, breath, urine tests upon arrest; crime scene info) on timing and intensity of substance use in relation to offense			3	3
5. Defendant exhibited psychotic symptoms only during intoxication or symptoms seem to persist after effects of substance known to be in its active phase			2	2
6. Evidence of psychotic symptoms or episodes of mental illness before or at times other than during the offense	2			
7. Defendant, before crime, had knowledge substance brought on psychotic symptoms				
8. Defendant has been involved in prior mental health treatment	3			
9. Other (text input)				

Jurisdiction-Specific Questions

Participants provided information about policies within their jurisdiction and opinions on these policies (see Table 7; a more detailed version with additional questions is available on the OSF, https://osf.io/v6kjb/). While less than 4% of respondents reported they did not know whether their jurisdiction allowed for a traditional insanity defense, nearly 39% did not know if their jurisdiction permitted a *settled* insanity defense, highlighting its relative obscurity. And while psychologist-participants overwhelmingly opined that their jurisdiction should allow for a traditional insanity defense (96%), fewer opined their jurisdiction should allow for settled insanity (75%), and far fewer were in favor of a voluntary intoxication defense of diminished capacity (25%).

Table 7. *Descriptive Statistics of Jurisdiction-Specific Questions*

Question	Yes *n* (valid %)	No *n* (valid %)	Don't Know *n* (valid %)
Jurisdiction allows use of insanity defense	295 (95.16%)	3 (0.97%)	12 (3.87%)
Should jurisdiction allow use of insanity defense?	296 (95.48%)	5 (1.61%)	9 (2.90%)
Jurisdiction allows diminished capacity (voluntary intox)	85 (27.51%)	147 (47.57%)	77 (24.92%)
Should jurisdiction allow diminished capacity (vol intox)?	76 (24.60%)	178 (57.61%)	55 (17.80%)
Jurisdiction allows **settled** insanity defense	108 (34.84%)	82 (26.45%)	120 (38.71%)
Should jurisdiction allow **settled** insanity defense?	228 (75.25%)	75 (24.75%)	

Note. Intox = intoxication. A "Don't Know" response option was mistakenly omitted from the "should jurisdiction allow settled insanity defense" question.

Study 2 Discussion

Study 2 provided insight into the decision-making of mental health experts in cases involving psychosis and substance use. As expected, and consistent with the law's general limitation of acute, voluntary intoxication in insanity cases, Vignette 2 (comorbid mental illness and substance use with apparent acute voluntary intoxication at time of crime) yielded the fewest insanity opinions (25%). Traditional evidence of insanity without substance use, and cases of settled insanity, yielded higher insanity opinions (77-81%). The lack of significant difference

between the two different settled insanity vignettes themselves, along with the similarity of those opinions compared to the traditional insanity vignettes, suggests mental health experts evaluate evidence of permanent mental illness similarly, regardless of whether the legal defense of insanity was general or settled in nature. And they largely opine defendants who are actively and voluntarily intoxicated at the time of the crime as *not* insane, consistent with the law's strictures.

Regarding confidence in insanity opinion, participants were most confident in their opinions in the traditional insanity vignette, followed by the settled insanity vignettes, and then the voluntary intoxication vignette. There was no difference between confidence ratings on the voluntary intoxication and settled insanity vignettes, supporting the idea that any time substance use is introduced into the clinical picture, the concept of insanity is further complicated, regardless of whether the substance use was temporally proximal or distal to a specific event. Again, this prompts inquiry into the necessity of settled insanity as it does not seem to function as a clarifying condition of the voluntary intoxication limiting rule.

Participants rated the Vignette 2 (acute voluntary intoxication) defendant as the most blameworthy, with similar but lower levels of blameworthiness for the defendant in Vignettes 1 (traditional insanity) and 3 (settled insanity). This finding is consistent with a large body of literature and with the law that defendants are seen as more culpable for their actions when substance use is involved. This finding that defendants in Vignette 3 (regardless of type of insanity instructions provided in the settled insanity case) were not seen as any more or less blameworthy than those in the straightforward insanity vignette — but were seen as less blameworthy than the defendant who was acutely intoxicated at the time of the crime —

suggests that defendants who develop a fixed, permanent mental illness regardless of its etiology is — again — seen by clinicians as similar to that of traditional insanity.

Taken together, all of these data suggest that settled insanity may be redundant to general insanity, at least from a clinical science perspective. All of the data point the same direction, including the opinions by clinicians about traditional insanity vignettes as similar to settled insanity but as very different from acute, voluntary intoxication at the time of a crime; confidence of clinicians in their insanity opinions about cases like these; perceptions of defendant blameworthiness; evidentiary factors reportedly used by psychologists in reasoning about these cases; and even psychologists' opinions about what kinds of law and policies their jurisdictions *should* have: the data suggest that settled insanity may unnecessarily complicate cases involving mental illness and substance use, and that a simpler approach may be possible.

Study 2 Limitations

The experimental case vignettes in Study 2 cannot fully capture the complexity of actual cases. Absent were the real-life implications of clinicians' opinions in Study 2; there were no material consequences of their opinions. Although we built the vignettes based on the general format and language of crime summaries found within actual cases, no experimental lab-based project can fully capture the ecological validity of the real world. This is a tradeoff present in all experimental work that, by design, has strengths in internal validity and the ability to infer causal relationships, but relative weaknesses in external validity. Furthermore, we focused on the reasoning and opinions of psychologists in this study, who are important experts involved in legal cases like these but who do not make the legal determination as to what happens in actual cases. Therefore, these data have value, but they also have attendant limitations.

General Discussion

The current set of studies address important questions at the intersection of law and clinical science by highlighting the complicated nature of settled insanity. There is significant tension in the law between fairness and personal responsibility, especially when voluntary intoxication is a consideration. This tension is reflected in the findings of the case law review from Study 1, such that courts tended to vary significantly in how they interpreted volition and substance use in their judicial opinions (e.g., *Commonwealth v. Dunphe*, 2020; *Crutsinger v. Thaler*, 2012). For example, in cases with similar features, there were sometimes very different outcomes (e.g., *State v. Johnson*, 2002 vs. *McNeil v. U.S.*, 2007). Most courts asserted that individuals who develop a condition as a result of voluntary intoxication are nonetheless responsible for their behavior and are therefore deemed to be worthy of blame, which is consistent with common practice (e.g., Model Penal Code §4.01[2]).

This finding leads to questions of how voluntariness is defined and operationalized within the context of psychology and the law. Although the law conceptualizes voluntariness as a conscious and willful action, psychology allows for a broader consideration of factors in its interpretation that captures the bidirectional nature of the relationship between substance use and psychosis. Research in neuroscience and psychology suggest that chronic substance use leads to impairments in executive functioning, such that an individual may experience deficits in their abilities to make decisions, control their impulses, and understand the long-term consequences of their actions (APA, 2022), which are all cognitive components of conscious and willful action.

Psychological and neuroscientific research related to psychosis and intoxication helps shed light on the complexities of the doctrine of settled insanity and the courts' struggle to

determine criminal responsibility. The high co-occurrence of substance use and psychosis, anticipated and unanticipated intoxication effects of psychotomimetic substances, and psychotic symptoms that last beyond the period of acute intoxication make it nearly impossible to determine the etiology of psychotic symptoms and determine whether they are a result of acute intoxication, an independent mental disorder, prolonged intoxication effects, or some combination thereof (Appelbaum, 2022; Bourget, 2013; Feix & Wolber, 2007). This complexity was reflected in the findings from Study 2, in which clinician-participants were least confident in their opinions when recent substance use was part of the clinical picture.

For psychologists and mental health practitioners, a definitive answer regarding the etiology of psychotic symptoms is less important as course of treatment tends to be the same (APA, 2022). This notion was supported by our findings—in Study 2, clinicians generally treated defendants with a fixed, permanent mental illness similarly, without regard to the etiology of that mental illness. However, the law relies on the very categorization that clinical practice avoids. In Study 1, trained coders with clinical science backgrounds opined that based on the information available in case opinions, defendants in 15 cases had potentially viable grounds for a settled insanity defense. However, only 1 case featured a defendant who was successful in their use of a settled insanity defense (*Dixon v. State*, 1994). Even when using the law's categorization of defendants with mental illness, there was still a discrepancy between psychology and the law, which was evident both in the coding and outcomes of cases (e.g., *People v. Skinner*, 1986).

Issues with the current process by which settled insanity cases are analyzed and resolved are perhaps clearer if we remove substance use and mental illness from the equation. Consider cancer. Like mental illness, cancer stems from both proximal and distal causes, which can be

biological, environmental, and/or social in nature. We cannot discern the relative contributions of behaviors imparting risk for developing cancer from biological disposition. We do not blame people for causing their cancer, or relatedly, attribute one specific factor as the sole cause of a person's cancer. Similarly, we would not ask for someone to prove that their cancer would exist if they had not engaged in certain behaviors, nor would we see someone's cancer who did not engage in risky behaviors as more legitimate: cancer is cancer. However, these are exactly the demands the legal system makes in cases featuring settled insanity.

The settled insanity doctrine prompts insoluble questions about the etiology of mental illness and needlessly expands the timeframe of interest to beyond the time of the crime (see also Johnson, 1994). We suggest the core inquiry of these cases center on whether the defendant had a qualifying mental illness at the time of the crime, focusing on eligibility for a *general* insanity defense. A legal defense of insanity requires a severe, permanent mental disease/defect. Permanent mental illness resulting from substance use can be regarded as any other qualifying disease/defect as relevant to a traditional insanity defense. Attempts to unpack the cause of the mental illness could be set aside (to continue the cancer analogy, the inquiry could focus on whether the person *has cancer* rather than attempting to determine whether the person *caused their cancer*). For those jurisdictions that limit insanity eligibility due to voluntary intoxication, eligibility can continue to hinge on evidence of acute, voluntary intoxication at the time of the crime (even for mentally ill defendants). This simpler approach provides a clearer path for future cases and is better aligned with scientific knowledge than the current settled insanity doctrine.

We recognize that the simpler approach would not solve all the complications faced by these kinds of cases. Specifically, substance/medication-induced psychotic disorder (SMPID)

and other short-term psychoses will still be contentious. The case law analysis revealed that SMPID was sometimes regarded as a qualifying mental illness under the insanity defense (e.g., *State v. Johnson*, 2002), whereas other times it was not (e.g., *Field v. State*, 2022). Even under the simpler approach, these determinations will likely come down to similar factors. Timeline will be of particular importance, with collateral information regarding the possibility of acute intoxication during the crime (e.g., witness and toxicology reports). We also recognize that some substances' expected intoxication effects may be longer/less clear than others. As a result, it may be necessary to seek the testimony of additional professionals well-versed in the pharmacokinetics of the implicated substance(s).

Even with the simpler approach, defendants may not be successful in their use of an insanity defense. After all, the rarity of successful insanity defenses is a function of the challenging standards of legal insanity (Melton et al., 2017). Accordingly, due process will still allow courts the opportunity to explore defendants' acute voluntary substance use at the time of the crime as a limiting factor of insanity. However, this proposal helps eliminate the posited preferential treatment that individuals who engage in chronic substance use have over those who engage in intermittent substance use (see Johnson, 1994) by focusing on the existence of a qualifying mental illness, so frequency of use becomes irrelevant.

More research is needed to continue to build understanding at the intersection of substance use, psychosis, and the law. Studies in neuroscience and psychology should continue to investigate the relationship between substance use and psychotic symptoms that endure beyond acute intoxication. Another important future direction is to empirically investigate how legal decision makers interpret evidence related to intoxication and mental illness. Due to the

inherent complexity of the intersection of substance use and psychosis, neuroscientific and psychological evidence are especially important in insanity cases, and as such, research is needed to understand how judges and juries assess evidence in these cases. And given that state courts vary greatly on their treatment of settled insanity, it is possible that state-specific laws may impact how mental health experts and courts interpret and apply the doctrine. Future research should investigate whether and to what degree state-specific voluntary intoxication laws may impact state-level cases and outcomes.

In sum, we found that while the doctrine of settled insanity attempts to serve as an exception to the voluntary intoxication rule that permits insanity defenses, it rarely does so successfully for two possible reasons: (1) it does not map onto clinical reality and (2) courts struggle to apply the rules. Our findings suggest that a simpler approach, one which does not attempt to answer inscrutable questions about the cause of mental illness, may be more effective (see *Dixon v. State*, 1994). Although more research is needed in this area before definitive recommendations are made, these mixed-method data provide early support for continuing to use the standards of traditional legal insanity rather than trying to understand and apply obscure exceptions to those standards.

References

Addington, J., & Addington, D. (2007). Patterns, predictors and impact of substance use in early psychosis: A longitudinal study. *Acta Psychiatrica Scandinavica, 115*(4), 304-309.

Addington, J., Chaves, A., & Addington, D. (2006). Diagnostic stability over one year in first-episode psychosis. *Schizophrenia Research*, *86*(1-3), 71-75.

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., Text Rev.). https://doi.org/10.1176/appi.books.9780890425787

Appelbaum, P. S. (2022). Settled insanity: Substance use meets the insanity defense. *Psychiatric Services*, *73*(1), 105-107.

Arendt, M., Rosenberg, R., Foldager, L., Perto, G., & Munk-Jørgensen, P. (2005). Cannabis-induced psychosis and subsequent schizophrenia-spectrum disorders: Follow-up study of 535 incident cases. *The British Journal of Psychiatry*, *187*(6).

Arenella, P. (1977). The diminished capacity and diminished responsibility defenses: Two children of a doomed marriage. *Columbia Law Review*, *77*(6), 827-865.

Arnett, C., Neal, T.M.S., & Irvin-Vitela, M. (2025). *The legal intersection of psychosis and substance use: A mixed-methods investigation of settled insanity.* [Data repository]. OSF. https://osf.io/v6kjb/

Arseneault, L., Cannon, M., Poulton, R., Murray, R., Caspi, A., & Moffitt, T. E. (2002). Cannabis use in adolescence and risk for adult psychosis: Longitudinal prospective study. *British Medical Journal*, *325*(7374), 1212–1213. https://doi.org/10.1136/bmj.325.7374.12

Auerbach, C.F., & Silverstein, L.B. (2003). *Qualitative data: An introduction to coding and analysis.* New York University Press.

Bardo, M. T., Neisewander, J. L., & Kelly, T. (2013). Individual differences and social influences on the neurobehavioral pharmacology of abused drugs. *Pharmacological Reviews*, *65*(1), 255-290.

Bell, D. S. (1965). Comparison of amphetamine psychosis and schizophrenia. *The British Journal of Psychiatry*, *111*(477), 701-707.

Berry v. State, 969 N.E.2d 35 (Ind. 2012).

Bieber v. People, 856 P.2d 811 (Colo. 1993).

Bloomfield v. State, 61 N.E.3d 1234 (Ind. Ct. App. 2016).

Bourget, D. (2013). Forensic considerations of substance-induced psychosis. *Journal of the American Academy of Psychiatry and the Law Online*, *41*(2), 168-173.

Bourque, J., Afzali, M. H., & Conrod, P. J. (2018). Association of cannabis use with adolescent psychotic symptoms. *JAMA Psychiatry*, *75*(8), 864-866.

California Penal Code § 25 (2024).

Carroll, A., McSherry, B., Wood, D., & Yannoulidis, L.L.B.S. (2008). Drug-associated psychoses and criminal responsibility. *Behavioral Sciences & The Law*, *26*(5), 633-653.

Carter-Yamauchi, C. A. (1998). *Drugs, alcohol, and the insanity defense: The debate over "settled" insanity*. Legislative Reference Bureau.

Catts, V. S., & Catts, S. V. (2010). The psychotomimetic effects of PCP, LSD and MDMA: Pharmacological models of schizophrenia? In P. S. Sachdev & M. S. Keshavan (Eds.) *Secondary Schizophrenia* (pp. 141–168). Cambridge University Press.

Chaplin, S. (1991). Adverse effects of drugs used for weight reduction. *Adverse Drug Reaction Bulletin*, *148*(1), 556-559.

Cole, J. O., & Katz, M. M. (1964). The psychotomimetic drugs: An overview. *JAMA, 187*(10).

Commonwealth v. Dunphe, 485 Mass. 871 (2020).

Commonwealth v. Herd, 604 N.E.2d 1294, 413 Mass. 834 (1992).

De Hert, M., Wampers, M., Jendricko, T., Franic, T., Vidovic, D., De Vriendt, N., Sweers, K., Peuskens, J., & van Winkel, R. (2011). Effects of cannabis use on age at onset in schizophrenia and bipolar disorder. *Schizophrenia Research*, *126*(1-3), 270-276.

Dixon v. State, 668 So. 2d 65 (Ala. Crim. App. 1994).

D'Souza, D. C., Perry, E., MacDougall, L., Ammerman, Y., Cooper, T., Wu, Y. T., Braley, G., Gueorguieva, R., & Krystal, J. H. (2004). The psychotomimetic effects of intravenous delta-9-tetrahydrocannabinol in healthy individuals: Implications for psychosis. *Neuropsychopharmacology*, *29*(8), 1558-1572.

Fauman, M. A., & Fauman, B. J. (1978). The psychiatric aspects of chronic phencyclidine use: A study of chronic PCP users. *PCP*, 183.

Feix, J., & Wolber, G. (2007). Intoxication and settled insanity: A finding of not guilty by reason of insanity. *Journal of the American Academy of Psychiatry and the Law Online*, *35*(2), 172-182.

Ferdinand, R. F., Sondeijker, F., Van Der Ende, J., Selten, J. P., Huizink, A., & Verhulst, F. C. (2005). Cannabis use predicts future psychotic symptoms, and vice versa. *Addiction*, *100*(5), 612–618. https://doi.org/10.1111/j.1360-0443.2005.01070.x

Fields v. State, No. 507, September Term, 2021 (Md. Ct. Spec. App. Sept. 8, 2022).

Gage, S. H., Jones, H. J., Burgess, S., Bowden, J., Davey Smith, G., Zammit, S., & Munafò, M. R. (2017). Assessing causality in associations between cannabis use and schizophrenia risk: A two-sample Mendelian randomization study. *Psychological Medicine*, *47*(5), 971–980. https://doi.org/10.1017/S0033291716003172

Glancy, G. D., Ash, P., Bath, E. P., Buchanan, A., Fedoroff, P., Frierson, R. L., Harris, V. L., Hatters Friedman, S. J., Hauser, M. J., Knoll, J., Norko, M., Pinals, D., Price, M., Recupero, P., Scott, C. L., & Zonana, H. V. (2015). AAPL practice guideline for the forensic assessment. *The Journal of the American Academy of Psychiatry and the Law*, *43*(2 Suppl), S3-S53.

Glaser, B. G., & Strauss, A. L. (1967). *Discovery of grounded theory: Strategies for qualitative research*. Routledge.

Gonzalez, R. (2007). Acute and non-acute effects of cannabis on brain functioning and neuropsychological performance. *Neuropsychology Review*, *17*, 347-361.

Greenwald, A. G. (1976). Within-subjects designs: To use or not to use? *Psychological Bulletin, 83*(2), 314.

Guarnera, L. A., Murrie, D. C., & Boccaccini, M. T. (2017). Why do forensic experts disagree? Sources of unreliability and bias in forensic psychology evaluations. *Translational Issues in Psychological Science*, *3*(2), 143.

Haile v. State, 30 Tenn. (11 Hum.) 154, 157 (1850).

Harry, B., Sturges, K.M., & Klinger, J.K. (2005). Mapping the process: An exemplar of process and challenge in grounded theory analysis. *Educational Researcher*, *34*, 3-13.

Hayes, A. F., & Krippendorff, K. (2007). Answering the call for a standard reliability measure for coding data. *Communication Methods and Measures*, *1*(1), 77-89.

Hofmann, A. (1959). Psychotomimetic drugs. *Acta Physiologica et Pharmacologica Neerlandica*, *8*, 240-258.

Hughes, J. (2024). Toward improved inference for Krippendorff's Alpha agreement coefficient. *Journal of Statistical Planning and Inference*, *233*, 106170. https://doi.org/10.1016/j.jspi.2024.106170

Hunt, G. E., Large, M. M., Cleary, M., Lai, H. M. X., & Saunders, J. B. (2018). Prevalence of comorbid substance use in schizophrenia spectrum disorders in community and clinical settings, 1990–2017: Systematic review and meta-analysis. *Drug and Alcohol Dependence*, *191*, 234-258.

Iowa Code. (1978). Iowa Criminal Code § 701.4.

Insanity Defense Reform Act of 1984, Public Law 98-473, Sec. 401, 402 §20 (1984).

Johnson, E. C., Hatoum, A. S., Deak, J. D., Polimanti, R., Murray, R. M., Edenberg, H. J., Gelernter, J., Di Forti, M., & Agrawal, A. (2021). The relationship between cannabis and schizophrenia: A genetically informed perspective. *Addiction*, *116*(11), 3227–3234. https://doi.org/10.1111/add.15534

Johnson, L. A. (1994). Settled insanity is not a defense: Has the Colorado supreme court gone crazy? Bieber v. People. *University of Kansas Law Review*, *43*, 259-274.

Judd, C. M., Westfall, J., & Kenny, D. A. (2012). Treating stimuli as a random factor in social psychology: A new and comprehensive solution to a pervasive but largely ignored problem. *Journal of Personality and Social Psychology, 103*(1), 54.

Khokhar, J. Y., Dwiel, L. L., Henricks, A. M., Doucette, W. T., & Green, A. I. (2018). The link between schizophrenia and substance use disorder: A unifying hypothesis. *Schizophrenia Research*, *194*, 78-85.

Knapp, J. A. (2018). Nexis Uni. *The Charleston Advisor*, *19*(3), 31-34.

Krippendorff, K. (2011). Agreement and information in the reliability of coding. *Communication Methods and Measures*, *5*(2), 93-112.

Lakens, D. (2016). Why within-subject designs require fewer participants than between-subject

designs. *The 20% Statistician*. Available at: https://daniellakens.blogspot.com/2016/11/why-within-subject-designs-require-less.html

Lambdin, C., & Shaffer, V. A. (2009). Are within-subjects designs transparent? *Judgment and Decision Making, 4*(7), 554–566.

Lechner, W. V., Dahne, J., Chen, K. W., Pickover, A., Richards, J. M., Daughters, S. B., & Lejuez, C. W. (2013). The prevalence of substance use disorders and psychiatric disorders as a function of psychotic symptoms. *Drug and Alcohol Dependence, 131*(1-2).

Levitt, H. M., Bamberg, M., Creswell, J. W., Frost, D. M., Josselson, R., & Suárez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA Publications and Communications Board task force report. *American Psychologist*, *73*(1), 26.

MacIntyre, M. R., Darby, W. C., Sones, A. C., Li, J., Leong, G. B., & Weinstock, R. (2021). Voluntary intoxication, homicide, and mens rea: Past, present, and future. *Behavioral Sciences & the Law*, *39*(2), 150-169.

Masroor, A., Khorochkov, A., Prieto, J., Singh, K. B., Nnadozie, M. C., Abdal, M., Shrestha, N., Abe, R.A.M., & Mohammed, L. (2021). Unraveling the association between schizophrenia and substance use disorder-predictors, mechanisms and treatment modifications: A systematic review. *Cureus*, *13*(7).

Mathias, S., Lubman, D. I., & Hides, L. (2008). Substance-induced psychosis: A diagnostic conundrum. *Journal of Clinical Psychiatry*, *69*(3), 358-367.

McDermott, B. E., Scott, C. L., Busse, D., Andrade, F., Zozaya, M., & Quanbeck, C. D. (2008). The conditional release of insanity acquittees: Three decades of decision-making. *Journal of the American Academy of Psychiatry and the Law Online*, *36*(3), 329-336.

McDonald, C., & Murray, R. M. (2000). Early and late environmental risk factors for schizophrenia. *Brain Research Reviews, 31*(2-3), 130-137.

McGrath, J. J., Saha, S., Al-Hamzawi, A., Andrade, L., Benjet, C., Bromet, E. J., Browne, M.O., Caldas de Almeida, J.M., Chiu, W.T., Demyttenaere, K., Fayyad, J., Florescu, S., de Girolamo, G., Gureje, O., Haro, J.M., ten Have, M., Hu, C., Kovess-Masfety, V., Lim, C.C.W.,… Kessler, R. C. (2016). The bidirectional associations between psychotic

experiences and DSM-IV mental disorders. *American Journal of Psychiatry*, *173*(10), 997–1006.

McNeil v. US, 933 A.2d 354 (D.C. Cir. 2007).

Melton, G. B., Petrila, J., Poythress, N. G., Slobogin, C., Otto, R. K., Mossman, D., & Condie, L.O. (2017). *Psychological evaluations for the courts: A handbook for mental health professionals and lawyers*. Guilford Publications.

Muench, J., & Hamer, A. M. (2010). Adverse effects of antipsychotic medications. *American Family Physician*, *81*(5), 617–622.

Murrie, D. C., & Boccaccini, M. T. (2015). Adversarial allegiance among expert witnesses. *Annual Review of Law and Social Science*, *11*(1), 37-55. https://doi.org/10.1146/annurev-lawsocsci-120814-121714

Murrie, B., Lappin, J., Large, M., & Sara, G. (2020). Transition of substance-induced, brief, and atypical psychoses to schizophrenia: A systematic review and meta-analysis. *Schizophrenia Bulletin*, *46*(3), 505-516.

Murrie, D. C., & Warren, J. I. (2005). Clinician variation in rates of legal sanity opinions: Implications for self-monitoring. *Professional Psychology: Research and Practice, 36*(5), 519–524. https://doi.org/10.1037/0735-7028.36.5.519

National Center for Health Statistics. (2023, June 26). *Substance use.* Centers for Disease Control and Prevention. https://www.cdc.gov/nchs/hus/sources-definitions/substance-use

National Institute on Drug Abuse. (2023). *Commonly used drugs charts.* National Institutes of Health. https://nida.nih.gov/research-topics/commonly-used-drugs-charts

Neal, T. M., & Grisso, T. (2014). Assessment practices and expert judgment methods in forensic psychology and psychiatry: An international snapshot. *Criminal Justice and Behavior*, *41*(12), 1406-1421.

Neal, T.M.S. *&* Line, E.N. (2022). Income, demographics, and life experiences of clinical-forensic psychologists in the United States. *Frontiers in Psychology.* https://doi.org/10.3389/fpsyg.2022.910672

Neal, T.M.S., MacLean, N., Morgan, R.D., & Murrie, D.C. (2024). Confirmatory information seeking is robust in psychologists' diagnostic reasoning. *Law and Human Behavior*. Advance online publication. https://doi.org/10.1037/lhb0000574

New Mexico Code. (1978). New Mexico Criminal Code § 30.6 (1).

Oregon Code. (1971). Oregon Criminal Code § 161.295.

People v. Conrad, 385 N.W.2d 277, 148 Mich. App. 433 (Ct. App. 1986).

People v. Kelly, 516 P.2d 875, 10 Cal. 3d 565, 111 Cal. Rptr. 171 (1973).

People v. Randolph, 20 Cal. App. 4th 1836, 25 Cal. Rptr. 2d 723 (Ct. App. 1993).

People v. Skinner, 185 Cal. App. 3d 1050, 228 Cal. Rptr. 652 (Ct. App. 1986).

People v. Williams, 751 P.2d 395, 44 Cal. 3d 883, 245 Cal. Rptr. 336 (1988).

Redding, R. E., Floyd, M. Y., & Hawk, G. L. (2001). What judges and lawyers think about the testimony of mental health experts: A survey of the courts and bar. *Behavioral Sciences & the Law*, *19*(4), 583-594.

Redding, R. E., & Murrie, D. C. (2010). Judicial decision making about forensic mental health evidence. In A. M. Goldstein, *Forensic Psychology: Emerging Topics and Expanding Roles*, 683-707.

Room, R. (2005). Stigma, social inequality and alcohol and drug use. *Drug and Alcohol Review*, *24*(2), 143-155.https://doi.org/10.1080/09595230500102434

Schmid, Y., Enzler, F., Gasser, P., Grouzmann, E., Preller, K. H., Vollenweider, F. X., Brenneisen, R., Muller, F., Borgwardt, S., & Liechti, M. E. (2015). Acute effects of lysergic acid diethylamide in healthy subjects. *Biological Psychiatry*, *78*(8), 544-553.

Silberg, J., Rutter, M., D'Onofrio, B., & Eaves, L. (2003). Genetic and environmental risk factors in adolescent substance use. *Journal of Child Psychology and Psychiatry*, *44*(5), 664-676.

Smith, M. J., Thirthalli, J., Abdallah, A. B., Murray, R. M., & Cottler, L. B. (2009). Prevalence of psychotic symptoms in substance users: A comparison across substances. *Comprehensive Psychiatry*, *50*(3), 245-250.

Stangel v. Wead, U.S. Dist. LEXIS 104100 (2023).

Starzer, M. S. K., Nordentoft, M., & Hjorthøj, C. (2018). Rates and predictors of conversion to schizophrenia or bipolar disorder following substance-induced psychosis. *American Journal of Psychiatry*, *175*(4), 343–350. https://doi.org/10.1176/appi.ajp.2017.17020223

State v. Abion, 478 P.3d 270, 148 Haw. 445 (2020).

State v. Brennauer, 993 N.W.2d 305, 314 Neb. 782 (2023).

State v. Johnson, 794 A.2d 654, 143 Md. App. 173 (Ct. Spec. App. 2002).

State v. Sexton, 904 A.2d 1092, 2006 VT 55 (Vt. 2006).

Stilo, S. A., & Murray, R. M. (2019). Non-genetic factors in schizophrenia. *Current Psychiatry Reports, 21*(10), 1-10.

Stinson, F. S., Ruan, W. J., Pickering, R., & Grant, B. F. (2006). Cannabis use disorders in the USA: Prevalence, correlates and co-morbidity. *Psychological Medicine*, *36*(10).

Substance Abuse and Mental Health Services Administration. (2023). *2022 national survey on drug use and health (NSDUH).* https://www.samhsa.gov/data/release/2022-national-survey-drug-use-and-health-nsduh-releases

Szuster, R. R., Schanbacher, B. L., McCann, S. C., & McConneil, A. (1990). Underdiagnosis of psychoactive-substance-induced organic mental disorders in emergency psychiatry. *The American Journal of Drug and Alcohol Abuse*, *16*(3-4), 319-327.

United States Courts (2016). *Just the facts: U.S. Courts of Appeals.* Administrative Office of the U.S. Courts, Judiciary Data and Analysis Office. https://www.uscourts.gov/news/2016/12/20/just-facts-us-courts-appeals

Volkow, N. D., Koob, G. F., & McLellan, A. T. (2016). Neurobiologic advances from the brain disease model of addiction. *New England Journal of Medicine*, *374*(4), 363-371.

Waters, N.L., Gallegos, A., Green, J., Rozsi, M. (2015). *Criminal appeals in state courts* (NCJ 248874). Bureau of Justice Statistics, U.S. Department of Justice. https://bjs.ojp.gov/content/pub/pdf/casc.pdf

Wells, G. L., & Windschitl, P. D. (1999). Stimulus sampling and social psychological experimentation. *Personality and Social Psychology Bulletin*, *25*(9), 1115-1125.

White v. Commonwealth, 636 S.E.2d 353, 272 Va. 619 (2006).

Witte, T. H., Wright, A., & Stinson, E. A. (2019). Factors influencing stigma toward individuals who have substance use disorders. *Substance Use & Misuse*, *54*(7), 1115-1124. https://doi.org/10.1080/10826084.2018.1560469

Yeager v. State, No. 1777, September Term, 2016 (Md. Ct. Spec. App. Sept. 15, 2017).

Zapf, P. A., Hubbard, K. L., Cooper, V. G., Wheeles, M. C., & Ronan, K. A. (2004). Have the courts abdicated their responsibility for determination of competency to stand trial to clinicians? *Journal of Forensic Psychology Practice*, *4*(1), 27-44. https://doi.org/10.1300/J158v04n01_02