# WOMEN IN PSYCHIATRY 2021: FORENSIC PSYCHIATRY

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# WOMEN IN PSYCHIATRY 2021: FORENSIC PSYCHIATRY

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# Table of Contents

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# Editorial: Women in psychiatry 2021: Forensic psychiatry

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Editorial on the Research Topic
Women in psychiatry 2021: Forensic psychiatry

Throughout modern times there has been a significant gender gap at all levels of science, technology, engineering and mathematic (STEM) disciplines, and only 33% of all researchers around the world are women according to the UNESCO Science report (1). In the 2030 Agenda for Sustainable Development (2) the United Nations identified that science and gender equality are vital for the achievement of the internationally agreed development goals. Furthermore, diversity and gender equality are important aspects to enhance in the continuous work in improving excellence and quality in science. By encouraging more female scientists to pursue research careers, particularly in STEM, the possibility to defeat stereotypic views of both scientists and research subjects emerges. This is particularly important vis-à-vis the fields of psychiatry and forensic psychiatry, as there is an added stigma connected to tenacious prejudices about sufferers of mental health disorders. This collection of articles by female main authors covers a range of topics related to the subject of women in forensic psychiatry.

One group of articles addresses issues of gender directly. Ali and Adshead provide an overview of gender as a social construct and explore how gender role stereotypes impact upon how psychological distress is communicated by men and women, and the relationship between violence, gender and mental health. In their article, women as violent offenders, as patients in secure psychiatric facilities but also as clinicians in forensic settings are examined. The authors focus on whether patriarchal influences and gender role stereotypes may have had an impact on the development of women's forensic mental health services. They caution us to be aware of gender as a social construct in forensic services in order to not cause harm to our patients. Neatly related to this topic, Joyes and Jordan analyse ethnographic data from a forensic mental health hospital in the UK. The over 300 h of fieldwork provide a unique insight into the communication between staff and patients, demonstrating the presence of misogynistic everyday talk

between staff. The authors argue that such attitudes are part of a continuum including a permissive mindset towards gender-based violence, and that they are particularly problematic in the context of patients sentenced for similar offences.

A number of papers address characteristics of women as offenders and victims.

Hodgins reviews descriptive studies of females sentenced to forensic psychiatric treatment and shows that most female aggressive and antisocial behaviour does not lead to criminal prosecution. Furthermore, the article highlights known facts about the two most common mental disorders in female forensic patients, namely schizophrenia and borderline personality disorder. Finally, Hodgins provides recommendations for earlier identification of women presenting with both mental disorders and aggressive and antisocial behaviour in psychiatric services.

Streb et al. present a study of male and female forensic psychiatric patients in the German forensic psychiatric system, examining the presence of substance use disorders and comparing socio-demographic, legal and clinical characteristics between the sexes. Differences were found in all these domains. The authors identify sex-specific characteristics, in particular past trauma, that should be considered in forensic psychiatric therapy. In Sweden, Caman et al. study clinical characteristics of perpetrators of intimate partner femicide (IPF) in comparison to male to male homicide (MMH) perpetrators, and find a higher proportion of individuals with substance use disorders in the MMH group compared to the IPF group. The proportion of homicide-suicide was relatively common in the IPF group (20%), suggesting that previous suicide attempts and suicide ideation might be important indicators for predicting and possibly preventing IPF.

Our collection also includes papers which do not address gender issues directly but demonstrate significant scientific contributions by female authors.

Markham offers a theoretical piece exploring the totalising and risk aversive nature of secure forensic mental health services. She looks in particular at restrictive practices and practitioner attitudes, and how they can cause iatrogenic harm and thereby hindering healing and recovery.

In their perspective article, Lennox et al. reflect on how randomized controlled trials (RCT), known as the gold standard for measuring the effectiveness of an intervention, have limitations particularly in prison settings. The authors share their experiences by describing two of their RCTs and through that propose that this particular research design may limit the understanding and ability to test complex interventions in prison settings. In lieu of RCTs, the authors call for more flexible and adaptive study designs. In another perspective article by Kip and Bouman the authors discuss how eHealth interventions could improve forensic psychiatric care, but that the uptake in practice is low. They explore how possibilities for eHealth could be connected to the risk-need-responsivity (RNR) model, where stand-alone eHealth interventions might be used to offer more intensive treatment to high-risk offenders. Novel experience-based interventions such as virtual reality (VR) and apps could also be made an integral part of forensic-psychiatric treatment. Furthermore, Göranson et al. report on a rarely studied subject. By using case vignettes presented to three professional groups, the authors investigate which types of information experts use to reach conclusions on legal insanity. Understanding the process is important in order to counteract potential bias which may include gender bias, though this is not the topic of the authors' contribution.

A group of papers include research on forensic psychiatric patients, investigating life time criminality, treatment process and the occurrence of self-harm during in-patient treatment. In their research article utilising a total cohort of forensic psychiatric patients in a Swedish setting, Krona et al. explore the possibility of a sub-group of particularly criminality prone individuals. Through statistical analysis, a small group defined by childhood adversities, neurodevelopmental disorders and later substance use emerged. The study replicates findings from prison populations, showing that there is a sub-group of individuals sharing early-onset disorders, childhood adversities and substance use disorders, who are more criminally persistent. Jankovic et al. present in their study of a nationwide sample of Dutch forensic psychiatric patients various long-term changes in dynamic and protective factors. The authors investigate trajectories of risk and protective factors over time in all 722 male forensic psychiatric patients who were unconditionally released between 2004 and 2014. Findings indicate that all changes in dynamic risk and protective factors could be depicted in two phases of the patients stay: the beginning of the stay and at the transition to unsupervised leave, which could be considered a turning point in the treatment. Jeandarme et al. analyse characteristics of discharged and not discharged (long-term) forensic patients in two newly implemented forensic high security settings in Flanders by studying files of an admission cohort of 654 patients. Their conclusion is that the Flemish forensic patients are characterized by a high proportion of sex offenders and personality disorders. The group of patients with personality disorders, especially those with elevated psychopathic traits, remain longer than expected and are more difficult to re-socialize. Laporte et al. investigate the important topic of self-harm, which has a much higher prevalence rate in forensic mental health settings compared to the general population and is one of the leading causes of death in these settings. The authors look at the clinical needs of individuals who self-harmed in forensic mental health settings in Sweden over a five-year period. Two thirds of their sample had self-harmed at some point with the most common method being head banging, banging one's fist against a solid surface and cutting. Self-harm was often associated with self-punishment and difficulties regulating affect.

Finally, Lutz et al. evaluate a specialized ward for language acquisition in a German forensic-psychiatric hospital, and found that patients on this ward achieve significantly better German language skills compared to regular wards, with literacy being an important predictor. The authors argue that more effort needs to be made to support language acquisition in order to enable patients to participate in treatment more effectively.

## Author contributions

HK, BV, and KH wrote the manuscript and contributed to the final version. All authors read and approved the submitted version.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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ORIGINAL RESEARCH
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# Patterns of Lifetime Criminality in Mentally Disordered Offenders – Findings From a Nationally Representative Cohort

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**Background:** Treatment of mentally disordered offenders (MDOs) is challenging as their behavior and clinical conditions can be traced to a complex constellation of major mental disorders, substance use and antisocial lifestyle. Finding subgroups of these offenders, which could guide treatment and risk assessment, is desirable. There are few long-term, prospective studies of risk factors for persistent criminal behavior among MDOs.

**Aims:** The aims are (1) to provide a map of lifetime criminality in MDOs, (2) to identify subgroups of offenders, and (3), if such clusters exist, to test whether they differ in lifetime criminality and patterns of negative events during in-patient treatment.

**Methods:** Background data on all offenders from the Malmö University Hospital catchment area sentenced to forensic psychiatric in-patient treatment 1999–2005 ($n$ = 125) was collected. Data on negative events during treatment (violence, threats, absconding and substance use) from date of admittance until discharge or until June 30, 2008 was gathered. Court decisions for 118 of the cohort-individuals were collected from the 1st of January 1973 until December 31, 2013. We used hierarchical cluster analysis to identify subgroups and MANOVA-analysis to examine differences between these clusters on lifetime criminality variables and negative events. A MANCOVA was used to control for time in treatment.

**Results:** The cohort was sentenced to a total of 3,380 crimes (944 violent) during the study period. Median age at first crime was 20 years (range 15–72), and at first violent crime 27 years (range 15–72). A subgroup ($n$ = 26) was characterized by childhood adversities, neurodevelopmental disorders and later substance use disorders and was more often associated with substance-related crimes, financial crimes and lower age at first crime. During treatment, this cluster showed higher rates of substance use and threats. When controlling for treatment time, no differences in negative events were found.

**Conclusions:** This study replicated findings from prison populations of the existence of a more criminally persistent phenotype characterized by early-onset neurodevelopmental and behavior disorders, childhood adversities and later substance use disorders. We did not find this cluster of variables to be related to negative events during inpatient treatment when controlling for length of stay.

**Keywords: violent criminality, forensic psychiatry, lifetime criminality, criminal career, cluster analysis, MANOVA (Multivariate Analysis of Variance), MANCOVA, multivariate ANCOVA**

## INTRODUCTION

Pathways to delinquent behavior, and for some, to a lifelong antisocial lifestyle have interested researchers for decades (1–3) as the economic consequences of crime are painstakingly high and as the suffering of the victims is immeasurable. Longitudinal, population-based studies have shown that an individual's propensity to commit crime varies through the lifetime, and that causes behind antisocial behavior are complex and multifaceted (4–6). A relatively small group of offenders are accountable for the vast majority of all crime convictions (7–9) and the risk factors for a long and intensive criminal career include male sex, childhood temperamental or self-regulation problems, adverse childhood experience, substance use disorders (SUD) and early-onset antisocial behavior (10–15).

To explore the emergence of criminal career patterns, the developmental taxonomic theory in its original outline (6) posits that two groups of offenders can be identified; a smaller group described as life course persistent offenders and a larger group of so-called adolescent-limited offenders. The former exhibits a high level of aggressive and antisocial behavior with an onset in childhood and persistence into adulthood, a skewed male-to-female sex ratio, a higher incidence of neurodevelopmental disorders (NDDs, including ADHD, autism spectrum disorders, tics disorder, learning disabilities, intellectual disability and conduct disorders), and childhood adversities. The latter, on the other hand, are thought to start their criminal careers during their teens by mimicking more antisocial peers and continue to do so up until young adulthood, when their criminal activities typically wane. Later research has shown that NDDs in themselves heighten the risk for the development of conduct disorder (4) and antisocial behavior (16–19), but also for major mental disorders and SUD (20, 21). Furthermore, conduct disorder is one of the strongest predisposing factors for SUD and all major mental disorders, including schizophrenia and bipolar disorder (21, 22) possibly due to shared genetic vulnerabilities (23) and early adversity (24).

The previously identified heightened risk of violent behavior associated with schizophrenia and other psychotic disorders have in later studies emerged as magnified by comorbid SUD (25–27), but also a history of conduct disorder (28). Absolute rates of violent crime over 5–10 years in individuals suffering from schizophrenia varies between 6 and 10 % and to more than 10 % in individuals with SUD (12, 27, 28). In a study of forensic male inpatients diagnosed with psychotic illnesses, only a minority of the patients showed aggression either at baseline (one in about 15) or during the period of time covered by the study (one in 43) (29). Similar numbers have been shown for psychotic patients and regular inpatient units (30). In studies of inmates, having a major mental disorder has been shown to be a risk-factor for reoffending (15), but so are childhood adversities (2, 31, 32), genetic factors, gene-environment interactions and epigenetic processes (33, 34). Thus, previous studies of persistent violent criminality have found multiple independent risk factors for reconvictions such as childhood adversities (17, 35, 36), SUDs (37) and major mental disorders (28, 38–40) which illustrates that various facets are operating in different pathways to promote violent behavior in sub-groups of offenders. Hodgins proposed (23, 41) that mentally disordered offenders (MDOs) may be posited according to one of three trajectories; (1) Type I offenders who exhibit an antisocial lifestyle from childhood years and onwards, prior to the onset of illness; (2) Type II offenders who, prior to the onset of the illness do not have an antisocial behavior yet develop one after illness ensues, and; (3) Type III offenders who suffer from a major mental disorder for several years until they commit a severe violent act. Type I is suggested to be more influenced by genes linked to both behavioral problems and major mental disorders, whereas types II and III are linked to neurological changes associated with the emergence of a major mental disorder, including effects of SUDs and medication (23). These findings have later been replicated (42) and the need for specialized treatment against both psychosis and aggression identified (43).

Prerequisites for a sentence to in-patient forensic psychiatric treatment in Sweden is the presence of a severe mental disorder calling for such treatment and that the crime was committed under its influence, and that the crime is severe enough to warrant a prison sentence. As a group, Swedish forensic psychiatric patients share many similarities. The majority are men of which about two thirds suffer from schizophrenia, almost all have had contact with psychiatric health services prior to their sentence and it is usually a violent crime that leads to forensic psychiatric treatment (44). In a previous study of the cohort (45), negative events (e.g., absconding [leaving without permission], violence, threats, and substance abuse) during in-treatment were described in relationship to length of stay. Other studies have suggested that homelessness and a previous conviction of assault may predict patient aggressive events (46), yet there is a lack of studies exploring both life course patterns of criminal behavior in MDOs as well as violent behavior in forensic psychiatric settings.

The aims of the present study are; (1) to map lifetime criminality in a total cohort of persons sentenced to forensic

psychiatric treatment and to describe different criminal patterns, (2) to determine if forensic psychiatric patients constitute of clinically distinct groups of offenders based on lifetime clinical and background characteristics in this population, and (3), if such clusters exist, to test whether they differ in variations of lifetime criminality and patterns of negative events during inpatient treatment.

# MATERIALS AND METHODS

## The UPPRÄTT-Malmö Study Cohort

The present study is part of the UPPRÄTT-Malmö project, which has followed a total cohort of all 125 individuals (101 men and 24 women) who were sentenced to forensic psychiatric in-patient treatment during 1999–2005. The group is nationally representative as it includes all consecutively sentenced individuals who at the time of the forensic psychiatric treatment belonged to the catchment area of the Skåne University Hospital, Malmö, which was demographically typical for all of Sweden at the time of the study. The cohort has been portrayed in greater detail in three previous papers; in a previous study by Andreasson et al. (45), the median length of treatment stay was shown to be 951 days (2.61 years) with negative events (for example absconding, violence, substance use) being described in 71 (60%) of all cohort individuals. The study further described the in- and out-patient phases of treatment with respect to negative events and known background factors. In a second study, the in-depth clinical characteristics were described (47), showing that almost one third of the cohort ($n = 36$, 29%) had a first-degree relative with a mental disorder of some kind and another third ($n = 34$, 32%) had been in contact with child- and adolescent psychiatric care when young. The paper further delved into risk prediction of relapse in criminality during a 10-year follow-up based on clinical and background data, where one finding was that patients with a restriction order was less likely to relapse into criminality. Lastly, Delfin et al. have described the incremental effects of neuroimaging data on risk prediction (48) based on data from the UPPRÄTT-cohort. The present study is the first to use data from a second wave of register-based follow-up.

All individuals in the cohort underwent either a Forensic Psychiatric Investigation (FPI) ($n = 97$, 78 %) or a Forensic Psychiatric Screening Report (FPSR) ($n = 28$, 22 %) prior to sentencing. Detailed descriptions of the Swedish criminal system and the forensic psychiatric treatment have previously been published (49, 50), but in summary, the Swedish Penal Code Chapter 30, § six states that a person who has committed a crime under the influence of a severe mental disorder shall at first hand be sentenced to another sanction than a prison sentence and that the recommendation is a sentence for compulsory forensic psychiatric treatment. The Swedish concept of a severe mental disorder is defined within a medico-legal discourse and overlaps with the clinical definition of a major mental disorder to some degree. A severe mental disorder is in most cases defined as various psychotic states yet with no discernment of the etiology of the psychosis, and all have in common symptoms such as a disturbed perception of reality, thought disturbances, confusion, delusions, and hallucinations. In some cases, the weight of the symptoms of other non-psychotic diagnoses in combination may be assessed as a severe mental disorder. In most cases, medication is avoided during the FPI in order to secure an accurate assessment. Seven individuals (6 %) were omitted from the analyses as data on lifetime criminality was missing and/or because they were deported from Sweden following the forensic psychiatric treatment. Thus, a total of 118 individuals (96 men and 22 women) aged 19–73 (median age 38), were eligible for inclusion into this study.

## Data Collection and Measures

Baseline data including background variables (e.g., SUD and psychiatric illness in first degree relative, migratory background, institutionalized before the age of 18, occupation, and housing), suicide attempts, and diagnostics of mental disorders including NDD, were gathered from the FPIs and FPSRs in accordance with a structured protocol. The variables were chosen as they either explicitly or indirectly were proxies of previously described risk factors of criminal behavior. At the time of the original forensic investigations, the Diagnostic and Statistical Manual of Mental Disorders 4th Edition (DSM-IV, (51) was in use. Thus, all psychiatric diagnoses were set with the semi-structured interviews (SCID I (52) by the forensic psychiatrist and SCID II (53) by the forensic psychologist) at the time of the forensic psychiatric investigation, according to the multiaxial system. In order to enable statistical analyses, sub-types of diagnoses are collapsed according to the overarching diagnostic categories of the DSM-IV. In the FPSRs, the personality diagnoses were set in clusters and therefore, statistical analyses do not portray specific personality diagnoses. Diagnoses set previous to the FPI were revised if deemed necessary. All individuals in the cohort were assessed to have at least one diagnosis severe enough to be included in the definition of a severe mental disorder, yet the majority (70 individuals, 59 %) had more than one diagnosis at the time of the FPI.

### Criminality Data

Information on lifetime criminality was collected from the National Crime Register which is managed by the Swedish National Council for Crime Prevention. The registry contains information on all criminal convictions in Swedish lower courts since 1st of January 1973. The cohort's criminal history is thus known from this date up until the study's ending-point, 31st of December 2013.

All crimes were categorized as being either violent or non-violent. *Violent crimes* were defined as the following; murder and manslaughter, negligent homicide, assault, sex crimes, violation of a woman's integrity[1], robbery, arson, extortion, kidnapping, illegal restraint, unlawful coercion, violence against an officer, unlawful threat against civilians as well as officers, obstructing the course of justice (in Swedish law defined as an act in which threat or violence is used to force a person to not participate in a trial),

[1]Referring to the crime *"grov kvinnofridskränkning"*, which by encompassing several violent crimes (among others battery, molestations, threats and unlawful constraint) identifies the long-term harmfulness created by repeated acts of violence by a present or former spouse. The crime renders a more severe sanction than the sentences of each encompassed crime separately.

violation of knife and weapon legislations, violent resistance, riot and creating a danger to another. It also included all sex crimes such as rape of adult or child, sexual coercion, sexual exploitation of an individual in dependence, sexual molestation of adults and children and intercourse with an offspring. The definition also included attempted and aggravated forms of the aforementioned crimes.

*Non-violent crimes* were categorized based on the headings of the Swedish penal code as well as categories used by the National Council of Crime Prevention: theft and shoplifting, traffic violations (including driving under the influence), financial crimes (including fraud and counterfeit), drug- and alcohol-related crimes and minor offenses (most commonly damage to other people's property).

### Data on Length of Stay and Negative Events During Forensic Psychiatric Treatment

Data on length of stay have previously been described in depth (45). By using a structured protocol, data on negative events that occurred during in-patient time was gathered. Negative events were defined as *absconding* (running away from staff or wards, or to not be compliant with conditions for permission to move freely about or leave the hospital area, not returning in time from a granted permission to leave the ward or the hospital area, or withdrawal of such permissions), *substance use* (both alcohol and drugs, detected by breath and urine analyses), *threats* (verbal abuse perceived as threatening by the recipient) and *violent behavior* (such as pushes, punches and kicks). The data includes threat and violent events with both staff and patients as recipients. An event was registered in the database if it had been affirmed in the hospital files.

In-patient treatment time was defined as time from when the court decision gained legal force until discharge or until 30th of June 2008, the end-point of the aforementioned study (45).

### Clinical and Risk Assessments

To assess the risk of renewed criminal behavior and psychopathic personality traits, HCR-20 (54) and the Hare Psychopathy Checklist-Screening Versions (PCL:SV, (55)) were used clinically at the time of the inclusion in the study. The HCR-20 is a 20-item checklist used in structured clinical violence risk assessments, where items are rated on a three-point scale ("not present" to "definitely present"). In the current study, only the first 15 items (the historical and clinical items) were rated at the time of the FPIs as the last five risk management items would have required the set-up of an individual treatment and management plan, a procedure which was not done during the investigations.

The PCL:SV screens for psychopathic personality traits and is a 12-item rating scale which is highly correlated with the 20-item full version (56, 57). The items are scored according to the manual and rated on a three-point scale (0 = does not apply, 1 = may apply or in some respects applies, 2 = does apply) and the variables measure the interpersonal, emotional and behavioral aspects of the construct of psychopathy.

Only individuals who underwent a full FPI were assessed with the HCR-20 and PCL:SV. In most cases this was done by the FPI team but in 25 cases the assessments were made retrospectively by the research team based on the information gathered from the FPI files and from extensive file and register reviews in each case. Previous studies have shown that it is possible to reliable assess psychopathy (58) and risk factors (59) from file-based information.

## Statistical Analysis

All analyses were conducted using version 25.0 of the SPSS (60). Due to some missing background data, all presented percentage values are based on valid percentages.

### Basic Descriptive Data

Analyses of dichotomous variables were done by $\chi^2$-tests and Fisher's exact test when any cell count was less than five. Mann-Whitney *U*-test was used for continuous variables as data was not normally distributed. All statistics were calculated using anonymized data, using two-tailed *p*-values. To measure effect size, Phi scores for $\chi^2$-tests and *r* for Mann Whitney *U* tests are presented. According to Cohen's model (61), an effect size of 0.20 is small, of 0.30 medium, and of 0.50 large when Phi is used, and when *r* is used 0.10 indicates a small effect, 0.30 a medium effect, and 0.50 a large effect.

### Cluster Analysis

In order to explore whether the cohort could be divided into subgroups due to differences in lifetime clinical and background characteristics, a hierarchical cluster analysis was performed. This method was chosen as it allows the data to develop inherent associations, as the variables which are closest to each other will form clusters. The following dichotomous variables were entered in hierarchical cluster analyses as these variables corresponded to previous studies of developmental taxonomies and were considered fairly static and possible to affect the outcome variables of lifetime criminality; migratory background, sex, SUD in a first degree relative, psychiatric illness in a first degree relative, level of education, having been in contact with child- and adolescent psychiatry (CAP), being placed in social custody or a youth institution before the age of 18, and being diagnosed with a NDD, SUD, psychotic disorder or a personality disorder. Ward's method (62) was used to identify the relevant number of clusters. Measures of similarity between cases was calculated through squared Euclidian distances. One insignificant variable of the hierarchical cluster analysis was excluded at a time in a step-wise manner, starting with the one with highest *p*-value until all remaining variables had a $p < 0.05$. Due to missing data on various variables, 93 individuals were available for the cluster analysis and the subsequent comparisons between identified clusters.

### MANOVA and MANCOVA

One-way between-groups multivariate analysis of variance (MANOVA) was chosen to investigate cluster differences in variables of lifetime criminality and in negative events during in-patient treatment. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity. Since the variables exhibited a non-linear

relationship, all continuous data were transformed in accordance with the natural logarithm and as such used in the subsequent analyses. Eventually, two MANOVAs were performed. The first one to investigate cluster differences in lifetime criminality variables grouped as violent crimes and non-violent crimes, where the latter were further sub-categorized according to the headings of the Swedish penal code into theft and shoplifting crimes, traffic-related crimes, financial crimes, drug- and alcohol related crimes, and minor offense, and finally, age at first crime registered at courts. The second one to investigate negative events during in-patient treatment in the forensic psychiatric hospital defined as number of substance use events, absconding, violent events, and threats. To further explore the data, three one-way multivariate analyses of covariance (MANCOVA) were performed. As extensions of the MANOVA of lifetime criminality, age at the time of the FPI and time from initiating in-patient treatment at the index-crime until end of study or death, were entered as co-variates in two separate MANCOVAs. By extending data on negative events during in-patient treatment, length of stay was used as the co-variate in the third MANCOVA. In all the inferential statistical procedures, a Bonferroni correction was made as a post-*hoc* analysis to determine what would be considered a statistically significant *p*-value. The continuous variables included in the MANOVA analyses were converted to z-scores in order to illustrate the distribution of the means of the variables in linear diagrams. Statistical analyses were performed using the SPSS 25.0.

## Ethical Considerations

The study was approved by the regional ethical review board in Lund (64/2007 and 2014/911). All data were anonymised using coded files, and the key code was kept separate from the study material and database. Since it is register-based and it would not be possible to contact most participants due to the length of time that has passed after finishing treatment informed consent was not considered necessary. The fact that contact could pose a risk to vulnerable subjects with mental health and/or legal problems was also considered in the ethical approval. When applying for the second ethical approval, the ethical board requested that the authors of this study announced the planned register study in mainstream media. The announcement went out in the two largest newspapers in the Malmö and Gothenburg area in the beginning of 2015.

# RESULTS

## Data on Lifetime Criminality

The total number of crimes found in sentences committed by the cohort from the beginning of registries at the 1st of January 1973 until endpoint of study at December 31, 2013 was 3380 (median 16.5, range 1–185). Five individuals (4 %) had committed only one crime during the study period and for 16 individuals (14 %) the index crime was their first registered offense. The median age at first crime was 20 years (range 15–72 years). Of the non-violent crimes, thefts or shopliftings were most common followed by traffic offenses, drug- and alcohol related crimes, financial crimes and fraud, and lastly other minor crimes.

The total number of committed violent crimes in the cohort was 944 (median 5.5, range 0–47). The median age at first convicted violent crime was 27 years (range 15–72 years). Eight individuals (7%) had not been convicted of a violent crime. Eight individuals (7%) had been convicted of some form of lethal violent crimes (murder, manslaughter, negligent homicide and attempts thereof) and 14 individuals (12%) had committed arson. Ten individuals (8%) had committed in total 37 sexual crimes (median 1.5 crimes, range 1–21). Four of these individuals (3%) had committed sexual crimes against children.

## Cluster Analyses

Two clusters, 1 and 2, were identified based on background and clinical data, see **Figures 1**, **2**. About a quarter of the cohort ($n = 26$, 28%) was grouped in cluster 1 and the rest, 67 individuals (72%), in cluster 2. Individuals in cluster 1 were more likely to have childhood onset problems or adversities, such as having a first degree relative with SUD, not having finished primary school, having contact with CAP, being placed in social custody or a youth institution before the age of 18, and having NDD. Presence of SUDs was also more prevalent among those in cluster 1.

In **Table 1**, the total cohort and the two clusters are described and compared on background and clinical variables not included in the cluster analysis. The first cluster consisted more often of individuals with a Swedish descent ($p < 0.001$), and they also had higher HCR-20 scores compared with cluster 2, both on total scores (H and C items combined, $p < 0.01$) and on historical scores ($p < 0.01$).

## Cluster Comparisons of Lifetime Criminality

The criminal careers differed between the two clusters that were identified. There was a statistically significant difference in a MANOVA between clusters 1 and 2 on the combined dependent variables covering criminality in a lifetime perspective, $F$ (7, 85) = 2.46, $p = 0.024$; Wilks' Lambda = 0.832; partial eta squared = 0.168. When the results for the dependent variables were considered separately, two variables reached statistical significance, using a Bonferroni adjusted alpha level of 0.007; lifetime number of financial crimes, $F$ (1, 91) = 12.03, $p = 0.001$, partial eta squared = 0.117, and number of alcohol or drug-related crimes, $F$ (1, 91) = 8.85, $p = 0.004$, partial eta squared = 0.089. An inspection of the mean scores indicated that individuals of cluster 1 were more often convicted of financial crimes compared to those in cluster 2 (*mean (M)* = 3.42, *standard deviation* (*SD*) = 3.44 vs. $M = 1.22$, $SD = 1.98$), and of alcohol or drug-related crimes ($M = 4.85$, $SD = 7.49$ vs. $M = 1.67$, $SD = 3.35$).

To further test the validity of the identified clusters, two MANCOVAs were made. First, age at the time of the FPI was added as a co-variate. There was a statistically significant difference between the clusters on the combined dependent variables after controlling for age at the time of the FPI, $F$ (7, 84) = 2.93, $p = 0.009$, partial eta squared 0.196, Wilks' Lambda = 0.804. When the results for the dependent variables

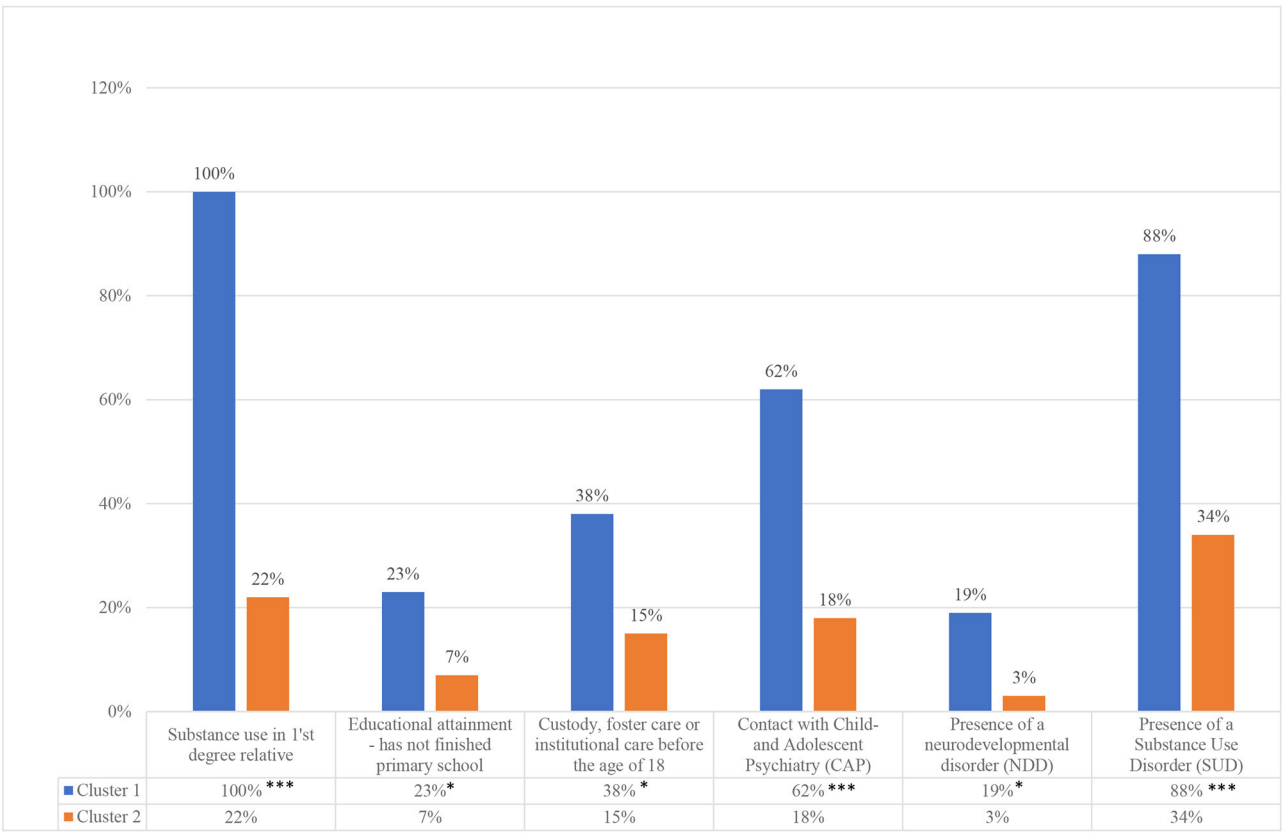


**FIGURE 1 |** Variables in the cluster analyses.

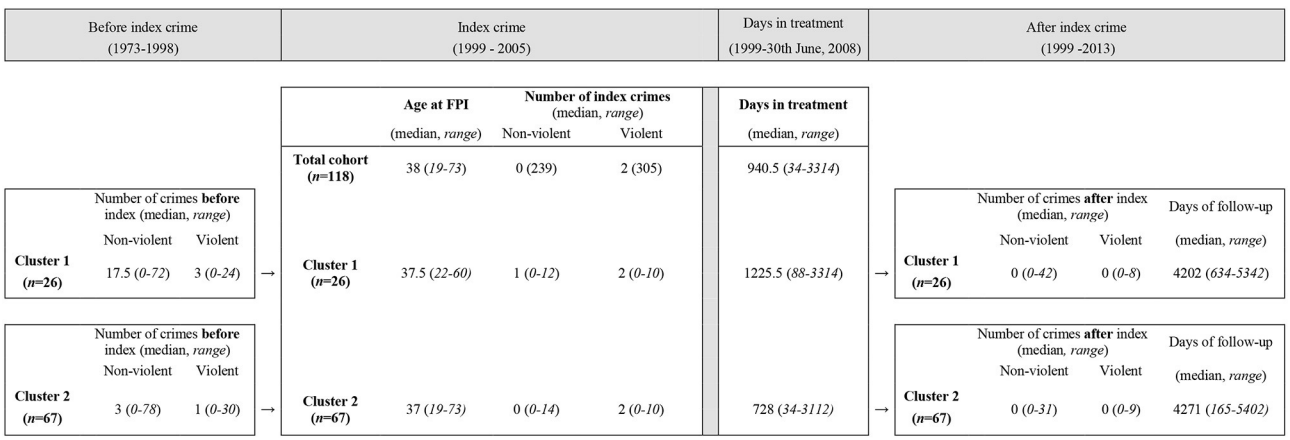


**FIGURE 2 |** Lifetime criminality before, at, and after index crime.

were considered separately, only one variable reached statistical significance, using a Bonferroni adjusted alpha level of 0.007; age at first crime, $F$ (1, 90) = 109.82, $p$ = 0.000, partial eta squared = 0.550.

A second MANCOVA was made by entering time from initiating in-patient treatment at the index-crime until end of study or death, as a co-variate. There was no statistically significant difference between the clusters on the combined

**TABLE 1 |** Background and clinical characteristics of the cohort and comparisons between the two clusters.

| Variables | Total Cohort<br>*n* = 118<br>*n* (%) | Cluster 1<br>*n* = 26, 22%<br>*n* (%) | Cluster 2<br>*n* = 67, 57%<br>*n* (%) | Phi | *r* |
|---|---|---|---|---|---|
| **Background characteristics:** | | | | | |
| Male sex | 96 (81) | 19 (73)[b] | 57 (85)[b] | −0.139 | |
| Migratory background | 59 (50) | 6 (23)[b] | 41 (61)[b]*** | 0.342 | |
| Occupation (work or studies) at the time of the FPI (*n* = 92) | 6 (7) | 1 (4)[a] | 5 (8)[a] | 0.068 | |
| Housing (permanent or accommodation) at the time of the FPI (*n* = 92) | 44 (48) | 14 (54)[b] | 30 (46)[b] | −0.076 | |
| No of individuals who have made one or more suicide attempts at the time of FPI/FPSR (*n* = 93) | 27 (29) | 9 (35)[b] | 18 (27)[b] | −0.077 | |
| **Diagnosis according to DSM-IV (51)** | | | | | |
| Psychotic disorder | 88 (75) | 18 (69)[b] | 49 (73)[b] | 0.039 | |
| Mood disorder | 13 (11) | 2 (8)[a] | 11 (16)[a] | 0.113 | |
| Anxiety disorder or OCD | 13 (11) | 5 (19)[a] | 7 (10)[a] | −0.118 | |
| Personality disorder, any | 33 (28) | 11 (42)[b] | 15 (22)[b] | −0.199 | |
| Personality disorder, cluster A | 6 (5) | 4 (15)[a] | 2 (3)[a]* | −0.227 | |
| Personality disorder, cluster B | 19 (16) | 7 (27)[b] | 7 (10)[b]* | −0.207 | |
| Personality disorder, cluster C | 1 (1) | 0 (0)[a] | 1 (2)[a] | 0.065 | |
| Personality disorder, NOS | 9 (8) | 2 (8)[a] | 5 (8)[a] | −0.004 | |
| **Risk Assessments** | | | | | |
| PCL:SV (55), (*n* = 89), Total score, Median (range) | 11, (0–22)[c] | 12, (0–21)[c] | 10, (0–22)[c] | | 0.027 |
| HCR-20 (54), (*n* = 88), H and C scores, Median (range) | 19, (0–28)[c] | 21, (0–28)[c] | 16, (3–28)[c]** | | 0.122 |
| HCR-20, Historical variables, (*n* = 88), Median (range) | 12, (0–19)[c] | 14, (0–18)[c] | 11, (2–19)[c]** | | 0.132 |
| HCR-20, Clinical variables, (*n* = 89), Median (range) | 7, (0–10)[c] | 7, (0–10)[c] | 7, (1–10)[c] | | 0.022 |

*NOS, Not Otherwise Specified. *** $p<0.001$, ** $p<0.01$, * $p<0.05$. [a]Fisher's Exact test. [b]Pearson Chi-square. [c]Mann–Whitney U test.*

dependent variables, $F$ (7, 84) = 0.701, $p$ = 0.671, partial eta squared 0.055.

## Cluster Comparisons of Negative Events and In-Patient Treatment Time

A MANOVA was also performed to investigate cluster differences in negative-events during in-patient treatment at the forensic psychiatric hospital. In the analysis, four dependent variables were included: absconding, substance use, threats or violence during in-patient treatment. As in the first MANOVA, the independent variable was the two clusters.

There was a statistically significant difference between clusters 1 and 2 on the combined dependent variables, $F$ (4, 88) = 2.57, $p$ = 0.044, Wilks' Lambda = 0.896; partial eta squared = 0.104. When the results for the dependent variables were considered separately, the only difference to reach statistical significance using a Bonferroni adjusted alpha level of 0.0125, was number of events of substance use during in-treatment time, $F$ (1, 91) = 7.36, $p$ = 0.008, partial eta squared 0.075. Here individuals in cluster 1 were more often involved in using drugs or alcohol during in-patient treatment time ($M$ = 4.31, $SD$ = 5.07 vs. $M$ = 1.93, $SD$ = 4.50).

However, when length of stay was added as a co-variate in a MANCOVA, there was no statistically significant difference between the clusters on the combined dependent variables [$F$ (4, 85) = 1.78, $p$ = 0.106, partial eta squared 0.085].

# DISCUSSION

This study of a nationally representative total cohort of MDOs sentenced to forensic psychiatric treatment had as a first aim to map lifetime criminality. The study individuals were markedly crime burdened as 96% had been sentenced for at least two crimes during their lifetime and as the median number of crimes during the lifetime was 16.5. Added to this, official crime registry data does not include the full extent of all committed crimes, only those that have led to a sentencing. It is therefore a fair assumption that there is a large quantity of criminal behavior not reported in this study and that the cohort as a whole could be described as having various forms of persistent criminal careers. Previous studies of life course patterns of criminal behavior have shown that a long criminal career is associated with low age at first committed crime (63), a finding that also applies to our cohort. This is consistent with theories of a heightened risk for criminal behavior during the life course by a progression of disruptive behavior through conduct disorder in adolescence to an adult antisocial lifestyle which does not subdue in adulthood (64, 65).

The subsequent aims of the study were to identify subgroups of offenders and to test if these clusters differed in patterns of negative events during in-patient treatment time and lifetime criminality. Through a hierarchical cluster analysis, we found a small, more crime-prone subgroup, characterized by substance abuse among their first-degree relatives, presence of NDDs, low educational attainment, previous contacts with CAP and out-of-home placements during childhood and adolescence. Later in life they also developed SUDs more often compared to the larger cluster. Previous studies have shown that genetic effects, prenatal risk factors such as *in-utero* exposure to alcohol and toxins and childhood adverse experiences such as familial psychopathology, maltreatment and neglect are potential risk factors for conduct disorder (2, 66, 67), which in turn is a risk factor for a criminal career later in life (68).

Interestingly, the two clusters did not differ in terms of different PCL:SV scores, which could have been expected. One possible explanation may be that the PCL:SV instrument was originally validated using non-psychiatric participants (57), and that the current cohort differs in demographic characteristics compared to them. Furthermore, previous studies of psychopathy in forensic psychiatric patients (69) have shown that PCL-scores tend to be in lower range, possibly related to factors such as medication and psychotic symptoms. In our small study group, low scores in general probably decreased our possibilities to detect differences between the two clusters, contrary to our expectations. As was described in the methods section, the R-variables of the HCR-20 were not rated as the instrument was not to be used as a clinical risk assessment tool. In order to reduce the risk of aggressive inpatient behavior, applying a strategy of making risk assessments on all individuals on inpatient psychiatric units and not just the actively aggressive ones, is recommended (70).

The study's cluster construction renders support to previous findings of associations between persistence in violence in offenders and SUD, low educational attainment and parental risk factors such as psychiatric disorders (7). The NDD-diagnoses were more prevalent in cluster 1, which corresponds to previous theories that neurodevelopmental aberrations are central in a more persistent group of offenders (6, 71). It is estimated that 5–10% in the general population has any type of NDD (72) but in violent offenders in prison, the prevalence of ADHD may be close to 50% and for autism spectrum disorders up to 10% (16). When testing the relationship of NDDs and the risk for violent criminality in a population-based register study, only ADHD and tic disorders were found to be risk factors (73), yet other studies have shown that both ADHD and autism spectrum disorders carry a risk of adverse outcomes such as behavioral disturbances, criminality and an antisocial lifestyle in adolescence and adulthood (17–19). The low number of diagnosed NDDs in this study is probably not a true representation of the incidence and considering the risk these diagnoses carry for continuous criminality, this study urges the importance of testing for these disorders.

When testing the clusters in MANOVA-analyses of lifetime criminality and number and type of negative events during in-patient treatment time, cluster 1 had a lower age at first crime, had committed a proportionately larger number of financial and drug-related crimes and also had more registered events of substance use during in-patient treatment time, compared to cluster 2 (all $p < 0.05$), though the latter statistical significance ceased when controlling for length of stay. A criminal lifestyle and SUD go hand in hand as crime may be a necessity in order to sustain a misuse of drugs and/or alcohol. Though we could not replicate three clusters exhibiting the criminal trajectories Hodgins proposed, the findings of the current study are in concordance with studies suggesting two subgroups of early and late starters (74–76) as the individuals of the more crime prone cluster 1 had an earlier age at first crime and a more extensive criminal career compared to cluster 2. This was further indicated when age at the time of the FPI was added as a co-variate to lifetime criminality as there continued to be a statistically significant adjusted mean difference between the two clusters. The importance of SUD found in the current study has also been proved in follow-up studies of Hodgins' typology (77) as SUD is in itself a known risk factor for criminal behavior (28). A recent study by Sariaslan et al. (78) found that the elevated risk of a psychotic individual committing a violent offense was found to be due to the same genetic influences that simultaneously elevates the risk to develop mental health problems, SUD and commit violent crime. This may suggest that the same set of genes contribute to both psychiatric symptoms and violent behaviors.

Using official conviction data always carries the risk of overlooking true crime rates. Studies comparing self-reports with official records have shown that offenders in reality have a lower age at first crime, longer criminal careers as well as a larger volume of committed crimes than what is found in registries (79). In addition to the plausibility of more extended criminal careers, a limitation in this current study is that registers of sentences passed before 1973 were not obtainable. This may give a false lower number of lifetime criminality as 24 individuals (20 %) were of legal age before 1973. As the number of individuals who were of legal age before 1973 were evenly distributed between the two clusters with no significant difference in any of the studied variables, and as the exclusion of these individuals would give a heavy impact on the possibilities to conduct statistical analyses, all individuals were included in the study.

In earlier studies (80), a history of previous criminality has been proven to be a potent predictor of both general crime as well as violent crime, yet these findings were only partially replicated in this current study as life history of violent crime did not differ significantly between the clusters. This may be due to the fact that almost all individuals were sentenced to forensic psychiatric in-patient treatment due to violent criminality. Added to this, the number of committed violent crimes differed greatly due to the heterogenous nature of the cohort. Another limitation of the study is the difficulty of measuring the potential effects prescribed treatment interventions and psychiatric medication might have had on violent behavior both previous to and during forensic psychiatric treatment. Research has shown that antipsychotic medication, especially such given in depot forms as well as mood stabilizers, reduce the risk of violent behavior (81, 82), particularly in individuals with both schizophrenia and conduct

disorder (83). By offering MDO's interventions targeting both the mental disorders and the criminal behavior, forensic psychiatric caregivers may have reduced symptoms of distress and given the cohort individuals improved coping abilities and behavioral functioning (84).

In summary, the current study adds to a previous body of research by suggesting that there is a high risk, life course persistent phenotype not only in prison populations but also in forensic psychiatry. This subgroup is defined by an adverse childhood environment, early-onset antisocial behavior and psychiatric problems, poor school performance, out-of-home placements and later substance abuse. A larger and more subgroup focused study recruited to enhance group comparisons would have made comparisons clearer, yet the advantages of a consecutive, total cohort outweigh these limitations, as there are few such studies. The study adds important knowledge of the group of forensic psychiatric patients as a whole and illustrates the challenges the clinical teams have in assessing and treating them.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the study was approved by the regional ethical review board in Lund (64/2007 and 2014/911). Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

## AUTHOR CONTRIBUTIONS

HK, BH, HA, and TN designed the study. HK collected the data and took the lead in writing the manuscript in close collaboration with and under supervision of BH. TN and BH supervised the statistical analyses made by HK. All authors provided critical feedback and helped shape the analysis, research and full manuscript.

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# Clinical Characteristics and Self-Harm in Forensic Psychiatric Patients

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Self-harm, comprising non-suicidal self-injury, and suicide attempts, is a serious and potentially life-threatening behavior that has been associated with poor life quality and an increased risk of suicide. In forensic populations, increased rates of self-harm have been reported, and suicide is one of the leading causes of death. Aside from associations between self-harm and mental disorders, knowledge on self-harm in forensic psychiatric populations is limited. The purpose of this study was to characterize the clinical needs of a cohort of forensic psychiatric patients, including self-harm and possible risk factors thereof. Participants ($N$ = 98) were consecutively recruited from a cohort of forensic psychiatric patients in Sweden from 2016 to 2020. Data were collected through file information, self-reports, and complemented with semi-structured interviews. Results showed that self-harm was common among the participants, more than half (68.4%) of whom had at some point engaged in self-harm. The most common methods of non-suicidal self-injury were banging one's head or fist against a wall or other solid surface and cutting, and the most common method of suicide attempt was hanging. The most prominent functions of non-suicidal self-injury among the participants were intrapersonal functions such as affect regulation, self-punishment, and marking distress. Self-harm in general was associated to neurodevelopmental disorders ($p$ = 0.014, CI = 1.23–8.02, OR = 3.14) and disruptive impulse-control and conduct disorders ($p$ = 0.012, CI = 1.19–74.6, OR = 9.41), with reservation to very wide confidence intervals. Conclusions drawn from this study are that self-harm was highly prevalent in this sample and seems to have similar function in this group of individuals as in other studied clinical and non-clinical groups.

**Keywords: self-harm, non-suicidal self-injury, suicide attempt, forensic psychiatric patients, psychiatric disorders, ISAS scale**

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## INTRODUCTION

Every year 800 000 people in the world commit suicide. This corresponds to one suicide every 40 s (1). In forensic populations, i.e., offenders with or without varying degrees of mental disorders, suicide is one of the leading causes of death (2, 3), and it has been reported that suicide is five to 10 times higher in prison populations than in general populations (2, 4, 5). Studies in prison settings

have found some environmental factors (e.g., being in a single cell), psychiatric factors (previous suicide attempts, recent suicide ideation, mental illness), and criminological factors (being on remand, having received a life sentence, and having a violent index offense) particularly important in identifying individuals with a high risk of suicide (6). One of the main risk factors for suicide in prison populations is previous non-suicidal self-harm behavior; the risk of completed suicide has been found to be 30 times higher among people who demonstrate non-suicidal self-harm behavior than among those who do not (6–8).

The term self-harm is broad and refers to both non-suicidal self-injury (NSSI) and self-inflicted harm with the intention of committing suicide (suicide attempt) (9). This behavior is considered a global public health issue and is common in the general population (2.9–41.5%) (10, 11). In prison settings, the prevalence of non-suicidal self-harm and suicide attempts has been reported to vary from 7 to 47.6% (12, 13). In a Swedish prison cohort, the actual lethal intention of apparent suicide attempts was found to be as low as 6% (14). To our knowledge, few studies discuss the intention of suicide attempts. However, one study found that individuals with personality disorders had significantly lower intention of completed suicide than those with substance use or unknown psychiatric disorders (15). In sum, self-harm constitutes a significant challenge not only in parts of the general population, but also in forensic settings such as prisons. However, while it is important to determine the prevalence of such a challenging behavior, understanding why some individuals injure themselves is essential for designing and implementing treatment and prevention.

One specific setting where knowledge on self-harm is scarce is within forensic psychiatry. Every year, ∼350 individuals are convicted to forensic psychiatric care in Sweden. Forensic psychiatric patients (∼1,800) (16) are a relatively small group compared with the significantly larger group of people imprisoned in Sweden (∼5,000) each year (17). In international comparisons, it has been demonstrated a significant variation in both the number of forensic beds available, length of care and patient group characteristics [e.g., gender distribution; (18)] Nevertheless, a common denominator for all forensic psychiatric contexts is that forensic psychiatric patients require substantial effort and skill in terms of health care and intervention. These patients' clinical presentations are characterized by a complex spectrum of mental disorders and comorbid psychosocial problems, antisocial behaviors, and early adverse experiences (16, 19). The few studies on non-suicidal self-harm and suicide attempts among forensic psychiatric patients report alarmingly high rates (∼61%) (2, 20, 21). The severity of self-harm varies greatly in these populations, which raises questions about the function of this behavior. To our knowledge, this has not been studied previously in forensic psychiatric patients, but theoretical and clinical studies in other populations indicate that self-harm may function as an emotion regulation strategy (22–28).

The clinical presentations and overrepresentation of self-harm in forensic psychiatric patients make clear that this population is extremely vulnerable in this area. Forensic psychiatric care urgently needs to help these patients, but knowledge upon which to base evidence-based practice is scarce.

## AIMS

The explorative purpose of this study was to describe the clinical characteristics of a cohort of consecutively recruited forensic psychiatric patients with non-suicidal self-injury and suicide attempts and possible risk factors thereof, with the following specific aims:

(1) Describe the psychosocial, criminological, and psychiatric characteristics of a cohort of forensic psychiatric patients,
(2) Determine the prevalence, characteristics of non-suicidal self-injury and suicide attempts and functions of non-suicidal self-injury in forensic psychiatric patients,
(3) Identify possible psychosocial and clinical risk factors of non-suicidal self-injury in forensic psychiatric patients.

## METHODS

### Participants

This study was conducted in a consecutively recruited cohort of forensic psychiatric patients. All patients who met the initial criterion of being cared for at a high security forensic psychiatric clinic in Sweden during the data collection period of November 2016 to November 2020 were candidates for participation. To be included, patients had to have a longer predicted stay than 8 weeks at the clinic and be able to fulfill the tasks in the study without an interpreter. Also, all patients were assessed by their treating psychiatrist prior to participation and were excluded if assessed as unable to provide informed consent. The sample included only patients sentenced to forensic psychiatric care. Patients with remand statues or ongoing prison sentences with temporary need for involuntary psychiatric care were excluded from the study.

The aim was to collect 100 participants, but due to the COVID-19 pandemic, inclusion of participants was terminated in November 2020 after 98 patients had participated. The study was based on 98 participants (56% participation rate). For a detailed overview of the inclusion of participants (see **Figure 1**).

The mean age of the participants was 34.9 years (range 19–62, $SD = 10.7$) and 86.7% were male ($n = 85$). The mean length of stay in the current forensic psychiatric care period was 23.5 months (range 1–135, $SD = 33.5$), with most participants ($n = 87$, 88.8%) being treated under special care supervision, indicating a significant risk of recidivism. Only 14.3% ($n = 14$) of the participants had previously been in forensic psychiatric care. According to the Swedish National Forensic Registry report from 2019, the median age of forensic psychiatric patients in Sweden was 40 years, and 84% of the patients were male. The majority (90% for males and 84% for females) were being treated under special care supervision and 14% of the male patients and 11% of the female patients had previously been under forensic psychiatric care. Given this, the current sample seems representative of the population forensic psychiatric patients in Sweden. However, during data collection, nine participants chose to terminate their participation before all data had been collected and one self-report was assessed as unreliable. The characteristics of the nine patients who chose to terminate their participation

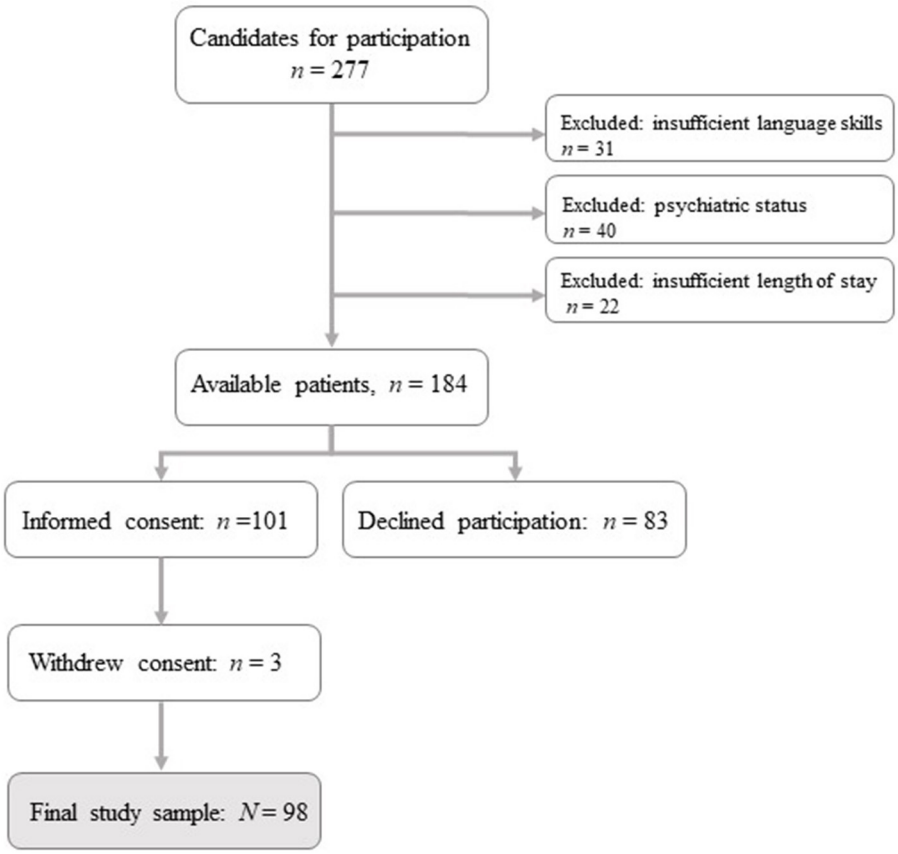


**FIGURE 1 |** Flowchart for inclusion of participants.

could be summarized by the following: 90% male, all with different current primary diagnoses and index crimes. Since the participants had been informed that they could terminate their participation at any time without giving a cause, no data on reason of dropout is available.

## Procedures

Information on the study was given to all 184 eligible participants by one of the two data collectors (the first author and a fellow PhD student), both with clinical experience with forensic psychiatric patients. After receiving oral and written information on the study, those who chose to participate provided written informed consent. Thereafter, the data collectors gathered all available file information, including the forensic psychiatric investigation (FPI), medical records from psychiatric health care facilities, detailed reports on previous living circumstances and criminal history, written court verdicts, and incidents during current treatment. The data collectors then met each participant, on one or several occasions depending on the participant's needs, to conduct self-report questionnaires. When the information from files was considered insufficient, complementary semi-structured interviews were conducted. A data collector was present for all participants while they answered the questionnaires to provide any necessary support (e.g., emotional support or interpretation of questions). After data collection was completed for each participant, all data were assessed for quality through a review by the data collector and a senior clinician and researcher in the field. Every participant received a small monetary compensation for their contribution to the study.

## Measures

### Psychosocial Background

Sociodemographic information (e.g., age and gender) and information on psychosocial background (e.g., schooling, institutionalization during childhood, work experience, alcohol and substance use), and information on previous psychiatric health care was obtained from files and complemented with interviews with the participant. Information on psychosocial background (e.g., parents absent during childhood) was asked as "Did the participant grow up with one or both parents absent during a significant part of their childhood?" and responses were categorized as "No," "Yes, mother absent," "Yes, father absent," or "Yes, both parents absent." Information on institutionalization was divided into two categories: shorter stay (<4 weeks) and longer stay (≥4 weeks). Information on previous criminality was collected through the FPI and retrieving written court verdicts

from the local district court. Criminal behaviors were categorized as follows: lethal violence (murder/manslaughter), assaults (not lethal or sexual), other violent crimes (threats and violence against an officer, unlawful threat, and fire setting/arson), sexual assaults (all sexual acts prohibited by the Swedish Penal Code), theft or robbery, economic crimes, traffic offenses, drug offenses, and unlawful possession of weapons. Responses were then divided into: "No," "Yes, single occasion (one time)," or "Yes, repeated occasions (two times or more)."

### Mental Health

Clinical factors regarding mental health including substance use disorders, both lifetime occurrence and current primary and secondary diagnoses of mental disorders, were collected through medical files and the FPI. In the files, diagnoses were specified in DSM-IV (29), ICD-9 (30), or ICD-10 (31) format and were therefore converted to DSM-5 (32) by a senior clinician, a psychologist and researcher (author MW) with considerable experience in the field. Information on diagnoses was categorized into (1) current diagnoses (primary and secondary) and (2) diagnoses at any point in a participant's life (from child and adolescent psychiatry until current stay within forensic psychiatric care). We found that one participant had a schizophrenia diagnosis both as a current main diagnosis and as a secondary diagnosis. This proved to be a miscoding in the medical file, and the patient was coded in our study as having schizophrenia only as primary diagnosis.

### Self-Harm

Information on lifetime self-harm was collected from files and self-reports, complemented by interviews. Data on NSSI (any occasion, number of occasions, age at onset, type of self-injury, and function of the behavior) and suicide attempts (any attempt, age at onset, violent attempts, risk of completed suicide at most serious attempt) were collected separately. The self-report instrument Inventory of Statements About Self-injury (ISAS) (33), designed to comprehensively assess the frequency and functions of NSSI, was also used to collect information on NSSI. The ISAS assesses NSSI in two parts: (1) the lifetime frequency of 12 NSSI made intentionally but without suicidal intent, and (2) the 13 functions of NSSI. In the first part of the ISAS, participants are asked to estimate the number of times they have used specific methods of NSSI. Additional multiple-choice questions assess descriptive and contextual factors including age at onset, pain experienced during the NSSI act, whether the behavior is performed alone or in the presence of others, time between the first urge to self-harm and the actual act (<1, 1–3, 3–6, 6–12, 12–24 hr, and >1 day), and whether the participant wants to stop self-harming. Only participants who confirmed one or more NSSI behaviors in the first part were asked to proceed to the second. The second part evaluates the 13 potential functions of NSSI by three items per function rated as "0: not relevant," "1: somewhat relevant," or "2: very relevant": affect regulation, anti-dissociation, anti-suicide, autonomy, interpersonal boundaries, interpersonal influence, marking distress, peer bonding, self-care, self-punishment, revenge, sensation seeking, and toughness. Scores for each function range from 0 to 6. These 13 functions constitute two overall factors: interpersonal factors (e.g., interpersonal influence, peer bonding), and intrapersonal functions (affect regulation, self-punishment) (33). The ISAS factors have previously presented good internal consistency and expected correlations with both clinical and contextual factors, supporting the reliability and validity of ISAS (34). The Swedish translation of the ISAS has demonstrated good internal consistency for the interpersonal and intrapersonal factors in a female population with known and severe self-harm (35). The ISAS has not been validated in forensic settings with an explorative objective, nor has any other self-report assessment of self-harm. In this study, Cronbach's alpha was used to calculate internal consistency for the ISAS self-report items, demonstrating good internal consistency ($\alpha = 0.898$ for the intrapersonal scale and $\alpha = 0.859$ for the interpersonal scale; both over the acceptable value of 0.7). Analyses on ISAS-factors were performed on the 43 participants who had answered the ISAS.

In the Results section we specify suicide attempts because we believe this is of clinical relevance. Participants were asked "Have you ever made a suicide attempt with the intention to die?" Participants who answered "Yes" were asked to report their most recent method of suicide attempt, any attempt of suicide in the last 6 months, any substance use in conjunction with the attempt, and the lethality of the latest attempt. Levels of lethality of the attempt were categorized using the scale from C-SSRS Suicide risk assessment instrument, "Actual Lethality/Medical Damage," categorizing the physical consequences of suicide attempts on a 6-point Likert scale (0–5) (36).

## Statistical Methods

For the first and second aim, we used descriptive frequency tables to report psychosocial, criminological, and clinical backgrounds and information on self-harm. For the third aim, we performed chi-square tests of independence to examine associations between self-harm and psychosocial and clinical factors deemed relevant based on previous research. We performed all bivariate analyses with the general self-harm variable as dependent variable, which was created by merging two variables (suicide attempt yes/no and NSSI yes/no). Effect sizes, confidence intervals, and odds ratios (ORs) were reported for ease of interpretation. Several diagnoses could not be analyzed in relation to self-harm due to a low number of participants in each cell (see **Table 5** in the Results section for more information). The authors are aware of the large variation of mental disorders in this population, and that a small representation in some disorder categories might lead to statistical power issues. However, this is an explorative study why we argue for the need to examine the sample thoroughly regarding this issue. We did not correct for multiple comparisons because of the explorative purpose of the study.

## Ethical Considerations

Because of the studied population's vulnerabilities, ethical considerations were especially important. We consulted the treating forensic psychiatrist for all candidates for participation and excluded all candidates considered not currently suitable for the study due to psychiatric status

**TABLE 1 |** Psychosocial background of forensic psychiatric patients ($N = 98$).

| Background characteristic | *n* | % |
|---|---|---|
| **Born in Sweden** | 70 | 71.4 |
| **Marital status** | | |
| Single | 84 | 86.6 |
| In a partner relationship/married | 13 | 13.4 |
| Parent of a child | 27 | 27.6 |
| **Schooling** | | |
| Graduated from primary school | 43 | 44.3 |
| Truancy | 74 | 77.9 |
| Bullied others | 29 | 31.2 |
| **Work experience** | | |
| Full-time employment for >1 year | 33 | 34 |
| Part-time employment for >1 year | 19 | 19.6 |
| **Upbringing circumstances** | | |
| Parent(s) absent during childhood | 40 | 40.9 |
| Institutionalization before age 18 | 36 | 36.8 |
| Foster care placement | 28 | 28.5 |

(e.g., acute psychosis or imminent risk of violence) or unable to provide informed consent (e.g., due to intellectual disability). All participants provided voluntary informed written consent before participation and were informed of their right to terminate participation at any time without giving a reason. The study, including the small monetary reward (low in order not to give an incentive that would compromise free consent), was approved by the Research Ethics Committee at Linköping University, 2016/213-31 and 2017/252-32.

# RESULTS

## Psychosocial, Criminological, and Clinical Characteristics of Forensic Psychiatric Patients

The psychosocial backgrounds of the participants are presented in **Table 1**. For gender-specific distributions, see **Table A1**. A subgroup of the participants had not graduated from compulsory primary school ($n = 19$, 19.6%), while 25 participants (25.8%) had completed high school. A minority had initiated studies at the university level ($n = 6$, 6.2%) or completed a vocational training education ($n = 4$, 4.1%). As reported in **Table 1**, almost one in three of the participants had bullied other children during childhood, with the majority ($n = 21$, 22.6% of the total cohort) having done so repeatedly. Truancy was reported for more than three in four of the participants, with many ($n = 58$, 61% of the total cohort) demonstrating a high rate of truancy. Among the participants who grew up with one or both parents absent, 27 (27.6%) reported one single parent as absent, while in 13 cases (13.3%) both parents had been absent during a significant time of their childhood. About one in three participants had been institutionalized during childhood, and longer stays (several months or years) was more frequent ($n = 32$, 32.7%) than shorter stays (a couple of weeks; $n = 4$, 4.1%). This was also the case with foster care placements, where a longer stay was more frequent ($n = 21$, 21.4%) than a shorter stay ($n = 7$, 7.1%). The gender-specific distributions presented in **Table A1** in the **Appendix**, demonstrated some trends regarding gender differences, e.g.,; female participants were more often than males in some kind of a partner relationship, reported much less work experience than their male counterparts, and had to a lower degree bullied others during childhood.

The mean age at first prosecuted offense was 22.3 years (median = 18, range 15–50) among the participants, and the mean age of onset at first crime (not prosecuted) was 14.7 (median = 14, range 6–47). For male participants, the age range of first prosecuted offense was 15–50, while for female participants the range was 20–41 (see **Table A2**). The number of previous convictions per participant ranged from 1 to 50, with a mean number of convictions at 7.4 for the whole cohort. The maximum number of previous convictions reported among the female participants was 6 times. The mean number of prison sentences was 1.7 (range 0–38). Female participants who had committed an offense of lethal violence ($n = 4$, 30.8%) had done so at a single occasion. No woman had committed an offense of lethal violence at multiple occasions. Overall, the majority of the female participants reported assaults ($n = 11$, 84.6%), other violent crimes (non-sexual) ($n = 11$, 84.6%), theft or robbery ($n = 10$, 77%), and drug offenses ($n = 10$, 77%). For detailed information on the criminological background of the cohort, see **Table 2** and **Table A2** for gender-specific distributions.

As seen in **Table 3**, a majority of the participants had a current or history of diagnosis within the spectrum of schizophrenia or other psychotic disorders. The most frequent current primary diagnosis at time of participation in this spectrum was schizophrenia ($n = 19$, 19.4%), predominantly paranoid or unspecified, followed by unspecified schizophrenia or other psychotic disorder ($n = 18$, 18.4%). A common category in previous diagnoses was substance-related and addictive disorders, with almost two in three (62.2%) participants having received such a diagnosis at some point during their lifetime. The most common substance use disorder was "Other" or "Unknown)" ($n = 37$, 37.8%), followed by cannabis-related disorders ($n = 20$, 20.4%) and stimulant-related disorders ($n = 15$, 15.3%).

Two out of five participants had a history of a childhood-onset mental disorder that continued, as a primary or secondary diagnosis, at the time of participation (see **Table 3**). Over a lifetime perspective, attention deficit/hyperactivity disorder was the most common neurodevelopmental diagnosis among the participants.

Personality disorders were common among the participants, with two in five having a history of such a diagnosis and one in three having a current primary or secondary diagnosis (see **Table 3**). The most common were cluster B personality disorders, with a prevalence of antisocial personality disorder (APD) at 23.5%, $n = 23$, ($n = 22$, 25.9% of male participants, and $n = 1$,

**TABLE 2 |** Criminological characteristics of forensic psychiatric patients.

| Type of offense | Yes single occasion *n* (%) | Yes repeated occasions *n* (%) | No *n* (%) | Age at onset, mean (range) |
|---|---|---|---|---|
| Lethal violence | 20 (20.4) | 5 (5.1) | 73 (74.5) | 27.6 (19–41) |
| Assaults (non-sexual) | 22 (22.4) | 59 (60.2) | 17 (17.3) | 19.3 (5–47) |
| Other violent crimes (non-sexual) | 13 (13.3) | 76 (77.6) | 9 (9.2) | 23.1 (7–50) |
| Sex offences | 6 (6.1) | 6 (6.1) | 83 (87.4) | 22.4 (11–39) |
| Theft or robbery | 19 (19.4) | 70 (71.4) | 9 (9.2) | 16.4 (5–45) |
| Economic offenses | 11 (11.3) | 15 (15.5) | 71 (73.2) | 22.2 (13–36) |
| Traffic offenses | 27 (27.8) | 40 (41.2) | 30 (30.9) | 20.2 (11–35) |
| Drug offenses | 4 (4.1) | 76 (77.6) | 18 (18.4) | 15.9 (8–35) |
| Unlawful weapons possession | 22 (22.4) | 37 (37.8) | 39 (39.8) | 21.1 (9–47) |

**TABLE 3 |** Current and historical mental disorders in forensic psychiatric patients.

| Diagnosis | Lifetime prevalent diagnosis* *n* (%) | Current primary diagnosis* *n* (%) | Current secondary diagnosis* *n* (%) |
|---|---|---|---|
| **Neurodevelopmental disorders** | 46 (46.9) | 21 (21.4) | 23 (23.5) |
| Intellectual disability, any kind | 13 (13.3) | 0 | 0 |
| Attention-deficit/hyperactivity disorder | 34 (34.7) | 4 (4.1) | 16 (16.3) |
| Autism spectrum disorder | 25 (25.5) | 14 (14.3) | 7 (7.1) |
| **Schizophrenia spectrum and other psychotic disorders** | 69 (70.4) | 51 (52.0) | 7 (7.1) |
| **Bipolar and related disorders** | 11 (11.2) | 5 (5.1) | 2 (2.0) |
| **Depressive disorders** | 24 (24.5) | 1 (1.0) | 0 |
| **Anxiety disorders** | 28 (28.6) | 0 | 0 |
| **Obsessive-compulsive and related disorders** | 7 (7.1) | 0 | 1 (1.0) |
| **Trauma- and stressor-related disorders** | 18 (18.4) | 0 | 4 (4.0) |
| Post-traumatic stress disorder | 8 (8.2) | 0 | 3 (3.1) |
| Other trauma and stressor-related disorders | 13 (13.3) | 0 | 2 (2.0) |
| **Disruptive, impulse-control, and conduct disorders** | 17 (17.3) | 1 (1.0) | 5 (5.1) |
| Oppositional defiant disorder | 5 (5.1) | 0 | 1 (1) |
| Intermittent explosive disorder | 5 (5.1) | 0 | 1 (1) |
| Conduct disorder | 5 (5.1) | 0 | 0 |
| Unspecified disruptive, impulse-control, and conduct disorder | 7 (7.1) | 0 | 3 (3.1) |
| **Substance-related and addictive disorders** | 63 (64.3) | 2 (2) | 32 (32.7) |
| **Personality disorders, any** | 42 (42.9) | 18 (18.4) | 12 (12.2) |
| Cluster A personality disorders | 7 (7.1) | 0 (0) | 0 (0) |
| Cluster B personality disorders | 38 (38.8) | 12 (12.2) | 18 (18.4) |
| Cluster C personality disorders | 1 (1.0) | 0 (0) | 0 (0) |
| Other personality disorders | 25 (25.5) | 4 (4.1) | 5 (5.1) |
| **Paraphilic disorders** | 2 (2.0) | 1 (1.0) | 1 (1.0) |
| **Other mental disorders** | 10 (10.2) | 2 (2.0) | 0 |

**Lifetime prevalent diagnoses = diagnoses from childhood until current forensic psychiatric care; Current primary and secondary diagnoses = diagnoses at time of participation.*

7.7% of female participants) and borderline personality disorder (BPD) at 20.4%, $n = 20$ ($n = 9$, 10.6% of male participants, and $n = 11$, 84.6% of female participants). However, the prevalence of APD or BPD as a current primary or secondary diagnosis was low (APD primary: $n = 7$, 7.1%; APD secondary: $n = 11$, 11.2%; BPD primary: $n = 4$, 4.1%; BPD secondary; $n = 7$, 7.1%). Specific personality disorders in the other clusters were uncommon and ranged from 0 to 3 in lifetime occurrence and 0

to 1 in current diagnoses. As seen in **Table A3**, in the **Appendix**, gender differences in psychiatric (co-)morbidity were visible, except for substance-related and addictive disorders and specific disruptive, impulse-control, and conduct disorders. This was valid for both lifetime prevalence and current diagnoses.

Comorbidity was common in this sample at the time of participation. The majority of the participants had one secondary diagnosis ($n = 43$, 43.9%), 15 (15.3%) had two additional diagnoses, 10 (10.2%) had three, and 3 (3.1%) participants had four additional diagnoses. The most common secondary diagnoses were substance-related and addictive disorders. Some diagnoses belonging to the spectrum of disruptive, impulse-control, and conduct disorders had a low lifetime occurrence or no representation in this sample (Pyromania: $n = 0$ [0%], Kleptomania: $n = 1$ [1%], and Other specified disruptive, impulse-control, and conduct disorder: $n = 3$ [3.1%]).

## Prevalence, Characteristics, and Function of Self-Harm in Forensic Psychiatric Patients

In total, 67 (68.4%) of the participants had engaged in self-harm (non-suicidal self-injury and/or suicide attempts) at some point during their lifetime. Of those, $n = 54$ (55.1%) were male. All female participants in the study ($n = 13$) reported a history of NSSI or suicide attempt. Fifty-seven (58.2%) of the participants had made one or more suicide attempts, seven (12.5%) during the previous six months. Only one ($n = 1$) of the female participants had never attempted suicide. The mean age at first suicide attempt was 21.5 years of age (median 19 years; range 9–53, $SD = 9.0$). Most recent suicide attempts included several different methods. Of alternatives listed, hanging was the most common ($n = 14$, 26.4%), followed by self-poisoning ($n = 12$, 22.6%), cutting ($n = 9$, 17%), self-strangulation ($n = 5$, 9.4%), choking/swallowing objects ($n = 3$, 5.7%), jumping from heights ($n = 2$, 3.8%), and traffic related attempts ($n = 2$, 3.8%). Six (11.3%) participants had made another type of suicide attempt not given as an alternative. Asked to specify their method, they reported "caused infection," "ran out on an iced lake," "drove a car into a tree," "started a fire in prison cell," "injected air into blood," and "tried to overdose." The physical consequences of the participants' most serious suicide attempts were none or minimal for 20 (40%), minor for 8 (16%), moderate for 11 (22%), moderately difficult for 6 (12%) and severe or nearly lethal for 5 (10%). The most commonly used method of suicide attempt for male and female participants, respectively were hanging/strangulation for men ($n = 13$, 15.3% of male participants), and cutting for women ($n = 6$, 46.2% of female participants).

More than half of the participants ($n = 56$, 59%) had engaged in NSSI (mean age at onset 18 years, $SD = 8.3$, range 4–41). The mean age at the last episode was 28.25 years ($SD = 8.3$, range 13–45). The majority of those who had self-harmed with non-suicidal intent had not done so under the influence of drugs ($n = 31$, 66%) and, although, other data on the exact circumstances of the NSSI episode were not collected, many participants often told the data collector that these episodes had occurred during their arrest or early in their admission to forensic psychiatry. The most common method of NSSI was banging or hitting oneself ($M = 31$ occasions) along with cutting ($M = 30$ occasions). The majority of the participants who reported cutting as an NSSI ($n = 13$, 14.9%) had only done so once. Male participants reported more single occasions of cutting, while female participants reported mostly repeated occasions of cutting. The lowest frequency of cutting reported by female participants was 10 times ($n = 3$), and the rest of the female participants ($n = 7$) who had cut themselves reported high frequencies (50–1,000 times). Several participants who scored high on frequencies of NSSI stated that the frequency was impossible to count and therefore reported an estimation. Regarding pain experience while self-harming, almost half of the participants who had self-harmed ($n = 21$, 45.7%) stated "yes," 14 (30.4%) stated "sometimes," and 11 (24%) stated "no." The majority ($n = 38$, 82.6%) reported that they preferred being alone while self-harming. The participants were also asked to estimate a time interval from their first thought of self-harm to the self-harm act. The majority ($n = 31$, 70%) reported "<1 h," 11% ($n = 5$) answered "1–3 h," 9% ($n = 4$) answered "3–6 h," and 6.6% ($n = 3$) answered "6–12 h" or "more than 1 day". When asked if they wanted to stop self-harming, 81.8% ($n = 36$) of the participants answered "yes."

**TABLE 4 |** Functions of NSSI (mean ISAS values) in forensic psychiatric patients.

| ISAS scale | Function | *M (SD)* | Range |
|---|---|---|---|
| **Intrapersonal** | | | |
| | Affect regulation | 3.04 (2.02) | 0–6 |
| | Anti-dissociation | 1.55 (1.80) | 0–6 |
| | Anti-suicide | 1.48 (2.02) | 0–6 |
| | Marking distress | 2.23 (1.84) | 0–6 |
| | Self-punishment | 2.48 (1.84) | 0–6 |
| **Interpersonal** | | | |
| | Autonomy | 0.40 (1.07) | 0–5 |
| | Interpersonal boundaries | 0.86 (1.35) | 0–4 |
| | Interpersonal influence | 1.50 (1.53) | 0–5 |
| | Peer bonding | 0.21 (0.51) | 0–2 |
| | Revenge | 0.44 (0.88) | 0–4 |
| | Self-care | 1.97 (2.07) | 0–6 |
| | Sensation seeking | 0.60 (1.25) | 0–6 |
| | Toughness | 0.90 (1.21) | 0–4 |

Overall, the participants reported intrapersonal functions as the more relevant functions of NSSI. As seen in **Table 4**, the two most commonly reported functions of NSSI were affect regulation and self-punishment, followed by distress signaling. The distribution of the participants' self-reported NSSI functions were, for the majority of the scales, positively skewed, explaining the large SD for some of the scales in **Table 4**. See **Table A4** for gender-specific distributions.

## Psychosocial and Clinical Risk Factors of Self-Harm in Forensic Psychiatric Patients

**Table 5** shows the effects of different psychosocial and clinical characteristics on self-harm when tested in chi-square

**TABLE 5 |** Psychosocial and clinical risk factors of self-harm (NSSI & suicide attempts).

| Psychosocial and clinical characteristics* | Self-Harm (*n*) | | | $X^2$ | *P* | CI | OR |
|---|---|---|---|---|---|---|---|
| | No | Yes | Expected yes-count | | | | |
| Female gender | 0 | 13 | 8.9 | 6.95 | 0.008 | 1.10–1.40 | 1.20 |
| Neurodevelopmental disorders | 8 | 38 | 31.4 | 8.13 | 0.004 | 1.47–9.63 | 3.77 |
| Schizophrenia spectrum and other psychotic disorders | 24 | 46 | 47.9 | 0.79 | 0.372 | 0.24–1.72 | 0.64 |
| Depressive disorders | 5 | 19 | 16.4 | 1.71 | 0.190 | 0.69–6.15 | 2.06 |
| Anxiety disorders | 5 | 23 | 19.1 | 3.44 | 0.064 | 0.92–8.02 | 2.72 |
| Trauma- and stressor-related disorders | 3 | 15 | 12.3 | 2.28 | 0.131 | 0.72–10.09 | 2.69 |
| Disruptive, impulse-control, and conduct disorders | 1 | 16 | 11.6 | 6.31 | 0.012 | 1.19–74.58 | 9.41 |
| Substance-related and addictive disorders | 21 | 42 | 43.1 | 0.23 | 0.627 | 0.32–1.97 | 0.80 |
| Personality disorder clusters A, B, and C | 13 | 29 | 28.7 | 0.01 | 0.900 | 0.45–2.50 | .90 |
| Cluster B personality disorders | 11 | 27 | 26 | 0.20 | 0.649 | 0.51–2.79 | 1.23 |
| Other personality disorders | 8 | 17 | 17.1 | 0.002 | 0.963 | 0.37–2.59 | 0.98 |
| Parents absent during childhood | 11 | 29 | 27.3 | 0.53 | 0.465 | 0.57–3.35 | 1.39 |
| Institutionalization during adolescence | 6 | 30 | 24.6 | 5.89 | 0.015 | 1.23–9.30 | 3.38 |
| Foster care placement during childhood | 6 | 22 | 19.1 | 1.89 | 0.17 | 0.73–5.69 | 2.04 |
| Truancy | 21 | 53 | 50.6 | 1.48 | 0.224 | 0.69–4.69 | 1.80 |
| Bullying others | 11 | 18 | 19.8 | 0.75 | 0.385 | 0.27–1.66 | 0.67 |

**Due to low representation in some diagnostic categories, bipolar syndrome, obsessive-compulsive and related disorders, paraphilic disorders, and other mental disorders and mental illness could not be analyzed in a chi-square analysis.*

analysis, demonstrating a few significant associations with wide confidence intervals. Similar results were demonstrated when analyzing only male participants (see **Table A5**).

## DISCUSSION

This study aimed to describe the clinical characteristics of self-harm and its functions and possible risk factors in a cohort of consecutively recruited forensic psychiatric patients. The participants reported many aggravating circumstances during their childhood, along with repeated criminal behaviors, both violent and non-violent, and a high prevalence and comorbidity of mental disorders, primarily within the schizophrenia spectrum and other psychotic disorders and substance-related and addictive disorders. More than half (68.4%) of the participants had at some point during their lifetime engaged in self-harm (NSSI and/or suicide attempt), and 58.2% had a history of one or multiple suicide attempts. The most commonly reported functions of NSSI were intrapersonal functions such as affect regulation, self-punishment, and marking distress, and self-harm in general was associated with neurodevelopmental disorders and disruptive impulse-control and conduct disorders, although, we acknowledge the wide confidence intervals and made no corrections for multiple comparisons. Gender differences in psychosocial, criminological and clinical characteristics were obvious, with female gender being a risk factor for self-harm.

### Psychosocial, Criminological, and Clinical Characteristics of Forensic Psychiatric Patients

Results in this study confirm previous findings that forensic psychiatric patients constitute a vulnerable group who have experienced stressful events since childhood. Many participants' childhood had been marked by seemingly complex relationships with peers and family and troubled educational histories with repeated truancy (61%) and school failures; one in five had not graduated from compulsory primary school. Almost two in five grew up without both parents present during a significant part of their childhood. Childhood institutionalization or placement in foster care, usually for long periods, was also common. Over the years, researchers have discussed the negative relationship between some children's temperaments and their parents' poor parenting and the subsequent effect on the child's behavioral adjustment in adolescent and adulthood (37, 38). Some children who are naturally more aggressive, easily frustrated, and have a hard time expressing themselves in a prosocial manner may frustrate their parents, who in response may disengage from parenting or become more sporadic and inconsistent toward the child, unfortunately intensifying the destructive development of these already vulnerable children or adolescents. The participants in our study were all once children, many of whom, for some reason, had difficulties getting through their basic education, had a high rate of truancy, and bullied their peers. For some, their childhood circumstances led to institutionalization or foster care placement for long periods of time. Taken together, the findings suggest a profound lack of parental support, something that needs to be investigated in future research. Regarding gender differences, the results suggest more externalizing childhood behaviors in male forensic psychiatric patients (e.g., bullying others), and more intimate partner relationships and lower degrees of work experience in the female patients. These are findings that are important for the rehabilitation to society for forensic psychiatric patients, since male and female patients may have different needs. Yet, this needs to be further investigated with a sample including more female patients.

The criminal histories of participants in this study included repeated assaults, threats, arson, theft, sexual violation, property crime, and drug-related crime, in accordance with reports from the Swedish National Registry of Forensic Psychiatry (16). Considering possible gender differences, the male patients demonstrated a more diverse criminological background than the female patients, with a lower age at onset confirming the suggestion above of more externalizing childhood behaviors in male forensic psychiatric patients. Male participants were overrepresented in multiple occasions of lethal violence compared to the female participants, yet the proportion of female participants that committed lethal violence at one occasion (30.8%) was larger than the proportion of male participants (18.8%). According to a Swedish study (39) there is a declining gap between genders in committed crimes. The authors argue that there are multiple possible explanations to this, yet with the definitive consensus that there is an increase in females committing crimes. The present study was conducted at a high-security forensic psychiatric clinic with special admission criteria. The results might have been different if the study had recruited from lower-security clinical settings.

The mean age of onset within the different crime categories follow previous findings of criminal development in different forensic populations such as violent offenders (40), with the youngest mean ages of onset in drug related crimes (15.9 years) and theft or robbery (16.4 years), and the oldest mean age of onset for lethal violence (27.6 years). The age of onset for some of these crimes was in some cases as low as 5 years of age. Taken together, the criminal background of the participants seems characterized by a focus on violent criminality, yet with a versatility that must be seen in light of the context for recruitment: a high-security forensic psychiatric clinic. Thus, this pattern cannot be expected to translate to all forensic psychiatric contexts but may be specific to those referred to care facilities with high security. However, the results clearly demonstrate the need for early childhood interventions and support to prevent the criminological path of some forensic psychiatric patients, and for continued explorations of gender differences in criminological characteristics.

Representation of gender in the sample (predominantly male) was in line with reports from the Swedish National Registry of Forensic Psychiatry (16). The most common primary psychiatric diagnosis at the time of participation was schizophrenia spectrum and other psychotic disorder. While schizophrenia (paranoid and unspecified) was the overall most common (primary or secondary) diagnosis in this sample, over 64.3% of the participants had at some point during their lifetime been diagnosed with some kind of substance-related and addictive disorder. According to previous research, forensic psychiatric patients are more likely than a general psychiatric population to be treated with a combination of different antipsychotic medications and higher doses (19). For the current cohort of forensic psychiatric patients suffering from high comorbidity of psychotic disorders and substance use disorders, the pharmacological treatment could be immensely challenging for clinicians. Interestingly, the prevalence of neurodevelopmental disorders in this sample was lower at the time of participation than the lifetime prevalence. Although, symptoms of neurodevelopmental disorders might decrease with time for some individuals (41, 42), these disorders may not be adequately accounted for in forensic psychiatric care, since psychotic disorders, especially in a more acute phase, might overshadow other mental disorders. In fact, this could be a valid concern for many other mental disorders, such as personality disorders, as symptoms might be harder to tease out in an overall complex clinical picture. Regarding possible gender differences in psychiatric morbidity, it is known that women overall tend to report higher lifetime prevalence of mood and anxiety disorders (43) and BPD (44), and women in forensic psychiatry tend to be overrepresented in BPD (45). Although, we found that BPD was common in female participants, no such conclusions could be drawn from the current sample because of the low number of women represented. However, the results indicate differing psychiatric (co-)morbidity between female and male forensic psychiatric patients, something that needs to be explored in samples with a larger proportion of female patients before conclusions can be drawn. The current findings of a complex psychiatric comorbidity in forensic psychiatric patients emphasize the need for a forensic psychiatric care that accounts for both comorbidity and gender differences and tailor interventions accordingly.

## Prevalence, Characteristics, and Function of Self-Harm in Forensic Psychiatric Patients

The prevalence of self-harm in the current study was high, in line with previous studies on forensic samples (46, 47). More than half of the participants reported self-harm, including suicide attempts, at least once. This is a serious behavior that can lead to death or other serious physical injuries, and the consequences of self-harm are visible not only within health care or the individuals' personal suffering, but also in health economics. The societal costs of self-harm are often explained in terms of the costs, the need, and the length of hospitalization and/or medical treatment and psychosocial assessment related to the self-harm event (48). This study found three particularly interesting characteristics of self-harm: (1) hanging was the most common method of suicide attempt, (2) the most serious suicide attempt usually had no or minimal physical consequences, and (3) the most frequent form of NSSI was banging one's head or fist against a wall or cutting oneself.

Hanging as the most commonly used method of suicide attempt corresponds well with findings that hanging is the most frequently used method for completed suicide among men in Europe (49). Researchers argue that the chosen method of suicide is often influenced by the possibility of succeeding with the suicide without being detected (49). Results in our study show that most participants did choose a lethal method for their most serious suicide attempt, but they survived with minimal or no physical consequences. We suggest this might be because the suicide attempt was made in a forensic or care setting where the person had no possibility of being alone without supervision for any significant length of time. The suicide attempt, therefore, may not have been made with lethal intent, but could have had another function. However, since no detailed data on the

circumstances around the suicide attempt were collected, this needs to be further investigated in future studies. Our findings can be contrasted against findings from patients with severe depressive disorders, where 32% had made a previous suicide attempt (50). We collected no further information on the circumstances or context of the most frequently used method of NSSI (banging fists or head against wall or cutting), but participants often told the data collector that these episodes of NSSI and/or suicide attempt had occurred during their arrest or early in their admission to forensic psychiatry. This provides increased support for the proposition that mentally disordered offenders are especially vulnerable to self-harm in critical time of their initial deprivation of liberty due to criminal offending and staff must be extra vigilant about the risk for self-harm in such contexts. All female participants reported some form of self-harm (NSSI and/or suicide attempt) and reported high frequencies of the NSSI behavior cutting, while male participants more frequently reported hanging/strangulation. Early studies argue for gender differences in self-harm behavior (51–53), while more recent studies [e.g., (54)] show that self-harm rates in men are not significantly different from those among women. Although, the current study showed a statistically significant difference between male and female participants concerning self-harm, general conclusions regarding gender differences cannot be drawn from this study because of the low number of female participants.

Previous studies on the functions of NSSI tend to fall on two sides: intrapersonal or interpersonal functions. The results of this study point to an intrapersonal orientation of the functions of NSSI, most prominently affect regulation, self-punishment, and distress signaling. This was especially prominent among female participants, although, the women also reported more interpersonal functions regarding interpersonal influence and self-care. This pattern is similar to that in discussions dominating the research field of self-harm today and shows that the functions of NSSI in forensic psychiatric patients, despite the influence of severe mental disorders, are comparable to those in other clinical and non-clinical groups (55–57) and that gender differences need to be considered. This information gives a unique insight into forensic psychiatric patients' perspectives on self-harm and is crucial for decisions on interventions directed toward self-harm in forensic psychiatry. Patients in forensic psychiatry also demonstrate, as evidenced earlier and in the current study, severe mental disorders and have also often experienced a traumatic childhood (58, 59).

## Psychosocial and Clinical Risk Factors of Self-Harm

There were no statistically significant associations between self-harm (NSSI and/or suicide attempts) and any of the psychosocial variables studied. Furthermore, no strong associations to any specific psychiatric diagnosis were demonstrated. However, self-harm was associated with neurodevelopmental disorders ($p = 0.014$, CI = 1.23–8.02, OR = 3.14) and disruptive impulse-control and conduct disorder ($p = 0.012$, CI = 1.19–74.6, OR = 9.41), although, the wide confidence intervals should be acknowledged. In numerous previous studies, self-harm has been associated with BPD, although, participants in the majority of those clinical studies have been female, and women are known to be overrepresented in BPD (44, 60, 61). In this study, we could not test the association between self-harm and BPD due to a low prevalence of the specific diagnosis in the sample. However, a high rate of self-harm was reported in several other diagnostic groups. Of the 67 participants who reported self-harm, 45 demonstrated a disorder within the spectrum of schizophrenia and other psychotic disorders. Even though, female gender increased the risk of self-harm 1.2 times, no gender-specific differences were demonstrated when the males in this sample were analyzed separately.

Given the NSSI functions reported by the participants, this could suggest they considered NSSI a way of expressing distress and frustration. However, conclusions about the function of NSSI must be drawn with caution and need to be further investigated in this particular group. Self-harm is a well-researched area, but not in forensic populations, and the differences in both the environmental and psychosocial backgrounds between a general population sample and a forensic sample must be taken into account.

## Strengths and Limitations

The sample in the current study was large considering previously reported difficulties in recruiting participants from forensic psychiatry (62), and the number of total forensic psychiatric patients existing in Sweden, representing ∼5% of the total population and characteristics in line with the total population. However, the distribution of psychiatric diagnoses was not varied enough for analyses with self-harm as a dependent variable. Thus, in-depth analyses on self-harm in relation to possible risk factors were not feasible. Also, the current sample was recruited from a high-security forensic psychiatric clinic and may thus not be generalizable to forensic psychiatric settings in general. Differences in the legal context also need to be considered, since forensic psychiatric patients might be legally defined differently in other jurisdictions. Furthermore, we acknowledge the limitations due to sample size, affecting the statistical analysis possibilities. Also, since the current study was cross-sectional, no conclusions on causality can be drawn from the current findings.

Another limitation of this study is that the instrument used to collect self-report information on NSSI has not previously been used in a forensic sample. Although, the psychometrics of the instrument had acceptable values, this should be studied further. In the first part of the ISAS participants report the number of NSSI incidents. This becomes problematic in terms of reliability as the number rises as it did in our sample. Multiple participants reported more than 100 up to 1000 NSSI incidents. Without questioning the accuracy of their information, this result raises concern about whether this instrument is suitable for a sample with substantial NSSI. This has been pointed out as problematic in previous research (63, 64). Finally, we made no corrections for multiple comparisons, due to the study's explorative design.

## Conclusions

This study confirms forensic psychiatric patients as a vulnerable patient group with a complex and severe clinical presentation in

combination with early maladjustment to society, where gender differences need to be considered. The results demonstrate that self-harm is a common and serious issue in a forensic psychiatric sample, with a higher prevalence than in the general population. Although, self-harm was significantly associated with neurodevelopmental disorders and disruptive, impulse-control, and conduct disorders, the confidence intervals were large in both cases and therefore no conclusions can be drawn in relation to clinical diagnosis. Self-harm was not associated with any specific psychosocial characteristics, but the predominant functions of NSSI in forensic psychiatric patients—affect regulation, self-punishment, and distress signaling—indicate that this group of vulnerable and exposed individuals may express their distress in a self-destructive manner.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Research Ethics Committee at Linköping University, 2016/213-31 and 2017/252-32. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

NL and MW developed the study concept. AO, SW, and ÅW contributed to the study design. Data collection and data analysis was performed by NL. NL drafted the paper. MW, AO, SW, and ÅW provided critical revisions. All authors approved the final version of the paper for submission.

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## SUPPLEMENTARY MATERIAL

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# Migrants With Schizophrenia in Forensic Psychiatric Hospitals Benefit From High-Intensity Second Language Programs

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**Background:** As a result of migration, an increasing number of patients in forensic psychiatric hospitals show poor skills in the national language, which can affect their treatment. Improving the second language (L2) of inpatients with schizophrenia may help to enable effective psychotherapy and thus reduce the risk of criminal recidivism and facilitate reintegration into society, for example because of a language-related higher degree of social functioning. For this purpose, a Hessian forensic psychiatric hospital established a ward specialized in L2 acquisition. The ward accommodates up to 21 patients with schizophrenia, who attend an L2 program consisting of 800–900 lessons within 1 year.

**Aims:** The study aimed to evaluate whether patients on the specialized ward (experimental group) achieve at least Common European Framework of Reference (CEFR) level A2 in the L2 program. Additionally, it examined whether language acquisition is better among participants in the experimental group than among those on regular wards (control group).

**Methods:** Achievements in the L2 were assessed by an L2 test 3 times: at the beginning of the program, after 6 months, and after 1 year. The impact of intelligence on achievements in L2 was evaluated using Raven's Standard Progressive Matrices.

**Results:** The experimental group showed significantly better improvement than the control group. Literacy was a significant predictor of improvement in the L2. The majority of the experimental group reached at least CEFR level A2 after 1 year.

**Conclusions:** High-intensity L2 programs are an effective way to improve the L2 of inpatients with schizophrenia in forensic psychiatric hospitals.

**Keywords: second language acquisition, schizophrenia, language, forensic psychiatry, language learning, longitudinal**

## INTRODUCTION

In accordance with the German legal system, offenders who commit serious crimes because of mental disorders are admitted to closed wards in forensic psychiatric hospitals. Similar to prisoners, forensic inpatients have to cope with deprivation of liberty, autonomy, and personal possessions (1). However, unlike incarceration, forensic psychiatric treatment aims to decrease the risk of recidivism by addressing the criminal risks associated with mental disorders (2).

The proportion of patients with a migration background in forensic psychiatry in Germany has risen since 2014 as a consequence of increased migration. Surveys in 2015 showed that 35.6% of forensic psychiatric inpatients in the federal state of Baden-Württemberg (Germany) had a migration background (3). A number of studies have been conducted on migrants in forensic psychiatry. The most frequent finding, is that migrants in forensic psychiatry are more likely to be diagnosed with schizophrenia and less likely to be diagnosed with personality disorders compared to patients without migration background. It was found for British, Canadian, Danish and German samples (4–7). This may reflect diagnosis biases related to poor language skills of migrants (8). However, Bulla et al. found that migrants from Southern Europe weren't more likely to be diagnosed with personality disorders compared to non-migrant patients in Baden-Württemberg. They speculate that German health professions may be familiar enough with the culture of South Europe which may decrease the risk of diagnosis biases (3). Moreover, a Canadian study found that migrants and non-migrants in forensic psychiatry didn't differ in sociodemographic variables such as age and education (5).

The high proportion of migrants in forensic psychiatry is a challenge for physicians, therapists, and nursing staff because linguistic and intercultural barriers make therapeutic work more difficult. In particular, poor language skills challenge the efficacy of psychotherapy and might lead to that forensic psychiatric treatment takes longer for non–native-speaking inpatients than for native-speaking inpatients.

One option to deal with poor language skills is to use an interpreter. Although this is a popular and apparently simple solution, it has several disadvantages in psychiatric settings. Interpreters must not be fellow inpatients or other non-professional persons (9) but have to be professional interpreters, so interpreting causes high additional costs and is logistically challenging. Furthermore, psychiatric interpretation requires good knowledge of mental disorders and psychotherapeutic techniques and close matching of the terminology of patients and psychotherapists. Such an approach might be feasible for frequently spoken languages, such as English, French or Spanish. However, for rarer ones, such as Tigrinya, these requirements are unlikely to be fulfilled. Furthermore, working in psychotherapeutic settings may cause a high level of emotional stress for interpreters (10). Consequently, a better long-term option may be to improve the second language (L2) of non–native-speaking forensic psychiatric inpatients.

Patients with schizophrenic disorders represent the largest diagnostic group (37%) in German forensic psychiatric hospitals (11). According to Dugan, a "wide variety of symptoms [of schizophrenia] are directly related to patients' ability to communicate" (12). However, recent reviews show that individuals with schizophrenic disorder are able to acquire new languages [e.g., (12, 13)]. For example, an Israeli study found that Russian migrants with and without schizophrenia showed similar patterns in spoken L2 after 5 years in Israel (14). The 2 groups differed only slightly in the syntax, lexis, and discourse markers evaluated in the study. The authors concluded that "despite the well-attested cognitive and social impairments in schizophrenia, second language learning proceeds rather normally" (14). Furthermore, psychotherapy in L2 may even have a positive impact on the treatment of schizophrenia (15, 16). Psychotherapy in patients' L2 is thought to trigger less emotional resonance than psychotherapy in their first language (L1). The reduced emotional resonance may be advantageous in cases where treatment can become emotionally overwhelming, such as in anxiety disorders.

Considering that almost all patients with a migration background in forensic-psychiatric hospitals in Germany want to remain in the country after their release, integration and networking in the host culture are essential components of rehabilitation programs. Thus, from a forensic-psychiatric perspective acquiring an L2 is not only important for making progress in psychotherapy, but also for successful reintegration into society. A recent review on the potential benefits of bilingualism for people with schizophrenia in Canada found that the employment rate was significantly higher in bilingual patients than in monolingual ones (13). The authors also assumed that learning an L2 may improve social functioning in patients with schizophrenia.

Besides the question whether patients with schizophrenia are in fact able to learn an L2, the extent of achievement isn't that clear. In Germany, the Common European Framework of Reference for Languages (CEFR) is used to assess language skills (17). CEFR levels A1 and A2 describe elementary language competence; people who reach this level can understand familiar and everyday words and use them in very simple sentences. At CEFR levels B1 and B2, individuals can talk about common and personal areas of interest and give brief explanations about them. CEFR levels C1 and C2 describe a competent use of language, and individuals with CEFR level C2 demonstrate near-native proficiency. Considering the importance of self-reflection in most psychotherapeutic approaches, CEFR-level B1 might be an appropriate minimum level for psychotherapy in an L2. To enable participants to reach CEFR level B1, L2 programs in Germany typically comprise 600 to 900 lessons (18).

In our study, we examined whether forensic inpatients with schizophrenia on the ward for language acquisition and integration were able to reach at least CEFR level A2 or even B1 in German within 1 year. We compared the progress of this group of patients in 1 year with that of patients at other forensic psychiatric hospitals who participated in regular treatment on wards that were not specialized in language acquisition.

# METHODS

## Procedure and Participants

The experimental group (EG) comprised patients from the forensic psychiatric ward specialized in language acquisition and integration at the Vitos Clinic for Forensisc Psychiatry in Hadamar. Patients of the ward were male, have committed a crime as a result of a schizophrenic disorder and have little or no knowledge of German. The ward was established to provide more targeted support to meet the specific needs of this patient population. It accommodates up to 21 inpatients who are first-generation migrants. The focus of the work on the ward is to teach German in everyday clinical practice through both intensive instruction and practical applications. Inpatients received 20 German lessons per week. For literate inpatients, the entire L2 program comprised 800 lessons, and for illiterate inpatients, 900 lessons, including a preceding unit of literacy instruction. The L2 program was separated into 4 successive parts that progressed from CEFR level A1.1 to level A2.2. The curriculum of the Federal Office for Migration and Refugees in Germany served as the basis for the L2 programs (18, 19). All teachers are certified by the Federal Office as teachers of German as a Second Language.

To recruit patients for the control group (CG), 7 German forensic psychiatric hospitals were contacted by email. They were asked if they treat patients who had the following inclusion criteria: First generation migrants with little or no knowledge of German who speak an L1 equivalent to that of a patient in the EG. Six forensic psychiatric hospitals agreed to participate in the study. Although these patients on regular wards had daily contact with German-speaking fellow inpatients, unlike the inpatients in Hadamar, they were only given German lessons if they requested them, and the lessons were conducted less often than in Hadamar.

Patients in EG and CG were first-generation migrants. All patients had a schizophrenic disorder (F2 according to ICD-10 criteria), which was diagnosed by experienced clinicians. Additionally, in EG, 10 patients had a disorder due to psychoactive substance use (F10-F19), 1 patient had a neurotic disorder (F40-F48), 1 patient had a intellectual disability (F70-F79) and 1 patient had a mental disorder with onset in childhood or adolescence (F90-F98). In CG, 4 patients had a disorder due to psychoactive substance use (F10-F19) and 1 patient a personality disorder (F60-F69). Participants were informed about the procedure and purpose of the study, signed informed consent, participated voluntarily and received no compensation.

Data were collected in the years 2017–2021 at 3 times: baseline (T1) and after 6 months (T2) and 1 year (T3). At T1, we collected sociodemographic data (age, education, and information on literacy) and tested participants' intelligence with Raven's Standard Progressive Matrices (RPM). At T2, we assessed the psychological distress of the sample using the Brief Symptom Checklist (BSCL). At T1, T2, and T3, we assessed all participants' German language skills with the L2 test *Pluspunkt Deutsch*. In the EG, the L2-test was conducted as part of the L2 program by the language teachers, in the CG they were conducted by a research assistant. Participants in the EG received periodic feedback about their progress in German within the context of the L2 program, and those in the CG received feedback about their results in the L2 test upon request.

**TABLE 1** | Scoring of the L2 tests.

| Test A1 | | Test A2 | |
|---|---|---|---|
| **Score** | **CEFR level** | **Score** | **CEFR level** |
| 0–17 | A1.1 | 0-17 | A2.1 |
| 18–33 | A1.2 | 18-33 | A2.2 |
| 33+ | A2.1 | 33+ | B1.1 |

The number of participants reduced between T1 and T3. At T1, we recruited 28 participants in the EG and 30 in the CG. At T2, 26 participants of the EG (92.86%) and 21 participants of the CG (70.00%) were tested and at T3, 18 participants of the EG (64.29%) and 18 of the CG (60.00%) remained. Most of the patients who could no longer be tested had left the clinic/ward during the course of the survey. Other patients refused to continue attending the language course and still others refused to take the language test.

## Measures

### L2 Test—*Pluspunkt Deutsch*

*Pluspunkt Deutsch* is an L2 test that assesses the current CEFR level (20, 21). It consists of 40 multiple choice items with different tasks. The tasks consist of word order and word completion tasks, in which participants have to choose the right word or phrase for the respective task, and decision tasks, in which participants have to decide whether a statement is true or false. The test has 3 successive subtests, A1, A2, and B1. In our study, we assessed participants with tests A1 and A2. Correct answers were summed to obtain a total score/CEFR level (**Table 1**). For statistical analysis, we merged the scores of both tests into a single scale ranging from 0 (A1.1) to 4 (B1.1).

### Raven's Standard Progressive Matrices

RPM (22) is a widely used test to estimate fluid intelligence. It was developed to provide a non-verbal measure of intelligence and consists of 60 items that gradually increase in difficulty (23). The task is to select the figure from 6 to 8 options that fits the pattern of the current item. The number of correct answers is summed to give a total score and is then transformed to a standardized T value that compares the participant's individual total score with those of people in the same age group. For our purpose and because of the cognitive limitations of inpatients with schizophrenia, we used a short form of the RPM with 32 Rasch homogeneous items (24). The short form was developed for the Vienna Test System and has been standardized by age in a sample with $n = 299$ and has a reliability of 0.91.

Despite the use of a short form of RPM, some participants answered an extremely low number of items correctly, so we were unable to transform the raw scores of these participants into standardized T-values. The low scores may reflect cognitive, educational, or cultural limitations in the use of the RPM (see section Limitations). Therefore, we decided to exclude these results from our examination of the impact of intelligence on

language acquisition. Therefore, the reported results should be interpreted with caution.

### Brief Symptom Checklist

The BSCL (11) is a self-assessment instrument for measuring psychological distress by asking for psychiatric symptoms (25). It was originally published as Brief Symptom Inventory (26). It consists of 53 items (Cronbachs Alpha for the Total Score = 0.97) which ask for Hostility, Anxiety, Depression, Paranoid Ideation, Phobic anxiety, Psychoticism, Somatization, Interpersonal Sensitivity and Obsession-Compulsion. For our purpose it was translated into the L1 of the participants.

## Data Analyses

Data Analyses was conducted using IBM SPSS Statistics for Windows, Version 27 (27).

Studies investigating L2 skills usually suffer from low sample sizes (12). This is a quite problematic issue for statistical analysis especially when sample size decrease within longitudinal studies as a result of dropout. Therefore, imputation using last observation carried forward (LOCF) was used to address the dropout in the sample for analyzing the language acquisition of both EG and CG within 1 year (=LOCF-Model). LOCF is a method to handle missing data which uses the last observed individual value of a measure to impute the values of the further observations. For example, for a participant who dropped out after T1, the observed CEFR level at T1 was imputed as CEFR level at T2 and T3. A disadvantage of LOCF is that it may under- or overestimate effects of interventions (28). In our study, LOCF is more likely leading to decrease mean values at later observations because it assumes that the CEFR levels of the dropout group didn't increased after dropout of the study. Therefore, we also computed a model which excludes participants of the dropout group or rather only includes participants who were examined at all observations (=Exclusion-Model). This model estimates the effects of the intervention for participants who finished the whole L2 program in EG. Both models were analyzed using mixed between-within ANOVAs.

Dropout of participants may occurred as a result of important variable such as intelligence (RPM-score), literacy or L2 skills. Therefore, we included a dropout analysis using student's *t*-tests, *U*-tests and chi-square tests.

# RESULTS

## Descriptive Statistics

**Table 2** shows the descriptive data of the sample.

**Table 3** shows the individual results of the EG and CG in the L2 test at baseline (T1) and after 1 year (T3).

## Dropout Analysis

To examine whether patients who dropped out of the study during the course differed from those who continued to participate, a drop-out analysis was performed. As can be seen in **Table 4**, the two groups did not differ in any of the variables studied.

**TABLE 2 |** Descriptive statistics of the participants in the experimental (EG) and control group (CG).

| | EG | CG | Statistics |
|---|---|---|---|
| Age | $M = 31.71$, $SD = 8.60$ | $M = 30.33$, $SD = 7.18$ | $t_{(56)} = -0.67$, $p = 0.508$ |
| First language | Arabic: 5 (17.9%)<br>Tigrinya: 7 (25.0%)<br>Somali: 3 (10.7%)<br>Portuguese: 1 (3.6%)<br>Polish: 1 (3.6%)<br>Farsi: 1 (3.6%)<br>Dutch: 2 (7.1%)<br>Serbian: 2 (7.1%)<br>Igbo: 1 (3.6%)<br>Hungarian: 1 (3.6%)<br>Spain: 1 (3.6%)<br>Romanian: 1 (3.6%)<br>Turkish: 1 (3.6%)<br>Kurdish: 1 (3.6%) | Arabic: 10 (33.3%)<br>Tigrinya: 3 (10.0%)<br>Somali: 3 (10.0%)<br>Portuguese: 1 (3.3%)<br>Polish: 2 (6.7%)<br>Farsi: 2 (6.7%)<br>English: 3 (10.0%)<br>French: 1 (3.3%)<br>Albanian: 1 (3.3%)<br>Edu: 1 (3.3%)<br>Pashto: 1 (3.3%)<br>Ashanti 2 (6.7%) | $\chi^2_{(19)} = 22.89$, $p = 0.242$ |
| Education | | | $U = 344.00$, $p = 0.480$ |
| No graduation | 14 (56.0%) | 17 (68.0%) | |
| Graduated after 9 or 10 years of school | 7 (28.0%) | 4 (16.0%) | |
| General qualification for university entrance | 4 (16.0%) | 4 (16.0%) | |
| Psychological distress (BSCL) | $M = 23.16$, $SD = 30.30$ | $M = 41.31$, $SD = 37.89$ | $t_{(30)} = 1.51$, $p = 0.143$ |

*Mental State: A higher score indicates a higher level of psychological distress. BSCL, Brief Symptom Checklist.*

**TABLE 3 |** Results of participants in the experimental group (EG) and control group (CG) at baseline (T1) and after 1 year (T3).

| | | EG | | CG | |
|---|---|---|---|---|---|
| | CEFR level | Literate | Illiterate | Literate | Illiterate |
| T1 | A1.1 | 14 (77.8%) | 9 (90.0%) | 14 (66.7%) | 8 (88.9%) |
| | A1.2 | 4 (22.2%) | 1 (10.0%) | 5 (23.8%) | 1 (11.1%) |
| | A2.1 | 0 (0.0%) | 0 (0.0%) | 2 (9.5%) | 0 (0.0%) |
| T3 | A1.1 | 0 (0.0%) | 2 (33.3%) | 7 (46.7%) | 3 (100.0%) |
| | A1.2 | 0 (0.0%) | 3 (50.0%) | 1 (6.7%) | 0 (0.0%) |
| | A2.1 | 2 (16.7%) | 1 (16.7%) | 3 (20.0%) | 0 (0.0%) |
| | A2.2 | 5 (41.7%) | 0 (0.0%) | 1 (6.7%) | 0 (0.0%) |
| | B1.1 | 5 (41.7%) | 0 (0.0%) | 3 (20.0%) | 0 (0.0%) |

*CEFR, Common European Framework of Reference for Languages.*

## Analysis of the L2 Skills in EG and CG Within 1 Year

**Table 5** shows an overview of means and standard deviations of the examined variables in the two groups.

**TABLE 4 |** Mean values (*M*), median (*Md*) and standard deviations (*SD*) for the examined variables in the dropout analysis of the experimental group (EG) and control group (CG).

| | Dropout | Non-dropout | Statistics |
|---|---|---|---|
| **CEFR level at T1** | | | |
| EG | $n = 10$, $M = 0.10$, $SD = 0.32$ | $n = 18$, $M = 0.22$, $SD = 0.43$ | $t_{(26)} = 0.79$, $p = 0.437$ |
| CG | $n = 12$, $M = 0.17$, $SD = 0.39$ | $n = 18$, $M = 0.44$, $SD = 0.70$ | $t_{(28)} = 1.24$, $p = 0.225$ |
| **CEFR level at T2** | | | |
| EG | $n = 9$, $M = 1.00$, $SD = 1.22$ | $n = 17$, $M = 0.94$, $SD = 0.90$ | $t_{(24)} = -0.14$, $p = 0.890$ |
| CG | $n = 4$, $M = 0.50$, $SD = 0.58$ | $n = 17$, $M = 0.71$, $SD = 0.85$ | $t_{(19)} = 0.46$, $p = 0.653$ |
| **Illiterate participants** | | | |
| EG | $n = 4$ (40.0%) | $n = 6$ (33.3%) | $\chi^2(1) = 0.124$, $p = 0.724$ |
| CG | $n = 6$ (50.0%) | $n = 3$ (16.7%) | $\chi^2(1) = 3.810$, $p = 0.051$ |
| **RPM-score (intelligence)** | | | |
| EG | $n = 4$, $M = 78.25$, $SD = 21.30$ | $n = 14$, $M = 75.43$, $SD = 12.83$ | $t_{(16)} = -0.22$, $p = 0.931$ |
| CG | $n = 8$, $M = 80.59$, $SD = 18.50$ | $n = 13$, $M = 74.96$, $SD = 21.25$ | $t_{(19)} = -0.63$, $p = 0.537$ |
| **Age** | | | |
| EG | $n = 10$, $M = 29.00$, $SD = 8.19$ | $n = 18$, $M = 33.22$, $SD = 8.67$ | $t_{(26)} = 1.26$, $p = 0.220$ |
| CG | $n = 12$, $M = 32.08$, $SD = 4.48$ | $n = 18$, $M = 29.17$, $SD = 8.45$ | $t_{(28)} = -1.09$, $p = 0.283$ |
| **Education** | | | |
| EG | $n = 10$, $Md = 0.00$ | $n = 15$, $Md = 0.00$ | $U = 73.00$, $p = 0.901$ |
| CG | $n = 8$, $Md = 0.00$ | $n = 17$, $Md = 0.00$ | $U = 65.00$, $p = 0.832$ |
| **Psychological distress (BSCL)** | | | |
| EG | $n = 5$, $M = 14.80$, $SD = 28.70$ | $n = 14$, $M = 26.14$, $SD = 31.33$ | $t_{(17)} = -0.71$, $p = 0.488$ |
| CG | $n = 4$, $M = 54.00$, $SD = 30.08$ | $n = 9$, $M = 35.67$, $SD = 41.08$ | $t_{(11)} = -0.80$, $p = 0.444$ |

*n = number of participants; Education: 0 = No Graduation, 1 = Graduated after 9 or 10 years of school, 2 = General qualification for university entrance; Mental State: A higher score indicates a higher level of psychological distress. BSCL, Brief Symptom Checklist; CEFR levels: 0 = A1.1, 1 = A1.2, 2 = A2.1, 3 = A2.2, 4 = B1.1.*

**TABLE 5 |** Overview of the variables examined in the experimental (EG) and control group (CG).

| | Observed | Exclusion-model | LOCF-model |
|---|---|---|---|
| **Number of participants** | | | |
| EG | T1: $n = 28$<br>T2: $n = 26$<br>T3: $n = 18$ | $n = 17$ | $n = 28$ |
| CG | T1: $n = 30$<br>T2: $n = 21$<br>T3: $n = 18$ | $n = 17$ | $n = 30$ |
| **CEFR level at T1** | | | |
| EG | $M = 0.18$, $SD = 0.39$ | $M = 0.24$, $SD = 0.44$ | $M = 0.18$, $SD = 0.39$ |
| CG | $M = 0.33$, $SD = 0.61$ | $M = 0.47$, $SD = 0.72$ | $M = 0.33$, $SD = 0.61$ |
| **CEFR level at T2** | | | |
| EG | $M = 0.96$, $SD = 1.00$ | $M = 0.94$, $SD = 0.90$ | $M = 0.89$, $SD = 0.99$ |
| CG | $M = 0.67$, $SD = 0.80$ | $M = 0.71$, $SD = 0.85$ | $M = 0.50$, $SD = 0.73$ |
| **CEFR level at T3** | | | |
| EG | $M = 2.44$, $SD = 1.38$ | $M = 2.59$, $SD = 1.27$ | $M = 1.89$, $SD = 1.50$ |
| CG | $M = 1.22$, $SD = 1.59$ | $M = 1.29$, $SD = 1.61$ | $M = 0.83$, $SD = 1.34$ |
| **Illiterate participants** | | | |
| EG | $n = 10$ (35.71%) | | |
| CG | $n = 9$ (30.00%) | | |
| **German lessons per week** | | | |
| EG | $M = 20$, $SD = 0.00$ | | |
| CG | $M = 2.24$, $SD = 1.22$ | | |
| **Intelligence (RPM)** | | | |
| EG | $M = 76.83$, $SD = 14.37$ | | |
| CG | $M = 20$, $SD = 0.00$ | | |
| **Change in CEFR level over 1 year** | | | |
| EG | $M = 2.22$, $SD = 1.26$ | | |
| CG | $M = 0.78$, $SD = 1.00$ | | |

*M, Mean; SD, Standard deviation; CEFR, Common European Framework of Reference for Languages; n, number of participants; RPM, Raven's Standard Progressive Matrices; T1 = baseline, T2 = half a year, T3 = 1 year.*
*CEFR levels: 0 = A1.1, 1 = A1.2, 2 = A2.1, 3 = A2.2, 4 = B1.1.*
*Observed = values as observed for participants at T1, T2 and T3 without imputation or exclusion.*
*Exclusion-Model: Excludes participants who showed missing data at any observation.*
*LOCF-Model: Imputation Model which includes the full sample. For participants who dropped out and therefore showed missing data, the last observed CEFR level was used for imputation (=last observation carried forward method).*

**Table 6** shows the results of the between-within linear models which were computed to analyze achievements in the CEFR level within 1 year in EG and CG.

Both models showed a significant main effect of time and literacy. The main effect group was significant in the LOCF-Model, however, non-significant in the Exclusion-Model. Both models showed a significant interaction between time and group, that is, participants in the experimental group achieved a significantly higher CEFR-level within 1 year than participants in the control group (as can be seen in **Table 5**). In addition, both models showed a significant interaction between time and literacy meaning that literate patients achieved a higher level of language proficiency within 1 year than non-literate participants (as can be seen in **Table 3**).

In a correlation analysis, we investigated the relationship between RPM-score and progress in language acquisition. The correlation between the RPM-score and the mean achievement

**TABLE 6 |** Summary of the exclusion-model and the LOCF-model for achievements in the German CEFR level in the experimental group and control group.

| | Exclusion-Model ($n = 34$) | | | LOCF-Model ($n = 58$) | | |
|---|---|---|---|---|---|---|
| | *F* | *df* | *r* | *F* | *df* | *r* |
| Time | 30.43*** | 1.80, 54.04 | 0.62 | 28.20*** | 1.75, 94.28 | 0.48 |
| Group | 2.47 | 1, 30 | 0.28 | 4.51* | 1, 54 | 0.28 |
| Literacy | 11.81** | 1, 30 | 0.53 | 16.79*** | 1, 54 | 0.48 |
| Time * Group | 10.71*** | 1.80, 54.04 | 0.41 | 11.27*** | 1.75, 94.28 | 0.33 |
| Time * Literacy | 10.42*** | 1.80, 54.04 | 0.40 | 14.68*** | 1.75, 94.28 | 0.37 |
| Time * Group * Literacy | 1.00 | 1.80, 54.04 | 0.18 | 1.60 | 1.75, 94.28 | 0.13 |
| Group * Literacy | 0.11 | 1, 30 | 0.06 | 0.29 | 1, 54 | 0.07 |

*Dependent variable = Common European Framework of Reference for Languages (CEFR) level; *p < 0.05, **p < 0.01, ***p < 0.001.*
*Exclusion-Model: Excludes participants who showed missing data at any observation.*
*LOCF-Model: Imputation Model which includes the full sample. For participants who dropped out and therefore showed missing data, the last observed CEFR level was used for imputation (= last observation carried forward method).*

in L2 over 1 year was not significant $r = 0.36$, $p = 0.066$. Further analysis showed that the 2 groups did not differ in terms of mean RPM-score, mean difference $= -0.31$; BCa 95% CI ($-10.69$, 11.49) and $t_{(37)} = -0.124$; $p = 0.958$.

## DISCUSSION

As stated in the Introduction, previous research repeatedly found that patients with schizophrenia are able to learn an L2 (12, 13). The results of the present study confirm these findings. We computed two models, an Exclusion Model and a LOCF-Model which both agree in their main findings. The significant effect of time reflects that participants in both, EG and CG improved their L2 skills (CEFR level) within 1 year. However, the significant interaction between time and group indicates that improvements in L2-skills were stronger for participants in the EG. This suggests that the L2 program in the ward for language acquisition and integration was more effective in improving German than usual language acquisition efforts in forensic psychiatry. The Exclusion-model shows the effects of L2 programs for participants who finished the whole program. Effect sizes were moderate ($r = 0.40$) to large ($r = 0.60$) with respect to effect sizes which were typically found in L2 research (29).

However, the exclusion of the dropout group may lead to an overestimation of the language acquisition especially in the EG. The LOCF-Model which also includes the participants of the dropout group shows smaller effect sizes ($0.30 \leq r \leq 0.50$) than the Exclusion model. They may be more realistic considering that dropout of participants in L2 programs is quiet normal even in the general population (30). However, the imputation of L2 scores in the dropout group using LOCF may also lead to a biased estimation of the language acquisition. The majority of participants showed CEFR level A1.1 or A1.2 at the last observation which was used for the imputation of the following observations. Therefore, the LOCF-Models assumes that participants of the dropout group remained at an elementary level of German (17). This may underestimate the language acquisition, taking in account that in both models the main effect of time was significant which suggests that the L2 skills would have improved over time. Taking the overestimation of the language acquisition in the Exclusion-Model and the underestimation in the LOCF-Model together, this could suggest that the true effect sizes may fall between the estimates of the two models.

However, the important role of literacy should be noted. The significant interaction between time and literacy reflects that L2-skills in literate participants increased more compared to illiterate ones. In addition, the non-significant interaction between group and literacy shows that literacy wasn't more meaningful in neither the EG nor the CG. Moreover, there were a non-significant interaction between time, group and literacy. This means that literacy neither in the EG nor in the CG was more related to the observed improvements in the L2 skills within 1 year. Taken together, illiterate participants were disadvantaged with respect to general improvements in L2-skills. In addition, the high intense L2 program wasn't as effective as for literate participants in the EG.

The important role of intelligence for school achievement has been repeatedly demonstrated. A recent meta-analysis found an overall mean correlation between intelligence and school achievement of $0.41 \leq r \leq 0.48$ (31). For non-verbal measures such as RPM, the meta-analysis typically found a lower mean correlation of $0.34 \leq r \leq 0.43$. The effect size of the barley non-significant correlation between RPM-scores and the mean achievement of $r = 0.36$ found in the present study corresponds with the above findings. However, two of our findings are noteworthy. First, the participants in the EG and CG did not differ significantly in RPM-score. Therefore, the EG's better achievements in learning German can be considered as a result of explicit language acquisition. Second, the observed mean in RPM-score of participants in both the EG and CG was below average; however, participants in the EG were nevertheless able to successfully increase their CEFR level.

Another question addressed by this study was how well patients with schizophrenia learn an L2. In Germany, 91.8% of people in the general population who finish general L2 programs reach CEFR level A2 or B1 (30). The L2 achievements of the literate participants in the EG were comparable to those of the general population in general L2 programs. However, the achievements of the illiterate participants were clearly worse

than those of participants in literacy programs in the general population, where 59.3% reached at least CEFR level A2 (30). Thus, as long as inpatient migrants with schizophrenia are literate, they can be considered to be as able as migrants without schizophrenia to successfully participate in L2 programs. To achieve better proficiency in German, illiterate inpatients might need additional support, such as a higher number of lessons.

In sum, although participants in the EG successfully improved their CEFR level, the majority of participants in the CG did not. Language acquisition support for participants in the EG provided good conditions for them to improve their L2. One important condition might be the number of lessons per week. Participants in the EG received 20 German lessons per week, which was almost 10 times more than the mean number received by the CG. Moreover, participants in the EG were taught on 5 days a week. Studies have repeatedly found that schizophrenia is associated with deficits in working memory (32), which plays an important role in encoding new information. Thus, participants in the CG may have failed to consolidate newly learned words or phrases into long-term memory because language lessons were not frequent enough. Unlike the EG, the CG had the opportunity to socialize with fellow patients whose native language is German. Thus, they had the opportunity to practice German language skills in everyday conversation. However, the results of the present study do not indicate that these opportunities significantly support language acquisition. Another reason for the good performance of the EG may be that group instruction were more advantageous than individual instruction. In group instruction, teachers may be less able to delay successive language units due to a slower learning rate of an individual patient, for example, to repeat the last unit, than in individual instruction. This may lead to a faster progress in the L2 program and therefore a shorter total learning time. Furthermore, the EG were in a motivational environment that supported participants in improving their L2. Motivation is an important predictor of language acquisition (31). In the EG, language acquisition was a mandatory goal of both inpatients and staff, so inpatients were constantly encouraged to practice the L2.

## LIMITATIONS

The sample size of the examined sample is low. This might be quite normal for studies investigating L2 acquisition in patients with schizophrenia (12). Nevertheless, it may have a negative effect on statistical computations. For example, we were unable to match the EG and CG for age and L1 because of the decrease in sample size over time. In addition, important subgroups such as for intelligence, educational background or different L1 could not be analyzed. Further research is needed to investigate the impact of those predictors.

As reported above, some participants were illiterate. Therefore, the L2 tests were read to these participants. In contrast, the literate participants worked through the L2 test independently. Thus, in literate participants the L2 tests were related to reading comprehension, but in illiterate participants they were rather related to listening comprehension.

Language skills were tested with 2 different L2 tests that were associated with particular CEFR levels. Therefore, the tests showed both an upper and a lower limit. We only examined whether participants reached CEFR level B1.1, but some participants may have exceeded this level.

The RPM is a measure for the non-verbal assessment of intelligence which can handle validity problems caused by lacking language skills. However, non-verbal measures such as RPM also show problems in validity caused by culture differences (33). For example, while European participants are usually used to figurative tasks in school, this cannot be taken for granted for participants of countries with poorly developed educational system. As stated before in the method section some participants showed an extremely low number of correct items in RPM. This may reflect educational and cultural limitations in the use of the RPM.

The BSCL was translated into the L1 of the participants. This may impact the validity of the measure. In addition, due to illiteracy some participants couldn't be asked. That's why the results of the BSCL should be interpreted with caution.

## CONCLUSIONS AND PRACTICAL IMPLICATIONS

Our results on the effects of the language program, which consisted of frequent lessons, were encouraging, and the participants were able to successfully improve their language skills. Therefore, L2 acquisition programs may be a good option for addressing language-related problems in the treatment of forensic inpatients.

To achieve good results both staff and inpatients must be motivated to engage in inpatients' L2 acquisition. Language acquisition is a time-demanding task that may not lead to measurable improvements for several weeks, despite daily lessons. If improving L2 skills is voluntary, other demands of forensic treatment may interfere with the commitment of patients and staff to improve L2 skills because they may appear to be more important than language acquisition.

Language skills are a general resource and affect several domains. For example, both inpatients in forensic psychiatry and people in long-term imprisonment commonly worry about becoming a victim of criminal behavior (34, 35). Poor relationships or a lack of relationships with other prisoners was found to be associated with a fear of crime in migrants in long-term imprisonment (36). Further studies may investigate whether L2 programs help to improve relationships with fellow patients and therefore decrease the fear of crime. Providing good living conditions is important for patients with frequent, long-term stays in forensic psychiatry (37). Furthermore, as stated in the Introduction, reintegration into society is the main goal of forensic psychiatry. However, the secondary benefits of language acquisition, such as a higher level of social functioning in patients with schizophrenia, should not be underestimated (13). In addition, the impact of L2 programs on length of stay in forensic psychiatry or recidivism after discharge should be investigated.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics review committee of the State Chamber of Physicians of Hesse. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

MD and NR designed the study. ML and MD were responsible for administration of data collection. ML and LT conducted the literature research. ML wrote the first draft of the paper. ML and MB conducted the statistical analysis. JS supervised the statistical analysis and writing process. JS, MD, CP-S, and LT revised the manuscript. All authors read and approved the final version of the manuscript.

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PERSPECTIVE
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# A Perspective on the Integration of eHealth in Treatment of Offenders: Combining Technology and the Risk-Need-Responsivity Model

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While there are multiple ways in which eHealth interventions such as online modules, apps and virtual reality can improve forensic psychiatry, uptake in practice is low. To overcome this problem, better integration of eHealth in treatment is necessary. In this perspective paper, we describe how the possibilities of eHealth can be connected to the risk-need-responsivity (RNR) model. To account for the risk-principle, stand-alone eHealth interventions might be used to offer more intensive treatment to high-risk offenders. The need-principle can be addressed by connecting novel experience-based interventions such as VR and apps to stable and acute dynamic risk factors. Finally, using and combining personalized interventions is in line with the responsivity-principle. Based on research inside and outside of forensic psychiatry, we conclude that there are many possibilities for eHealth to improve treatment—not just based on RNR, but also on other models. However, there is a pressing need for more development, implementation and evaluation research.

**Keywords: forensic psychiatry, offenders, eHealth, technology, RNR-model, risk factors, responsivity**

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## INTRODUCTION

Forensic psychiatry is focused on treatment of people who display aggressive or sexual delinquent behavior that led or could lead to offenses and who simultaneously suffer from at least one psychiatric disorder, for example schizophrenia, antisocial personality disorder or post-traumatic stress-disorder (1–3). Treatment is offered to both out- and inpatients (4). Regardless of differences between levels of security, the main goal is to prevent (re)offending and thus to protect society. A meta-analysis has shown that 50% of offenders who did not receive treatment reoffend, as opposed to 38.8% of those who received psychological treatment (5). While these results are quite positive, recidivism rates show room for improvement. Cognitive behavioral therapy, a much-used form of psychological treatment, has been helpful in reducing recidivism, but has not been as effective for treatment of aggression as it is for treatment of anxiety or depression (5–7). There are multiple explanations for this. First, a pitfall of current treatment is that most forensic psychiatric patients are not that motivated for their often mandatory treatment (8, 9). Second, many forensic psychiatric patients experience difficulties with reflecting on their own behavior and emotions, which is an important skill for psychological treatment (10–12). Third, the forensic psychiatric patient population is extremely heterogeneous: there is no "typical" forensic psychiatric patient due to a large diversity in type of offense, mental disorders and socio-demographic background (13).

If developed and implemented well, technologies such as mobile apps, online modules, virtual reality (VR), serious games or wearables can be used to overcome some of the aforementioned barriers (14). The use of technology to support health, well-being and healthcare is referred to as eHealth (15). Technologies such as websites or mobile apps can be used to offer (parts of) existing treatment to a patient, enabling them to work independently on digital assignments or receive psycho-education *via* videos or written text (16). Immersive technologies such as VR can be used to transport patients to digital yet realistic environments in which they can practice with difficult situations and increase their coping skills (17, 18). Apps and wearables offer the possibility to collect contextual information from patients that cannot be retrieved in treatment rooms. Examples are wearables that continuously collect data on physiological signals such as heartrate variability or skin conductance, or experience sampling apps in which patients are asked about their experiences throughout the day (19). While there are more possibilities of technology, these examples illustrate that eHealth might have the potential to improve forensic mental healthcare (14).

However, there is a gap between the current situation and the potential of eHealth: uptake in practice is lagging behind on expectations (14, 17). An explanation for this gap is that eHealth is often used as a separate addition instead of in a blended way (20). Blended care refers to the combination of "offline," in-person treatment with "online" technologies (21). By integrating offline and online care, it might be possible to combine the best of both worlds: offering new and unique types of treatment, while maintaining the advantages of the therapeutic alliance (22–24). A possible way to offer blended care and thus better embed technology in treatment is by integrating eHealth in models that are used to shape treatment.

In forensic psychiatry, the predominant, most-used treatment model to shape assessment and treatment of offenders is the Risk-Need-Responsivity (RNR) model (25, 26). The RNR model is based on three main principles: risk, need and responsivity. According to the risk principle, offenders that pose a high risk for reoffending should receive more intense levels of treatment. The need principle focuses on assessing and targeting criminogenic needs, also known as risk factors. In order to prevent offending, dynamic risk factors are especially relevant since these are changeable by means of specific interventions (27, 28). Finally, the responsivity principle of the RNR model prescribes that evidence-based interventions should fit the attributes of the individual offender, such as motivation or cognitive abilities.

In this perspective paper, we describe how the possibilities of eHealth interventions can be connected to the three main principles of the RNR-model to show how eHealth can be better integrated in treatment of offenders. By combining literature from both in- and outside of forensic psychiatry, we aim to identify directions to further improve treatment of offenders by means of technology. While this paper is structured by the RNR-model, the points that are raised are also relevant for other types of forensic treatment.

## eHEALTH AND THE RISK-PRINCIPLE

The risk principle of the RNR model prescribes that the intensity of treatment should be adapted to the level of risk that a specific patient poses, which implies that high-risk patients require more intensive and frequent treatment than those that show a lower risk on re-offending and committing severe crimes. However, this is easier said than done, especially considering the increasing number of forensic psychiatric patients, combined with a shortage of staff and budget cuts (29–31). Web-based modules offer the opportunity to deliver treatment to patients regardless of time, place and availability of staff (15, 32). Systematic reviews on internet-based cognitive behavior therapy for multiple types of psychiatric disorders indicate that outcomes are comparable to face-to-face treatment (33, 34). The same trend seems to be recognizable in research on web-based intervention in forensic psychiatry: a review identified nine studies that focused on evaluation of different types of text-based digital interventions (14). Seven of those showed outcomes at least as effective as comparison groups and more effective than no intervention groups (16, 35–40), while only two studies found no improvements (41, 42). Consequently, psycho-education or standardized assignments in face-to-face treatment might be replaced by eHealth interventions, which could take valuable time of therapists' hands and provide them with more room for in-depth treatment. However, while they have the potential to make care more efficient, these interventions are hardly used in forensic practice, there have been questions about the fit of these mostly language-driven interventions with a low literacy target group, and their fit with the risk principle has not been investigated (43, 44). Additionally, inpatients are often not able or allowed to use technologies with internet access; either because this is policy of an inpatient clinic, or because the offense was related to the internet (44). Consequently, if eHealth is to be used to offer more treatment to high-risk patients, more attention needs to be paid to implementation, which is currently underrepresented in forensic practice and research (43–45).

## eHEALTH AND THE NEED PRINCIPLE

The need-principle of the RNR-model states that treatment should focus on reducing the dynamic risk factors of individual patients by means of targeted interventions (26). A distinction can be made between unchangeable static risk factors such as prior offenses or job history, stable dynamic risk factors such as antisocial attitudes, substance abuse, financial problems and antisocial associates, and acute dynamic risk factors, like access to a victim, exposure to drugs or a fit of rage (27, 46, 47).

### Stable Dynamic Risk Factors

There are multiple ways in which eHealth can be used to target stable dynamic risk factors. A first example is the use of technology to improve behavioral skills that are related to offending. Amongst other things, online modules or (secure) social networking sites can support patients in acquiring knowledge and skills about offense-related behavior, such as drug refusal skills (14, 35, 48). Furthermore, VR offers opportunities

to actually practice with behavior in realistic contexts. To illustrate, a study outside of forensic psychiatry has shown that social skills training in VR led to increased conversational skills and assertiveness in psychiatric inpatients with schizophrenia, compared to regular social skills training (49). These types of studies highlight the potential of roleplaying in VR to support patients in improving important skills related to risk factors, such as emotion regulation or social functioning.

A second example is the use of technology to increase coping skills. A recent pilot study on an 8-week mindfulness training program showed a significant decrease in stress with an effect size of 0.39 directly in 13 forensic inpatients directly after the intervention. While no significant effects were found after a 3-month follow-up, this pilot study indicates that mindfulness might be a suitable coping method (50). Because a meta-analysis has shown that online mindfulness interventions are effective in general (51), mindfulness apps might be useful for forensic psychiatric patients as well. Another example is DEEP, an applied game that teaches diaphragmatic breathing in a gamified VR-environment *via* biofeedback. Although the effect was small, after using DEEP, anxiety was reduced in children in special education (52). These types of engaging, experience-based approaches might also be a good fit for enhancing relaxation skills in the often unmotivated forensic psychiatric patient populations (44).

Third, eHealth can be used to bolster self-control, which is one of the strongest protective factors and correlates of crime (53). Research has shown that heart rate variability (HRV) and skin conductance rise in the 20 min preceding aggressive outbursts of forensic psychiatric inpatients, which indicates that self-control failure might be predicted by changes in physiological variables (54). Consequently, wearables that provide direct feedback on HRV can offer "just-in-time coaching" and increase interoceptive awareness, which could in turn support patients in recognizing when coping strategies should be used to prevent self-control loss (55). Furthermore, a recent randomized controlled trial on interactive VR in forensic psychiatric inpatients showed no direct effects of VR on aggression, but regardless, several interesting findings emerged. Amongst other things, self-reported impulsiveness improved directly after the VR intervention compared to a control group, but this effect was not maintained on the long term (18). Even though these findings are not as convincing as expected, they do illustrate the potential of VR to target risk factors in a patient population whose behavior and treatment motivation are generally hard to improve. Finally, a self-control training app, in which participants train their "self-control muscle" by using their non-dominant hand for daily tasks, has been shown to be a promising way to target the automatic aspect of self-control in students, and might also be useful for forensic psychiatric patients (56).

Fourth, eHealth offers novel ways to target addiction, another important risk factor for offending. Besides existing self-help modules or apps for addiction (57), there are other ways to target addiction in hard-to-involve target groups. An example is the use of a gamified app based on evidence-based alcohol avoidance training (AAT), in which the user has to push away pictures of alcoholic beverages and pull non-alcoholic beverages toward themselves (58, 59). A pilot study with non-clinical sample with drinking problems showed promising results, amongst which a significant reduction in alcohol consumption after 3 months (59). This approach offers ways to also involve the automatic part of behavior in treatment of offenders. When using these types technologies, attention should not only be paid to their added value for individual patients, but also to ethical and privacy-related matters, such as ownership of data and the extent to which patients can and should be angered when immersed in offense-related VR scenarios.

While there are many possibilities, the connection between eHealth interventions and dynamic risk factors is not yet present in practice and research (17, 44). Consequently, it is important to explore and evaluate if and how eHealth can target risk factors, and to integrate this approach into clinical practice. In order to structure this, risk assessment instruments such as the FARE, HCR-20 or HCT-R can be of assistance (60–62). By creating an overview of eHealth interventions that can be used to target specific risk factors, the current "*ad-hoc*" approach - in which interventions are mostly selected because of their availability - can be overcome since therapists can select the most appropriate options for a patient's risk factors (43, 44). In **Table 1**, this is illustrated by means of examples.

## Acute Dynamic Risk Factors

While static and stable dynamic risk factors are incorporated in standardized risk assessment instruments, this is more challenging for acute dynamic risk factors for offending. Because these contextual factors - that occur directly before offending - are highly individual and only relevant for short periods of time and in specific situations, they are hard to identify and to improve in standard treatment, which is mostly based on talking and reflecting (70, 71). Identifying these factors in treatment requires fairly high levels of reflective skills, memory and honesty from forensic psychiatric patients (70, 71). Technologies offer multiple ways to identify and treat acute dynamic risk factors. One way to achieve this is by means of VR. In an interview study, therapists indicated that a possibility of VR might be that patients can be exposed to a broad range of personalized scenarios and in that way, insight might be gained into what "triggers" a patient when it actually occurs, as opposed to retrospectively talking about it, and targeted interventions and coping skills can be introduced (72) Furthermore, experience sampling *via* mobile apps might be used to gain more insight what triggers the patient throughout their daily lives. This could be asked at predetermined times, or when a specific event occurs, for example when a patient's heart rate variability (HRV) rises above the threshold value (19). While there are many possibilities to target triggers, it is not yet studied and integrated in clinical practice, so more research on this topic is required.

# eHEALTH AND THE RESPONSIVITY PRINCIPLE

Finally, the responsivity-principle of the RNR-model states that the entire treatment should be tailored to fit the characteristics of

**TABLE 1 |** An overview of how different types of eHealth interventions can fit four of the risk factors of the HCR-20 (28, 63).

| Dynamic risk factor | Two examples of eHealth interventions |
|---|---|
| Recent problems with insight | • Offense chain: multimodal online module to increase insight in what went wrong regarding the offense, with information, stories of forensic psychiatric patients and assignments with feedback (63).<br>• Self-scoring app: mobile app in which the patient can assess their own protective and risk factors based on the HKT-R and HCR-20V3 to increase insight in risk factors (64) |
| Recent problems with instability | • Mobile app and biofeedback: chest strap to measure arousal and mobile app with just-in-time coaching based on physiological signals to prevent reactive aggression (55, 65)<br>• Virtual reality aggression prevention training (VRAPT): Interactive VR for aggression regulation by means of roleplaying in virtual environments (18) |
| Recent problems with violent ideation or intent | • Virtual reality game for aggressive impulse management (VR-GAIME): serious game in VR that addresses bias toward aggressive facial expressions *via* gamified approach-avoidance training (66)<br>• Aggression: multimodal online module to better deal with aggressive impulses by providing insight into thinking patterns, risky situations and pro's and cons of aggressive behavior (67). |
| Future problems with stress or coping | • DEEP: VR-game in which diaphragmatic breathing can be improved *via* biofeedback using a chest strap (68)<br>• Diary moment of stress: mobile diary app with experience sampling to gain insight *in situations* or experiences that are related with experiencing stress (69). |

forensic psychiatric patients (26). On the one hand, eHealth offers multiple ways to further integrate this principle in treatment, and on the other hand, the responsivity-principle should also be integrated in eHealth interventions. The one-size-fits-all approach toward eHealth in treatment of offenders is still predominant (14), while scientific research and experiences from clinical practice both highlight the need for personalized eHealth interventions, i.e., more responsive interventions (17, 72). For example, a study showed that the condition in which three additional computerized treatment sessions that were tailored to the individual of perpetrators of domestic violence was more effective than a non-tailored intervention (16). Research into the needs of therapists and patients also displayed the importance of personalized, tailored eHealth interventions because of the diversity and heterogeneity of the forensic psychiatric patient population (72).

eHealth can make treatment more responsive if interventions are successfully matched to the characteristics and preferences of patients. To illustrate: therapists indicate that patients who have difficulties with talking about their offense due to shame might benefit from written assignments in online modules (43, 44). Furthermore, new insights about risk factors that are generated by technologies such as VR or wearables can be used to better tailor treatment more to the needs of the patient (14, 44). Ideally, different types of eHealth interventions are combined to optimally fit the treatment of a patient: by integrating data from different technologies, a fuller picture can be painted (44). However, using eHealth in such a responsive way requires specific types of skills of therapists, highlighting the need for fitting education and training (44, 73). In order to unlock the potential of eHealth in forensic psychiatry, necessary preconditions seem to be that therapists have the necessary knowledge and skills required for using eHealth in a responsive way, and that they have an adaptive and flexible mindset toward experimenting with different technologies (74, 75).

## DISCUSSION AND CONCLUSION

Based on insights from research and practice in- and outside of forensic psychiatry, we provided some initial views on how eHealth can be integrated in the RNR Model. While it is obvious that more research is needed to further investigate effectiveness, eHealth interventions might be used to increase intensity of treatment of high-risk offenders by allowing them to independently work on parts of treatment. Furthermore, eHealth interventions such as VR and apps can offer new ways to identify and treat stable and acute dynamic risk factors. Finally, eHealth interventions should be more responsive, and the most optimal combination of interventions should be identified for individual patients. However, most of the possibilities are still potential and not used in practice and outcomes of evaluation studies are not always very convincing, so there is a pressing need for more research into if, how and when eHealth interventions are of added value for forensic mental healthcare.

In order to integrate eHealth in treatment guided by the RNR model, thorough development, implementation and evaluation are important (76). Multiple researchers recommended to develop new interventions *via* a participatory development approach, in which patients, therapists and other stakeholders are actively involved throughout the entire process (77–79). This approach is used to ensure that the intervention fits the characteristics, wishes, treatment protocols and risk factors (78). It is important to note that existing interventions from regular mental healthcare cannot simply be copy-pasted into this complex and unique setting, so they might have to be re-designed to optimally fit forensic psychiatry (14).

Second, thorough implementation in forensic organizations is a necessary precondition to achieve added value of eHealth. Despite its importance, implementation is underrepresented in both research and practice (44, 45). According to implementation models, attention needs to be paid to the required skills and attitudes of healthcare providers and patients, characteristics of the organization, demands of the wider context and their fit with the technology (43, 80). It seems that often, researchers, practitioners and management underestimate the importance of eHealth implementation. Consequently, factors from multiple levels need to be integrated in future research on implementation to account for all aspects of implementation (43).

Third, there is a need for more evaluation studies on eHealth in forensic psychiatric settings (14). To gain insight into effectiveness, classic randomized controlled trials can be used. However, depending on the research questions, other types of research designs that are more feasible and provide more insight into how and for whom eHealth works might be more suitable (81). Examples of methods that might be a good fit for these types of questions are single-case experimental designs, mixed-methods studies, realist evaluations or factorial designs (17, 76).

While this perspective paper provides some initial directions and insights into how eHealth can be integrated in the RNR model, it should be viewed as a starting point, and more research is required to further investigate how this should be achieved. In general, we suggest that more attention should be paid to eHealth interventions that can add something new that would not be possible in standard treatment, such as VR or wearables (76). Especially these types of interventions - which focus on doing and experiencing in a realistic context as opposed to thinking and talking in a treatment room - might be of added value for identifying and treating criminogenic needs in a responsive way (82). We also recommend that future work should not solely focus on benefits, but also on limitations of these types of interventions, including but not limited to barriers related to internet access, limited digital skills of patients and therapists, and ethical issues. To illustrate, a pitfall is that patients—especially when they receive treatment as part of a sentence—might feel that they must accept an eHealth intervention that is offered to them, while they might not feel comfortable with for example using a wearable due to privacy concerns. This highlights the importance of shared decision-making when shaping blended care—especially in those types of settings where patients have less autonomy. Finally, since the Good Lives Model, which applies a more positive psychology-approach, has been gaining ground (83, 84), future research could investigate how eHealth interventions fit within this model. A possible avenue to investigate is the way in which eHealth interventions can support offenders in reaching their "primary goods."

To conclude: in order to ensure that eHealth can be of actual added value for forensic psychiatry, interventions need to be integrated in the predominant treatment model and have to be developed, implemented and evaluated by means of suitable research methods. In this perspective paper, we identified some ways in which the characteristics of eHealth interventions and the RNR model can be linked and provided multiple directions for future research and activities in practice. Finally, while for evidence-based practice, more research is obviously needed, we also might need to be aware that this does not become a reason - or excuse - not to try to innovate treatment by means of technology: at times it might even be helpful to just "take a leap of faith" and to challenge therapists and patients to start experimenting and trying out different types of eHealth interventions to determine what might be of added value. Based on our viewpoint paper, the most important theme seems to be a good fit: not just between eHealth and the RNR model, but also between technology, patient, therapist and treatment context.

## DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

## AUTHOR CONTRIBUTIONS

HK drafted the first version of the paper. YB revised the paper. All authors accepted the final version of the paper.

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# The Long-Term Changes in Dynamic Risk and Protective Factors Over Time in a Nationwide Sample of Dutch Forensic Psychiatric Patients

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The long-term changes of dynamic risk and protective factors have rarely been studied in forensic psychiatric patients. We utilized a latent growth curve analysis to investigate trajectories of risk and protective factors over time in all 722 male forensic psychiatric patients who were unconditionally released between 2004 and 2014 from any of 12 Dutch forensic psychiatric centers (FPCs). The study covered the period from juridical observation until unconditional release. Moreover, we investigated whether these trajectories differ between patients depending on their psychiatric diagnosis namely substance use disorders (SUD), psychotic disorders, and cluster B personality disorders (PDs). In addition, we also investigated whether SUD may influence changes in risk and protective factors in a group of psychotic and cluster B PDs patients, respectively. Overall, findings suggest that all changes in dynamic risk and protective factors could be depicted by two phases of patients' stay in the FPCs. Specifically, most changes on dynamic risk and protective factors occurred at the beginning of treatment, that is, from the time of juridical assessment up to the time of unguided leave. Moreover, the moment of unguided leave could be considered the 'turning point' in the treatment of offenders. We also found that SUD and psychotic patients changed the most in the first phase of their stay, while cluster B PDs patients changed the most in the second phase. However, SUD did not modify changes in risk and protective factors in psychotic and cluster B PDs patients. These findings may help improve offender treatment and crime prevention strategies.

**Keywords: forensic psychiatric patients, risk factors, protective factors, cluster B personality disorders, psychotic disorders, latent growth curve analysis, substance use disorder**

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## INTRODUCTION

In recent years, there has been a growing interest in longitudinal research on changes in dynamic risk and protective factors in forensic psychiatric patients. Dynamic risk and protective factors can be defined as potentially changeable characteristics of individuals and their environments that are expected to increase (risk factors) or decrease (protective factors) the likelihood of recidivism after discharge (1, 2). Previous research has shown that they are moderately to strongly associated with reoffending (3, 4). Dynamic risk factors and to a lesser extent protective factors are essential to

forensic correctional practice; they can help set reasonable goals for interventions that reduce the likelihood of reoffending [e.g., *criminogenic needs*; (1), or *primary goods*; (5)], determine whether meaningful progress is being made toward treatment goals, and inform risk management strategies (6, 7). For these reasons, dynamic risk and protective factors are now routinely evaluated in structured risk assessment tools (7–9), such as the Historical, Clinical, and Future–Revised [HKT-R [*Historisch Klinisch Toekomst–Revised*]; (10)]. The HKT-R is comparable with the HCR-20-V$^3$ (9), which is the most widely used risk assessment tool in the world for assessing violent risk. The HKT-R is developed in the Netherlands and should be mandatorily used for all admitted forensic patients and prisoners to investigate the future risk of recidivism and changes in recidivism risk.

It has been suggested that repeated measurements of dynamic risk and protective factors provide better and more valuable information for treatment progress in forensic psychiatric patients than dual time-points [e.g., pre-and post-treatment; (11, 12)]. Although useful, pre-and post-treatment measurements can only be indicative of whether a significant linear change in risk and protective factors has occurred, for instance, from admission to the forensic clinic until unconditional release (8). In contrast, multiple time-points allow for the measurement of different patterns and trajectories of change (11), which can offer a better understanding of treatment progress and an opportunity for forensic practitioners to adjust the treatment of offenders if needed.

Although the great importance of longitudinal research on the changeability of dynamic risk and protective factors has been recognized by many scholars, the trajectories of these factors during forensic treatment have so far rarely been investigated (7, 13). One reason for this is that the length of stay in forensic clinics is usually very long, thus collecting repeated measurements can be quite intensive and time-consuming. Especially for the forensic healthcare professionals who work with this challenging group of patients (14), collecting data at multiple time points can considerably increase their workload. Another reason has to do with obtaining sufficient statistical power due to the specificity of high-risk psychiatric patients staying in secure forensic facilities. For example, forensic psychiatric patients are very often unwilling to participate in a study or do not take the research seriously; there is also a high drop-out rate among patients, along with their limited understanding of the items, and a tendency for socially desirable answers (13).

Nevertheless, some studies have documented longitudinal trajectories of dynamic risk factors over time. In one such study, Douglas et al. (15) reported a linear decrease of dynamic risk factors over four time points, while a similar study detected no significant changes over time (12). However, both studies used very small samples of forensic patients and employed different risk assessment instruments. Recently, long-term trajectories related to the change of dynamic risk factors have been investigated in a relatively large sample of Dutch forensic psychiatric patients. The results showed a significant linear decrease in dynamic HKT-R risk factors, from judicial assessment until unconditional release [i.e., over five time points; (13)]. However, due to inconsistencies in findings in these few studies and scarcity of empirical evidence, further research is needed to better understand longitudinal changes in dynamic risk and protective factors in forensic psychiatric patients.

Moreover, all of these previous studies were based on aggregated data (i.e., a scale score) that included both risk and protective factors in the same measurement. Therefore, no conclusions can be drawn about changes in dynamic risk and protective factors separately. This emphasized the need for measuring more specific and detailed changes in dynamic risk and protective factors, for example, at a level with a small number of comparable factors. Therefore, the present study aimed to investigate changes in the HKT-R factors during treatment by examining trajectories of both the clinical scale (based on all the 14 HKT-R clinical factors) and the more fine-grained risk and protective subscales in a large nationwide sample of Dutch forensic psychiatric patients covering a period of ∼9 years of institutional stay (i.e., five time points: from juridical observation until unconditional release). See **Supplementary Table S1** in the Supplementary Materials for more details on the individual HKT-R factors. The clinical scale was expected to decrease significantly from juridical observation until unconditional release.

Furthermore, it is important to underline that the patients in high-security forensic psychiatric institutions differ in terms of dynamic risk and protective factors, which may be partly attributed to their diverse psychiatric diagnoses (16, 17). Substance use disorders (SUD) and psychotic disorders are particularly common clinical disorders in these patients, as are cluster B personality disorders [PDs; (18–20)]. These disorders have been shown to reinforce violent behavior and are important predictors of recidivism (6, 21, 22).

SUD is defined as a problematic pattern of using substances that leads to clinically significant impairment in daily life or distress (23). The odds of criminal behavior are three to four times higher in SUD patients compared to non-SUD patients (24). Kraanen et al. (25) found that 61.5% of violent offenders were diagnosed with SUD, while 29.9% were intoxicated during the offense. Substance use may lead to disinhibition making aggression more likely (6). In addition, patients with SUD are more likely to have difficulties in areas such as family relationships, employment, legal matters, housing, and health (20), which can also indirectly increase the risk of recurrence of criminal behavior. Furthermore, patients with SUD are considered difficult to treat because of their propensity for extreme emotional reactions and the difficulty of engaging them until abstinence is achieved. Research has shown that forensic patients who withdraw from treatment are more likely to use alcohol and/or drugs during treatment than patients who do not withdraw from treatment (26). Apart from that, there is also a high rate of comorbid psychiatric diagnoses in patients with SUD of which the most frequent are psychotic disorders (27), and cluster B PDs (28). Thus, this may further worsen the response and outcome of treatment (29).

The most common psychotic disorder is schizophrenia. Schizophrenia and other psychotic disorders are severe mental disorders characterized by the presence of delusions, hallucinations, paranoia, disorganized thinking (speech), grossly disorganized or abnormal motor behavior (including catatonia),

and negative symptoms (23). People who experience these symptoms may appear to have lost contact with reality. Research has shown that patients with psychotic disorders are more likely to display dynamic risk factors, such as hostile behavior, poor impulse control, recent drug use, alcohol, and substance misuse, and non-compliance with medication and psychological therapies [for a review, see Ref. (30)]. In addition, untreated psychotic symptoms, often in combination with paranoia, are one of the main risk factors for violent behavior in psychotic patients (31). However, higher levels of psychopathy have been claimed to adversely influence treatment responsiveness (32) and 33% of forensic patients suffering from psychotic disorders are considered to be treatment resistant (33, 34). The presence of comorbid SUD in psychotic patients may even aggravate illness symptoms (35), leading to a poorer treatment prognosis. Psychotic patients with comorbid SUD are also more prone to medication non-compliance and generally have a higher risk of violent behavior than psychotic patients without comorbid SUD (36, 37).

Likewise, patients with cluster B PDs are more likely to reject treatment than seek it (38). Cluster B PDs include antisocial, borderline, histrionic, and narcissistic PDs. A defining characteristic of these disorders is a consistent pattern of disregard for and violation of the rights of others (23). People with cluster B PDs experience problems with emotion regulation, impulsivity and interpersonal conflicts (21, 38), and are characterized by a lack of empathy (39). The latter represents one of the main factors associated with serious and persistent criminal offending (40), while poor self-regulation and higher impulsivity are considered crucial in explaining criminal behavior according to the general theory of crime (41). In addition, many previous studies have often linked cluster B PDs to SUD, and antisocial behavior [e.g., (42–44)], i.e., factors that are also significant predictors of violent reoffending (1).

To summarize, patients with SUD, psychotic disorders or cluster B PDs are less likely to respond adequately to treatment and are more likely to recidivate after release from high-security forensic psychiatric institutions than patients without these disorders. It could be that these patients make less progress on dynamic risk and protective factors during forensic treatment, making them more likely to recidivate after release. Although a number of studies have contributed to a better understanding of specific risk and protective factors related to violence and recidivism in SUD, psychotic and cluster B psychiatric patients, to date, no studies have examined how risk and protective factors change during treatment in these patients. Therefore, in this study, we investigated whether changes in the clinical scale, and the risk and protective subscales over time are dependent on SUD, psychotic disorders, and cluster B PDs. It was expected that SUD, psychotic, and cluster B PDs patients would show less decrease on risk factors and less increase on protective factors over time than patients without these mental conditions. In addition, we also investigated whether SUD may influence changes in these factors in psychotic and cluster B PDs patients. It was hypothesized that psychotic and cluster B PDs patients with comorbid SUD would have a poorer treatment outcome than psychotic and cluster B PDs patients without comorbid SUD.

# METHODS

## Participants

The original study sample consisted of all forensic psychiatric patients ($n = 815$) who were unconditionally released between 2004 and 2008 ($n = 347$, 8.6% female) and between 2009 and 2014 ($n = 468$, 13.5% female) from any of the 12 Dutch forensic psychiatric institutions. Female patients ($n = 93$, 11.4%) were excluded from this study because the sample size was too small for the intended statistical analysis. Therefore, the final sample comprised a total of 722 male patients. Of these 12 forensic institutions, there are six Dutch forensic psychiatric centers (FPCs), five forensic psychiatric clinics (FPKs) and one center for transcultural psychiatry (CTP)[1]. These institutions treat convicted offenders who have committed a serious crime caused by a severe mental illness or a personality disorder and are not held, or just partly, accountable for their offenses (45). Depending on the required treatment intensity and the estimated risk of recidivism (low, low to medium, medium, medium to high, high), these patients are placed by the judge in FPCs, which is a maximum secured institution, or FKPs or CTP, which are also secured institutions, but the security level is not as high as in the FPC.

## Procedure

The data were obtained from the electronic patient files with thorough descriptions of the background and criminal history of the patients, risk assessment scores, psychiatric reports and diagnoses, treatment plans, leave requests, and prolongation advice. Psychiatric diagnoses were based on the *Diagnostic and Statistical Manual of Mental Disorders* [4th ed., text rev. [DSM-IV-TR]; (46)] which was in use during the period for which the data were retrieved. Trained psychologists coded the HKT-R retrospectively for each patient based on available file information. The present study concerned the measurements of the HKT-R at five time points. The first time point (T1) refers to the scores obtained at the time of juridical assessment (performed by a psychiatrist and psychologist). The second time point (T2) refers to the scores after the first 12 months of the stay in the FPC. The third time point (T3) relates to the scores before the first unguided leave, which means that patients can leave the institution for a short period (e.g., half a day) without supervision. The fourth time point (T4) refers to the scores before conditional leave, which means that patients can live outside the institution but are still supervised by the correctional services. Finally, the fifth time point (T5) relates to the scores before unconditional release, which means that rules and agreements are no longer imposed and the patients are no longer under the supervision of correctional services. All data were anonymized and could not be traced back to individual patients. Information about violent recidivism rates has been obtained from the Dutch Ministry and Security of Justice. Forensic psychiatric patients who were released between 2004 and 2008 had been tracked from discharge until July 11,

[1]From now on, we use the abbreviation FPC(s) to denote all these highly secured forensic psychiatric institutions.

2011, while patients released between 2009 and 2014 had been followed from discharge until June 20, 2018. The study has been approved by the Scientific Research Committee of the FPC Kijvelanden, the Dutch Ministry of Security and Justice, the 12 directors of the forensic institutions included in this study and the Ethical Review Board of Tilburg University.

## Measures

### Risk and Protective Factors

Risk and protective factors were assessed using the risk assessment instrument HKT-R (10). The HKT-R is a structured professional risk assessment tool for assessing the risk of future violent and general recidivism in forensic psychiatric patients after release. The tool consists of three distinct domains comprising 12 historical factors, 14 clinical factors and seven future factors. Historical factors are static, irreversible and untreatable and refer to the offender's personal history up to the time of arrest for the current forensic psychiatric index offense (the offense that led to the conviction). Clinical and future factors are potentially changeable and therefore treatable. Clinical factors refer to the offender's behavior in the last 12 months, while future factors refer to the assessment of potential risks that may arise after release from the FPC (e.g., stressful circumstances, living arrangements and work situation). In this study, we used the 14 clinical indicators because the study covered the period of treatment. For more details on the individual HKT-R factors, see **Supplementary Table S1** in the Supplementary Materials.

The clinical indicators were rated on a five-point Likert scale ranging from 0 = *no risk* to 4 = *high risk*. First, the *clinical scale* was created as an average score of the 14 clinical HKT-R indicators, where higher scores indicate a higher risk for recidivism. Moreover, to create the risk and protective subscales, we divided the clinical items into seven risk and seven protective factors as has been done in previous research (8). However, before creating the protective subscale, we reversely coded the protective factors such that 0 = *no protection* and 4 = *high protection*, while the coding of the risk factors remained unchanged (0 = *no risk* and 4 = *high risk*). In the next step, we applied exploratory factor analysis to validate the factor structure of these two subscales. In line with the study of Bogaerts et al. (8), factor analysis on the risk subscale revealed a one-factor solution (see **Supplementary Table S2** in the Supplementary Materials). Hence, the *risk subscale* was created as an average score of the following seven risk items: psychotic symptoms, addiction, impulsivity, antisocial behavior, hostility, violation of terms and influence by risky network members. Factor analysis on the protective subscale, however, revealed a two-factor solution and we, therefore, split the protective subscale into a subscale referring to *protective awareness* and a subscale referring to *protective skills* (see **Supplementary Table S3** in the Supplementary Materials). Average scores were also calculated for the *protective awareness subscale*, including problem insight, treatment compliance, and taking responsibility for the index offense, as well as for the *protective skills subscale*, including self-reliance, social skills, coping skills, and labor skills. In the current study, the internal consistency of the clinical scale was acceptable to good at all times of measurement, with Cronbach's alphas being $\alpha_{T1} = 0.85$, $\alpha_{T2} = 0.82$, $\alpha_{T3} = 0.76$, $\alpha_{T4} = 0.74$, and $\alpha_{T5} = 0.85$.

### SUD, Cluster B PDs and Psychotic Disorders

Diagnostic criteria for SUD, cluster B PDs and psychotic disorders were based on DSM-IV-TR (46). Diagnoses were determined by a psychiatrist in consultation with a clinical psychologist, taking into account all patients' information available at the time of admission to the FPC. SUD included excessive alcohol or drug use and was coded as 0 = *no diagnosis* and 1 = *diagnosis*. Cluster B PDs included antisocial personality disorder, borderline personality disorder, histrionic personality disorder and narcissistic personality disorder, and were coded as follows: 0 = *no diagnosis* and 1 = *diagnosis*. Finally, psychotic disorders included schizophrenia and related disorders and were coded such that 0 = *no diagnosis* and 1 = *diagnosis*.

## Statistical Analyses

All analyses were done using SPSS software version 25.0 (IBM Corp., Armonk, NY, USA) and the free software environment R (47). Prior to conducting the main analyses, the data were subjected to preliminary analyses regarding the assessment of missing data, identification of outliers, normality and multicollinearity. Data are considered to be not severely violated of normality if skewness is between −2 and +2, and kurtosis is between −7 and +7 (48, 49). Multicollinearity was measured by variance inflation factors (VIF) and tolerance; a VIF above 4.0 or tolerance below 0.2 signifies that multicollinearity might exist (49). Missing data were handled with full-information maximum likelihood (50). In addition, descriptive statistics of demographic and questionnaire data were computed. Furthermore, we utilized a latent growth curve analysis (LGCA) to investigate trajectories of the clinical scale as well as trajectories of the risk and two protective subscales over five time points. Additionally, it was investigated whether these trajectories are dependent on SUD, psychotic disorders and cluster B PDs. It was also investigated whether SUD may modify changes in risk and protective factors in patients with psychotic disorders and cluster B PDs, respectively. LGCA allows for investigating trajectories over time, characterized by the initial starting point (i.e., intercept) and change (i.e., slope). The LGCA was computed in R, using the lavaan package (51). Fit of the model was evaluated using the model chi-square statistic ($p \geq 0.05$), comparative fit index (CFI; values $\geq 0.90$), standardized root-mean-square residual (SRMR; $<0.08$), and root-mean-square error of approximation [RMSEA; $<0.06$; (52, 53)]. Finally, an analysis of variance (ANOVA) was performed to investigate the scores on the clinical scale as well as the risk and two protective subscales at five time points for SUD and non-SUD patients, psychotic and non-psychotic patients, and cluster B PDs and non-cluster B PDs patients.

# RESULTS

## Sample Characteristics

Of the total sample of 722 male patients, 539 (74.6%) were born in the Netherlands and 183 (25.4%) were born elsewhere, such as in India and Suriname. The mean age at admission to the

**TABLE 1 |** Means and standard deviations of clinical risk and protective factors.

| | T1 | T2 | T3 | T4 | T5 |
|---|---|---|---|---|---|
| **Variables** | | | *M (SD)* | | |
| Clinical scale | 1.79 (0.67) | 1.42 (0.66) | 0.96 (0.49) | 0.82 (0.48) | 0.68 (0.55) |
| Risk subscale | 1.34 (0.75) | 1.09 (0.75) | 0.73 (0.54) | 0.59 (0.49) | 0.49 (0.55) |
| Protective awareness | 1.28 (0.80) | 1.93 (0.95) | 3.19 (0.64) | 2.80 (0.83) | 3.22 (0.76) |
| Protective skills | 2.33 (0.84) | 2.47 (0.76) | 2.87 (0.55) | 3.04 (0.60) | 3.03 (0.72) |

*M, Mean; SD, Standard Deviation; T1, Judicial psychiatric assessment; T2, Admission to the clinic; T3, Unguided leave; T4, Conditional leave; T5, Unconditional leave.*

institution was 32.28 years ($SD$ = 9.36, range = 17–79) with an average length of stay in the FPCs of 8.25 years ($SD$ = 3.45, range = 1–26). The index offenses that led to admission included manslaughter ($n$ = 244, 33.8%), moderate violence ($n$ = 216, 29.1%), robbery ($n$ = 170, 23.5%), severe violence ($n$ = 113, 15.7%), murder ($n$ = 111, 15.4%), sexual violence against adults ($n$ = 100, 13.9%), arson ($n$ = 88, 12.2%), and sexual violence against minors ($n$ = 64, 8.9%). Patients could be convicted of multiple index offenses at the same time. At the beginning of treatment, the most frequent DSM-IV diagnoses were SUD ($n$ = 310, 42.9%), PD not otherwise specified ($n$ = 305, 42.2%), cluster B PDs ($n$ = 199, 27.6%), and schizophrenia and other psychotic disorders ($n$ = 178, 24.7%). These percentages do not count to exactly 100% as most patients had comorbid disorders. One hundred and four patients with cluster B PDs and 71 patients with psychotic disorders were also diagnosed with SUD. Within 2 years of release, 118 (16.6 %) patients reoffended violently. The means and standard deviations of clinical indicators of the HKT-R are displayed in **Table 1**.

## Changes Over Time of the Clinical Risk and Protective Factors

To investigate the trajectories of the clinical HKT-R scale, the risk subscale, and two protective subscales over five time points, LGCA was applied. These trajectories are shown in **Figure 1**. The assumptions of normality, no multicollinearity and no outliers were checked before conducting the LGCA. No violations of the assumptions were observed (for skewness and kurtosis, see **Supplementary Table S4** in the Supplementary Materials).

### Clinical Scale

First, we tested an unconditional model (i.e., without predictors) with a simple linear trajectory of the HKT-R clinical scale (consisting of 14 clinical indicators). This model fitted the data poorly, $\chi^2_{(10)} = 228.622$, $p < 0.001$, CFI = 0.658, RMSEA = 0.174, and SRMR = 0.118. Consequently, an alternative so-called the linear piecewise model was tested. Linear piecewise models are used for modeling changes that deviate from a simple linear trajectory; when the rate of change during the specific time window differs from the rate of change during another time window (54). The simplest variant of the linear piecewise model is the two-phase model with two linear slopes and a single change point (55). In this model, the first linear slope represents the changes that occur during the first phase of the study, and the second linear slope describes the trajectories during the second phase. The change point represents the fixed time point where these two linear slopes are to be joined (54). Based on the plot (see **Figure 1**; clinical scale), the change point was assumed to be at T3, and therefore the unconditional two-phase linear piecewise model was tested. Compared to the single slope linear model, this model had a better fit, $\chi^2_{(6)} = 11.591$, $p = 0.07$, CFI = 0.991, RMSEA = 0.036, and SRMR = 0.028. The mean of the intercept factor was 1.790, which closely corresponds with the observed mean of 1.789 at T1. The mean of the first slope factor was −0.406, $p < 0.001$, indicating that there was a significant decrease of ∼0.406 on the clinical scale at each time point during the first phase of the study (T1–T3). The mean of the second slope factor was −0.145, $p < 0.001$, indicating that a level of the clinical scale continued to decline, but at a slower rate, of ∼0.145 at each time point during the second phase of the study (T3–T5). The difference in slopes suggests that the rate of decline on the clinical scale was not constant throughout the entire stay in the FPCs. The rate of change was greater in the first phase than in the second phase. This was tested by constraining the two slope means to be equal, with the results showing that the slopes were significantly different, $\Delta\chi^2_{(1)} = 155.6$, $p < 0.001$. Finally, the variance of the intercept (0.258), and both slopes (0.045, 0.062) were significant, $p < 0.001$, showing the significant between-person variance of the initial score on the clinical scale and the slopes. The latter result indicates that the risk level of some patients decreased to a greater or lesser extent over time.

### Risk Subscale

To gain more insight into detail-level changes, the clinical HKT-R indicators were split into a *risk* subscale and two protective subscales, one related to *protective skills* and the other to *protective awareness*. Examination of the single linear slope of the risk subscale resulted in a model that did not fit the data well, $\chi^2_{(10)} = 88.044$, $p < 0.001$, CFI = 0.826, RMSEA = 0.104, and SRMR = 0.075. Hence, an alternative model was tested. Based on the plot (see **Figure 1**; risk subscale), we assumed that two linear segments joined at T3 would comprise the overall change process. Examining the two-phase unconditional linear piecewise model resulted in an excellent fit to the data, $\chi^2_{(6)} = 13.263$, $p = 0.04$, CFI = 0.984, RMSEA = 0.041, and SRMR = 0.030. The mean of the intercept factor was 1.342, which closely corresponds with the observed mean of 1.335

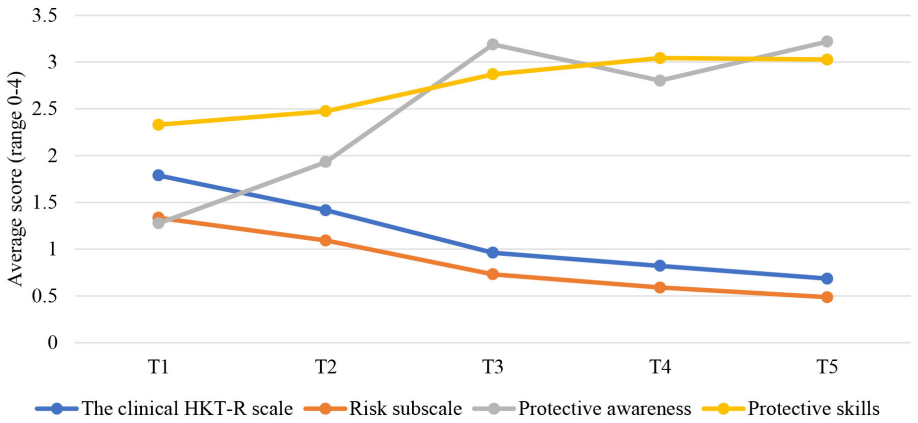


**FIGURE 1 |** Changes over time in the clinical scale and the risk and two protective subscales. T1, Judicial psychiatric assessment; T2, Admission to the clinic; T3, Unguided leave; T4, Conditional leave; T5, Unconditional leave.

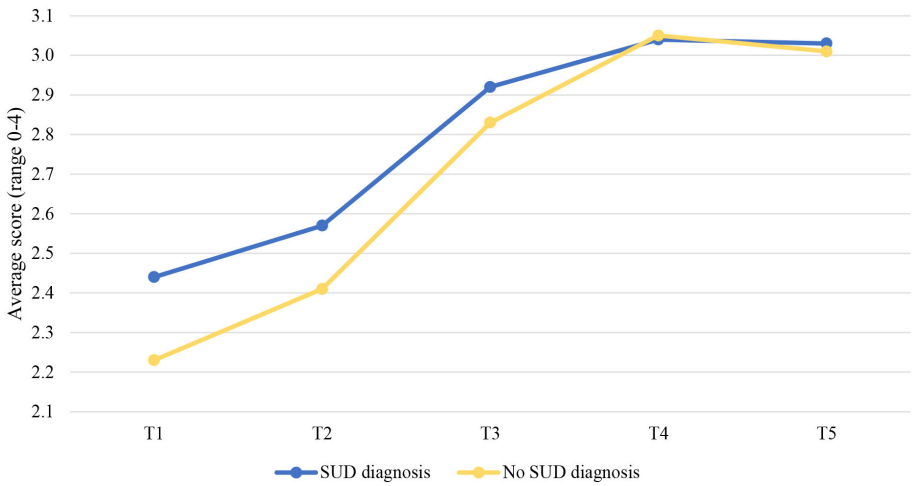


**FIGURE 2 |** Changes over time in the protective skills subscale for patients with and without SUD. SUD, Substance use disorders; T1, Judicial psychiatric assessment; T2, Admission to the clinic; T3, Unguided leave; T4, Conditional leave; T5, Unconditional leave.

at T1. The mean of the first slope factor was −0.299, $p < 0.001$, indicating that there was a significant decrease of ∼0.299 on the risk subscale at each time point in the first phase of the stay in the FPCs (T1–T3). The mean of the second slope factor was −0.128, $p < 0.001$, indicating that a level of the risk scale continued to decline, but at a slower rate, of ∼0.128 at each time point in the second phase of the stay (T3–T5). The rate decline on the risk subscale was not constant as evidenced by the difference in slopes; the rate of change was greater in the first phase than in the second phase. This hypothesis was tested by constraining the two slope means to be equal, with the results showing that the slopes were significantly different, $\Delta\chi^2_{(1)} = 57.236$, $p < 0.001$. Finally, the variance of the intercept (0.278), and both slopes (0.037, 0.048) were significant, $p < 0.001$, showing the significant between-person variance of the initial level on the risk subscale and the slopes.

## Protective Skills

In addition, we also tested an unconditional model with a simple linear trajectory of the subscale protective skills. This model did not fit the data well, $\chi^2_{(10)} = 138.881$, $p < 0.001$, CFI = 0.711, RMSEA = 0.134 and SRMR = 0.108. An alternative two-phase linear piecewise model was then tested. Based on the plot (see **Figure 1**; protective skills), we assumed that the rate of change on protective skills would be greater from T1 till T3, than from T3 till T5. Compared to the single linear trajectory model, this model had an acceptable fit, $\chi^2_{(6)} = 38.713$, $p < 0.001$, CFI = 0.927, RMSEA = 0.087 and SRMR = 0.056. The mean of the intercept factor was 2.301, which corresponds to the observed mean of 2.330 at T1. The mean of the first slope factor was 0.280, $p < 0.001$, indicating that there was a significant increase of ∼0.280 on the protective skills at each time point in the first phase of stay in the FPCs (T1–T3). The mean of the second slope factor was 0.092, $p < 0.001$, indicating that a level of the protective skills

**TABLE 2 |** Differences in the means of clinical risk and protective factors of different subgroups of patients.

| | Psychotic disorders | | *F* test | Cluster B PDs | | *F* test | SUD | | *F* test |
|---|---|---|---|---|---|---|---|---|---|
| **Variables** | **Diagnosis** | **No diagnosis** | | **Diagnosis** | **No diagnosis** | | **Diagnosis** | **No diagnosis** | |
| | ***M (SD)*** | | | ***M (SD)*** | | | ***M (SD)*** | | |
| **Clinical scale** | | | | | | | | | |
| T1 | 2.21 (0.69) | 1.66 (0.61) | $F_{(1,719)} = 97.414^{***}$ | 1.88 (0.61) | 1.75 (0.68) | $F_{(1,719)} = 5.056^{*}$ | 1.75 (0.67) | 1.82 (0.66) | $F_{(1,719)} = 1.735$ |
| T2 | 1.60 (0.71) | 1.36 (0.64) | $F_{(1,535)} = 13.651^{***}$ | 1.49 (0.61) | 1.38 (0.68) | $F_{(1,535)} = 3.039$ | 1.37 (0.65) | 1.44 (0.67) | $F_{(1,535)} = 1.450$ |
| T3 | 1.01 (0.54) | 0.95 (0.48) | $F_{(1,639)} = 1.444$ | 1.04 (0.49) | 0.93 (0.49) | $F_{(1,639)} = 6.529^{*}$ | 0.92 (0.46) | 0.99 (0.51) | $F_{(1,639)} = 2.821$ |
| T4 | 0.91 (0.51) | 0.78 (0.46) | $F_{(1,353)} = 5.633^{*}$ | 0.88 (0.47) | 0.80 (0.48) | $F_{(1,353)} = 2.137$ | 0.85 (0.48) | 0.80 (0.48) | $F_{(1,353)} = 0.675$ |
| T5 | 0.72 (0.52) | 0.67 (0.57) | $F_{(1,716)} = 0.854$ | 0.71 (0.51) | 0.68 (0.57) | $F_{(1,716)} = 0.434$ | 0.67 (0.53) | 0.70 (0.57) | $F_{(1,716)} = 0.617$ |
| **Risk subscale** | | | | | | | | | |
| T1 | 1.72 (0.82) | 1.22 (0.69) | $F_{(1,716)} = 59.624^{***}$ | 1.48 (0.71) | 1.28 (0.76) | $F_{(1,716)} = 9.839^{*}$ | 1.35 (0.74) | 1.33 (0.76) | $F_{(1,716)} = 0.160$ |
| T2 | 1.23 (0.80) | 1.05 (0.72) | $F_{(1,531)} = 6.132^{*}$ | 1.21 (0.70) | 1.05 (0.76) | $F_{(1,531)} = 5.085^{*}$ | 1.06 (0.72) | 1.11 (0.77) | $F_{(1,531)} = 0.625$ |
| T3 | 0.73 (0.57) | 0.73 (0.53) | $F_{(1,638)} = 0.013$ | 0.85 (0.54) | 0.68 (0.53) | $F_{(1,638)} = 12.976^{***}$ | 0.74 (0.51) | 0.73 (0.57) | $F_{(1,638)} = 0.54$ |
| T4 | 0.63 (0.52) | 0.57 (0.47) | $F_{(1,353)} = 0.859$ | 0.71 (0.48) | 0.55 (0.48) | $F_{(1,353)} = 7.330^{*}$ | 0.63 (0.49) | 0.56 (0.49) | $F_{(1,353)} = 1.582$ |
| T5 | 0.49 (0.54) | 0.48 (0.55) | $F_{(1,716)} = 0.023$ | 0.52 (0.49) | 0.47 (0.57) | $F_{(1,716)} = 0.908$ | 0.47 (0.53) | 0.50 (0.56) | $F_{(1,716)} = 0.340$ |
| **Protective awareness** | | | | | | | | | |
| T1 | 0.86 (0.65) | 1.40 (0.80) | $F_{(1,705)} = 60.062^{***}$ | 1.20 (0.68) | 1.31 (0.84) | $F_{(1,705)} = 2.462$ | 1.26 (0.78) | 1.29 (0.81) | $F_{(1,705)} = 0.155$ |
| T2 | 1.67 (0.96) | 2.02 (0.93) | $F_{(1,510)} = 13.012^{***}$ | 1.85 (0.90) | 1.97 (0.97) | $F_{(1,510)} = 1.698$ | 1.95 (0.99) | 1.91 (0.92) | $F_{(1,510)} = 0.157$ |
| T3 | 2.94 (0.67) | 3.25 (0.62) | $F_{(1,633)} = 25.045^{***}$ | 3.11 (0.68) | 3.22 (0.63) | $F(1,633)=3.267$ | 3.22 (0.63) | 3.16 (0.66) | $F(1,633)=1.692$ |
| T4 | 2.61 (0.92) | 2.88 (0.78) | $F_{(1,341)} = 7.568^{*}$ | 2.77 (0.82) | 2.81 (0.84) | $F_{(1,341)} = 0.125$ | 2.76 (0.80) | 2.82 (0.85) | $F_{(1,341)} = 0.217$ |
| T5 | 3.18 (0.73) | 3.23 (0.76) | $F_{(1,704)} = 0.660$ | 3.18 (0.73) | 3.24 (0.77) | $F_{(1,704)} = 0.857$ | 3.24 (0.71) | 3.21 (0.79) | $F_{(1,704)} = 0.342$ |
| **Protective skills** | | | | | | | | | |
| T1 | 1.92 (0.90) | 2.45 (0.78) | $F_{(1,717)} = 55.368^{***}$ | 2.34 (0.81) | 2.33 (0.85) | $F_{(1,717)} = 0.019$ | 2.46 (0.83) | 2.23 (0.83) | $F_{(1,717)} = 13.544^{***}$ |
| T2 | 2.29 (0.80) | 2.53 (0.74) | $F_{(1,524)} = 9.823^{*}$ | 2.46 (0.74) | 2.48 (0.77) | $F_{(1,524)} = 0.062$ | 2.57 (0.78) | 2.41 (0.75) | $F_{(1,524)} = 0.5.917^{*}$ |
| T3 | 2.79 (0.62) | 2.89 (0.53) | $F_{(1,633)} = 3.313$ | 2.87 (0.54) | 2.87 (0.55) | $F(1,633)=0.002$ | 2.92 (0.52) | 2.83 (0.57) | $F(1,633)=3.740$ |
| T4 | 2.95 (0.65) | 3.08 (0.58) | $F_{(1,350)} = 3.632$ | 3.04 (0.58) | 3.04 (0.61) | $F(1,350)=0.003$ | 3.04 (0.60) | 3.05 (0.60) | $F(1,350)=0.032$ |
| T5 | 2.97 (0.67) | 3.05 (0.74) | $F_{(1,706)} = 1.535$ | 3.02 (0.72) | 3.03 (0.72) | $F_{(1,706)} = 0.008$ | 3.03 (0.72) | 3.01 (0.75) | $F_{(1,706)} = 0.839$ |

*M, Mean; SD, Standard Deviation; PD, Personality disorder; SUD, Substance use disorders; T1, Judicial psychiatric assessment; T2, Admission to the clinic; T3, Unguided leave; T4, Conditional leave; T5, Unconditional leave; *p < 0.05, ***p < 0.001.*

continued to increase, but at a substantially slower rate, of ∼0.092 at each time point in the second phase of the stay (T3–T5). To test whether the rate of change was significantly greater in the first phase than in the second phase of stay, we constrained the two slope means to be equal. The results showed that the slopes were significantly different, $\Delta\chi^2_{(1)} = 48.13$, $p < 0.001$. Finally, the variance of the intercept (0.382), and both slopes (0.081, 0.092) were significant, $p < 0.001$, showing the significant between-person variance of the initial level on the protective skills and the slopes.

### Protective Awareness

Finally, examining the single linear slope of the protective awareness subscale resulted in a model that did not fit the data well, $\chi^2_{(10)} = 903.931$, $p < 0.001$, CFI = 0.001, RMSEA = 0.352 and SRMR = 0.488. Hence, an alternative piecewise model with a change point at T3 was tested. However, this alternative model poorly fitted the data, $\chi^2_{(6)} = 197.408$, $p < 0.001$, CFI = 0.641, RMSEA = 0.210 and SRMR = 0.136 and therefore, the results cannot be interpreted. It is plausible that a piecewise model with three rather than two linear slopes would sufficiently capture the non-linear change of protective awareness. However, this more complex three-slope model could not be tested as we only had five time points and this analysis requires at least seven time points for identification (56).

## Patients With SUD vs. Patients Without SUD

The results showed that SUD significantly predicted trajectories over time, but only for the protective skills subscale. SUD was not significantly associated with the trajectories of the clinical scale and the risk subscale.

Examining the two-phase linear piecewise model of the protective skills subscale for patients with and without SUD resulted in an acceptable model fit, $\chi 2_{(8)} = 38.849$, $p < 0.001$, CFI = 0.933, RMSEA = 0.007 and SRMR = 0.048. However, SUD was only significantly associated with trajectories of the protective skills subscale in the first phase of residence in the FPCs (T1–T3), $b = -0.066$, $p = 0.044$. The level of the protective skills increased faster from T1 to T3 for SUD patients ($b = 0.308$ $p < 0.001$) compared to non-SUD patients ($b = 0.242$ $p < 0.001$; **Figure 2**). This hypothesis was tested by comparing a model with varying slopes for the two groups with a model with the same slopes. The results showed that the slopes were significantly different, $\Delta\chi 2_{(1)} = 33.84$, $p < 0.001$. We did not test differences in changes in the protective awareness subscale over time between these two

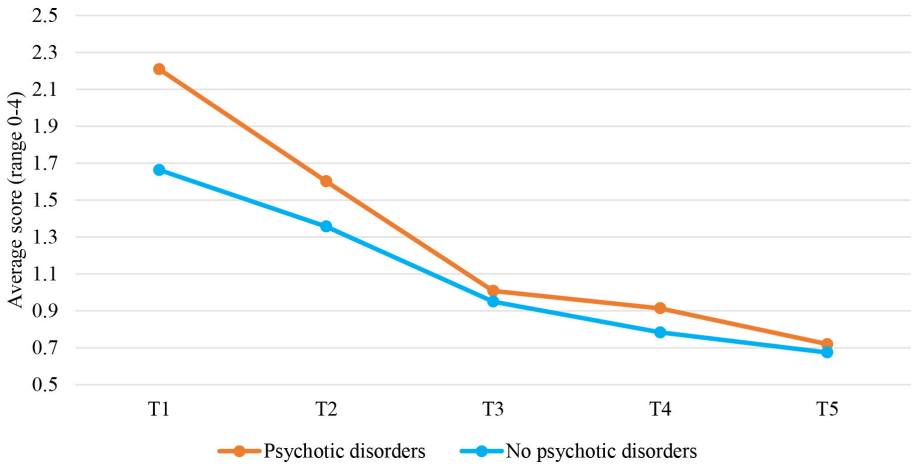


**FIGURE 3 |** Changes over time in the clinical scale for patients with and without psychotic disorders. T1, Judicial psychiatric assessment; T2, Admission to the clinic; T3, Unguided leave; T4, Conditional leave; T5, Unconditional leave.

groups of patients, as this model did not fit well in the present study and the results cannot be interpreted. Finally, differences in risk and protective factors between SUD and non-SUD patients, considering each time point, are displayed in **Table 2**.

## Patients With Psychotic Disorders vs. Patients Without Psychotic Disorders

Investigating the two-phase linear piecewise model of the clinical scale for patients with psychotic disorders and those without resulted in a model that still fitted the data well, $\chi^2_{(8)} = 16.266$, $p = 0.039$, CFI = 0.989, RMSEA = 0.038, and SRMR = 0.026. Psychotic disorders significantly predicted trajectories of the clinical scale, but only in the first phase of stay in the FPCs (T1–T3), $b = 0.219$, $p < 0.001$. The level of the clinical scale decreased at a greater rate from T1 to T3 for patients with psychotic disorders ($b = -0.575$, $p < 0.001$) compared to patients without these disorders ($b = -0.356$ $p < 0.001$; **Figure 3**). This hypothesis was tested by comparing a model with varying slopes for the two groups to a model with the same slopes. The results showed the slopes were significantly different, $\Delta\chi^2_{(1)} = 89.967$, $p < 0.001$.

Likewise, investigating the two-phase linear piecewise model of the risk subscale for patients with and without psychotic disorders resulted in a well-fitting model, $\chi^2_{(8)} = 16.076$, $p = 0.041$, CFI = 0.984, RMSEA = 0.037, and SRMR = 0.027. Psychotic disorders significantly predicted trajectories of the risk subscale, but only in the first phase of the patients' stay (T1–T3), $b = 0.228$, $p < 0.001$. The level of the risk scale decreased at a greater rate from T1 to T3 for patients with psychotic disorders ($b = -0.475$, $p < 0.001$) compared to those without these disorders ($b = -0.247$ $p < 0.001$; **Figure 4**). This hypothesis was tested by comparing a model with varying slopes for the two groups to a model with the same slopes. The results showed the slopes differed significantly, $\Delta\chi^2_{(1)} = 52.034$, $p < 0.001$.

The two-phase linear piecewise model of the protective skills for patients with psychotic disorders and those without was also tested. The model had a good fit to the data, $\chi^2_{(8)} = 40.913$, $p < 0.001$, CFI = 0.934, RMSEA = 0.075, and SRMR = 0.049. Psychotic disorders significantly predicted trajectories of the protective skills, but only in the first phase of the patients' stay in the FPCs (T1–T3), $b = -0.206$, $p < 0.001$. The level of protective skills increased at a greater rate for patients with psychotic disorders ($b = 0.438$, $p < 0.001$) compared to patients without these disorders ($b = 0.232$ $p < 0.001$; **Figure 5**). This hypothesis was tested by comparing a model with varying slopes for the two groups to a model with the same slopes. The results showed that the slopes were significantly different, $\Delta\chi^2_{(1)} = 22.201$, $p < 0.001$. Of note, we did not test whether psychotic and non-psychotic patients differ in scores on the protective awareness subscale over time because this model had a poor fit to the data in our study and results should not be interpreted. Between-group differences in the risk and protective factors at both scale and subscale levels for each time point are displayed in **Table 2**.

Finally, it was also tested whether SUD may modify the changes in the clinical scale and the risk and protective skills subscale over time in a group of psychotic patients. However, the results showed no significant differences in these changes between psychotic patients with and without SUD.

## Patients With Cluster B PDs vs. Patients Without Cluster B PDs

The results showed that cluster B PDs significantly predicted trajectories over time, but only for the risk subscale. Cluster B PDs were not significantly associated with the trajectories of the clinical scale and the protective skills subscale.

Examining the two-phase linear piecewise model of the risk subscale for patients with cluster B diagnosis and those without resulted in the model that fitted the data well, $\chi^2_{(8)} = 14.002$, $p = 0.082$, CFI = 0.987, RMSEA = 0.032, and SRMR = 0.027. Cluster B PDs were only significantly associated with trajectories of the risk subscale in the second phase of the stay in the FPCs (T3–T5), $b = 0.060$, $p = 0.033$. The level of the risk subscale decreased faster from T3 to T5 for patients with cluster B diagnosis ($b =$

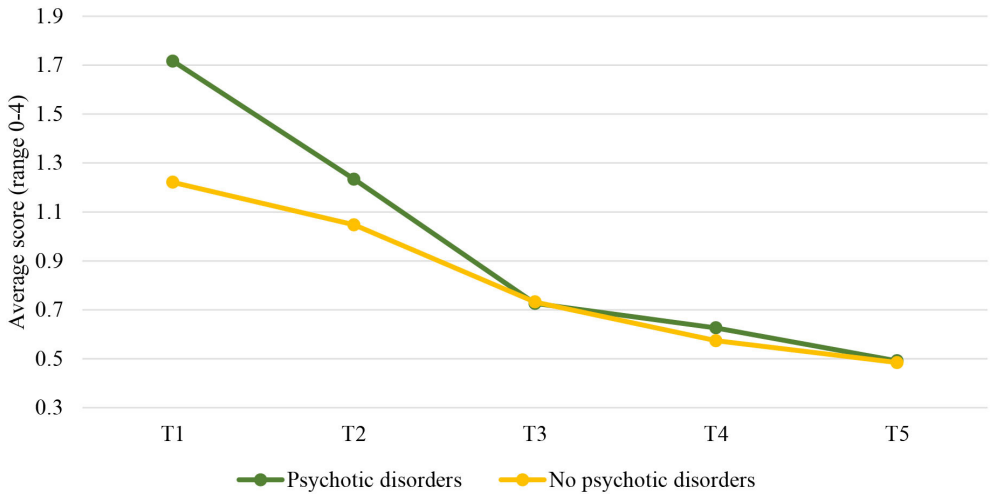


**FIGURE 4 |** Changes over time in the risk subscale for patients with and without psychotic disorders. T1, Judicial psychiatric assessment; T2, Admission to the clinic; T3, Unguided leave; T4, Conditional leave; T5, Unconditional leave.

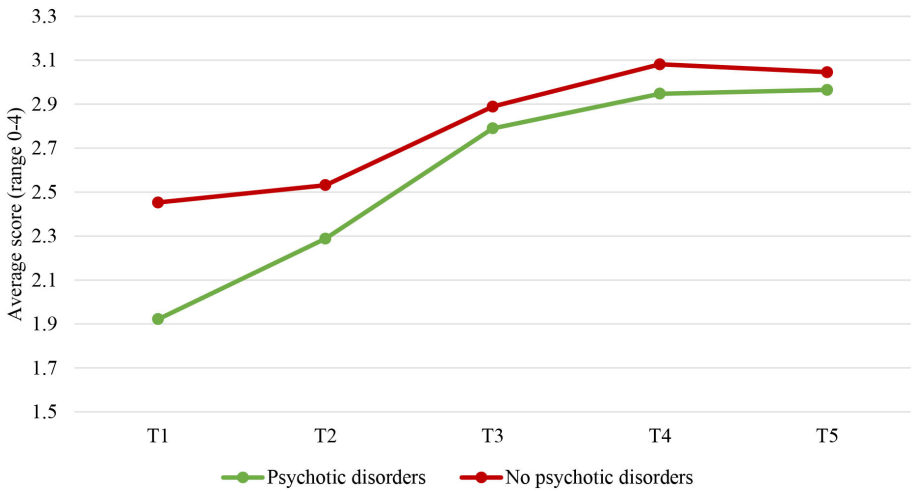


**FIGURE 5 |** Changes over time in the protective skills subscale for patients with and without psychotic disorders. T1, Judicial psychiatric assessment; T2, Admission to the clinic; T3, Unguided leave; T4, Conditional leave; T5, Unconditional leave.

$-0.170$, $p < 0.001$) compared to patients without this diagnosis ($b = -0.111$ $p < 0.001$; **Figure 6**). This hypothesis was tested by comparing a model with varying slopes for the two groups to a model with the same slopes. The results showed that the slopes were significantly different, $\Delta\chi^2_{(1)} = 10.311$, $p < 0.001$. It should be noted that we did not test differences in changes of protective awareness subscale over time between these two groups of patients, as this model did not fit the data well in this study and results should not be interpreted. Differences in risk and protective factors between cluster B and non-cluster B PDs patients considering each time point are displayed in **Table 2**.

Lastly, it was also tested whether SUD may influence trajectories of the clinical scale as well as the risk and protective subscales in a group of cluster B PDs patients. The results revealed no significant differences in these trajectories between cluster B PDs patients with SUD and those without.

## DISCUSSION

The long-term changes of dynamic risk and protective factors have been rarely studied in forensic psychiatric patients. In addition, to our knowledge, no prior studies have examined whether these trajectories differ between patients depending on their psychiatric diagnosis, namely SUD, psychotic disorders, and cluster B PDs. Therefore, the main goal of this study was to investigate the changes in dynamic risk and protective factors over time utilizing LGCA in all male forensic psychiatric patients

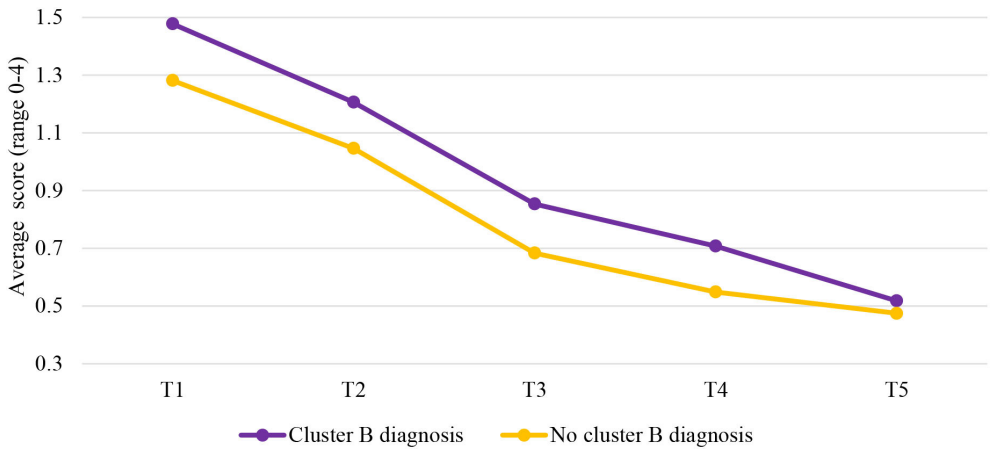


**FIGURE 6 |** Changes over time in the risk subscale for patients with and without cluster B diagnosis. T1, Judicial psychiatric assessment; T2, Admission to the clinic; T3, Unguided leave; T4, Conditional leave; T5, Unconditional leave.

who were unconditionally released between 2004 and 2014 from one of the 12 Dutch FPCs. The period of investigation covered the entire stay in the FPC; from the moment of juridical observation until the moment of unconditional release. First, we tested the unconditional model for the clinical scale, as well as the risk, and protective subscales. Then, the conditional models were analyzed with SUD, psychotic disorders, and cluster B PDs as predictors. Finally, we tested whether changes in the clinical scale, and protective and risk subscales are influenced by SUD in psychotic and cluster B PDs patients. Overall, the results indicate that the rate of change of dynamic risk and protective factors is not constant over time and that there are some important differences in the pathways of these factors between SUD and non-SUD patients, psychotic and non-psychotic patients, as well as cluster-B and non-cluster B PDs patients. However, SUD did not modify the changes in risk and protective factors in psychotic and cluster B PDs patients.

## Changes Over Time of the Clinical Risk and Protective Factors: General Findings

Concerning our unconditional models, the results showed that changes in the severity score of the clinical scale and risk subscale follow a very similar two-phase linear pattern. That is, the score on the clinical scale and risk subscale significantly decreased over time, with the rate of change being greater in the first phase of the stay in the FPCs than in the second phase. Similarly, there was also a larger improvement on the level of the protective skills subscale in the first phase, while there was almost no progress on this subscale in the second phase. Our findings are in line with previous findings showing that dynamic risk factors together with the lack of protective factors, continuously decrease over the course of treatment (13, 15, 57). However, in previous research, this rate of change was constant throughout the treatment, while in our study it deviated from a simple linear trajectory and consisted of two linear phases. In other words, the rate of change was greater from admission to the FPC up to the moment of the first unguided leave, that is, when patients were allowed to leave the institution for a short period without guidance, than from the moment when patients went on unguided leave and onwards. These differences between the present findings and those obtained in previous studies can be attributed to very limited empirical evidence on this matter as well as a much larger sample of forensic psychiatric patients in our study.

It could be that progress was greater in the first phase of the stay because the most change of dynamic risk and protective factors is expected to occur at the beginning of treatment (58, 59). In addition, the present study further revealed that the moment when leave modalities were granted to patients for the first time could be seen as a 'turning point' in the treatment of offenders. Leave modalities play an important role in the treatment of offenders. The typical progression is from escorted to unescorted leave and finally to the unconditional release. All proposals for leave must be approved by the Ministry of Justice. During these leave modalities, patients are tested if they are able to take responsibility and apply the skills learned during the treatment. Unguided leave can be granted to patients only when staff members conclude there is no risk for reoffending and no immediate danger of a patient's escape (18). In line with this, our study showed that at this particular point, patients were indeed characterized by low scores on the clinical scale and the risk subscale, and high scores on the protective skills subscale. It may be that from the moment when the unguided leave was granted, patients did not need to change much during the rest of the treatment because the largest progress has already been made in the first phase of their stay.

## Patients With SUD vs. Patients Without SUD

Furthermore, we investigated if there are differences in trajectories of the clinical scale, and the risk and protective skills subscales between SUD and non-SUD patients, psychotic

and non-psychotic patients and cluster B and non-cluster B PDs patients.

With regard to SUD, contrary to our expectations, the results showed no significant differences in the changes in the clinical scale and the risk subscale over time between patients with and without SUD. Even more unexpectedly, we found that SUD patients improved faster on the protective skills subscale than non-SUD patients, but only in the first phase of treatment, namely from the time of unguided leave to unconditional release. These findings may be attributable to contextual factors and the impact of forensic psychiatric treatment. Since our sample included forensic psychiatric patients staying in highly-secured FPCs, the potential for alcohol or illicit drugs may be significantly reduced than in the outside world, as these substances are not readily available for consumption in these institutions (i.e., there is strong control for their presence), thus forcing many patients to abstain (60). Hence it is plausible that the influence of SUD might be diminished. In addition, patients with SUD receive addiction treatment which usually starts with psychoeducation about substance use and increasing their intrinsic motivation. Furthermore, cognitive behavioral techniques are used to teach them prevention skills, such as helping thoughts to cope with urges and potentially risky situations (61, 62). The intervention has been proved to be efficient in resisting drug use (63), reducing maladaptive thinking (64), and decreasing self-reported substance use (65). This could be another explanation for non-significant differences regarding changes in the clinical scale and the risk subscale between SUD and non-SUD patients in this study. Moreover, the finding that SUD patients improved faster on protective skills than non-SUD patients in the first phase of their stay may be explained by the impact of the treatment. As mentioned, during the rehabilitation treatment, offenders with SUD learn different coping strategies in group settings, which may directly enhance their coping skills and perhaps indirectly their social skills. Therefore, this could be a reason for their faster improvement in protective skills overall compared to non-SUD patients. However, these differences were not significant in the second phase of the treatment, which could be attributed to the fact that treatment is more intensive in the first phase of their stay (58).

## Patients With Psychotic Disorders vs. Patients Without Psychotic Disorders

The findings showed that patients with psychotic disorders decreased faster on the clinical scale and risk subscale, and increased more strongly on the protective skills subscale than patients without these disorders, but only in the first phase of their stay in the FPCs. In the second phase of their stay, however, there were no significant differences in the change of these factors between the two groups of patients. Hence, our expectations that psychotic patients (compared to non-psychotic patients) would show less decrease in risk factors and less increase in protective factors over time are not supported. It is important to note, however, that a *post-hoc* ANOVA analysis showed that at the moment of juridical assessment (T1) and after the first 12 months of the stay in the FPCs (T2), psychotic patients scored significantly higher on the clinical scale, and the risk subscale, and significantly lower on the protective skills subscale than non-psychotic patients. This is consistent with evidence that individuals with a psychotic diagnosis are at higher risk for violence and criminal behavior than those without this diagnosis (17, 22, 31). That said, significant differences in trajectories of the clinical scale, and the risk and protective subscales in the first phase of the stay may be attributed to the differences in the initial levels of the risk and protective factors between psychotic and non-psychotic patients. This means that non-psychotic patients changed less on these factors because at the beginning of the treatment they displayed fewer risks and more protection against reoffending and hence did not need to change as much as psychotic patients. Alternatively, it might be that psychotic patients progressed more in the first phase of the treatment as a result of the received antipsychotic medications. The antipsychotic drugs produce structural changes in the brain, regulating its action (30). They can therefore also cause changes in risk and protective factors in psychotic patients.

However, during the second phase of their stay, no significant differences were detected in the risk and protective skills subscales between patients with and without psychotic disorders, except at the moment of conditional leave (T4). At this particular time point, psychotic patients scored significantly higher on the clinical scale. It may signify that there were some deviations from treatment progress in this group of patients at T4. Nevertheless, the present study shows that psychotic patients overall have benefited from forensic treatment, especially at the beginning of their stay in the institution. Therefore, the notion that patients with psychotic disorders are less responsive to treatment and more difficult to work with (33, 34) cannot be entirely supported by the findings of the present study. The somewhat contrasting finding could be explained by the fact that much has been done in recent years to improve treatment in forensic hospitals. For example, during their stay in the FPCs, patients are offered a wide range of treatment options, such as cognitive behavioral therapy, schema focus therapy, psychomotor therapy, music therapy, psychopharmaceutical therapy, and a combination of therapies (16). Hence, it may be that some of these options did indeed work well even for 'difficult' patients such as those with psychotic disorders.

Similarly, there were no significant differences in the trajectories of the clinical scale and the risk and protective subscales between psychotic patients with and without SUD comorbidity. As mentioned earlier, this might be due to the impact of the treatment and the fact that illicit drugs and alcohol are difficult (legally) accessible in high secure FPCs (60, 64). Therefore, it could be assumed that the use of these substances is reduced, which can subsequently benefit treatment progress.

## Patients With Cluster B PDs vs. Patients Without Cluster B PDs

Furthermore, we also found that cluster B PDs significantly predicted trajectories of the risk subscale, but only in the second phase of the patients' stay in the FPCs. That is, cluster B PDs patients decreased significantly faster from the moment

of the unguided leave until unconditional release than non-cluster PDs B patients. This is not in line with our expectations that cluster B PDs patients would show less progress during treatment than non-cluster PDs B patients. In contrast, the results showed that cluster B PDs patients benefited from the treatment as well, especially from the moment of unguided leave onwards. In addition, the *post-hoc* ANOVA analysis further revealed that patients with cluster B PDs scored significantly higher on risk factors from T1 to T4, which corresponds with empirical evidence that cluster B PDs patients are overall at higher risk for criminal behavior [e.g., (43, 44)]. However, these differences were not significant anymore at the end of their stay in the FPC (T5), meaning that cluster B PDs patients completed treatment equally well as non-cluster B PDs patients. One possible reason for non-cluster B PDs patients showing less improvement in the second phase of the stay could be due to their overall lower risk for reoffending at the beginning of this phase, which also implies less necessity for change from that particular moment until the end of the treatment. Another reason could be that cluster B PDs patients showed greater improvement during that second phase because they might need more time to adjust to and comply with treatment's requirements once being admitted to the forensic hospital. In support of this, patients with cluster B are indeed deemed to be less likely to conform to social norms and rules, which in turn can lead to violations of terms and agreements as well as treatment non-adherence (23, 38). Alternatively, it could be that cluster B PDs patients displayed fake behavior and exaggerated their mental fitness to reduce mandatory treatment and obtain privileges, such as unguided leave (66). Faster improvement during the second phase of their stay could possibly result from increased motivation to deceive once they succeed in their intentions to obtain certain benefits, such as the first unguided leave. Previous research also showed that antisocial patients deploy under-reporting of symptoms and post-conviction social desirability to make a favorable impression on judicial decision makers while denying real problems, such as substance use and impulsivity (67).

In addition, we did not find significant differences between cluster B and non-cluster B PDs patients in the trajectories of the clinical scale, and the protective skills subscale. It could be speculated that differences were only found for the risk factors as they are more pronounced in patients with cluster B PDs (17, 23, 42–44) than the lack of protective factors (17, 68).

Finally, as in a group of psychotic patients, SUD did not influence the changes in the risk and protective factors in a group of cluster B PDs patients as well. Again, this finding could be explained by the effects of treatment for substance use and forced abstinence of patients during their stay in the FPCs (60, 64).

## Limitations, Suggestions for Future Research, and Clinical Implications

There may be some possible limitations in this study that could be addressed in future research. The first limitation concerns the use of the DSM-IV to diagnose and classify mental disorders instead of employing the latest edition of this manual, namely the DSM-5. However, at the time when this study was carried out, the DSM-5 had not yet been published. One of the key changes from DSM-IV to DSM-5 is the removal of the multiaxial system of diagnosis. Instead, the DSM-5 combines axes I to III into a single axis that depicts mental and other medical diagnoses. Nonetheless, it is likely that this does not affect the generalizability of our findings. The study was further limited by the fact that we did not control for the presence of other comorbid conditions than SUD in psychotic and cluster B PDs patients when examining group-specific trajectories of risk and protective factors, which may also affect the results (69). For example, in this sample 5.7 % ($n = 41$) patients had both psychotic disorder and cluster B PDs. Another limitation is that we did not have enough time points to identify a non-linear latent growth curve model for the protective awareness subscale, and thus to interpret it. Although two linear slopes were sufficient to capture the non-linear change of most dynamic risk and protective factors at scale and subscale levels, our findings indicate that when it comes to the protective awareness subscale, a piecewise model with at least three linear slopes might be necessary. However, this more complex three-slope model could not be tested as we only had five time points and this analysis requires at least seven time points for identification (56). Moreover, in all tested models, the slope variance was significant, indicating significant individual differences in the growth rates of the clinical scale and the risk and protective subscales. The same holds true even when we added predictors to the unconditional models. Future research should attempt to find which factors may explain these individual differences in the growth trajectories of dynamic risk and protective factors. Future studies may wish to consider examining these pathways between recidivists and non-recidivist as this could deepen our understanding of whether the rate of change may contribute to the relapse. Finally, our findings may not be generalizable to other international samples of high-risk forensic patients. Unlike in the Netherlands, in the United States, for example, most offenders suffering from PDs and/or SUD, are likely to end up in the prison system rather than in the forensic psychiatric institutions (18).

Despite these limitations, the findings from this study could be highly relevant to forensic mental health practitioners. Although at the end of the treatment the risk associated with reoffending was very low for all patients, our results showed that 118 (16.6 %) of them violently reoffended within 2 years after release. Of these, 48 (40.7%) were diagnosed with cluster B PDs of which 30 (25.4%) had comorbid SUD, and 27 (22.9%) were diagnosed with psychotic disorders of which 16 (13.6%) had comorbid SUD. This signifies that there is a need to further improve the effectiveness of treatment in forensic correctional facilities. This can be achieved, e.g., by improving the treatment of cluster B PDs patients in the first phase of their stay in the FPCs, especially in terms of reducing risk factors. Similarly, for psychotic and all other patients, more attention should be paid to improving the second phase of their treatment, since fewer changes usually tend to occur in that phase. Last but not least, our findings showed that not all patients follow the same growth rate, meaning that there is a lot of variability between them. This signifies

that individualized treatment might be even preferred for some patients. Therefore, forensic mental health professionals may need to adapt the treatment for these patients in agreement with their learning style, motivation, abilities, and strengths (1, 5).

To sum up, the present study provides an insight into the change of the risk and protective factors over time in a highly representative sample of Dutch forensic psychiatric patients. Overall, findings suggest that all changes in dynamic risk and protective factors could be depicted by two phases of patients' stay in the FPCs. In addition, the moment of unguided leave could be considered as the 'turning point' in the treatment of offenders. Specifically, most changes in dynamic risk and protective factors occurred at the beginning of the treatment namely from the moment of juridical assessment up to the moment of the unguided leave. We also looked at group-specific long-term changes in these factors, and found that SUD patients and psychotic patients changed the most in the first phase of their stay, while cluster B PDs patients changed the most in the second phase. These findings may help improve offender treatment and crime prevention strategies. More effective treatment may lead to lower recidivism rates, better reintegration of offenders into society, and a safer environment for patients and others. However, the present study is not without limitations and our findings should only be considered preliminary. Future research is therefore necessary to replicate the findings of this study and to further investigate the effectiveness of treatment at different stages of the patient's stay in FPCs.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by The Scientific Research Committee of the FPC Kijvelanden, the Dutch Ministry of Security and Justice, the directors of the FPCs involved in this study and the Ethical Review Board of Tilburg University, the Netherlands. In exceptional cases, research with patient file data is possible without permission (Article 7:458 paragraph 3 of the Dutch Civil Code [in Dutch: BW]).

## AUTHOR CONTRIBUTIONS

MJ analyzed the data and wrote the first draft of the manuscript. GB, EM, EC, and SB critically revised the manuscript for important intellectual content. All authors contributed to and have approved the final manuscript.

## SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.737846/full#supplementary-material

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# The Totalising Nature of Secure and Forensic Mental Health Services in England and Wales

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This evidence-based opinion piece explores the totalising risk averse nature of secure and forensic mental health services and associated iatrogenic harms in England and Wales. Drawing on the research literature I consider the various influences, both external and internal which impact on the provision of such services and how both the therapeutic alliance and recovery potential for patients may be improved. Especial attention is paid to the deployment of restrictive practise, practitioner attitudes, the potential for non-thinking, and how these may impact on decision-making and the care and treatment of mentally disordered offenders.

**Keywords: forensic—psychiatric practise, ethics—institutional, ethics—clinical, risk, rights activism**

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## MENTALLY DISORDERED OFFENDERS

Patients detained under Part III of the Mental Health Act (1) in England and Wales are required by law to receive specialist care because their mental disorder is perceived as posing a risk of harm to themselves and to the community (2). Secure and forensic mental health services are provided for such patients (3). Risk can manifest at individual, interpersonal, organisational, and community levels (4, 5). Adverse incidents, some having extreme consequences can and do present in secure and forensic mental health settings. Evidence-based understanding of causal factors, authoritative and procedurally just boundary setting, consistent care, treatment, and proportionate monitoring are required to maintain therapeutic efficacy (6).

The care and treatment of mentally disordered offenders involves balancing the therapeutic role with managing perceived risk and maintaining safety and security (7). However, in practise secure and forensic settings place an overriding emphasis on physical and procedural security; ways of working with and treating patients that are viewed as permissible and even necessary, given the stereotypes associated with mentally disordered patients. This can lead to administratively and legislatively driven disregard for patient well-being and even harm. It is recognised that disproportionate risk aversion can lead to patients being deprived of the opportunities they need to progress in their recovery (8).

Within forensic clinical practise risk tends to be treated as an objective reality that can be rationally managed *via* the deployment of expert knowledge and authority. However, early modern anthropological research reified that the way in which risk is perceived and responded to, is determined by social values and institutions rather than evidence-based thinking (9). Risk rather than being a neutral, objective concept is infused with values and beliefs that can exert a significant normalising influence and ultimately determine what is an isn't to be considered as a risk (9).

The concept of risk provides the raison d'etre for the structure and operation of secure mental health systems, directing every aspect of the care and treatment of mentally disordered offenders

from admission to discharge and beyond. Without the notion of risk and beliefs regarding its assessment and management, these hospitals would not exist. Forensic mental health care spans both criminal justice and healthcare systems and as such is subject to the political, cultural, legal, and economic factors influencing these contexts.

It is recognised that secure and forensic mental health settings can be highly restrictive, coercive, and risk-averse (10, 11). The dominant discourses of modern forensic psychiatry are constituted by reductively simplistic conceptions of the causation of violence. The stigmatisation, lack of rigour in maintaining detention under the MHA (1) and effectively unchecked discretion of the Ministry of Justice (MoJ) in the United Kingdom (UK) regarding the recall to a secure hospital of patients under Section 41 (S41) of the MHA (1) are manifestations of the means by which a modern government and society seek to assuage their sense of ontological security in the face of offences committed by those with a diagnosis of mental disorder.

Forensic psychiatry can be framed as operationalising a system of social control in which individuals with the mentally disordered offender label are stratified according to the risk they are perceived to present to others in high, medium and low secure mental health settings (12). In these settings, treatment and care are delivered within a coercive framework of imposed assessment and therapy (13, 14). Risk assessment and management subsume all other dimensions of care and treatment. They are multi-dimensional processes relating to physical, procedural, and relational security with the over-arching aim of integrating security with therapeutic goals (15, 16). Perceived risk can dominate every aspect of practise and service provision, leading to a culture of containment developing whereby staff increasingly prioritise perceived safety over recovery and favour the deployment of risk-averse approaches (including seclusion and restraint) rather than using more therapeutic forms of intervention (17, 18).

It can be argued that the focus on risk assessment and management discriminates against those with a diagnosis of mental disorder given the mandatory nature of such practises and associated controls placed on patients (19). There is a significant risk of disproportionate risk aversion and coercion given the perceived implications for professionals of failure to predict what may be unpredictable and consequent apportioning of accountability and blame (20). Where risk assessment and management dominate and pervade the of risk provision of care and treatment, together with patients' autonomy, the potential for inappropriate levels of restriction to be imposed upon individuals will present. For instance research has historically proven that a significant number of forensic patients have been placed at unnecessarily high levels of security (21). It has been argued with reference to empirical data and literature that the defining characteristics of late modern social control are manifest within forensic mental health services (22).

The assessment and management of risk are considered essential skills for forensic mental health staff, along with the implementation of evidenced based interventions (23). However, the extent to which risk presents on wards may be partially associated with the quality of the interactions between staff and patients (24). For instance, more authoritarian approaches to boundary setting may engender a negative response from patients, whereas using an authoritative manner may promote positive outcomes (25). Anxiety-based, subjective, often unreasoned and unevidenced perceptions of potential risk in the context of legal controls directed by the Ministry of Justice lead to the liberty of patients being curtailed indefinitely by practitioners wary of potential damage to their continuing professional development should a rare but serious event be enacted.

Thus various social and structural control processes can impact upon the implementation of strength- and recovery-based approaches to care and treatment in secure and forensic mental health settings. It is recognised that in secure and forensic mental health settings a culture of containment can present in which staff become increasingly unable to deliver intervention which will aid recovery and instead prioritise unsafe certainty *via* the deployment of restrictive measure, both direct and indirect (17, 18). The actualisation of patient empowerment, autonomy, identity, and connectedness can conflict with and be compromised by the punitive influences of disproportionate risk aversion and other forms of containment and control (22).

## STANDARDS OF PRACTISE FOR OFFENDER RECOVERY

Standards of practise are authoritative statements that reflect current knowledge and understanding along with the values and priorities for a profession and provide stated expectations of accepted performance (26, 27). Standards allow staff to be held accountable for safe, competent, ethical, and legally defensible practise (16). The Royal College of Nursing (RCN) in the UK has identified the core competencies and advanced nursing practises for mental health nurses working with mentally disordered offenders (28). The core competencies were generic mental health nursing competencies; advanced nursing practises included risk assessment and management, assessment and management of dangerousness, cognitive therapies, behavioural therapies, and social skills training (29).

A literature review identified competence in safety and security, risk assessment and management, management of violence, providing therapy, knowledge of offending and legislation and ethics, report writing, understanding the criminal justice system and "jail craft," as relevant to forensic nursing, together with desirable personal qualities such as an understanding of public attitudes, an appreciation of control and the secure environment, and the nurse and patient relationship (30).

Tension and the potential for challenge are inherent in the context of the care and treatment of mentally disordered offenders. Policies and protocols concerning physical, procedural, and relational security are rooted in distrust and disregard, and patients' legal status conflicts with notions of voluntary treatment. Hence, the imperative for staff to be capable of making optimal use of interpersonal therapeutic skills (4,

31). Secure recovery (promotion of personal, clinical, functional and social recovery, and desistence) requires knowledge of the criminogenic needs of the patient together with the circumstances, nature, and consequences of their offending behaviour, in addition to their personal, clinical, functional and social needs and priorities (32). Therapeutic relationships and ward ambience can serve to facilitate an understanding of offending and other maladaptive behaviours together with mental disorder and other recovery needs (32–34).

## THE CARCERAL STATE AND SECURE AND FORENSIC MENTAL HEALTH CARE

Secure and forensic mental health services ostensibly aim to balance care and treatment with custodial objectives and function. However, given the totalising reality of forensic mental health settings, carcerality permeates every aspect of the provision of secure care, as confirmed by the literature describing secure hospitals as dangerous, punitive, and controlling (35). This carcerality is visibly manifest in the physical security on which such services are based and operate, and acts to confound attempts to introduce more trauma-informed ways of working with mentally disordered offenders (36). The punitive and custodial nature of secure environments may also be mediated by stigmatising and judgmental staff attitudes. In one study staff are reported as stating of patients that "they should be having a miserable time. That's not a therapeutic attitude I know, and it doesn't really work very well but I do feel it from time to time" (37).

It is the alleged or offending behaviour that differentiates secure and forensic mental health patients. Attitudes regarding mental disorder and offending behaviour are impacted by fear, ignorance, misinformation, and at times sensationalist media coverage. Secure and forensic mental health patients can "evoke feelings of disgust, repulsion and fear" and leave staff feeling unskilled and fearful of their own safety (16).

Patients experience punitiveness daily *via* the enactment of protocols; blanket restrictions and other rules and regulations (22). The spectre of presumed public opinion and the fear of condemnation from the popular press haunts secure and forensic mental health settings and dictates and sustains a philosophy of stigmatisation and oppression.

## COLLABORATIVE RISK ASSESSMENT AND MANAGEMENT

Risk assessment is a mandatory component of care planning and a constant concern for staff with significant consequences for liberty of patients (38). The risk patients present to others though less present than risk to self, has greater salience in both legislation and practise, with greater perceived negative outcomes for both staff and mental health providers (39, 40). Risk assessment policies and practises are developed and implemented within this wider context of concern about possible adverse effects for accessors and the organisations who employ them should they fail to identify and guard against a rare but serious event occurring. There is more emphasis and resource placed on and deployed in mitigating against the incidence of high profile but low probability harms such as patient homicide than the low profile high probability harms sustained by the patient body such as adverse reactions to medication and associated physical health effects, including higher rates of morbidity and mortality, which are seemingly accepted without concern (41).

Risk assessment is a contested area of mental health care, especially in the context of forensic psychiatry. The predictive accuracy of risk assessment in mental health care is sub-optimal; even the best performing actuarial tools perform at a level which is substantially below what is deemed acceptable in other branches of healthcare (40, 42). Reviews have consistently recommended that risk assessment tools and associated scales are not used for routine clinical practise and emphasise the need for a more personalised focus on the individual patient (43).

The weight placed on and the enduring nature of the influence of risk assessments should not be underestimated, yet those subject to them often have little involvement in the process and related decision-making. Research has indicated that patients and staff have contrasting and at times competing priorities in relation to risk assessment and management (39). Patients view risk as a staff driven priority that may lead to restriction and loss of liberty (39). Staff claims of involving people in the care planning process do not extend to risk assessment and management processes (39).

Staff attribute risk to originating in the patient rather than social or environmental factors, are risk averse and prioritise the procedural aspects of risk assessment (39). Risk assessment practise operates as a form of fiction in which poor predictive ability and subjective fear of adverse consequences are accepted in the interests of presumed normative certainty (39). Contrary to best practise guidance staff may inevitably default to the false security of unsafe certainty regardless of the costs to both individual patients and tax-payers of unnecessary levels of supervision and monitoring including overlong lengths of stay (44). As a consequence, risk adverse options are preferred by staff and patients discouraged from taking advantage of opportunities for ordinary risks thereby hindering the development and maintenance of their personal recovery (39).

While risk assessment and management processes focus on risk of self-harm, suicide and harm to others, the risk of iatrogenic harm, i.e., harm associated with the provision of care and treatment such as adverse reactions due to psychotropic medicine is invariably neglected (45). Other risks to which patients may be vulnerable include discrimination, stigma and verbal, and physical aggression (46). Patients may find it difficult to assert their rights and experience a profound sense of powerlessness in the face of bureaucracy and uncaring staff (47).

Collaborative risk assessment and management have been recommended in health policy for over a decade in the UK (48). However, there is evidence that the extent to which patients are involved in risk assessment is suboptimal (49, 50). Patients are often not aware of the content of their risk assessments let alone included in their development (51). There appears to be a discrepancy between the beliefs staff articulate and their statements about being open to collaborative risk assessment and their practise (14). There is evidence that patients are often unaware of risk assessments taking place (52) and that

assessments place significantly more emphasis on individual risk factors than structural, social or interactional issues (53). By not allowing patients opportunities to be meaningfully involved in risk assessment and management and develop their own understanding and knowledge regarding risk, staff are culpable of epistemic injustice (54).

Patients may disagree with the contents of their risk assessments, but feeling they have little influence, may perceive that there is no value in contesting them (51). Patients may also seek to minimise their risk status through compliance with staff's views (55). They may believe that contesting the content of a risk assessment may be interpreted as a lack of insight on their part and thus an indicator of risk in itself (56). It is important to be able to understand how patients experience the processes of violence risk assessment and management in order to optimise engagement and meaningful collaboration.

Collaborative risk assessment and management have been recommended for over a decade (57). This involves a joint decision-making process between patients and staff with the patient involved in each part of the process including the identification of risks and appropriate level of support they need to mitigate risk (13, 14). Collaborative risk assessment can become the first step towards patients becoming accountable for and managing their own risk. The collaborative process can also enhance patients' understandings of why certain interventions are viewed as required and support them to feel empowered (58). Other positive consequences of collaboration include ensuring relevant information is not missed, the identification and provision of insight on warning signs which may not be obvious to staff (13, 59). Collaborative risk assessment and management may also lead to patients taking increased accountability for their own recovery (60), and providing information on their internal mental states which are associated with risk (61). However, the research which has been conducted indicates that the extent to which collaborative risk assessment is occurring may be suboptimal (49, 50). However, evidence of the value of collaborative care in evaluating risk in secure and forensic settings does exist, and remains a possible means of improving forensic care (62).

## BARRIERS TO AUTHENTIC THERAPEUTIC RELATIONSHIPS AND PATIENT RECOVERY

The recovery paradigm has become the mandated model for secure and forensic mental health services over the last decade (63). The recovery model is a strengths-based approach which involves clinicians supporting patients to lead satisfying and meaningful lives in the context of their mental disorder (64). The Secure Recovery model focuses on the role of therapeutic relationships, active participation in recovery and developing a sense of responsibility and self-agency (32, 65). It is recognised that the therapeutic alliance can act as a vehicle to keep patients safe and manage their needs and risks (66). However, secure and forensic mental health services place favour the concept of the managed patient rather than having regard for patient agency or autonomy. Mental health legislation empowers staff and disempowers patients. Staff may deploy statutory powers in the context of perceptions of risk, whereas patients may lose their liberty and be compelled to accept treatments that they would not otherwise choose.

It is recognised that mentally disordered offenders form an "othered" and marginalised social group predominantly due to the dual stigma associated with both the mentally unwell and criminal identities (67). Attitudes towards mental disorder and offending behaviour are shaped by ignorance, fear, misinformation, and sensationalist representation in the media. Patients have expressed the concern that such stigma will negatively impact upon their recovery (67). Such stigma is enduring and likely to remain with mentally disordered offenders after discharge and affect their reintegration into the community, influencing housing, occupational, and social opportunities (68). It can act as a barrier to opportunities to find work, and other means of social integration and well-being.

It has been found that staff in forensic contexts had difficulty in articulating exactly what it is that they did that might be therapeutic (69). Examination of staff case file entries in a secure and forensic mental health unit failed to confirm the nurses' contention that their practise was comprehensive and therapeutic (70). Negative appraisals from others together with the internalised impacts on self-concept of the mentally disordered offender identity and conditions of existence can present significant barriers to personal recovery. An inability to think on the part of staff, i.e., to fully empathise, consider and understand a patient in a given situation, coupled with subjective self-protective anxieties can lead to the potential for significant iatrogenic harm. Understanding, support, advocacy and education are required to combat stigma and discrimination within and outside of secure and forensic mental health services (71).

Staff may, on a daily basis, be involved in making decisions that necessitate conflicts between multiple ethical, legal and societal values (72). This raises the potential for moral injury and concerns regarding the psycho-emotional aspects of decision making, such as feelings of regret and shame (73, 74). Staff may feel compromised due to the seeming contradiction of providing care and treatment while protecting the public. The phenomenon of accepted fictions can present in that staff may recognise that the basis for certain approaches may be predominantly administrative and have no scientific validity (42). Staff may also prefer to avoid potentially problematic conversations regarding risk and offending behaviour for fear of this damaging the therapeutic relationship (49, 75). The process of developing therapeutic alliances, and experiencing trust or even rapport can also be problematic due to the restrictive nature of secure and forensic mental health services. The individuals who come to be mentally disordered offenders may also have been exposed to neglectful or cruel experiences in early life (62). Trauma can be an integral part of the experience of being a mentally disordered offender; trauma related to committing an index offence, detention (isolation from the community and personal contacts), coercion in secure settings, and the impact of the totalising nature of the secure environment. Legal status and enduring mental illness can result in significantly long lengths of stay leading to the risk of loss of hope and institutionalisation.

Staff have also reported concerns for their own security (76). Aggression when it presents can have multiple adverse consequences for patients, staff, ward atmosphere and operation (77, 78). Patients who express aggression may be met with restrictive interventions such as sedation, seclusion or restraint (78). A reliance on relational as opposed to procedural or physical modes of security may require staff to challenge and overcome paternalistic perspectives and associated assumptions regarding risk.

Patients have articulated frustration regarding the dominance of the staff's views together with their sense of helplessness and inability to change the status quo. Having to ask permission to meet basic needs can result in patients feeling disempowered and lacking agency. Patients perceive relationships with staff as distorted due to the significant power differential which exist. Patients may have a strong desire for change, compounded by perceptions of powerlessness. Compliant behaviour may seem the only practicable way to progress leading to symptoms and concerns being masked or downplayed, and patients regulating what they communicate to staff. This can lead to increased levels of frustration and impede the recovery process. Even when well-managed by the patient, passivity and compliance rather than active engagement will likely lead to sub-optimal outcomes. Thus, meaningful and effective therapeutic relationships can be difficult to initiate and sustain in secure and forensic mental health settings. The barriers mentally disordered offenders face in negotiating and achieving recovery should not be underestimated. However, national and local quality improvement networks such as the Royal College of Psychiatrist's Quality Network for Forensic Mental Health Services which organises peer reviews of medium and low secure and forensic hospitals with a view to increasing standards of care for patients and sharing good practise have demonstrated success in improving the quality of patient care and experience (79).

## THE POTENTIAL FOR ABUSE OF POWER—STAFF ATTITUDES AND ACCOUNTABILITY

The morality of decisions can become dependent on the context; who and what is being prioritised; perhaps what is best for the service, ward or individual practitioner as opposed to the patients. Disregard and harm on the grounds of exceptionalism, predicated on the dubious notion that practitioners are innately superior and shouldn't be held to the same standards when dealing with individuals whose human rights are qualified due to past offending behaviour are insidious and yet potentially pervasive wrongs. Without internalised or externalised structures of personal or moral responsibility, accountability and monitoring, the nature and extent of the disregard enacted upon patients may become unlimited. Practitioners who routinely engage in harm, but may consistently claim that on the contrary, that they are engaged in good practise need robust supervision and monitoring. A relationally secure See Think Act framework for professional practise, supervision, vigilance, and ultimately whistle-blowing would potentially be of great benefit to services and patients (80).

The greater the power differential between staff and patients, the greater the potential for abusive staff behaviour (81). Milgram's obedience studies led to the development of the concept of a drone like "agentic state" in which individuals suspend their capacity to make informed moral judgments and relinquish responsibility for what they do to those in authority (82). Individuals may abdicate their moral agency by acting primarily to mitigate their subjective, self-protective anxieties, regardless of the harm it may cause to others. "*You have to protect your back*." Zimbardo suggested that such a sense of obligation and duty is not necessarily dependent on the presence of strong authority figures, but can be due to individuals conforming to what they believe is expected of them as a group member. Whether, staff follow the policies and practises set by those in authority or prioritise individual patient need and well-being can depend upon the extent to which they perceive themselves to share social identification with either group (83, 84).

The restrictive ethos of secure and forensic settings can compromise a patient's individuality in various ways, leading to an overall sense of powerlessness (85). In some circumstances, for example a secure and forensic mental health ward with a high incidence of violence, authoritarian leadership might provide relief and protection against the environmental uncertainties (86). Workers may then displace the responsibility for their actions onto their superiors: "*It's not up to me, I don't make the decisions, I just do what I'm told to do*." In such situations staff may perceive it to be a virtue to over-restrict patients; that they deserve it, for the violence they have committed and the potential for further violence that they are perceived to possess.

An inability of practitioners to identify with their patients can lead them to be unaware of the potential gulf in human suffering that separates them (the oppressors) from their patients (the oppressed). Incapable of thinking from the perspective of one labelled as the alien inferior and innately unreliable other (the mentally disordered offender) practitioners may by default fail to take account of or priorities their patients' self-articulated needs.

Barriers to the proportionate deployment of relational as opposed to more restrictive and oppressive forms of security and ways of working with and relating to patients could include negative staff attitudes, competing organisational priorities, and organisational inertia. The work of staff can tend to be more functional and task oriented, rather than relationally focused (87). Research has found that staff may have difficulty in articulating exactly what it is that they do that might be therapeutic (69). Nurses might distance themselves from patients in order to cope with conflict and other relational difficulties (88). It can necessitate resilience and to care for patients who exhibit such demanding presentations (89).

Staff in secure and forensic settings tend to attribute conflict with patients, including presentations of violence and aggression, either to mental illness or other deeply ingrained aspects of patients' personalities (90, 91). This is consistent with the broader literature that indicates mental health staff generally tend to attribute patient aggression to internal factors, such as patient psychopathology, more readily than environmental or situational

factors including communication between the patient, staff member, and other patients (92). A study found that staff reframe restrictive practise as acts of compassion and necessary means of managing risk, thereby reducing feelings of unease derived from constantly acting against the will and wishes of their patients (93).

The beliefs that relational security is of secondary importance to physical and procedural security, or that it already exists in practise or presents by default when situations arise that aren't explicitly covered by other forms of security, can present further attitudinal barriers to the consistent and effective implementation of relational security. Other barriers to proportionate emphasis on relational security include heightened acuity, demands on staffing resources, and criticism of the process of implementation (91).

Other unhelpful staff attitudes and behaviours include being judgemental, confrontational, and over-reacting (94). Staff need to be risk aware and risk assessment competent whilst being able to confidently hold onto uncertainty. It is important to balance security and safety with ensuring equity of care whereby the forensic mental health patient is treated the same as any other mental health patient. The ability of staff to recognise and acknowledge their feelings towards patients' behaviours can be important in determining how staff exercise relational security (25). Policy, procedures and the quality and consistency of staff supervision and reflective practise also impact hospital and relational culture, and ultimately staff behaviour and relational security (25).

Concerns have also been expressed that relational security; developing a knowledge and understanding of patients' inner and outer worlds may be misused by staff as a means of controlling patients rather than to promote meaningful recovery (95, 96). Given the length of stays in secure settings, and thus the long periods of time patients spend in the company of staff, it is understandable that how staff treat individuals can impact significantly on their self-concept, self-esteem, and potential for sustained recovery. I would suggest that evidence-based initiatives to improve the quality of relational security as it is deployed within secure and forensic mental health settings would be of value to both patients and staff.

## REDUCING COERCION AND RESTRICTIVE PRACTISES

It is recognised that in secure and forensic mental health settings a culture of containment can present in which staff become increasingly unable to deliver interventions which will aid recovery and instead prioritise unsafe certainty *via* the deployment of restrictive measures, both direct and indirect (17, 18).

Restrictive practise refers to the broader context of confinement, including the ward environment, dynamics, atmosphere, and routines, in addition to restrictive interventions. A distinction may be drawn between direct coercion (e.g., rapid tranquilisation, seclusion etc.) indirect coercion (e.g., restrictive rules and regulations, a controlling ward atmosphere, etc.), and informal coercion (which patients may refer to as "pressure") (97). Restrictive practises can conflict with individuals' attainment of their human rights, for example autonomy, physical integrity, and liberty of choice or movement (98). Research has indicated that the more restrictive the environment and approach to care, the higher the levels of depression and suicidal ideation, hostility, disrespect for patients, and perceived lack of institutional transparency. Lack of autonomy can lead to patients feeling punished and disempowered through having to rely excessively on staff. Restrictive practises can lead to harmful consequences such as physical injury or death, mental health deterioration (including the onset of post-traumatic stress disorder), and increased length of detention (99).

The experiences of restrictive practises can be enacted *via* means which are in sensitive, distal, and bureaucratic, as well as visible, routine and coercive (63). A concept analysis of restrictiveness in secure and forensic mental health settings identified two key factors; paternalistic attitudes towards care and treatment, and the dominance of the concept of risk assessment and management (10). In addition to formal forms of coercion, patients may experience implicit coercion in the form of pressure to achieve therapeutic goals in which they have played no part in setting, and which they experience insufficient if any support.

"Yes, the expectations are to achieve goals. And if it doesn't work, they don't ask what the problem is. Instead, it's said, 'You have to' instead of communicating with each other about this issue. It is always—how shall I put it? It's defined what we have to do and not talked about what makes it troublesome to achieve it. If goals are not met, there is no support, there is more pressure" (93).

Reducing and eliminating the use of restrictive practises, such as seclusion and restraint, has become both a national and international priority and focus of mental health policy reform (100, 101). In order to reduce the deployment of restrictive practises there have been legislative reforms, and changes in policy and best practise guidelines in the UK (1, 102, 103). The National Collaborating Centre for Mental Health recently implemented the Reducing Restrictive Practise Collaborative, a large-scale initiative that aimed to reduce restrictive practise by 33% across 26 NHS trusts in England (104). However, secure and forensic services continue to report high rates (105) and it has been evidenced that they may form part of a "vicious cycle" in which the psychological perturbation and distress they cause lead to more maladaptive behaviours, and in turn further coercive measures that in turn result in further restrictive practises (106). It has been evidenced that restrictive practises are associated with harms such as anxiety, trauma, disorientation and perceptions of neglect and abuse (97, 107).

Specific focus on secure mental health services is warranted as restrictive practises are often viewed as an integral part of forensic psychiatry but have received limited research attention relative to other areas of psychiatric practise (106, 108). Patients have reported that coercion is applied in a disproportionate way not only in terms of individual measures but to the system as a whole (93). A correlation has been found between disruptive behaviour, violence, and seclusion use in relation to sense of community and ward climate (109).

Proactive approaches should be used to mitigate the potential for harm in a proportionate and personalised manner (110). Unit culture is the core factor in influencing the use of restrictive practises (18). Therefore, the development and maintenance of relationally secure environments can play a key part in minimising restrictive practises. A scoping review of the use of restrictive practises, the consequences of using them and efforts to reduce restrictive practises, in adult secure and forensic mental health settings recommended that the importance of collaborative working (111).

Research has indicated that staff's emotional world can affect the deployment of restrictive measures with higher levels of anger likely to lead to the endorsement of management techniques such as the use of restraint, whereas those who experienced higher levels of guilt were less likely to sanction the use of seclusion (112). A study found that staff reframe restrictive practise by describing interventions as acts of compassion and as necessary means of managing risk, thereby reducing feelings of unease derived from constantly acting against the will and wishes of their patients (93). The manner in which staff process and understand their actions has an impact on their emotional reactions to the ways in which they interact with patients. This indicates a need for regular supervision and reflective practise (113). To mitigate the barriers to reducing restrictive practises posed by staff perceptions and attitudes, the introduction of staff training which utilises a co-creation approach has been shown to be beneficial (114, 115).

A caring, proportionate and authoritative, rather than authoritarian, boundary-setting style potentiates positive outcomes (25). Asking rather than telling patients what to do has proven more effective in managing behaviour (25). Setting limits in an authoritarian as opposed to an authoritative manner can be experienced by patients as aggressive and disrespectful, and as a result, may increase rather than decrease the risk of uncooperative and other forms of maladaptive behaviour (25).

Patients understand and accept that boundaries need to be set and are thankful when limits are set on other patients' behaviours, as this is perceived to protect their own wellbeing and the therapeutic milieu (25). Patients also acknowledge the need for boundaries in therapeutic relationships (116) including the degree of affective involvement (24). One study found that the efficacy of boundary setting was optimised when boundaries were set firmly, but empathetically *via* mutual agreement, and consistently applied among all patients (117). A caring, proportionate and authoritative, rather than authoritarian, boundary-setting style can therefore potentiate positive outcomes (25).

## PROFESSIONAL JUDGEMENT AND DECISION MAKING IN SECURE AND FORENSIC SERVICES

Patients have expressed the need for an ethical authority that monitors forensic psychiatrists and secure and forensic mental health services (93). This demonstrates the existence of a perceived need for protection from arbitrariness. In order to understand decision-making we need to understand both the individual decision maker and the context in which they make decisions (118). The fear of making "mistakes" may hinder good practise (119). Psychological safety is the perception that expressing ideas, opinions and reporting concerns, or mistakes won't lead to humiliation or punishment. A sense of psychological safety is necessary if staff are to feel confident in taking proportionate risks and innovation. The three most powerful behaviours that foster psychological safety are being available and approachable, explicitly inviting input and feedback, and modelling openness and fallibility.

Improving the quality of decision making in secure and forensic mental health settings also requires practicable knowledge of the efficacy of interventions, skills in managing decision processes; and a knowledge base for reflective practise (120). There is a real need for staff to be able to relate their perceptions and understandings of risk to practicable modalities of proportionate preventive intervention and organisational risk management systems. Within this clear delineation is required of the communication and decision-making processes associated with risk assessment together with knowledge of how the benefits and costs of associated actions may impact on patients. The effective assessment and use of both strengths and risk factors may protect against disproportionate risk aversion. The development of evidence-based frameworks which allow the modelling and delineation of what constitutes reasoned, reasonable decision-making in the context of perceived risk would significantly benefit patients.

## HUMAN RIGHTS ADVOCACY

It has been posited that grounding arguments for strength- and recovery-based principles in the heuristic framework of human rights can offer a set of common values to stimulate reform in forensic mental healthcare (22). Article 8 of the European Convention on Human Rights (ECHR) and Fundamental Freedoms (right to respect for private and family life, home and correspondence) protects individuals' "physical, psychological, or moral integrity," "privacy," and "identity and autonomy" (121, 122). Article 8 presents a clearly defined and robust framework to support emphasis on more recovery oriented ways of working. Qualification of these rights is permitted under the ECHR (122) but only where any restriction is "in accordance with national law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others."

It has been argued that the substantive rights contained within Art. 8 ECHR (122) are aligned with the essential components of strength- and recovery-based approaches (22). Therefore, the imposition of barriers to the enactment of these principles can be contested within a cogent human rights framework. However, such approaches can be rendered ineffective by the various

influences and issues they are in theory supposed to mitigate. Nevertheless, any efforts to educate staff and strengthen the application of human rights legislation in secure and forensic mental health settings has the potential to be of value to patients.

## ACKNOWLEDGING THE NEEDS AND HUMANITY OF MENTALLY DISORDER OFFENDERS

The contrast between the passive reality of being a restricted and managed patient in a secure and forensic mental health setting, and the aspiration of being an autonomous, reflexive, and active consumer of mental health care can create both frustration and despair. Agency is denied in the context of the deployment of mental health legislation to restrict liberty and impose treatments. Patients may have minimal access to the community regardless of their length of stay, be denied access to all but a limited number of their possessions and prevented from forming intimate relationships (63).

Secure and forensic mental health care has been mired in a problematic discourse that frames the forensic context and maladaptive attitudes and behaviours of the patient as impediments to good practise. There is an unjustified yet widely held view that mentally disordered offenders lack the mental capacity for moral responsibility and accountability (123). The scepticism regarding the capacity for forensic patients to account for past offending behaviour should not be under-estimated (124). An explicit acknowledgement and understanding of how mental health factors mediate the mutative aspects of interventions is required at the individual patient level, taking into account clinical, personal, social and political dimensions together with the organisational factors that are needed to create the necessary and sufficient conditions for a mentally disordered offender to experience meaningful and lasting recovery.

## CONCLUSION

Regardless of the nature and extent of the potential for psychological and other interventions to effect adaptive change at the individual patient level, detention in totalising institutions can act to compromise the possibility of recovery. Given the potential for disproportionate risk aversion, unjustified qualification of human rights and sub-optimal patient outcomes, there is a real need for the development of theoretical conceptualizations that direct and inform research regarding what constitutes sound professional judgement, decision, and assessment processes, in the context of offender recovery.

Reductively simplistic and pejorative forensic psychiatric discourses frame mentally disordered offenders as innately unreliable, inferior risk entities lacking the grounding of experiential insight. The moral cynicism of managers and practitioners, their belief that everything is permitted for them, may rest on a solid conviction that authority conveys moral and epistemic superiority. Patients may be subject to punishment or punitive attitudes, othering, and multiple associated barriers to re-integration into society. Reform and progress within the provision of secure and forensic mental health services and practise require the deconstruction of the polarised distinction between offenders and non-offenders, as no one is entirely innocent of moral and other transgressions.

It has been suggested that a human rights approach might counter the detrimental effects experienced by patients who exist at the totalising nature of secure and forensic services. In order to allow for the possibility of positive change and self-restoration, it is necessary to validate the humanity and experiences of patients. Without this there may be no inner healing and outward behaviour change may be neither authentic nor sustainable.

To recognise that (permanent) positive change and progression are possible and can be actualised, are crucial for the recovery of mentally disordered offenders. Within this proportionate patient involvement in decisions and actions relating to their own care and well-being can act as a vehicle for secure recovery and the transition of the mentally disordered offender into an accountable, responsible and responsive member of the community.

## DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

## AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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# Female Forensic Patients May Be an Atypical Sub-type of Females Presenting Aggressive and Antisocial Behavior

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The percentage of forensic psychiatric patients who are female varies from 5 to 13% in Europe, rises to 18% in England and Wales, and sits at 15% in Canada. Similarly, many fewer women than men are incarcerated in correctional facilities. While these statistics supposedly reflect less antisocial and aggressive behavior (AAB) among females than males, not all findings support this supposition. Data from prospective longitudinal studies show that aggressive and antisocial behavior onsets in childhood, and in a small group of females it remains stable across the life-span. Unlike similar males, few of these females are convicted of crimes. This article begins with a review of descriptive studies of females sentenced by criminal courts to treatment in forensic psychiatric hospitals and moves on to present evidence showing that most female AAB does not lead to criminal prosecution. Next, studies of female AAB are reviewed, noting that it onsets in early childhood and, that in a small group remains stable across the life-span. Subsequent sections of the article focus on the two most common mental disorders presented by female forensic patients, schizophrenia and borderline personality disorder, highlighting what is known about the sub-groups of women with these disorders who present AAB. The article concludes with recommendations for earlier identification by psychiatric services of women presenting mental disorders and AAB, treatments to reduce both the symptoms of their mental disorders and their life-long AAB, and the research that is needed in order to improve the effectiveness of these treatments. The real possibilities of prevention of the development of AAB, and even perhaps aspects of the mental disorders that plague female forensic patients, are described.

**Keywords: antisocial and aggressive behavior, schizophrenia, borderline personality disorders, female, forensic psychiatry**

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## INTRODUCTION

In most countries fewer women than men are treated within forensic psychiatric services and fewer are incarcerated in correctional facilities. While supposedly this reflects less antisocial behavior and aggressive behavior (AAB) among women than men, not all findings support this supposition. Diagnostic studies report much higher rates of disorders that include symptoms of AAB among males than females, but this sex difference is not evident in prospective longitudinal studies of birth

cohorts (1). For example, in a birth cohort of ∼1,000 individuals followed to age 32, 7.5% of females and 10.5% of males presented AAB that onset in childhood and remained stable through three decades of life (2). Female aggressive behavior is primarily indirect, reactive, and occurs within relationships (3, 4).

This article begins with a review of descriptive studies of females sentenced by criminal courts to treatment in forensic psychiatric hospitals and moves on to present evidence showing that most female AAB does not lead to criminal prosecution. Next, studies of female AAB are reviewed, noting that AAB onsets in early childhood and, that in a small group of females it remains stable across the life-span. Subsequent sections of the article focus on the two most common mental disorders presented by female forensic patients, schizophrenia and borderline personality disorder, highlighting what is known about the sub-groups of women with these disorders who present AAB. The article concludes with recommendations for earlier identification by psychiatric services of women presenting AAB and treatments to reduce both the symptoms of their mental disorders and their life-long AAB, and the research that is needed in order to improve the effectiveness of these treatments. The real possibilities of prevention of the development of AAB, and even perhaps aspects of the mental disorders that plague female forensic patients, are described.

## FEMALE FORENSIC PSYCHIATRIC PATIENTS

There are few females within forensic psychiatric services (5, 6) and in correctional facilities. Data reported from Belgium, Germany, Latvia, Italy, Ireland, Poland, Portugal, The Netherlands, England and Wales, Scotland, Slovenia, Spain, Finland, France, Croatia, Macedonia and Lithuania in 2013 reported that the prevalence of forensic inpatient beds varied from 1.4 per 100,00 inhabitants in Spain to 23.9 per 100,000 inhabitants in The Netherlands. The percentages of female patients varied from 5% in Slovenia to 18% in England and Wales (7). From 2002 to 2005, in Canada, ∼15% of forensic patients were female (8). In most countries, forensic hospitals treat primarily patients with psychotic disorders, however, The Netherlands has an additional forensic system specifically for patients presenting personality disorders.

A Dutch study (9) described a sample of 275 female forensic patients who were in their mid-thirties at the time of admission. Prior to admission, 54% of the women had been convicted of a criminal offense, with a mean age at first conviction of 25 years and an average of four convictions, and 88% had been previously treated in psychiatric services. Just over three-quarters of the women had experienced maltreatment in childhood, 58% were victimized as adults, and 44% of them both in childhood and adulthood. While 54% of the women had children, in 81% of these cases, the children been taken away by social services prior to admission. At the time of the index offense only two-thirds of the women had a home.

Index offenses included homicide (53.8%), arson (23.1%), other violence (14.1%), property offenses (6.4%), and sexual offenses (2.6%). In 88% of cases, victims were involved with the perpetrator and notably there were 24 cases of maternal filicide, seven cases of physical abuse and four cases of sexual abuse of offspring (see also 4). Primary diagnoses included schizophrenia/psychotic disorder (32.9%), substance use disorder (17.4%), depression (12.9%), and post traumatic stress disorder (8.1%). Secondary diagnoses included borderline personality disorder (BOPD) (60.6%) (with another 21% of patients presenting borderline traits), antisocial personality disorder (ASPD) (15.2%) (with another 24% presenting ASPD traits), and narcissistic personality disorder (2.6%) (with another 9% presenting narcissistic traits). Only three of the women obtained scores of 30 or higher on the Psychopathy Checklist-Revised (PCL-R), 19% obtained scores of 23 or higher (a recommended cut-off score for women). The average PCL-R score was 16.5.

During treatment, one-third of the women engaged in aggressive behavior primarily toward staff, and 45% in self-destructive behavior. They were described by staff as being highly manipulative. The mean duration of treatment was 62 months.

Seventy-eight of these women were followed for a 3-year period following discharge (10) during which 18% died and 12% were re-admitted to psychiatric services. Death was associated negatively with interpersonal (facet 1) scores from the PCL-R. Few recidivated, 14 by 3 years post-discharge and 24 at 11 years post-discharge. FAM total items, HCR-20$^{v3,}$ clinical items, and START vulnerability scores showed the highest predictive accuracy. Only six women were convicted of violent crimes in the 3 years following discharge, and 14 during 11 years post-discharge. These latter violent convictions were predicted only by HCR-20$^{v3}$ clinical scores and START vulnerabilities score (10).

Another study (11) examined all forensic psychiatric patients in Sweden in 2010, 15% of whom were women aged, on average, 41 years. Prior to admission, 85% of these women had previously been inpatients in psychiatric services, 51% had records of criminal convictions, and 25% convictions for violence. At the time of admission to forensic services, 39% of the women were homeless. Almost half (48%) of the women were diagnosed with schizophrenia spectrum disorders, 9% with mood disorders, and 17% with personality disorders. Most index offenses included some form of violence; 43% crimes related to life and death (e.g., murder, manslaughter, assault), 28% general dangerous crimes (e.g., arson, threat, violence against staff), and 12% liberty and peace (e.g., trafficking, trespassing).

A study in Ontario, Canada of all forensic admissions from 1987 to 2012 resulting in a disposition of Not Criminally Responsible on account of Mental Disorder reported that 14% (362) were women (12). Prior to this admission to forensic services, 91% of the women had been treated in psychiatric services, 65% as inpatients, and 36% had been convicted of crimes. At the time of the index offense, these women were aged, on average, 39 years, 13% of them were homeless, 42% had not graduated from high school, and 21% were employed. More than half (58%) of the index offenses were described as violent and 19% as serious violence. More than three-quarters (77%) of the women were diagnosed with a psychotic disorder, and 22% with mood disorders. Comorbid substance use disorders were

reported among 29% and indications of personality disorders among 27%. Another Canadian study provides a similar picture of female forensic patients (13).

Thus, female forensic psychiatric patients present mental disorders that include dysfunctions of emotion and cognition and low levels of psychosocial functioning, most commonly schizophrenia and BOPD, in addition to long histories of AAB and often, psychopathic traits. Most were treated in general psychiatric services before committing the crime that lead to admission to forensic services.

## FEMALE AAB IS HIDDEN FROM THE CRIMINAL JUSTICE SYSTEM

Among females presenting AAB, forensic patients are distinguished by having been prosecuted in the criminal justice system. Findings from a prospective longitudinal investigation, suggest that despite a long history of AAB, many women escape prosecution. The Dunedin Multidisciplinary Health and Development Study followed a birth cohort of ∼500 males and 500 females for more than 40 years, with repeated assessments of behavior, cognition, mental and physical health. At age 32, the males and females characterized by childhood onset AAB were engaging in serious violence and experiencing significant mental health, physical health, and economic problems. A greater proportion of the males (33%) than the females (3%) had been convicted of violent crimes, but 42% of the women and 10% of the males reported hitting a child. While 11.1% of the women reported engaging in violence toward others, informants reported that 47.1% of them had in fact engaged in such violence. Among the males, 30.6% self-reported engaging in violence, and informants reported that 26.7% had engaged in violence (2). Similarly, in a study of forensic patients in The Netherlands, the women had twice as many police contacts without convictions than the men (14). These findings, and others (3) strongly indicate that neither records of arrests or convictions fully capture AAB, especially among females. Women in forensic and correctional facilities may thereby represent a small, atypical, sub-group of females presenting AAB. Importantly, criminal prosecution is influenced by many factors aside from the accused's behavior. Consequently, studies measuring aggressive behavior are more likely to identify both etiological factors for AAB among females and factors promoting prevention and treatment.

We studied 96 teenage girls who consulted a clinic for substance misuse treatment, and their 89 mothers and 52 fathers (15). Forty-three (44.8%) girls reported engaging in at least one violent act (street fight; carried weapon; beaten someone; hurt someone with a weapon). Almost two-thirds (62.8%) of the violent girls and 34.0% of the non-violent were diagnosed with conduct disorder. Univariate comparisons showed that the violent girls, compared to the non-violent, were four times more likely to have a first degree relative with a substance use disorder, three times more likely to have a substance use disorder, three times more likely to have been abused by their mother, three times more likely to have been abused by peers, and two times more likely to have been sexually abused. The violent girls were characterized by significantly more risk factors than the nonviolent girls. Protective factors for violence included maternal warmth, attachment, and parents' attempted understanding.

We followed the girls who had presented conduct disorder for 5 years. At a mean age of 24 years, very few of them met criteria for Antisocial Personality Disorder (ASPD), although they reported significantly higher rates of aggressive behavior than a matched sample of healthy women. Few had graduated from high school, 59% were unemployed, and 48% had given birth on average 10 years earlier than women in Stockholm. Brain scans showed that the women with a history of childhood conduct disorder, as compared to the healthy women, displayed abnormalities of gray and white matter structures even after adjusting for past and current comorbid disorders and maltreatment (16, 17). Both in adolescence and adulthood, the women with prior conduct disorder showed higher levels of psychopathic traits than the healthy women but lower than scores reported for female offenders. Yet, psychopathic traits were associated with abnormalities of neural white matter structures, and notably, the interpersonal facet (glibness, grandiosity, and manipulation) was associated with a white matter abnormality previously observed in adult male offenders presenting the syndrome of psychopathy (18). Thus, in females, conduct disorder prior to age 15 was associated with aggressive behavior from childhood onwards, low academic achievement, by mid-adolescence psychopathic traits higher than levels reported among healthy women that stayed stable for the next 5 years, unemployment, early child birth, neural abnormalities of both gray and white matter, but not diagnoses of ASPD. Thus, female AAB as previously noted remains hidden from view, even though these girls/women display abnormalities of brain structure and functioning (19), endure physical and sexual victimization, hurt others, and fail to support themselves and their offspring.

## AAB ONSETS VERY EARLY IN LIFE

A recent review of aggressive behavior stated: "Men are found to use aggression more than females when studies focus on direct forms of aggression (e.g., physical or verbal aggression) and when the target of the aggression is an individual not known to the perpetrator. Conversely, females are found to use aggression more often than males when studies focus on indirect forms of aggression (e.g., psychological or social aggression) and when the target of the aggression is an individual known to the perpetrator" (20). Robust evidence from prospective, longitudinal investigations of birth and population cohorts conducted in different countries confirm that aggressive behavior is observed during the first year of life, that it increases to about the age of 4 years, then declines. All studies identify one group of individuals who display high levels of aggressive behavior through childhood, adolescence, and adulthood (20). In a representative sample of 1,183 Canadian children 12.5% of boys and 11.0% of girls were reported to present the highest levels of aggressive behavior and of indirect aggression from ages 2 to 8 years. Another 1% of boys and <0.63% girls presented high

aggressive behavior without indirect aggression and 0.18% of boys and 1% of girls presented indirect aggression with aggressive behavior (21). These same data showed that from 2 years of age onwards, among those presenting high, stable, aggressive behavior, there were more boys (53.6%) than girls (46.4%). From age 4 years, more girls (57.6%) than boys (42.7%) were on a high trajectory of indirect (relational) aggression. While trajectories of aggressive behavior remained relatively stable through adolescence, there was a large increase in the proportions of teenagers engaging in relational aggression. There is now a large body of evidence regarding bullying by both boys and girls (22). Other studies report that from toddlerhood through adolescence (∼5% of boys display high levels of physically aggressive behavior as do 1% of girls (23); for a review see (24). As for all types of aggressive behavior, across adolescence, stable high trajectories of both proactive and reactive aggression have been observed (20).

In the Dunedin study (25), comparisons were made of the males and females who presented conduct problems in childhood and whose AAB persisted across the life-span. At age three, within sex comparisons showed that those who presented early onset, persistent, conduct problems differed from other cohort members by displaying more neurological soft signs, and lower scores on the Bailey Motor Test, and in childhood lower IQ and reading scores. Boys, not girls, characterized by early onset, persistent, conduct problems also presented lower heart rate, uncontrolled temperament, and poor memory. From age 7 to 15 years, both females and males with childhood onset, persistent, conduct problems differed from same sex healthy peers as to three individual factors-low IQ, poor reading achievement, and ADHD symptoms, and seven parent characteristics-low socio-economic status, maltreatment and inconsistent parenting, family conflict, poor maternal mental health, low maternal IQ, and parents' criminality. Thus, individual and family risk factors for early onset conduct problems that remained stable across the life-span were mostly similar in males and females.

Callous-unemotional traits, a key antecedent of psychopathy traits, can be identified by age 2 or 3 years. At even younger ages, precursors of callous-unemotional traits are observed (26–28). Among toddlers, callous-unemotional traits are reduced by warm, positive maternal parenting. If not lowered, these traits provoke harsh parenting in the subsequent years that promotes AAB. A study of a randomly selected population sample in the UK estimated that close to half of both the girls and boys with conduct disorder presented elevated levels of callous-unemotional traits (29). These children were five times more likely than others with conduct disorder to show serious conduct problems 3 years later. Prevalence rates for elevated levels of CU traits have ranged from 10 to 32% in community samples and 21% to 50% in clinic-referred samples of children with conduct problems (30). Thus, while CU is observed by age 2 or 3 years, and predictors of CU by six or seven months of age, CU shows change during childhood, but stability in a small group. By adolescence, levels of psychopathic traits appear to be relatively consolidated in both males and females (31).

In a study of a large UK population sample of 9,462 twins, trajectory analyses of callous-unemotional traits rated by teachers at age 7, 9, and 12 years found that 3.4% of the children presented high stable callous-unemotional traits. Nineteen percent of these children were girls. The sub-group displaying high and stable callous-unemotional traits showed the highest levels of conduct problems prior to school entry and by early adolescence their families were described as chaotic, and their parents were using negative discipline (32). The moderate stability and resistance to change of callous-unemotional traits from age 7 to 17 was shown in a study of boys. Only eight of 65 family and individual factors that were examined modified stability of callous-unemotional traits, but only among boys with low, not high, psychopathy scores at age 13 (33).

The stability of conduct problems and callous-unemotional traits is further shown by a US study in which a large sample of US children, at age three, were divided into four groups: 1. no conduct problems, no callous-unemotional traits, no internalizing symptoms; 2. conduct problems alone; 3. conduct problems with callous-unemotional traits; and 4. conduct problems with callous-unemotional traits and internalizing problems. Membership in these groups remained stable up to age 15 (34). This study found no sex differences in the proportions of girls in the four groups. By contrast, other studies of children suggest that more girls than boys present conduct problems, callous-unemotional traits and anxiety, while studies of adolescents suggest that the group with conduct problems and callous-unemotional traits and low anxiety includes few females (34).

Children presenting conduct problems together with callous-unemotional traits and anxiety show heightened threat perception, and greater autonomic and central nervous system reactivity that triggers reactive aggression (35), and have more often experienced maltreatment than children presenting conduct problems and callous-unemotional traits but not anxiety (35–37). Further, changes in autonomic system reactivity following maltreatment vary as a function of callous-unemotional traits (35). Children presenting conduct problems, callous-unemotional traits, and anxiety are fearful, hypersensitive to threat (38), obtain lower than average intelligence scores, do poorly at school, show weak self-regulation (34), and present no deficits in recognizing or responding to emotional expressions (38, 39), despite being more behaviourally and emotionally dysregulated (38).

Importantly, conduct problems and callous-unemotional traits in young girls predict criminality. In a prospective study of 1,241 girls, we found that those rated by their teachers at age 6 as showing conduct problems and callous-unemotional traits were six times more likely than girls without such ratings to be convicted of a non-violent crime by age 24, and those rated by their teachers as presenting callous-unemotional traits with or without conduct problems at age 10 were four times more likely to be convicted of non-violent crimes by age 24 (40).

Taken together, this evidence suggests that women sentenced to forensic psychiatric services may have a life-long history of AAB and the callous-unemotional traits of psychopathy. They have endured physical and sexual maltreatment, done poorly at school and in the job market, had multiple intimate relationships often with men presenting AAB and at a young age given birth

to children who are at risk for AAB from a young age. The AAB may often have been in response to real or perceived threat or to curry favor with friends or to achieve some other goal. Treatments and management strategies aimed at reducing AAB by these women are, in fact, tackling a life-long pattern of behavior and personality.

## MENTAL DISORDERS PRESENTED BY FEMALE FORENSIC PSYCHIATRIC PATIENTS

### Schizophrenia

While studies of forensic psychiatric samples show that most risk factors for violence are similar in males and females, for example similar prevalence of childhood conduct problems (41), clinical factors are more strongly linked to aggressive behavior in females (3, 4). Yet, studies of female forensic patients have not generally focused on aspects of their mental disorders that may be linked to AAB. Schizophrenia is a potent risk factor for violent offending among both females and males (41). While fewer women than men with schizophrenia commit crimes, schizophrenia increases the risk of violent offending to a greater extent among females than males. For example, we examined a birth cohort composed of all the 358,180 persons born in Denmark from 1944 through 1947 followed until they were in their mid-forties. Official criminal records indicated that the risk of a violent crime was elevated 23.2 (14.4–37.4) times among the women with schizophrenia treated in psychiatric services as compared to women never admitted to a psychiatric ward, a much greater increase than that of five found among males (42). These findings suggest that schizophrenia confers a very elevated risk for violence in females. In other words, very few females are convicted of a violent crime, but among those few who develop schizophrenia a much larger proportion are convicted of a violent crime. However, the etiology of AAB among women with schizophrenia may be the same as it is for men with schizophrenia.

As presented in **Table 1**, comparisons of criminal convictions of women hospitalized in general psychiatry with diagnoses of severe mental illness (primarily schizophrenia) and general population samples of women in the UK, Sweden, and Denmark, again shows that the increase in risk conferred by illness is much greater for females than males. Severe mental illness was associated with a 17 fold increase in risk of a conviction for a violent crime in the UK, 11 fold in Sweden, and 6 fold in Denmark (43). But as noted, many incidents of aggressive behavior, particularly among women, do not lead to criminal prosecution. For example, using the definitions of aggressive behavior and serious violence from the MacArthur study of violence (44), we examined aggressive behavior of females in three different studies that were similar as to age and that had used the same instrument to collect information on aggressive behavior and violence (43). In a UK sample of inpatients with severe mental illness (primarily schizophrenia) 39% had engaged in aggressive behavior and 19% in serious violence (43) in the past 6 months, in a trial of antipsychotic medications that recruited only stable patients with schizophrenia, 21% had engaged in aggressive behavior and 3% violence in the past 6 months (44), and among the patients with schizophrenia in the MacArthur Violence study 44% reported aggressive behavior and 18% violence in the past 10 weeks (43). Even prior to first admission for psychosis, approximately one-third of patients are reported to have engaged in aggressive behavior (45). A meta-analysis reported that male sex was associated with any violence, but there was no sex-difference when examining incidents of serious violence (46). People with schizophrenia are at high risk for physical victimization, more so if they are engaging in aggressive behavior (47). The risk of such victimization varies across countries (48).

Thus, while fewer women than men, with schizophrenia, are convicted of crimes and engage in aggressive behavior toward others, schizophrenia confers a greater risk for offending and for aggressive behavior among women than among men. This finding may suggest that schizophrenia symptoms and the associated features such as cognitive, emotional, and psychosocial functioning, are more related to aggressive behavior in women than men. Further, this finding implies that the effective treatment of all aspects of the illness is needed in order to reduce aggressive behavior.

People who develop schizophrenia present multiple difficulties from early childhood onwards. By age two, they show motor abnormalities such as delays in walking and talking and specific neurological soft signs (49), in the subsequent years there is further evidence of motor deficiencies, neurological signs, receptive language deficits (50), lower than average IQ (51), and by mid-childhood psychotic-like-experiences (52). Additionally, a significant minority present conduct disorder. These children are more likely than healthy children to experience maltreatment by adults and by peers (53). Prospectively collected data indicate that 40% of individuals who develop schizophrenia presented conduct problems in childhood (54), while retrospectively collected data from samples of women and men with schizophrenia report that ∼20% had a history of conduct problems since childhood. Some estimates among male patients with severe mental illness are as high as 42% presenting childhood onset conduct problems (43). We found that among males, symptoms of conduct disorder were linearly, and positively associated with numbers of convictions for any crime and for violent crimes after controlling for substance misuse (55). In a sample of male and female patients with severe mental illness, we found no sex difference in the link between childhood/adolescent conduct disorder and crime or aggressive behavior after controlling for substance misuse (56).

Females who are developing schizophrenia are hidden among adolescents presenting AAB. For example, we conducted a follow-up study of 1660 males and 332 females who had been treated at the only clinic for adolescent substance misuse in a large urban center in Sweden from 1968 to 1971. When they consulted the clinic, one-third of the females had not used illicit drugs, two-thirds had used alcohol only experimentally or not at all, and 61% had no record of delinquency. Statistics Sweden created a general population sample by randomly selecting for each individual in this clinical sample an individual in the

**TABLE 1 |** Odds ratios for criminal convictions up to age 30 comparing inpatient samples with severe mental illness to general population samples from three countries.

| | UK inpatient sample compared to UK general population sample[A] | Swedish inpatient sample compared to Swedish population sample[B] | Danish inpatient sample compared to Danish population sample[C] |
|---|---|---|---|
| Men | | | |
| Conviction for a criminal offense | 2.72 (1.90–3.90) | 2.15 (1.39–3.33) | 2.59 (2.37–2.84) |
| Conviction for a violent criminal offense | 4.86 (3.30–7.16) | 4.74 (2.84–7.91) | 2.49 (2.10–2.95) |
| Women | | | |
| Conviction for a criminal offense | 2.85 (1.63–4.98) | 3.78 (2.13–6.69) | 3.48 (2.96–4.08) |
| Conviction for a violent criminal offense | 17.24 (8.18–36.32) | 11.18 (4.30–29.13) | 5.89 (3.60–9.63) |

*A. General population statistics available from Chapter 3 of Home Office's 'Criminal careers of those born between 1953 and 1978' document, available from http://www.homeoffice.gov.uk/rds/pdfs/hosb401.pdf.*
*B. Hodgins S. Mental disorder, intellectual deficiency, and crime. Evidence from a birth cohort. Arch Gen Psychiatry (1992) 49:476–83. doi: 10.1001/archpsyc.1992.01820060056009.*
*C. Hodgins S, Mednick SA, Brennan PA, Schulsinger F, Engberg M. Mental disorder and crime. Evidence from a Danish birth cohort. Arch Gen Psychiatry (1996) 53:489–96. doi: 10.1001/archpsyc.1996.01830060031004.*
*Odds ratios were calculated from data as article presents relative risk ratios.*
*Table from: (3).*

general population with the same sex, month, year, and place of birth. All participants were followed to the age of 50 using national health, criminal, and social service registers. Among the females in the clinical sample compared to those in the general population sample, the risk (expressed as odds ratio) of developing schizophrenia was 8.55 (2.55–28.66) by age 50, much higher than the risk for males 3.79 (2.38–6.05) (57). A similar analysis of younger sample lead to the same results (58).

Thus, by the time a women presenting schizophrenia is admitted to a forensic psychiatric service she typically has a long history of motor, cognitive, and emotional difficulties, and most will also have a history of AAB.

Studies have shown that elevated positive psychotic symptoms during an acute episode, for example at admission to a psychiatric ward, are associated with aggressive behavior in almost all patients. When patients take antipsychotic medication, psychotic symptoms decline as does the aggressive behavior. For example, one study of inpatients included 67 female and 155 male patients with schizophrenia or bipolar disorder. There was no difference in chlorpromazine equivalents of antipsychotic medications taken by the women and men. Thirty-one percent of the women and 43% of the men engaged in physical assaults in the 2 months after admission. Women tended to have a higher total number of physical assaults than men during the initial month after admission, and a faster decrease in assaults during the second month. Although 41% of the males had engaged in aggressive behavior in the community prior to admission, this was true of only 25% of the women (59).

When positive symptoms are lowered by antipsychotic medication, other factors such as an early onset pattern of AAB emerges as the one of the strongest predictors and correlates of AAB (60–62). However, positive psychotic symptoms and aggressive behavior are intricately linked in ways that still elude understanding. A recent randomized controlled trial measured the effects of different antipsychotic medications on positive symptoms and aggressive behavior of men with schizophrenia, half of whom presented a history of AAB since childhood. Among violent patients with schizophrenia, those with conduct disorder prior to age 15, as compared to those without this past disorder, showed greater reductions in aggressive behavior and similar reductions in positive symptoms when taking clozapine as compared to haloperidol. Similarly, a stronger lowering of aggressive behavior was shown among patients with than without prior conduct disorder when taking olanzapine as compared to haloperidol (63). Interestingly, the medication, clozapine, that was most effective in lowering both positive symptoms and aggressive behavior among the men with schizophrenia and a childhood history of AAB, impacts the neurotransmitter serotonin that is strongly linked to aggressive behavior (64). Further, among men with schizophrenia, those with a childhood onset of AAB present distinctive neural differences as compared to those with no childhood history of AAB and some neural characteristics similar to men without schizophrenia with a childhood history of AAB (65). There are no similar studies of females with schizophrenia who present AAB. However, since neither the etiology of schizophrenia (66) nor AAB (67) varies by sex, it is likely that neural abnormalities observed among men presenting schizophrenia and AAB also characterize women with schizophrenia and AAB. More knowledge of the interplay of aspects of schizophrenia and AAB from early childhood onwards is urgently needed.

## Borderline Personality Disorder

As noted above, another disorder commonly diagnosed among female forensic patients is BOPD. The prevalence of BOPD is estimated at 0.7% to 2.3% with most studies reporting a similar prevalence in women and men, but much higher treatment seeking among women (68). Reactive aggressive behavior is recognized as a key feature of BOPD. The aggressive behavior of persons with BOPD is reported to be associated with affective

dysregulation, impulsivity, threat hypersensitivity, and empathic functioning and the associated neurobiological abnormalities (69). Women, like men with BOPD, also display traits of psychopathy (70, 71) and/or ASPD (72) that are associated with aggressive behavior. Thus, some of the mechanisms underlying aggressive behavior among women presenting BOPD may be directly related to BOPD, while others are associated with traits of ASPD and psychopathy. The key to understanding the etiology of aggressive behavior among women with BOPD, and to identify effective treatments, risk management strategies, and prevention programs, may be furthering knowledge of the disorder itself.

As with females presenting AAB and those who develop schizophrenia, by the time women with BOPD are admitted to a forensic psychiatry service, they have a long history of difficulties. For example, in a prospective, longitudinal study of 2,232 British twins, at age 12, mothers rated items tapping three core features of adult BOPD: affective instability/dysregulation, impulsivity/behavioural dysregulation, and disturbed relatedness/interpersonal dysfunction. The children who obtained scores at the 95$^{th}$ percentile or higher of the cohort on the borderline personality disorder items were characterized by lower IQs, less well developed theory of mind, low self-control, high levels of impulsivity and externalizing and internalizing problems, and were seven times more likely than the children without these high scores to have experienced maltreatment. They were also more likely than the children without the borderline symptoms to present conduct disorder, depression, anxiety, and psychotic symptoms (73). By age 18, they presented a distinct personality characterized by narrow-mindedness, antagonism, distress, and poor impulse control, and elevated risks for conduct disorder, alcohol use disorder, cannabis use disorder, depression, generalized anxiety disorder, post-traumatic stress disorder, and suicide attempts or self-harm. Not surprisingly given these disorders, they had acquired low educational qualifications, were neither studying or working, smoked, were socially isolated, reported low life satisfaction, had records of criminality, and more physical and sexual maltreatment and crime victimization (74).

Another prospective longitudinal study of 2,450 US adolescent girls assessed clinical, psychosocial, and demographic factors, previously found to be associated with BOPD in late childhood, early and mid-adolescence. Nineteen predictors assessing depressive and anxiety symptoms, self-control, harsh punishment, and poor social and school functioning explained 33.2% of the variance in BOPD symptoms. Factors were identified that distinguished BOPD from conduct disorder and depression (75).

Thus, when women with BOPD are sentenced to forensic psychiatric treatment, they present a long history of emotional dysregulation, conduct problems, lower than average cognitive abilities, failure at school and at work, AAB, and criminality.

## THE ROLE OF MALTREATMENT

As reviewed above, young girls presenting AAB, and those developing schizophrenia or BOPD are at elevated risk for physical and sexual maltreatment by adults and peers. The high risk of victimization persists through adulthood. A Swedish study included 34,903 persons with schizophrenia, 29,692 with bipolar disorder, and a comparison group of 2,763,012 Swedish citizens without these disorders. Six "triggers" of violence were assessed: exposure to violence, parental bereavement, self-harm, traumatic brain injury, unintentional injuries, and substance intoxication. Within individual analyses were conducted to determine whether the "triggers" occurred in the week preceding the commission of a violent crime. The triggers were all associated with an increased risk of violent crime in each group, most strongly among persons with schizophrenia. The trigger most strongly associated with committing a violent crime was violent victimization that increased the risk of violent crime in the following week, 12 times among people with schizophrenia, and eight times among people with bipolar disorder and also among those in the comparison group (76). Aggressive behavior is strongly associated with physical victimization highlighting a vicious circle that likely onsets in childhood and persists across the life-span.

## CONCLUSION

There are few women in forensic psychiatric hospitals. They suffer from severe mental disorders that are associated with difficulties in multiple domains of functioning accompanied by AAB from early childhood onwards. While most females presenting a life-long history of AAB escape criminal prosecution, the few in forensic psychiatry did not. When they are admitted to general psychiatric services, little, if anything is done to assess, manage, and/or reduce their AAB. Yet, effective treatment at first episode for psychosis could prevent much suffering and harm to others. Knowledge is urgently needed to identify treatments that effectively reduce the symptoms of their mental disorders, increase their level of psychosocial functioning, and reduce their AAB. The research strategy most likely to provide knowledge that would improve the effectiveness of treatment for such women would focus on studies of clinical samples of females with schizophrenia or with BOPD, comparing those with and without AAB. Such studies also have the potential to yield findings about the association of the mental disorder symptoms and AAB.

Current evidence strongly suggests that the factors associated with the mental disorders of women who end up in forensic services are intricately connected with their AAB across developmental stages. The available evidence also shows that the antecedents of these women's mental disorders and AAB emerge very early in life. Aggressive behavior and callous-unemotional traits, motor and language delays, low IQ, emotion dysfunction, and parents presenting AAB and/or mental health problems providing harsh and ineffective parenting are evident prior to school entry such that by age six regular classroom teachers can identify those at elevated risk of adult criminality. Findings from prospective, longitudinal studies already provide a wealth of evidence that could be used to inform childhood prevention programs. Interventions that succeeded in reducing aggressive behavior, impulsivity, and emotion dysregulation in childhood would allow for greater academic success, despite lower than average intelligence, and interventions in early adolescence could

prevent substance misuse that would increase the likelihood of completing work training and employment.

Although AAB by females is hidden from view, the consequences for children and others cared for by women, such as the elderly, are substantial and destructive. These women play a critical role in the intergenerational transfer of antisocial behavior as shown by the fact that their offspring present an elevated risk of AAB (77). Females who present AAB disproportionately mate with antisocial males, give birth at a young age, transmit genes that confer vulnerability for antisocial behavior, provide harsh parenting and other adverse rearing conditions to their offspring (77). Thus, preventing the development of women who are treated in forensic psychiatric services will take several generations. Interventions aimed at reducing teen pregnancy would contribute to achieving this objective. Parents who themselves present antisocial and/or aggressive behavior are at increased risk to engage in non-optimal parenting (78), and to physically maltreat their children (24, 78–80). When children are born to young women with histories of AAB, nurse visitation programs can identify mothers who would benefit from parenting programs that reduce conduct problems in their offspring.

Public and mental health policies that allow females to develop such profound disorders and to harm so many victims before sentencing them to forensic care are cruel and wasteful. Science can contribute to prevention and to the reduction of suffering.

## AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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# Mental Disorders and Intimate Partner Femicide: Clinical Characteristics in Perpetrators of Intimate Partner Femicide and Male-to-Male Homicide

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Intimate partner violence against women is a global and persistent public health issue. An extreme manifestation of this problem is intimate partner femicide (IPF), the killing of a woman by a male partner. While declining trends of homicide rates have been observed over decades, rates of femicide and IPF have remained stable. Yet, IPF as a phenomenon has until recently been fairly invisible in Europe, why research from the European countries on rates and characteristics of IPF has been relatively scarce. One area of research, particularly in need of further scrutiny, is to what degree perpetrators of IPF suffer from mental health conditions, and what the clinical features are. The objective of present study was to add to the existing literature by investigating prevalence and types of mental disorders in perpetrators of IPF, and to compare with male-to-male homicide (MMH) perpetrators. Our aim was also to examine life-time contact with psychiatric services, and, with missed opportunities in mind, contacts shortly preceding the homicide. With a retrospective design, this population-based study includes all solved cases of male-perpetrated homicides against intimate female partners (IPF) and other males (MMH) committed in Sweden between January 2007 and December 2009. Primary and secondary psychiatric diagnoses based on ICD, version 8, 9 or 10 from psychiatric inpatient as well as outpatient care have been retrieved. In order to identify mental disorders in perpetrators during commission of the homicidal offense, we also retrieved diagnoses from forensic psychiatric evaluations. Our results demonstrate that approximately one-third of the perpetrators, irrespective of homicide type, had been diagnosed with a mental disorder (excluding substance related disorders) at some point in life. Diagnosis of substance related disorders from psychiatric care was significantly more common in MMH perpetrators (37%) compared to IPF perpetrators (15%). Similarly low rates of major mental disorder were found in both groups (11%) when aggregating life-time diagnoses and diagnoses during commission of the crime.

However, homicide-suicide in connection to the offense was relatively common in IPF perpetrators (20%). Thus, our study supports the notion that previous suicide attempts and suicide ideation are important indicators for predicting and possibly preventing IPF.

**Keywords: homicide, femicide, violence against women, intimate partner violence, offender, psychopathology, forensic psychiatry**

## INTRODUCTION

Violence against women perpetrated by intimate partners is a global and persistent public health issue, with detrimental short- and long-term consequences. It has been estimated that approximately one in four women worldwide have been exposed to intimate partner violence (IPV) (1). While Sweden continually has been positioned as one of the leading countries in Europe (2) and globally (3) in terms of gender parity, IPV still constitutes an urgent and extensive societal issue. In line with the global estimates, 25% of women aged 15 years and older in Sweden have been victimized of IPV (4). According to Swedish crime statistics, approximately one in five of all assaults that were reported to authorities in 2019 involved victimization by a current or former partner, in which 84% of these cases involved a female victim (5). An extreme manifestation of violence against women is intimate partner femicide (IPF), the killing of a female by a male intimate partner. A recent report from the Centers for Disease Control and Prevention, based on homicides in 18 states, highlighted that 55% of the homicides committed against women in the U.S. involved an intimate partner (6). Moreover, roughly 60% of all female homicide victims are killed by their intimate (opposite-sex) partners, while the corresponding figure for men is below 10% in Sweden (7) and Europe (8), respectively. As such, the phenomenon of homicides against intimate partners is a gendered crime.

IPF has until recently been a fairly invisible phenomenon in the European research field, why research from European countries on this topic has been relatively scarce (9). As such, research on trends in rates of IPF has been fairly limited (10). One of several reasons for this has been the insufficient data regarding offender-victim relationships (11). Thus, the European Institute for Gender Equality emphasize the importance of data collection on femicides by EU Member States, in which, for example, information on background demographics, the context of the killing and the offender-victim relationship is included (2). On a similar note, the United Nations Office on Drugs and Crime (UNODC) report that the global data on gender-related killings of women and girls is of insufficient quality, leading to challenges in understanding the scale of the problem and monitoring trends (12). Nevertheless, the current available research demonstrates that rates of IPF tend to remain relatively stable over time in comparison to the overall homicide rates (9, 10, 13, 14).

The causes to intimate partner violence and IPF are complex; factors that increase or decrease risk appear on multiple levels and interplay (9, 15, 16). As demonstrated in Bronfenbrenner's Social Ecological System (17), which was first developed to study child development, relevant factors range from macro- to individual level. On macrolevel, factors such as gender inequality, public awareness and legislation may have an impact on intimate partner violence and IPF. On a community level, access to services, such as domestic violence resources, and norms within the community that support violence against women can contribute to the levels of risk. Factors at the interpersonal level include state and status of the intimate relationship, poverty and other family influences, such as child custody matters or presence of a stepchild. Lastly, there are individual-level risk factors, that is an individual's biological or personal history that influence the risk of becoming a perpetrator or victim. These factors, for example, relate to individual attitudes, mental health, substance abuse, and history of violence (9, 18). The focus in the present study is on individual-level factors in perpetrators, related to mental and substance use disorders.

Identification of risk factors specific for IPF is of great importance, as it enables the possibility to predict and to identify individuals at risk of greatest harm. Factors pertaining to different forms of previous IPV have been identified as the strongest risk factors for IPF (19–21). For example, the study on risk factors for femicide in abusive relationships by Campbell et al. (19) identified previous threats with a gun, stalking, forced sex and abuse as significant risk factors for IPF on bivariate-level. On a similar note, a recent meta-analysis identified history of non-fatal strangulation, previous rape of the victim, controlling behaviors, threat with a weapon, and previous threats to harm the victim as risk factors for IPF (21). All which tap in to different forms of previous IPV. In addition, direct access to a gun has been identified to be an independent and strong risk factor for IPF (19, 21). A cross-national study, involving data from 15 nations, indicates a five-fold higher risk of IPH (regardless of gender) when the perpetrator has direct access to a gun (22). However, a recent study from Spain did not identify previous reports of IPV or gun threats as independent risk factors for IPF (23). Moreover, men who kill intimate partners tend to be particularly possessive; demonstrated by controlling behaviors, jealousy and stalking (23–26), and a high proportion of IPFs are motivated by separation and/or jealousy (27). Separation, involuntary for the perpetrator, has been identified as a circumstance that elevates risk for IPF (24–26), and the level of risk is especially increased if the victim has a new partner (19). It is however important to keep in mind that women may leave as a response to IPV that escalates to a dangerous level (28).

Overall, factors related to perpetrators are particularly important when assessing risk for IPF (20). Unemployment has been identified as one of few risk factors related to sociodemographic background (29, 30). On a similar note, the perpetrator having economic or work-related problems in the past 6 months has been identified as one of the most important risk factors in a recent study (23). It has also been emphasized

that suicide ideation and suicidal thoughts ought to be considered important in terms of risk for IPF (13, 23, 31), and it has been found that the suicide rate is four times higher in IPF perpetrators compared to perpetrators of other homicide types (32).

Mental disorders and substance use disorders have been identified to be risk factors for future IPV and IPF perpetration (19, 23, 33–35). However, the literature is somewhat unclear in what types of mental disorders actually pose an increased risk of severe or lethal violence against an intimate partner. Overall, aspects concerning clinical features in IPF perpetrators are under-researched and in particular need of further scrutiny (29).

Findings from a meta-analysis on risk factors for male IPF perpetration suggest that substance abuse by perpetrators significantly increase the risk of IPF, while history of mental health issues was found to be a significant but weaker risk factor (21). A consecutive case series of all intimate partner homicides and other adult domestic homicides in England and Wales between 1997 and 2008 reported that approximately one-third of all intimate partner homicide perpetrators (including both genders) had a lifetime diagnosis of a mental disorder, and the most common diagnosis was affective disorder (36). In terms of symptoms of mental disorder at the time of the intimate partner homicide, it was reported that 20% of the perpetrators had symptoms of mental disorders, 13% involved symptoms of depression and 7% involved symptoms of psychosis (36). In contrast, findings from a Swedish population-based study on homicides committed in Sweden between 1990 and 1999 concluded that a profound majority of the IPF perpetrators were mentally disordered, and that every third offender was psychotic at the time of the offense (32). Another register-based case-control study, involving men who had killed intimate partners with whom they had biological children, investigated psychiatric and criminal risk factors, and risk estimates relative to matched population controls (37). Major mental disorder, in their study defined as psychotic, personality and affective disorders, was found to be a strong independent risk factor, in which affective disorders were predominant (37).

Perpetrators of IPF have been suggested to be positioned in the middle of a psychopathological continuum; perpetrators of domestic homicides that involve non-intimates are more likely to exhibit psychopathological traits, while perpetrators of homicides involving acquaintances and strangers are less likely to be characterized with such attributes (27, 36, 38). However, the empirical findings regarding comparisons between IPF perpetrators and other homicides perpetrators are inconsistent. While some studies either demonstrate that perpetrators of IPF had been equally troubled (39) or more troubled (40) with regards to history of mental disorders, other findings even demonstrate that IPF perpetrators are *less* mentally troubled in some aspects. For example, a nationwide Finnish study reported that psychiatric contact before 18 years of age; antisocial personality disorder and drug abuse decreased the odds for IPF, as did psychoses and being assessed as legally insane (41).

Overall, studies on clinical features involving IPF perpetrators are relatively few and inconsistent. The reported prevalence rates of mental disorders vary between 10% (42) and 80% (32). We intended to address this gap of knowledge by investigating prevalence rates and types of mental disorders in perpetrators of IPF, and compare with male-to-male homicides (MMH). Our aim was to detect both longstanding illness and sudden onset of disorders. Doing so, we examined both diagnosis at some point in life prior and in connection to the offense. We also examined whether they had recent contact with psychiatric services, with missed opportunities in mind.

# METHODS

## Sample Description

The present study is part of a larger project, in which a database called Forensic Homicide Database was manually created, incorporating all homicides in Sweden within a limited time frame (January 1st, 2007, through December 31st, 2009) [e.g., (7, 43–45)]. The nationwide and retrospective dataset is based on comprehensive and extensive information from various sources, that has been manually linked and systematically coded. Three national registries and police files were used to extract data on perpetrators and victims. In Sweden, a unique personal identification number is provided to all Swedish citizens, which enables linkage of registries. A forensic medicine registry by the National Board of Forensic Medicine provided data on victims who had died as a result of homicide. Victims and perpetrators were manually linked based on the police and court files, which also revealed the victim-perpetrator relationships. The database includes sufficient number of incidents in order to detect generalizable patterns and subtypes, however limited enough to be manageable and enable high-resolution details in which the complexity can be captured.

The adopted definition of homicide is in line with European research (46) and corresponds to intentional criminal acts of violence by one or more human beings resulting in the death of one or more other human beings. The definition holds cases of murder, manslaughter, infanticide, and finally aggravated assault/robbery *in combination with* causing another person's death. In terms of defining IPF, the present study refers to homicide against women in heterosexual relationships, in which the couples were or previously had been married, engaged, cohabitants or boyfriend-girlfriend.

The clearance rate for homicide incidents in Sweden during the study time was 87%, where a solved case denotes incidents that involve a perpetrator who has been charged or convicted, or where a prosecutor has identified the perpetrator(s) who could not be charged (for example if perpetrator has committed suicide or has gone missing). The unsolved cases of homicide consisted of 17% female victims and 83% male victims. For the purpose of present study, male-perpetrated homicides against intimate partners (i.e., IPF) were included, and compared to male-perpetrated homicides against other males. As such, male-perpetrated homicides against non-intimate females were omitted from the analyses, which is in line with previous similar studies (47, 48). Overall, the nationwide sample consist of 179 incidents of male-perpetrated homicides; 46 cases (26%) of IPF and 133 (74%) cases involving MMH. IPF perpetrators were significantly older ($Mdn = 43$ years) than perpetrators of MMH ($Mdn = 29$ years), $U = 1{,}442$, $p < 0.001$. In terms of country of

birth, 59 % ($n = 27$) of IPF perpetrators and 68 % ($n = 90$) of MMH perpetrators were born in Sweden $\chi^2$, (1, $N = 179$) = 1.2, $p = 0.270$ (for a more detailed sample description see (43)).

## Measures

In order to identify psychiatric diagnoses prior to the index crime, the National Patient Register (NPR) from the National Board of Health and Welfare was used. The psychiatric inpatient registry provides all primary and secondary discharge diagnoses, with a nationwide mandatory documentation and county participation since 1987, and the psychiatric outpatient registry holds primary and secondary outpatient diagnoses, in which nationwide coverage was reached in 2001. The retrieved data from NPR consisted of information regarding dates (including admission and discharge dates for inpatient care) and diagnosis. The psychiatric diagnoses are coded according to the 8th, 9th, and 10th editions of the International Statistical Classification of Diseases and Related Health Problems (ICD; 1969e1986, 1987e1996, 1997e). Information was available on individuals treated both in psychiatric inpatient and outpatient facilities, in which some had been treated in both settings.

The National Board of Forensic Medicine is a governmental authority under the Ministry of Justice that is responsible for performing forensic psychiatric evaluations (FPE), requested by the courts to assess whether the offender suffered from a Severe Mental Disorder[1] (SMD) in commission of the offense. During a pre-trial process, if it is suspected that the perpetrator may have suffered from a SMD at the time of the offense it is mandatory for the perpetrator to be subjected to an FPE. Additionally, with regard to severe crimes, such as homicide offenses, the court is more inclined to require an FPE. Firstly, the perpetrator is referred to a minor FPE (also called a §7-assessment in Sweden), an hour-long clinical assessment conducted by a specialist in psychiatry, with the objective of screening for indications of whether the perpetrator committed the crime under the influence of a SMD, and whether there is a need to continue with a major FPE. An FPE is conducted by a multidisciplinary team (forensic psychiatrist, clinical psychologist, social investigator and ward staff). When the suspected perpetrator is in custody the FPE is performed during 4 weeks on average and the perpetrator is admitted to a specific evaluation unit as an inpatient. The FPEs are based on observations, extensive interviews and retrospective records. The final assessment gives recommendations to the court whether the perpetrator ought to be sentenced to prison or compulsory forensic psychiatric care.

In order to identify presence of mental disorders in commission of the offense, primary and secondary diagnoses were retrieved for all perpetrators who underwent a major FPE. In total, 52% ($n = 24$) of the IPF perpetrators and 53% ($n = 71$) of the MMH perpetrators were subjected to a comprehensive FPE. As there were perpetrators who committed suicide in connection to the homicide offense, some perpetrators could not be subjected to an FPE.[2] The diagnoses from the major FPEs were assessed according to the 4th text-revised edition of the Diagnostic and Statistical Manual of Mental Disorders (49), however; the registry retrieved was transformed and displayed according to the 10th version of ICD (50). Major mental disorder is defined as schizophrenia, schizoaffective disorder, bipolar disorder and/or depression with psychotic symptoms. Other diagnoses noticed were depression and anxiety, neuropsychiatric disorders including autism and ADHD, and other diagnoses (for example dementia, paraphilia, conduct disorder, stress reactions, adjustment disorders, Tourette syndrome, PTSD and intellectual disability). We also noticed personality disorders and substance abuse. The study was approved by the Regional Ethical Review Board in Stockholm, Sweden (Protocol-ID: 2010/1764–31/5).

## Statistical Analyses

The study has a descriptive and explorative approach, in which the Pearson's chi-square tests and, in variables with expected counts less than five, the Fisher exact tests were conducted for the categorical variables. In order to test the distribution of the continuous variable age, the Shapiro-Wilk test of normality was conducted, indicating deviation from normality. As such, Mann-Whitney U test was applied to analyze the age variable. Uncorrected probability values $< 0.05$, derived from two-tailed tests were regarded as statistically significant. Odds ratios (OR) were reported for categorical variables. A binary logistic regression was conducted in order to investigate timing of psychiatric inpatient and outpatient care. SPSS for Mac version 28 was used for all analyses.

# RESULTS

## Previous Contacts With Psychiatric Services

As illustrated in **Table 1**, 41% ($n = 19$) of IPF and 53% ($n = 70$) of MMH perpetrators had received inpatient and/or outpatient care from psychiatric services prior to the homicide offending, $\chi^2$, (1, $N = 179$) = 1.8, $p = 0.185$. It is also worth mentioning that 33% ($n = 15$) of IPF perpetrators and 41% [$n = 54$; $\chi^2$, (1, $N = 179$) = 0.9, $p = 0.708$] of MMH perpetrators had received inpatient psychiatric care. The time aspect, in which how recent the contacts with the psychiatric services were, is interesting from a point of view of missed opportunities of intervention. A somewhat higher (non-significant) percentage of MMH perpetrators (28%, $n = 37$) had consumed psychiatric care during the past year, compared to IPF perpetrators [17%, $n = 8$; $\chi^2$, (1, $N = 179$) = 2.0, $p = 0.160$]. However, looking in to psychiatric care in closer proximity to the homicide offense, our results demonstrate that 11% ($n = 5$) of IPF perpetrators and only 6% ($n = 8$) of MMH perpetrators had sought psychiatric service the same month as the offense ($p = 0.323$). With an even higher resolution, our results demonstrate that the corresponding figures for contact with psychiatric services the same week as the

[1]Severe Mental Disorder is a judicial term that holds (1) all psychotic states regardless of origin, (2) severe depression with suicidal ideation, (3) personality disorders with psychotic episodes, (4) mental disorders with marked compulsiveness with an impact on the social functioning, and (5) severe intellectual disability, severe dementia and severe brain damage.

[2]Taken this into account, the figures in which the homicide-suicide perpetrators have been excluded are 65% (24/37) of IPF perpetrators and 54% (71/131) of MMH perpetrators.

**TABLE 1 |** Clinical characteristics in intimate partner femicide (IPF) and male-to-male homicide (MMH) perpetrators prior to the incident (national patient registry).

| Variable | IPF | MMH | $\chi^2$ | *p*-value | Odds ratio (OR) | 95% confidence interval |
|---|---|---|---|---|---|---|
| | *n* (%) 46 (100) | *n* (%) 133 (100) | | | | |
| Any psychiatric care | 19 (41.3) | 70 (52.6) | 1.8 | 0.185 | 0.633 | (0.32–1.25) |
| Outpatient care | 11 (23.9) | 51 (38.3) | 3.2 | 0.076 | 0.505 | (0.24–1.08) |
| Inpatient care | 15 (32.6) | 54 (40.6) | 0.9 | 0.337 | 0.708 | (0.35–1.44) |
| Contact > year | 11 (23.9) | 33 (24.8) | 0.02 | 0.903 | 0.952 | (0.44–2.09) |
| **Contact < year** | **3 (6.5)** | **29 (21.8)** | **5.4** | **0.020** | **0.250** | **(0.07–0.87)** |
| Contact < month | 5 (10.9) | 8 (6.0) | F | 0.323 | 1.905 | (0.59–6.15) |
| Major mental disorder | 2 (4.3) | 11 (8.3) | F | 0.520 | 0.504 | (0.11–2.37) |
| Psychotic disorder | 1 (2.2) | 6 (4.5) | F | 0.679 | 0.470 | (0.06–4.01) |
| Bipolar and Schizoaffective disorder | 1 (2.2) | 5 (3.8) | F | 1.000 | 0.569 | (0.07–5.00) |
| Neuropsychiatric disorder | 2 (4.3) | 12 (9.0) | F | 0.524 | 0.458 | (0.10–2.13) |
| Depression/anxiety | 8 (17.4) | 22 (16.5) | 0.02 | 0.894 | 1.062 | (0.44–2.58) |
| Other diagnosis | 7 (15.2) | 24 (18.0) | 0.2 | 0.662 | 0.815 | (0.33–2.04) |
| Personality disorder | 1 (2.2) | 9 (6.8) | F | 0.456 | 0.306 | (0.04–2.49) |
| **Substance related disorder** | **7 (15.2)** | **49 (36.8)** | **7.4** | **0.006** | **0.308** | **(0.13–0.74)** |
| Any psychiatric diagnosis* | 14 (30.4) | 47 (35.3) | 0.4 | 0.545 | 0.801 | (0.39–1.65) |
| **Both psychiatric and substance related disorders** | **3 (6.5)** | **26 (19.5)** | **4.27** | **0.039** | **0.287** | **(0.83–0.99)** |
| **Homicide-suicide** | **9 (19.6)** | **2 (1.5)** | **F** | **<0.001** | **15.932** | **(3.30–76.97)** |

**Any psychiatric diagnosis including personality disorders excluding substance related disorders. Based on diagnoses from psychiatric outpatient and/or inpatient care.*
*The bold text indicates probability values less than .05 which are derived from two-tailed tests that were regarded as statistically significant.*

**TABLE 2 |** Binary logistic regression regarding timing of psychiatric outpatient and inpatient care in intimate partner femicide (IPF) and male-to-male homicide perpetrators.

| | *B* | SE | Wald | *P*-value | Odds ratio (OR) | 95 % confidence interval for OR |
|---|---|---|---|---|---|---|
| Contact > year | −0.251 | 0.417 | 0.363 | 0.547 | 0.778 | (0.343–1.762) |
| Contact < year | −1.421 | 0.649 | 4.802 | 0.028 | 0.241 | (0.068–0.861) |
| Contact < month | 0.377 | 0.615 | 0.377 | 0.539 | 1.458 | (0.437–4.866) |
| Nagelkerke R square = 0.059 | | | | | | |

offense are 7% ($n = 3$) in IPF perpetrators and 3% ($n = 4$) in MMH perpetrators ($p = 375$). Furthermore, two IPF perpetrators had been in contact with psychiatric services the same day as the homicide (related to dementia, respectively, substance use disorder). Results from a logistic regression (see **Table 2**) confirm these findings by showing a similar tendency. Contact with psychiatric services previously than or during the year of the offense were associated with lower odds for IPF, whereas contact during the month of the offense was associated with higher odds for IPF. However, this association was not statistically significant, conclusions should therefore be interpreted cautiously.

## Clinical Characteristics in Perpetrators

Diagnosis of a major mental disorder (i.e., schizophrenia, schizoaffective disorder, bipolar disorder and/or depression with psychotic symptoms) from psychiatric inpatient or outpatient care prior to the homicide offense was uncommon in IPF (4%, $n = 2$) and MMH perpetrators (8%, $n = 11$; $p = 0.520$). However, approximately every third perpetrator, irrespective of homicide type, had been diagnosed with a mental disorder prior to the homicide offense, in which substance related diagnoses had been excluded. Additionally, 15% ($n = 7$) of the IPF perpetrators had been diagnosed with a substance use disorder, which is significantly lower than in MMH perpetrators [34%, $n = 49$; $\chi^2$ (1, $N = 179$) = 7.4, $p = 0.006$]. Considering the combination of both psychiatric disorders and substance related disorders based on the NPR, our results demonstrate a significant difference between the two groups; 7% ($n = 3$) in IPF perpetrators and 20% ($n = 26$) in MMH perpetrators [$\chi^2$ (1, $N = 179$) = 4.3, $p = 0.039$].

With regard to major mental disorders in commission of the index crime, we investigated the psychiatric diagnoses in all IPF ($n = 24$) and MMH perpetrators ($n = 71$) who underwent a major FPE. Among these, four of the IPF perpetrators suffered from a major mental disorder during commission of the crime, in which two were related to psychosis. The corresponding figures in MMH perpetrators are eight and six. Overall, aggregating both life-time diagnoses (according to the NPR) and diagnoses during commission of the crime (according to the FPEs), it is demonstrated that major mental disorders was found in 11% ($n = 5$) of IPF perpetrators, and in 11% ($n = 15$) of MMH perpetrators: similarly low rates in both groups [$\chi^2$ (1,

$N = 179) = 0.006$, $p = 0.940$]. With regards to personality structure, there were eight IPF perpetrators and 13 MMH perpetrators who were diagnosed with a personality disorder (predominantly borderline and antisocial personality disorders). The findings on combination of psychiatric disorders and substance related disorders, after aggregating data from NPR and FPEs, demonstrate fairly similar rates between IPF perpetrators (22%, $n = 10$) and MMH perpetrators [27%, $n = 36$; $\chi^2$, (1, $N = 179) = 0.6$, $p = 0.476$].

A result differentiating IPF and MMH perpetrators is with regards to homicide-suicide; 20% ($n = 9$) of the IPF perpetrators committed suicide within 24 h after the incident, which is significantly higher compared to MMH perpetrators (2%, $n = 2$; $p < 0.001$). Among the nine IPF perpetrators who committed suicide, five had been visiting a psychiatric health service prior to the offense, in which two had the preceding contact within the same month as the homicide offense.

## DISCUSSION

Firstly, our objective was to contribute to the scientific literature regarding clinical characteristics in IPF perpetrators, by investigating the prevalence rates and types of mental disorders in IPF and MMH perpetrators, respectively. We were particularly interested in the prevalence rates of major mental disorders (i.e., psychoses, bipolar disorders, schizoaffective disorders or depressions with psychotic symptoms), both prior to and in connection to the homicide. Major mental disorders could be related to longstanding illness rather than sudden onset. Secondly, we intended to investigate the extent to which IPF and MMH perpetrators had preceding contact with psychiatric outpatient and inpatient services prior to the homicide. This approach helps to identify opportunities, or lack thereof, to prevent homicides in terms of perpetrators interacting with different authorities, such as the mental health services.

Our results demonstrate that ∼40% of IPF perpetrators had received mental health care at some point in life, prior to the offense. With regards to psychiatric inpatient care, our results are nearly identical to the findings by Weizmann-Henelius et al. (41), in which it was found that 32% of IPF perpetrators had been committed to psychiatric inpatient care. Considering recent contact with mental health services, Oram et al. (36) found that 14% had been visiting a mental health service during the same year, and 9% during the same month as the homicide. These findings are relatively similar to our corresponding figures of 17 and 11%, respectively. An even higher resolution, illustrated that three IPF perpetrators had contact with the mental health services the same week, in which two of these were discharged from psychiatric inpatient care the same day. Thus, despite small number of cases, our findings indicate that there are, in fact, some opportunities of risk assessment and intervention. Our study also highlights a tendency related to timing of psychiatric care; any psychiatric care was somewhat less common in IPF perpetrators in comparison to MMH perpetrators, however, among those who had received any psychiatric care, IPF perpetrators tended to have more recent contact with the mental health services. This could perhaps indicate some kind of crisis or worsened psychiatric state in these perpetrators, which introduces opportunities of intervention. However, this association was not statistically significant and the results should be verified in other studies.

In light of clinical characteristics, the study by Oram et al. (36) demonstrated that approximately one-third of all intimate partner homicide perpetrators had a lifetime diagnosis of a mental disorder, excluding substance use, in which affective disorders were predominant. Similarly, Bridger et al. (13) found that one-third of IPF perpetrators had diagnosis of a mental disorder, mostly involving depression. These findings are supported by the results in our study; while there was a low rate of major mental disorders, we found that ∼30% of IPF perpetrators had been diagnosed with any mental disorder (excluding substance use disorders) prior to the homicidal act, in which depression was predominant.

Previous comparable studies have highlighted that IPF and MMH perpetrators differ with regards to substance use disorders, in which IPF perpetrators are less likely to suffer from substance abuse (32, 39, 41). However, some research demonstrates high rates of chronic substance use disorders in IPF perpetrators (13). Based on perpetrators being diagnosed with a substance use disorder at a mental health service *prior* to the homicide offense, IPF perpetrators show significantly less adversity in this regard. However, when the data from the FPE was added, similar rates of substance use disorders were detected in IPF and MMH perpetrators. This could indicate that, rather than having less substance related issues, they may in fact be less likely to be diagnosed with substance use disorders, maybe due to not seeking help or the health care system not acknowledging the substance use in this group.

Considering personality disorders, it has been pointed out that overcontrolled-dependent men have been overlooked in terms of risk for IPF, and that the personality disorder most likely to be involved in IPF is men with dependent and passive-aggressive tendencies (51). In a similar vein, it has been concluded that psychopathic traits are rare in IPF perpetrators, and that they predominantly exhibit borderline/dysphoric traits (32). Considering the low tolerance for separation in borderline personality disorder (49), and involuntary estrangement being a common circumstance in these killing (19, 24), these findings may not be surprising. As such, the type of personality disorder could be a possible difference between IPF and MMH perpetrators, in which borderline personality disorder is more common in the IPF group, and antisocial personality disorder in the MMH group. However, the sample size was too small in order to allow satisfactory statical analyses between the groups. Nonetheless, our findings highlight existence of both borderline and antisocial personality disorders in IPF perpetrators. Moreover, our findings demonstrate that the frequencies of personality disorders in the FPEs were high; approximately one-third in both groups were diagnosed with a personality disorder, while they rarely had been diagnosed in outpatient and inpatient psychiatric care. This may suggest that personality disorders probably

are underdiagnosed in psychiatric care, and don't necessarily lead to treatment. It also reflects the deeper investigation in the FPE.

Major mental disorders, in present study operationalized as psychoses, bipolar disorders, schizoaffective disorders or depressions with psychotic symptoms, were relatively uncommon, even after aggregating information life-time diagnoses (from the NPR) and diagnoses during commission of the offense (from the FPEs). In total, 11% of homicide perpetrators, regardless of homicide type, had been diagnosed with a major mental disorder, prior or in connection to the offense. This percentage is considerably lower than the results found by Belfrage and Rying (32) demonstrating that every third IPF perpetrator is psychotic at the time of the offense, however, more in line with the findings by Oram et al. (36), indicating that 7% had suffered from psychosis. The inconsistencies between findings in current study and the findings elucidated by Belfrage and Rying (32) are probably explained by how the psychotic disorders were defined, as the latter study included all depressions in the definition of psychoses. Overall, statistics regarding mental disorders in homicide offenders vary significantly between studies, and there can be variations in diagnostic methods, making it challenging to obtain accurate prevalence rates (52). Another possible reason for the conflicting evidence may concern inconsistent definitions and insufficient operationalization of mental disorders, which hinders comparisons across studies (29, 53). A wide range of concepts have been used regarding mental conditions (e.g., mental disorder, mental illness, major mental disorder, and severe mental illness), and sometimes same concepts have been used for different conditions. Transparency in operationalizations of these concepts is therefore key, as is disaggregated presentation of the diagnoses since it enables comparisons across studies.

The rates of homicide-suicide have remained stable over time (12, 54), and are low in comparison to overall homicide and suicide rates, respectively (55). As has been found in previous research (32, 56), our findings highlight that the phenomenon of homicide-suicide is closely related to IPF; while one in five IPF perpetrators committed suicide in connection to the offense, suicide among MMH perpetrators was rare. As such, our study supports the notion that previous suicide attempts and suicide ideation are important indicators for predicting and possibly preventing IPF (23). The importance of mental disorders in homicide-suicides has been emphasized in previous research (57, 58). For example, in a sample of homicides committed in Spain, mental disorders were found to be four times more common in homicide-suicide perpetrators, compared to perpetrators of general homicides (55). As such, it has been theorized that the combination of mental disorders and a stressful event, like separation, is a plausible explanation for homicide-suicides in cases of IPF (55). It is, however, worth mentioning that different types of homicide-suicides have been identified; one type that is predominantly driven by homicidal intention, where the suicide is motivated by avoiding legal and social consequences, while the other type predominantly is related to suicidal intent, in which the homicide is an extension of the suicide (23, 59).

## Implications for Practice and Future Research

In national homicide death reviews, so called fatality reviews, possible missed opportunities of intervention and system gaps are identified and analyzed. Fatality reviews in some countries also identify risk factors, which may provide valuable information beyond prediction of repeated IPV (60), and shed light on possible risk factors unique for lethal violence. The aim of fatality reviews is to prevent future homicides by providing recommendations for improved practices, procedures and systems (9, 18). An annual report from the Domestic Violence Death Review Committee in Ontario, Canada (60) recommends that professionals within mental health services and addiction care receive training on risk factors for intimate partner femicide. They also encourage that presence of risk factors, such as depression and access to firearms, should lead to risk assessments, risk management and safety planning (60). The relevance of these recommendations is corroborated by the findings in present study, in which it has been demonstrated that a group of IPF perpetrators had recent contact with the mental health services prior to the offense. A study on intimate partner homicides in Norway, based on court documents and interviews with bereaved, illustrates that when individuals conveyed IPV related concerns to professional agencies, there was a tendency by professionals to not comprehend the urgency and level of risk, and did therefor not act on these reports (54). Moreover, a recent fatality review from Sweden (61) shows that even when the level of risk is comprehended, no contact is initiated with the law enforcement. Thus, it is of great importance that mental health professionals, as well as social service providers, inform the police in cases of potential danger, in which one should pay special attention to depressive and suicidal tendencies. Previous research has also shown that police officers have particular difficulty assessing aspects related to mental disorders in suspects of IPV (62), which suggests that training for professionals within the law enforcement regarding risk factors is warranted.

Given that clinical characteristics of mental disorders, substance use, and suicide are risk factor for IPF, and relatively prevalent among IPF perpetrators, accessible care and services targeting these issues may have a preventive effect. However, one identified system gap is that sufficient treatment for substance use and mental disorders had not been provided to perpetrators of IPF prior to the killing (61). In general, the health care system is an important piece of the puzzle in terms of prevention and intervention opportunities to combat IPV and IPF.

Risk assessment and management are critical components with regards to preventing IPV recidivism and IPF (23). There are, however, challenges related to prediction of IPF. For example, there are studies indicating differences between IPV and IPF (19, 24), in which IPF is considered more complex (23). Yet, most risk assessments have a global predictive target, intended to assess risk for IPV recidivism (23). Furthermore, since rare events are more difficult to predict, risk assessment tools targeting

IPF have lower predictive validity (63). Scholars have therefore recommended using two complementary risk assessment in order to increase the predictive capacity (64). Another important challenge worth highlighting is the lack of a single type of IPF perpetrator (23). Previous research indicates heterogeneity among IPF perpetrators (27), and who may display different risk indicators. In a similar vein, Dawson and Piscitelli (65) emphasize that future research on IPF risk factors ought to investigate certain combination of risk factors (i.e., clusters) instead of regarding these as independent of one another. For example, previous research demonstrates that the combination of psychiatric disorders and substance use disorders give the highest risk for violence (66). In present study, 22% of IPF perpetrators and 27% of MMH perpetrators displayed comorbidity of both psychiatric and substance use disorders. This new approach to risk factors, in which the combination of factors is considered, may improve risk assessment and management.

## Limitations

The present study is not without limitations. First and foremost, the relatively low rates of homicide in Sweden and, furthermore, the low rates of mental disorders within these subgroups, makes it challenging to sufficiently identify differences with regards to mental disorders and to use satisfactory statistical methods based on the limited time-frame adopted in present study. For example, one would preferably use a multiple logistic regression, in order to control for confounders. An additional limitation related to the time-frame is that the data is based on a sample from previous years. However, except for the extraordinary circumstances related to the Covid-19 pandemic, the rates and characteristic of IPF tend to be relatively stable over time (10), why the present findings ought to be of current relevance. For example, the overall rates of IPF have remained relatively stable in Sweden since the early 1990s, demonstrating a modest decline. Also, the majority of the characteristics in IPF perpetrators, such as ethnicity and criminal history, have remained stable over time (10). Furthermore, in spite of the obstacles related to statistical methodology, present study identifies descriptive data on approximately how common, or rare, various mental disorders are in a representative sample of perpetrators. On the other hand, the study would have been improved if diagnostic data from the primary health care was included, rather than restricting the data to diagnoses from mental health care, and would reasonably provide higher estimates. Furthermore, as the psychiatric outpatient registry is not as complete as the inpatient registry, there is a risk of underestimating the prevalence of mental disorders or exposure to mental health care. By using both inpatient and outpatient data, we optimize the chances of identifying these aspects. An additional limitation of the study is the lack of matched controls, facilitating comparisons to population figures in terms of prevalence rates of mental disorders.

It is also worth mentioning that a small proportion of the unsolved cases involved femicide (17%), and a previous study based on the current dataset has demonstrated that the unsolved cases predominantly involve young men who are criminally active (45). A methodological advantage of present study is the representative sample, since all perpetrators are convicted of their crimes in Sweden, regardless of their mental state during commission of the offense. This is especially fundamental when aiming to investigate mental disorders in these perpetrators, since the individuals who suffer from major mental disorders might be less likely to become convicted in some countries, and therefore tend to not be included in some datasets. Furthermore, present study includes homicide-suicide cases, which additionally improves the representativeness of the sample, considering the fact that a substantial proportion of IPF perpetrators commit suicide, and are important to include. On the other hand, this subgroup was not represented with regards to mental status in connection to the offense, as perpetrators who committed suicide in connection to the offense could not be subjected to FPEs. Although no conclusions can be drawn with regards to this, it is reasonable to assume that this subgroup is characterized by adversities related to mental disorders, such as depression and crisis reactions.

## Conclusions

Unraveling IPF perpetrators use of psychiatric services, and their clinical characteristics, can be essential for identification of high-risk individuals, and for understanding the prospects of efficient intervention. Our study indicates that there are possible opportunities of risk assessment and intervention, as some IPF perpetrators had recent contact with the mental health services prior to the offense. Overall, approximately one-third of all perpetrators had been diagnosed with a mental disorder at some point in life prior to the homicide, while only a minority of IPF perpetrators displayed characteristics of major mental disorders. On the other hand, homicide-suicide in connection to the offense was relatively common in IPF perpetrators. As such, our study supports the notion that previous suicide attempts and suicide ideation are important indicators for predicting and possibly preventing IPF.

# DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

# ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Regional Ethical Review Board in Stockholm, Sweden (Protocol-ID: 2010/1764–31/5). Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

# AUTHOR CONTRIBUTIONS

JS collected and linked all data and all authors (JS, SC, and KH) contributed in coding the data. SC conducted the statistical analyses and wrote the manuscript. All authors contributed in conceptualizing and operationalizing the study aim and approach, development and revision of the manuscript, and read and approved the submitted version.

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CONCEPTUAL ANALYSIS
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# Are Women Really Different? Comparison of Men and Women in a Sample of Forensic Psychiatric Inpatients

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**Background:** Women in detention remain a widely understudied group. Although the number of studies in women in prison has grown in the past decade, research on female forensic psychiatric inpatients has not increased, and women are in the minority in forensic psychiatry not only as patients but also as examinees. Consequently, most treatment manuals and risk assessments were developed in male samples and apply to male offenders. However, the same treatment and risk assessment rationale can be applied in male and female mentally ill offenders only if evidence shows that no relevant sex differences exist.

**Aims:** The aim of the present study was to examine a sample of male and female forensic psychiatric inpatients with substance use disorders and to compare the socio-demographic, legal, and clinical characteristics between the sexes.

**Methods:** The sample included 115 male and 61 female patients. All patients were in mandatory inpatient forensic psychiatry treatment according to section 64 of the German penal code.

**Results:** We found no significant differences between men and women in terms of educational status and vocational training. However, women were more often single and less likely to be employed full time, and they reported adverse childhood experiences more often than men. Regarding clinical variables, women appeared to be less likely to have a substance use disorder due to alcohol use and had more previous psychiatric treatments than men. Male patients were significantly younger on first conviction and detention, had more criminal records and served longer total penalties than female patients. Furthermore, men committed more violent crimes and women, more narcotics-related crimes.

**Conclusions:** The study identified sex-specific differences in forensic psychiatric patients that should be considered in the context of forensic therapy.

**Keywords: sex differences, forensic psychiatry, substance use disorder, violence, trauma**

## INTRODUCTION

In Germany, offenders with a substance use disorder may be ordered by the courts to be placed in a forensic psychiatric hospital in accordance with section 64 of the German penal code. Placement in such a hospital presupposes that the person's tendency to excessive consumption of drugs or alcohol is seen as a contributory cause of the delinquency and that there is a risk of further significant offenses as a result of this tendency.

The number of patients in forensic psychiatric care across Germany has been increasing almost steadily in the past few decades, from 1,373 patients in 1995 to 3,822 in 2014, but women account for only 4–6% of patients (**Figure 1**). A lower hospitalization rate for women is found also in other Western countries, in both forensic psychiatric institutions and prisons (1).

Socio-biologists explain the higher crime burden of men in particular by differences in chromosomal structure, hormonal makeup, or innate aggressive potential. In addition, differences are attributed to sex-specific socialization. Thus, women and men are assumed to resort to different behavioral patterns for resolving conflicts and to pursue different values. Nevertheless, some authors argue that criminal behavior by women is less likely to be detected and reported, that women are less likely to be convicted and that women who are convicted are more likely to receive a lighter sentence (2).

A central question in the research literature on sex and crime focuses on the applicability of traditional criminological theories to female offenders. Some researchers reject the assumption that the same factors can explain both male and female criminality. They believe that standard theories, which are mostly male centered, overlook factors specific to female criminality. To date, the psychosocial risks of female offenders identified in mostly qualitative studies are childhood victimization (3)—which is associated with mental illness, substance abuse, depression, and anxiety (4, 5)—and extreme poverty, homelessness, and educational and vocational problems (6, 7). In turn, other findings, largely from empirical research, suggest that the same explanatory factors (e.g., educational factors, occupational skills, social ties) explain criminal behavior equally in men and women (8).

Comparing the legal characteristics of imprisoned men and women shows that women are less often convicted of violent offenses and more often convicted of property crimes or embezzlement. Violent offenses committed by women are mostly indirect or reactive and tend to occur within social relationships, whereas those committed by men tend to be antisocial, instrumental, or sexually motivated or to be due to peer pressure (9, 10). However, although men generally appear to be more physically aggressive than women with respect to arrests for violent offenses, several studies suggest that psychiatric disorders reduce the sex difference (11). For example, in forensic patients with severe mental illness (no substance use disorders), Nicholls et al. (11) found no differences in the frequency with which women and men were placed in housing because of a violent offense or in the age at placement, type of employment before placement, or previous psychiatric treatment. However, men had more criminal records and women were more likely to be in a partnership. Similarly, de Vogel et al. (12) examined sex differences in forensic psychiatry and showed that women were more likely than men to have committed homicide and arson and to have been involved in violent incidents during treatment but less likely to have committed sexual offenses. Both men and women had high rates of childhood victimization, but women were more likely to report sexual abuse. Krammer et al. (13) studied only women in forensic psychiatry and showed that two-thirds were not in a committed relationship, more than half had not completed high school, three-quarters were without a stable job before detention, nearly half grew up with an alcoholic parent, slightly more than half experienced violence or neglect in childhood, and about a quarter had been sexually abused.

The present study focuses on offenders with substance use disorder. There are some factors that are considered to be possible causes for both sexes. These include in particular addiction in the family of origin, own and family's low level of education, low income/poverty of parents, negative childhood events (such as out-of-home care, loss of an important caregiver), mental, physical, sexualized violence experiences in childhood and adolescence, prolonged performance failure, peer group as a substitute for family, lack of self-esteem and a disturbed or poorly developed gender identity (14–16). However, there are also differences in genesis between men and women. Basically, it can be said that women and girls tend to choose substances that are considered less dangerous (light cigarettes, painkillers, sleeping pills and tranquilizers, "light" alcoholic substances, such as sparkling wine, wine, beer, alcopops, cannabis), which can be consumed inconspicuously, in an adapted manner (17). Addicted women often live in stable "addictive partnerships" (about 77%), that is, the partner is also an addict. Men, on the other hand, very often live in relationships in which the partner does not have an addiction problem (only about 33% of addicted men live in so-called addiction partnerships) (14, 17). Overall, addicted women are more excluded from the social environment than men and more often abandoned by their partners. Women are disproportionately affected by experiences of prostitution and violence. Experiences of violence reinforce the feeling of helplessness and worthlessness and can lead to increased consumption of addictive substances. It can be assumed that an estimated one third of drug-addicted women regularly engage in drug prostitution (14). In addition, it is not uncommon for women to exhibit psychosomatic reaction patterns (e.g., depression, anxiety disorders, post-traumatic stress disorders, eating disorders) even before substance-related abuse behavior or a dependence disorder (18, 19). Boys usually start using legal addictive substances (tobacco, alcohol) earlier than girls. Boys usually make their first experiences with illicit drugs in the context of groups of boys of the same age with similar previous experiences. On average, men consume more often and in larger quantities than women, and this does not only apply to illicit drugs. The forms of consumption are usually harder and riskier. Consumption usually takes place in public spaces and is loud and conspicuous. It is not uncommon for consumption to be coupled with a high propensity to violence and delinquency (especially in connection with the procurement of illegal drugs). It is often a matter of demonstrating power and strength, which can be

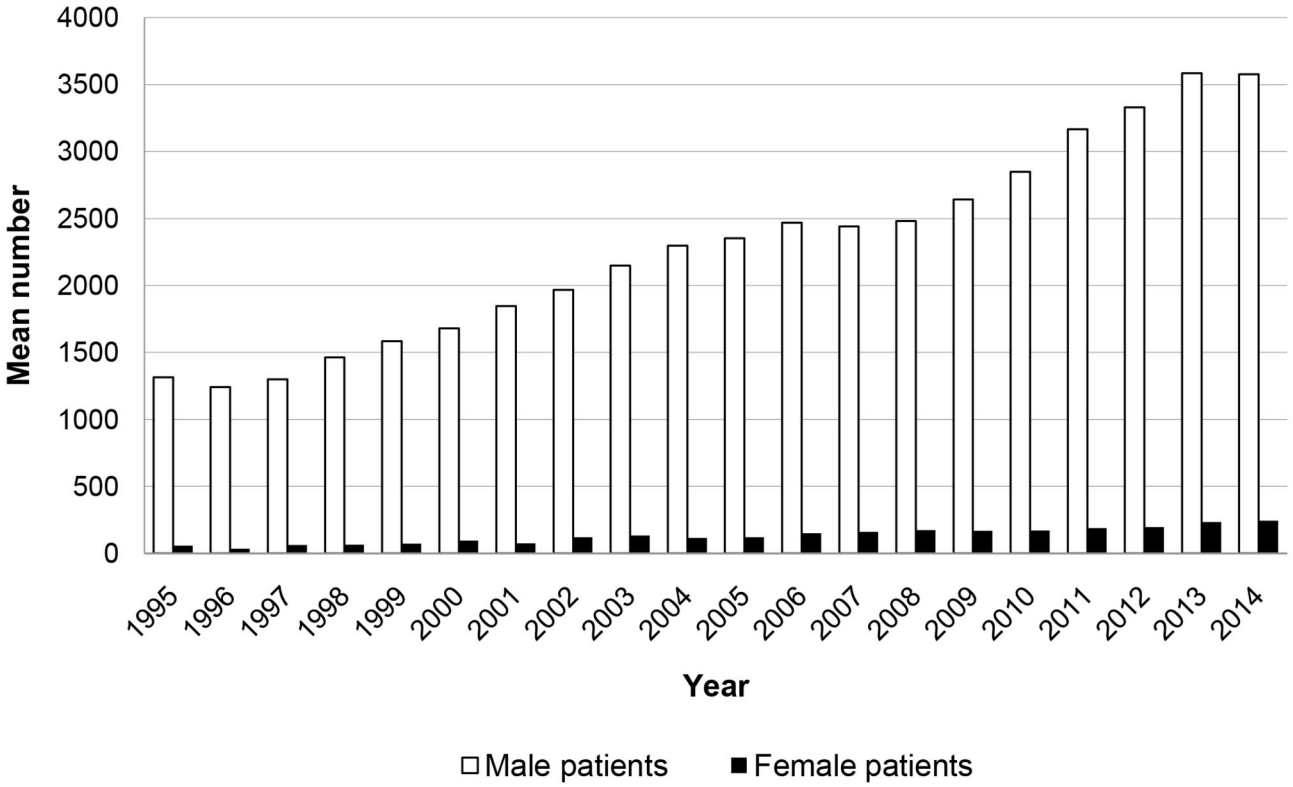


**FIGURE 1 |** Number of male and female patients placed in mandatory drug treatment in Germany according to section 64 of the German penal code in the years 1995–2014 (30).

explained against the background of social role assignments (14). Other factors specific to women that can contribute to the development of addiction are gender-related experiences of powerlessness as well as a more pronounced passivity and victim attitude. Traumatization, especially through sexualized violence in childhood with continuation into adulthood, is considered a risk factor for addiction development (as already mentioned above). Compared to control groups, addicted women and men experience sexual violence significantly more often (15, 18). The proportion of women who have experienced sexual violence is higher than among addicted men. Among substance abusers, 45% of women report having suffered sexual violence before the age of 16 (compared to 16% of men) (14). Furthermore, biological differences have to be taken into account. For example, the consumption of alcohol has a more damaging effect on the female organism than on the male organism. The consequences of harmful consumption often occur earlier in women. So do the resulting sequelae, such as faster disability, negative social reactions, feelings of guilt and shame, and social isolation (17).

As mentioned above, the vast majority of research in forensic psychiatry has focused on male populations. Therefore, we do not know whether the theoretical knowledge about male offenders is sufficiently valid and useful for female offenders. Significant gaps remain in our knowledge about the importance of sex differences in, for example, the development of offending and risk factors and assessment of violence. Therefore, the present study focused on differences in socio-demographic, legal, and clinical characteristics between male and female inpatients with substance use disorders in forensic psychiatry with the aim to support the development of sex-specific theories of delinquent behavior and treatment programs, if necessary.

# METHODS

## Participants

The sample included 115 male and 61 female patients. Participants were recruited from the departments of forensic psychiatry at three German hospitals (Guenzburg, $n = 85$; Taufkirchen, $n = 55$; and Rostock, $n = 36$). Slightly more than half of all patients accommodated in the three psychiatric hospitals took part in the survey (64%). The non-participating patients declined to participate or could not be approached at the time of the survey (because they were in therapy sessions or were outside the hospital). All patients were in mandatory drug treatment according to section 64 of the German criminal code. In Germany, admission to a forensic psychiatric hospital follows a court decision according to section 63 or 64 of the German criminal code. If a person has committed a serious offense as a result of a severe mental disorder, e.g., schizophrenia, and if there is a high risk of reoffending, the court orders that person's placement in a forensic psychiatric hospital according

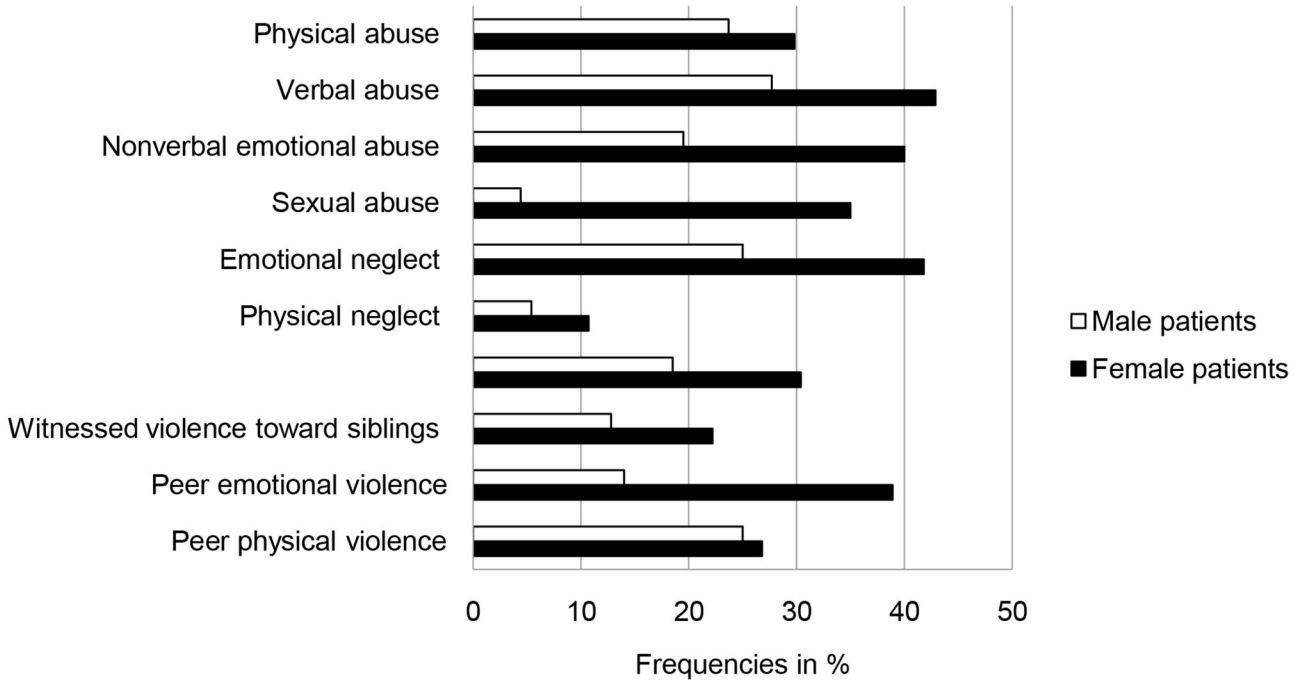


**FIGURE 2 |** Frequencies (in percent) of adverse childhood experiences above cut-off values in male ($n = 115$) and female ($n = 61$) forensic psychiatric inpatients with substance use disorders (multiple answers possible).

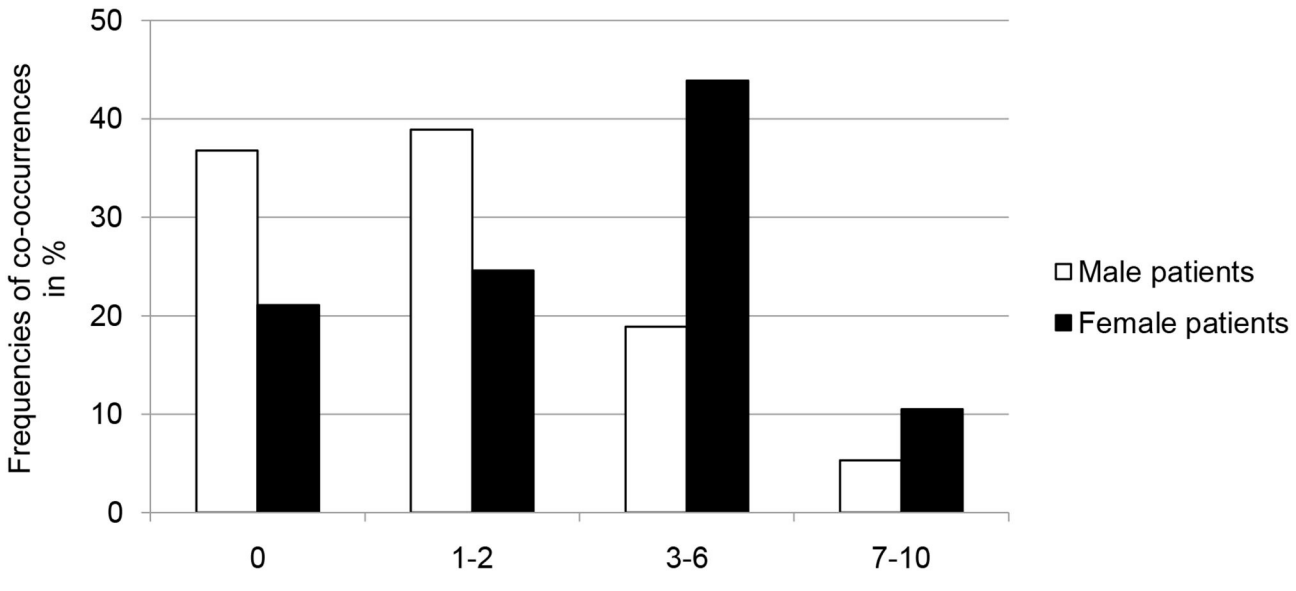


**FIGURE 3 |** Frequencies (in percent) of co-occurrences of adverse childhood experiences in male ($n = 115$) and female ($n = 61$) forensic psychiatric inpatients with substance use disorders.

to section 63. Hospitalization according to section 64 requires a diagnosis of a substance use disorder, a high risk of reoffending, and a favorable treatment prognosis. In some respects, the living conditions in forensic psychiatric hospitals are similar to those in prisons, however there are also differences. Because forensic patients have a mental or substance use disorder, they are cared for by doctors, psychologists, and nurses and receive treatment. The treatment objectives are to reduce the risk that the patients pose to society and facilitate their reintegration into society.

The mean (SD) age was 34.11 (9.08) years in the male sample and 35.26 (10.22) years in the female sample and was

**TABLE 1 |** Frequencies of socio-demographic variables in male ($n = 115$) and female ($n = 61$) forensic psychiatric inpatients with substance use disorders.

| | Male patients *n* (%) | Female patients *n* (%) | Statistics |
|---|---|---|---|
| **Family circumstances** | | | |
| Parents separated | 28 (43%) | 19 (49%) | $Chi^2(1) = 0.313$, $p = 0.685$ |
| Parents divorced | 22 (34%) | 16 (41%) | $Chi^2(1) = 0.542$, $p = 0.530$ |
| One parent deceased | 16 (24%) | 8 (21%) | $Chi^2(1) = 0.193$, $p = 0.811$ |
| Foster family/institutional care | 17 (26%) | 9 (23%) | $Chi^2(1) = 0.095$, $p = 0.819$ |
| Financial stress | 21 (32%) | 14 (36%) | $Chi^2(1) = 0.141$, $p = 0.831$ |
| **Highest school-leaving qualification** | | | |
| No graduation | 31 (30%) | 17 (29%) | Fisher's exact test = 1.694, $p = 0.662$ |
| Graduation after 8 years of school ("Hauptschulabschluss") | 54 (52%) | 27 (46%) | |
| Graduation after 10 years of school ("Realschulabschluss") | 14 (14%) | 12 (20%) | |
| Graduation from high school ("Abitur") | 4 (4%) | 3 (5%) | |
| **Marital status** | | | |
| Single | 66 (64%) | 27 (47%) | Fisher's exact test = 11.908, $p = 0.010^a$ Cramer-$V = 0.279$ |
| Married or in solid partnership | 23 (22%) | 12 (21%) | |
| Shorter, changing relationships (<6 months) | 0 | 4 (7%) | |
| Divorced | 13 (13%) | 13 (22%) | |
| Widowed | 1 (1%) | 2 (3%) | |
| **Vocational training/college degree** | | | |
| Did not complete vocational training | 60 (58%) | 34 (59%) | Fisher's exact test = 0.175, $p = 1.000$ |
| Completed vocational training | 41 (40%) | 23 (40%) | |
| Completed college degree | 2 (2%) | 1 (2%) | |
| **Last occupation** | | | |
| Full-time employment | 29 (28%) | 9 (16%) | Fisher's exact test = 19.966, $p < 0.001^b$, Cramer-$V = 0.361$ |
| Not working (housewife, -man) | 4 (4%) | 3 (5%) | |
| Occasional employment | 7 (7%) | 17 (30%) | |
| Registered as unemployed | 54 (53%) | 20 (35%) | |
| Retired/disability pension | 3 (3%) | 1 (2%) | |
| Other | 5 (5%) | 7 (12%) | |

*According to Benjamini and Hochberg corrected significance level: [a]$p = 0.0111$, [b]$p = 0.0056$.*

not significantly different between the sexes [$t_{(174)} = 0.765$, $p = 0.446$].

## Procedures

The study was approved by the local ethics committee of Ulm University (approval no. 194/14). The participants were recruited between July 2014 and June 2016. All patients were told about the study objectives and provided written informed consent. As per institutional policy, no compensation for participation was offered. Patients completed the questionnaire in small groups in a separate room on the ward, and a research assistant was available to offer help.

## Measures

### Assessment of Adverse Childhood Experiences

Adverse childhood experiences were assessed with the German version of the Maltreatment and Abuse Chronology of Exposure Scale [MACE, (20), German version: KERF, (21)]. This self-rating questionnaire enables a detailed retrospective assessment of traumatic childhood experiences with the following ten subscales: physical abuse (6 items), verbal abuse (4 items), non-verbal emotional abuse (5 items), sexual abuse (12 items), emotional neglect (10 items), physical neglect (6 items), witnessed physical violence toward parents (8 items), witnessed violence toward siblings (7 items), peer emotional violence (4 items), and peer

**TABLE 2 |** Differences in psychiatric and legal characteristics between male ($n = 115$) and female ($n = 61$) forensic psychiatric inpatients with substance use disorders.

| | **Male patients** *M* (*SD*) or *n*, (%) | **Female patients** *M* (*SD*) or *n*, (%) | **Statistics** |
|---|---|---|---|
| **Psychiatric characteristics** | | | |
| ICD-10 diagnosis: Mental and behavioral disorders due to use of | | | Fisher's exact test = 19.421, $p < 0.001^a$, Cramer-$V = 0.345$ |
| ...Alcohol | 33 (32%) | 6 (10%) | |
| ...Opioids | 6 (6%) | 6 (10%) | |
| ...Cannabinoids | 10 (10%) | 3 (5%) | |
| ...Cocaine | 5 (5%) | 0 | |
| ...Other stimulants, including caffeine | 5 (5%) | 9 (15%) | |
| ...Multiple drug use | 44 (43%) | 36 (60%) | |
| **Personality disorders** | | | |
| No | 44 (73%) | 75 (73%) | Fisher's exact test = 18.294, $p < 0.001^b$, Cramer-$V = 0.333$ |
| Dissocial | 0 | 10 (100%) | |
| Emotionally unstable | 13 (22%) | 5 (5%) | |
| Histrionic | 1 (1%) | 2 (1%) | |
| Other | 2 (3%) | 11 (11%) | |
| Age at first inpatient treatment, years | 26.75 (11.94) | 25.37 (10.78) | $t_{(157)} = -0.727$, $p = 0.468$ |
| Previous psychiatric treatments | 1.85 (3.21) | 4.51 (7.99) | $z = -3.032$, $p = 0.002^c$, $d_{Cohen} = 0.494$ |
| Suicide attempts | 18 (18%) | 19 (34%) | $Chi^2(1) = 5.189$, $p = 0.031^d$, Cramer-$V = 0.182$ |
| **Legal characteristics** | | | |
| Age at first conviction, years | 20.59 (8.83) | 25.08 (9.08) | $t_{(160)} = 3.085$, $p = 0.002^e$, $d_{Cohen} = 0.504$ |
| Age at first detention, years | 24.09 (8.87) | 29.51 (9.43) | $t_{(157)} = 3.612$, $p < 0.001^f$, $d_{Cohen} = 0.597$ |
| Number of criminal offenses | 8.90 (9.50) | 5.95 (4.03) | $z = -2.629$, $p = 0.009^g$, $d_{Cohen} = 0.424$ |
| Total penalty, months | 78.33 (56.85) | 57.46 (36.64) | $t_{(155)} = -2.819$, $p = 0.005^h$, $d_{Cohen} = -0.413$ |

*According to Benjamini and Hochberg corrected significance level: $^a p = 0.0056$, $^b p = 0.0111$, $^c p = 0.0222$, $^d p = 0.0444$, $^e p = 0.0278$, $^f p = 0.0167$, $^g p = 0.0389$, $^h p = 0.0333$.*

physical violence (4 items). Each item can be answered with yes or no (example item from the subscale on non-verbal emotional abuse: "Did you parents lock you in a closet, storage unit, basement, garage, or other, perhaps even very cramped, dark location?"). Responses of "no" were coded as 0, and responses of "yes," as 1. For each scale, the values were summed and transformed by linear interpolation to obtain comparable scale values. Last, a total score was calculated as the mean score of all ten scales. The authors of the instrument provide cut-off values for each subscale. Furthermore, participants had to specify at what age and for how long the adverse experience took place. For this purpose, they marked the period on a scale ranging from 1 to 18 years. In addition, the questionnaire captures clinically relevant additional information on financial stress (debt, poverty, little money) and loss of a parent (death, divorce, separation, foster care/institutional care) with separate items that are not assigned to a scale. The convergent and divergent validity of the KERF is established, as demonstrated by satisfactory associations with the Childhood Trauma Questionnaire (22) and with psychopathology scales [Hamilton Depression Scale (23), Borderline Symptom List (24), Shutdown Dissociation Scale, (25)] [see (21)].

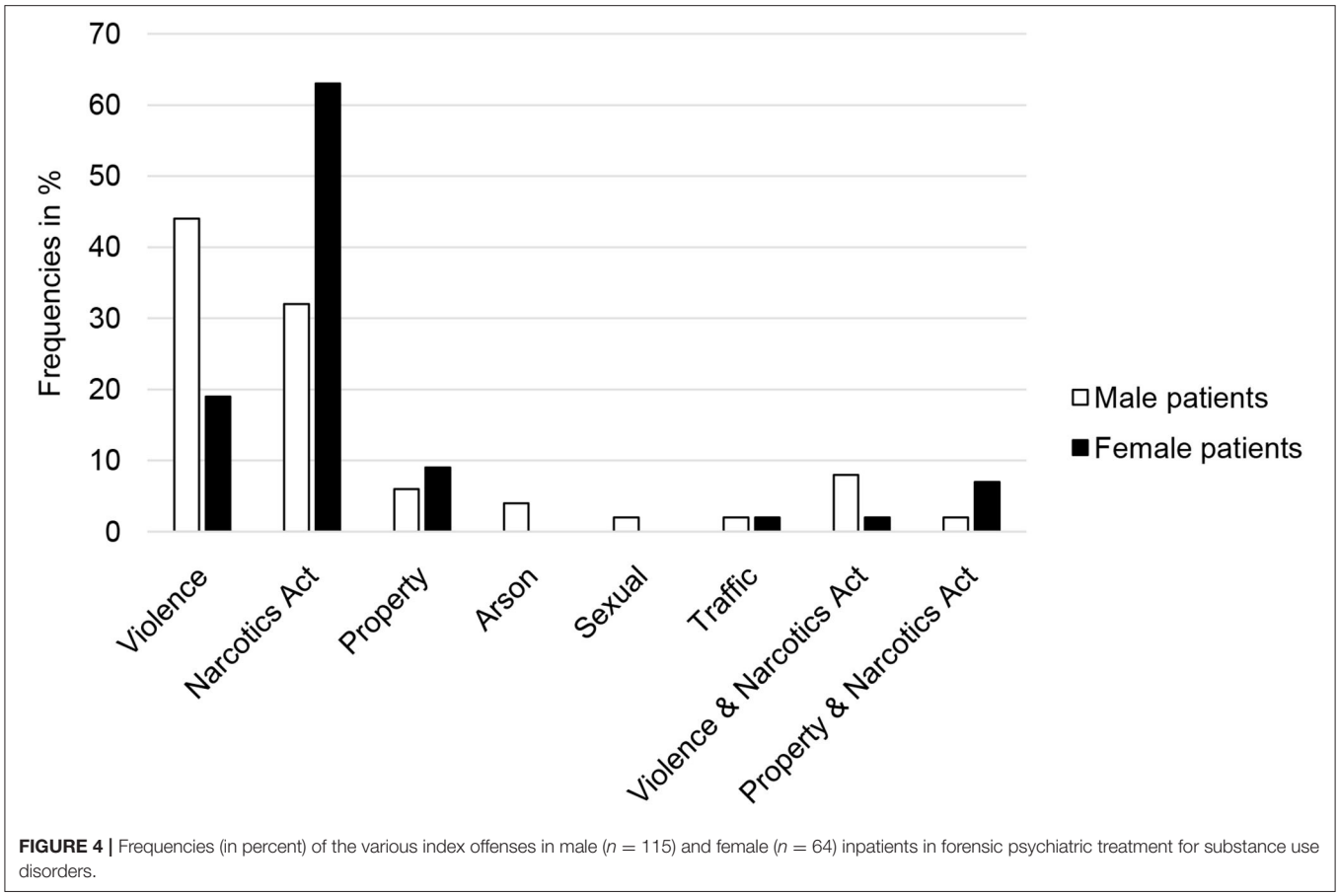


**FIGURE 4 |** Frequencies (in percent) of the various index offenses in male ($n = 115$) and female ($n = 64$) inpatients in forensic psychiatric treatment for substance use disorders.

### Assessment of Sociodemographic, Clinical, and Legal Characteristics

Socio-demographic (school-leaving qualification, marital status, vocational training, last occupation) and clinical characteristics (ICD-10 diagnosis, previous psychiatric treatment, suicide attempts) were obtained from the patient file, and information about the index offense and previous convictions was taken from the official court records.

## Data Analyses

Data were analyzed with IBM SPSS Statistics version 28.0 (Armonk, NY: IBM Corp.). In a first step, mean values, SDs, and relative frequencies were calculated. Sample characteristics of the male and female groups were compared with Student *t* test, Mann-Whitney *U* test, Pearson's chi-squared test, and Fisher's exact test. To avoid problems due to multiple testing, the significance level per test family (i.e., socio-demographic, clinical and legal characteristics) was adjusted according to the procedure of Benjamini and Hochberg (26). An $p < 0.05$ was considered to indicate a statistically significant difference.

# RESULTS

Female patients were significantly more likely than males to report adverse childhood experiences (proportion of patients with scores above the reported cut-off values in at least one of the KERF subscales: female patients, $n = 45$ (79%); male patients, $n = 60$ [63%; $Chi^2_{(1)} = 4.158$, $p = 0.041$, Cramer-$V = 0.165$]. **Figure 2** shows the mean frequencies of each type of adverse childhood experience in men and women. Women reported significantly more adverse childhood experiences than men in the following scales: non-verbal emotional abuse [$Chi^2_{(1)} = 7.081$, $p = 0.012$, Cramer-$V = 0.223$], sexual abuse [$Chi^2_{(1)} = 31.083$, $p < 0.001$, Cramer-$V = 0.458$], emotional neglect [$Chi^2_{(1)} = 4.439$, $p = 0.043$, Cramer-$V = 0.176$], and peer emotional violence [$Chi^2_{(1)} = 11.923$, $p < 0.001$, Cramer-$V = 0.285$].

Women reported also significantly more co-occurrences of adverse childhood experiences than men [$Chi^2_{(3)} = 14.249$, $p = 0.002$, Cramer-V $= 0.306$; **Figure 3**]. Further analyses showed that women had been exposed to adverse childhood experiences over a significantly longer period than men ($M_{Male} = 5.68$ years, $M_{Female} = 8.18$ years; $z = -2.379$, $p = 0.017$, $d_{Cohen} = 0.384$), but the age at first adverse childhood experience was not different ($M_{Male} = 5.75$ years, $M_{Female} = 5.31$ years; $z = -0.224$, $p = 0.823$).

We found no significant differences between men and women in terms of family circumstances, highest school-leaving qualification, and vocational training (**Table 1**). However, women were less often single, more often had shorter, changing relationships and were more often divorced than men. Furthermore, women were less likely than men to be employed full time and more likely to be in casual employment.

Twenty one patients had comorbid diagnosis (6 post-traumatic stress disorder, 4 depression, 3 eating disorder, 3 mental retardation, 3 and attention deficit hyperactivity disorder, 2 schizophrenia). The frequency distribution does not differ between men and women (Fisher's exact test = 8.154, $p < 0.001$). The overall frequency of a comorbid personality disorder and the age at first inpatient treatment were not significantly different between male and female patients (**Table 2**), but sex differences were found in all other clinical variables. Women were more likely to have emotionally unstable personality disorder, while men were more likely to be diagnosed with dissocial personality disorder. Women were less likely to have a substance use disorder due to use of alcohol or cocaine, underwent significantly more previous psychiatric treatments and reported more previous suicide attempts. In terms of the legal characteristics, male patients were significantly younger on first conviction and detention, had more criminal records and served longer total penalties than female patients.

**Figure 4** presents the frequencies of the index offense in male and female patients. The statistical analyses revealed significant differences (Fisher's exact test = 22.866, $p < 0.001$, Cramer-V = 0.383) in that men committed violent crimes more often and women, narcotics-related crimes.

## DISCUSSION

The present study aimed to explore whether socio-demographic, legal, and clinical characteristics are different in male and female forensic psychiatric inpatients with substance use disorders. The results showed that women reported more and longer-lasting adverse childhood experiences, had more psychiatric pretreatment and later delinquency and committed fewer violent crimes. The analyses of socio-demographic characteristics showed a similar pattern to women and men in the general population, i.e., women were less likely to be single and to be employed full time.

Our findings have implications for forensic psychiatric treatment in that they support the development of sex-specific treatment programs for women that focus in particular on past trauma. Traumatized women may self-medicate by abusing drugs, which may lead to delinquent behavior; however, such behavior could be prevented if we ensure that traumatized girls and young women receive timely care and support that enables them to cope with their traumatic experiences and educates them about the negative consequences of self-medicating. Of course, this approach is relevant also in men, but the issue of trauma requires special attention in women because of the higher prevalence of victimization and the increased risk of being re-victimized (27). Furthermore, trauma related disorders, in particular complex posttraumatic stress disorders, may be underdiagnosed in forensic-psychiatric settings, because symptoms such as emotional dysregulation are misattributed to the substance use disorder or a comorbid personality disorder (12). The focus of therapeutic work with women in forensic psychiatric hospitals should be on recognizing of harmful dependency patterns and their causes and consequences in relationships, uncovering and relativizing feelings of guilt and shame in relation to social stigmatization in connection with the disease (e.g., prostitution experience), dealing with external aggression and (physical, sexual and verbal) violence, addressing education and employment as the basis of life, and as factors promoting autonomy and self-efficacy. Drug addiction among men, in turn, has another cause: the feelings of increased drive, grandiosity, and outgrowing oneself experienced in intoxication correspond to the stereotypical dynamics of masculinity. Addictive substances serve as a means of enhancing performance, experiencing risk, and exploring limits, but they are also used to deny problems, endure feelings of weakness and helplessness, and overcome fears (resulting, for example, from early childhood trauma). The consumption expectations of men also relate to the maintenance of status and power, especially through uninhibited acting out of violence. Therapeutic intervention must address these issues in the case of men and future studies should explore whether these gender-specific treatment methods result in reduced recidivism.

In addition, our findings provide further support to the many arguments for increasing the respective expertise in general psychiatry (28, 29). Substance use problems appear early in many women, who may consequently seek psychiatric help. Adequate risk prediction and risk management in general psychiatry may prevent these women from developing additional problems, committing an offense and being admitted to forensic psychiatry.

A limitation of the study is that the adverse childhood experiences were recorded retrospectively and by means of self-report. Also, so far the questionnaire has been validated only in a female sample [see (21)]. Another limitation is the unequal size of the male and female samples. Nevertheless, the study appears to identify a need for sex-specific treatment approaches for female forensic psychiatric patients with substance use disorders.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Review Committee of Ulm University (approval no. 143/15). The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

MD and IF: designed the study. VK, CM, and IF: were responsible for administration of data collection. MF and ML: conducted the literature research. JS: wrote the first draft of the paper and conducted the statistical analysis. MD: supervised the statistical analysis and writing process. MF, ML, and IF: revised the manuscript. All authors read and approved the final version of the manuscript.

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REVIEW
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# Just Like a Woman: Gender Role Stereotypes in Forensic Psychiatry

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The relationship between violence, gender and mental health is a complex one which is yet to be fully understood. Gender role stereotypes are social constructs that can powerfully influence and regulate human behaviour, including violence; and so it is likely that they also influence the nexus of violence management and mental health which is at the core of forensic psychiatry. In this article, we examine how gender role stereotypes might influence the practice of forensic psychiatry: specifically, in relation to women as violent offenders, as patients in secure psychiatric care and as clinicians working in forensic settings. We identify areas of development in women's forensic mental health services, and examine whether patriarchal influences and gender role stereotypes may have inadvertently impacted upon these changes. We also consider whether these changes may maintain pre-existing barriers to treatment for both men and women.

**Keywords: gender, stereotype, forensic, psychiatry, mental health**

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## INTRODUCTION

In this paper, we will explore how gender role stereotypes and expectations might influence practice in forensic mental health settings. Specifically, we suggest that these stereotypes may operate both implicitly and explicitly in ways that are harmful to women's mental health, and consider how such an operation may be especially problematic for women involved in forensic services. We will further suggest that the operation of gender role stereotypes in forensic mental health services is not just a matter for female patients in forensic services but also extends to female professionals in secure hospital settings and within the legal system.

We begin with an overview of gender as a social construct and consider how gender role stereotypes impact upon how psychological distress is communicated by men and women. We then turn to the intersection of gender role expectations and their influence on antisocial behaviour and states of mind, with reference to the role of the forensic psychiatrist in assessing the functional link between violence risk and diagnosis. We discuss some responses of the legal and criminal justice system, as well as the media, to female violence, and conclude with some consideration of the gendered experience of female professionals working in forensic settings.

We have to declare a major caveat about the scope and depth of what is discussed. The academic domains of gender, crime, violence, and mental health are all vast, and any kind of detailed systematic review of how they intersect would lead to a book length publication, with multiple volumes. We therefore do not claim to provide a detailed or definitive analysis of all arguments in this paper. Our intention is to raise awareness of these complex constructs by pointing to related literature that has posed similar questions. We are aware that by focussing on Anglophone countries, we have not been able to offer any comment on the intersection between ethnicity, culture and religious beliefs with gender-based prejudice and related concerns about legal and

mental health practice; especially in those countries where forensic mental health services are still emerging. These equally important and relevant concepts deserve study in their own right. In this brief overview, our aim is to generate discussion and reflection about gender role bias within forensic mental health services which can enhance awareness and potentially improve practice.

## GENDER AND GENDER ROLE EXPECTATIONS

The concept of gender is complicated and the term can be used in different senses in ways that cause confusion. Stock [(1) p. 38] describes four different senses in which the term is used: first, a general term for the division of the sexes; second, referring to social stereotyping about sexes; third, referring to projections of ideas about masculinity and femininity onto men and women; and fourth, where gender is shorthand for "gender identity." Given these different senses in which the word is used, there is scope for confusion and disagreement. For our purposes, and because our discussion is in the context of health care, we will use the WHO definition of gender which is defined as "*the characteristics of males and females that are socially constructed, and includes norms, behaviours and roles associated with being of either sex*" (2).

Traditional accounts of gender typically offer a binary divide of "masculinity" and "femininity" in terms of what the two sexes are "like" psychologically and socially. Early historical accounts of gender were thought to reflect natural expressions of an individual's sex chromosomes, which were "normal" because "natural." However, this conception of the relationship between sex and gender has been regularly challenged as superficial by historians, feminists, biologists and social anthropologists who have studied male and female roles and relationships in different societies across time and using different methods. Many commentators have observed that gender role beliefs and expectations become social stereotypes that serve as regulators of social relationships in human groups, especially in relation to power and control over property, social and reproductive status (3–5). Carlen (6) asserted that women were exploited in "gender deals" that kept women in domestic roles in exchange for love and financial support from their husbands, as well as respectability. Butler's gender performativity theory views gender as a set of learned behaviours, akin to a "performance," in order to fit into social constructed notions of "male" and "female" (7).

Rigid definitions of "masculinity" and "femininity" lead to the development of gender role stereotypes that can have harmful effects for both men and women in different life domains; including work, relationships, social status, and health. For example, a definition of femininity that emphasises passivity and inability to act under pressure can result in a social expectation that women cannot lead or take important decisions. If women are then prevented from taking leadership or active roles on the basis of this stereotype, then they will by default be unable to prove it false, and their absence from these roles is then taken as evidence of their "natural" passivity. Similarly, if gender role expectations of masculinity emphasise strength, competition and lack of nurturing capacity, then young men and boys are likely to act into those roles and exclude themselves from nurturing roles; which then accentuate the notion that it is a naturally feminine task.

One pervasive gender role stereotype in relation to women's social roles assume that it is "normal" and natural for women to provide care for others, so they will "naturally" dominate in the care-giving professions (8). However, there is nothing "natural" about remunerating care work at a much lower rate than other similar forms of manual labour carried out by men. Men are paid at higher levels than women, in both manual and professional settings, when they are doing the same job; the current gender pay gap in the United Kingdom is 7.9% (9). Such inequality in pay for the same role suggests that work by women is rated as less valuable than work by men.

Research methods themselves may be affected by gender role stereotyping, in terms of methodology, sampling bias and the theme of the research itself. Research into any kind of sex difference often starts from the assumption that male data is the "norm" and female data is a variant or deviant from the norm. There is evidence of this kind of bias in relation to the study of pathology in physical health. For example, the "textbook" description of symptoms of myocardial infarction have been those which are regularly reported by males and thus typically true for them. However, research suggests that this description is not typical for females who experience different symptoms with the same disease (10). Similarly, males and females may experience pain or metabolise drugs differently; but if the "male" profile is deemed to be the norm, the female sex and gender role differences may not be identified (see (11)). In this way, biased gender role stereotyping can impact negatively on treatment and management of a range of health conditions for both sexes (12). Such bias may have been a particular issue in relation to women's capacity for cruelty and antisocial behaviour by positing male violence as essentially "normal" and women's violence and cruelty as evidence of mental disorder [for a general discussion see (13)].

Gender role stereotypes can also influence how men and women express psychological distress, and how they manage painful emotions which affect their well-being (such as sadness, fear, and anger). Gender role expectations for men which emphasise strength, dominance over others and invulnerability may encourage men to externalise their distress in terms of bodily action; and may contribute to increased rates of suicide and homicide in males (14, 15). Further, this gender role expectation generates an opposing one for women i.e., the belief that it is normal for women to be able to easily articulate distress to others. However, both adolescent boys and girls may struggle to communicate distress verbally and may use their bodies as vectors of pain: boys describe more problems related to anger, engage in higher-risk behaviours and commit suicide more frequently than girls (16), whereas girls experience suicidal ideation but express distress by harming their own bodies or developing eating disorders.

These trends continue into adulthood, as a greater proportion of women report anxiety, hopelessness and helplessness whilst men tend to engage in antisocial behaviours that are problematic

for others (17). Historically, when female patients presented with "masculine" symptoms (such as alcohol dependence or antisocial behaviours), they were often viewed as suffering more severe mental disturbance and the same was true for males presenting with "feminine" symptoms such as depression (18). Gender role expectations have also played a part historically in how women's mental health was assumed to be vulnerable in pregnancy and menstruation, and those women who did not appear to enjoy motherhood were more likely to be seen as mentally unwell (19).

More recently, there has been increased concern about those individuals for whom gender role stereotyping does not "fit" their sense of lived identity, which can cause mental distress. Although previously such gender "dysphoria" was deemed to be a mental health condition which required psychosocial treatments, the World Health Organisation (WHO) now state that such distress does not constitute a mental health problem (20).

We are discussing here the harmful impact of gender role expectations, beliefs and stereotypes at the level of large-scale communities and groups. Within those groups there will be individual exceptions and variations, and on an individual basis, there may be many men and women who feel comfortable with the gender role in which they have grown up and been socialised. However, they may not be aware of the limitations of the gender role in which they have been raised, nor the impact on their relationships with others, because of the cultural beliefs which structure their society. For example, feminist academics such as Gilligan and Richards (21) have argued that gender role stereotypes about male and female "norms" underpin a wider and more implicitly entrenched system of social beliefs, (usually described as "patriarchal") which assume a dominant role of men in society in terms of decision makers and controllers of those who are more vulnerable. Such patriarchal systems are harmful to both men and women, at an individual and a social level, because patriarchal thinking views vulnerability and neediness as shameful and relationships as solely transactions regulated by strength and domination. Such an analysis leads to gender inequalities which may have particular implications for how violence is understood in patriarchal societies and forensic services [e.g., (22)]. Patriarchal societies tend to have higher rates of homicide and suicide, especially if the political systems support patriarchal values; the effect is noticeable when comparing homicide and suicide rates in the United States with those in Europe (23).

## CRIME, GENDER AND VIOLENCE RISK

Within criminology, debates about gender and crime began in the 1970s and 1980s (24). Early debates in criminology focused on the question of whether data from studies of male offending could be generalised to female offenders; or whether female criminality (especially violence) might be specific to women's role in society; or whether female offenders were deviant compared to non-offending women (24, 25).

Human violence is not homogenous and is arguably best understood as a transaction between individuals within a particular social context (26). (In this context, we are excluding violence in terms of organised wars and conflicts that have social support and endorsement). It would seem reasonable to assume that gender role expectations and stereotypes might be relevant to the analysis of human violence, especially when it is known that at least 80% of violence perpetrators are male; a figure that appears to be the same across countries and cultures (27). However, although most violence perpetrators are male, most men are not violent and in most community populations, the denominator of non-violent males is large. Overall, violence is an uncommon way for people to break the criminal law, and rates of violence have been dropping in most social democratic societies over the last 4 decades. (This is even true of the United States, despite the marked elevation of their homicide rate by gun ownership.)

Some early theoretical models of violence do not mention gender at all. An early and influential paper by Bronfenbrenner (28) described an ecological model of risk factors for violence arising from both the macro-culture of the society and the micro-culture of the individual. Macro risk factors for violence include peer pressure, effects of deprivation and exclusion, and the creation of deviant/dissenting sub-cultural groups. Micro risk factors include neurophysiological and psychological risk factors, such as attitudes to rule breaking and violence in families and communities, and belief/value systems that are unempathic or antisocial. There is no mention of gender, either as a macro- or micro-level risk factor; despite the model being an attempt to reduce tension between criminological models and psychological models of risk for crime.

If gender role were included as a risk factor for violence, then it would be tempting to see masculinity as a major risk factor. For example, Lantz (29) quotes one writer who describes violence as "a resource for demonstrating masculinity," which might suggest that violent women are unusually "masculine." At least one risk assessment tool rates being female as a protective factor against violence [e.g., the VRAG, (30)], which makes the tool hard to use with female violence perpetrators. There seems to be strong support for the view that, while it is usually illegal and unwelcome, male violence is essentially normal, as are the motivations for male violence. For example, those who support an evolutionary perspective argue that males may be motivated to engage in violence in order to protect their reproductive status and authority over other male rivals (31). Anger, protection, social recognition, perceived positive outcomes and pleasure have all been posited as motivations for male violence (32). Motivations for female violence are often assumed to be different to male violence without much evidence to support this assumption: even although absolute rates of violence are far lower in women than in men, the motivations for female violence appear to be similar (13, 33, 34).

Such gender-based assumptions are mirrored in relation to the sex of victims of violence. Gender role stereotypes of women often include a narrative of victimisation experience; and yet, in terms of fatal violence at an international level, overall, men are still more likely to be murdered than females. However, context is crucial to make sense of this: males are more likely to be murdered in countries where the homicide rate is linked closely to the drugs trade, whereas women are more likely to be victims in countries where drug related crime is low, and

relational violence then is proportionally more common (35). Another example of how victimisation rates for both sexes are similar in one way but different in another was reported in a large-scale epidemiological study of 34,000 people (36). This study found that heterosexual men and women report similar levels of violent victimisation, but the nature and context of that violent victimisation is very different for men and women. Adult males reported higher levels of assaults by strangers with weapons, and non-partner violence; but women report higher prevalence of intimate partner violence (IPV) and sexual assault, both in childhood and adulthood. This study also found that "sexual minority" (*sic*) men and women were at increased risk of victimisation, suggesting that people who violate gender role expectations may face increased risk of attack.

Violence against women may be under-reported because it occurs in the domestic sphere, and there is evidence that violence against women is an international public health concern (37). Although most IPV perpetrators are male, there is evidence that females can also be perpetrators of violence of IPV, although this issue is less well researched. A study by Williams et al. (38) found that (like their male counterparts), female IPV perpetrators typically begin with emotional abuse of partners and then progress to physical and sexual IPV. In the context of discussion of women's motivations for violence, it is often postulated that IPV by women is motivated by fear and the need for self-defence. However, Swan et al. (39) studied women serving sentences in a federal prison in Canada; and found that of those who had a history of IPV, 64% had initiated the violence in at least one incident. Stewart et al. (40) studied the reported motives for violence in female IPV perpetrators and reported that self defence or defence of children were the *least* frequently coded motive. In a study of Saudi Arabian women who reported carrying out IPV, participants described using violence as a means of expressing frustration about patriarchal practices and wanting freedom from oppression (41). Finally, a systematic review of the literature on female IPV perpetrators' motives for violence identified anger in response to a felt inability to get their partner's attention: not dissimilar from male motivations described above (42).

These studies have important implications for interventions for women who commit IPV, who may need programmes that are both similar and different to their male counterparts. The difference in psychological treatment needs between male and female IPV perpetrators remains an area in need of further exploration (43). While male IPV offenders in prison or on probation may have access to offence-specific interventions which look at gender role stereotypes and prejudices, female IPV perpetrators may be offered (a) programmes designed for males, where females are always victims, (b) general violence reduction programmes which do not look at the relational context, or (c) programmes that focus on women's experience of victimisation and not their capacity for anger and revenge.

It is rare for women to commit acts of fatal or serious violence, but when they do, the violence can resemble male violence in terms of attacks on vulnerable victims. For example, women are frequently responsible for the deaths of their dependent children (44), just as men are responsible for fatal and non-fatal violence toward dependent partners. Rates of female violence appear to be increasing over time, and their violence risk is influenced by anger, hostility and substance misuse, just like their male counterparts. Intriguingly, both male and female violence perpetrators report similarly high levels of childhood adversity (45–48); suggesting that early and prolonged exposure to fear may be a risk factor for later violence.

Why the absolute numbers of violence perpetrators should be so different between the sexes remains an open question, and the answer is likely to involve an interaction of individual and social factors. Of those social factors, it seems reasonable to hypothesise that that gender role stereotypes play a role; whether it is in constructing normative accounts of masculinity in which violence is acceptable or accounts of femininity are based on victimisation. Some criminologists have argued that within masculinity, there exists a toxic variant which denigrates and degrades vulnerability in others in ways which increase the risk of violent attacks. Conversely, it may be that traditional gender role stereotypes of femininity are protective for women because they encourage social bonding and discourage the kind of social isolation that is known to be a risk factor for violence and poor mental health.

## FORENSIC PSYCHIATRY, MENTAL DISORDER AND VIOLENCE RISK

Forensic psychiatry as a profession grew out of two observations; first, that some people who are violent are clearly mentally unwell at the material time, and second, that significant proportions of serving prisoners have mental health problems that require management and treatment. Forensic psychiatrists in Europe, Canada, Australia and New Zealand both assess and treat violence perpetrators with mental disorders (either in prison or secure services) and they also provide expert testimony on these issues. In the United States, forensic psychiatrists generally only provide expert testimony although clinical forensic services are growing. Similar services in non-western countries such as those of Sub-Saharan Africa and South Asia have been neglected and remain in early stages of development [e.g., (49, 50)]. However, whilst general psychiatric beds appear to be in decline, numbers of forensic mental health patients are rising internationally (51).

Forensic psychiatrists typically analyse, formulate and manage any potential functional link between mental disorders and violence. They offer assessments on this issue, and based on that formulation, may also offer care to people who are serving sentences for violence in prison, and who need psychiatric help. Although the treatment offered is primarily directed toward improving mental health, in practice, forensic psychiatrists also seek to help their patients reduce their risk of violent recidivism in the future; and violence risk management is a key role for forensic psychiatrists.

Forensic psychiatry has emerged out of general psychiatry, which in turn developed from a traditional medical model of mind and disorder. Since the 1990s, risk factors for violence and antisocial behaviour have been increasingly studied at the level of the individual, using bioscientific methods [e.g., (15, 27)]. Studies of the link between mental disorder and violence have found

that mental disorder can increase violence risk, especially those conditions that cause intense paranoia and the sense that one's control of thoughts is being over-ridden (52). Both antisocial personality disorder (ASPD) and substance misuse are associated with increased violence risk, although substance misuse probably has the greatest effect (53, 54). Other kinds of personality disorder are also known to increase risk in conjunction with ASPD, such as Narcissistic Personality Disorder (NPD) and Emotionally unstable personality disorder (EUPD; also known as borderline personality disorder or BPD). However, many sociological risk factors for violence are stronger than mental disorder (such as youth, poverty, substance misuse, and exposure to childhood adversity) and may carry greater predictive weight.

In forensic services, there are noticeable differences in the ways that diagnoses are made. ASPD is a diagnosis which is associated with both criminal offending and increased violence risk (55). It is also a diagnosis which is made more commonly in males, whereas EUPD is a diagnosis made more commonly in females (51). These diagnostic differences may reflect real differences in personality disorder presentation between the sexes, but may also reflect gender role stereotypes about criminal deviance. There may be a reluctance among clinicians to diagnose ASPD in women offenders, and Hodgins (56) highlights that most female aggressive and antisocial behaviour does not lead to prosecution. The same diagnostic reluctance may persist even in those women who have substantial criminal records (which is a diagnostic criterion for ASPD), and also to believe that male offenders may meet criteria for EUPD. In this context, it is noteworthy that the combination of ASPD and EUPD is common in violence perpetrators and may be associated with increased risk to self and others (57). It is also known that EUPD is associated with emotional dysregulation which mediate the risk of high levels of interpersonal conflict, which in turn leads to an increased risk of intimate partner violence (IPV). If EUPD goes largely unrecognised and untreated in the male population, then men with EUPD will be at increased risk of IPV while being deprived of evidence-based therapies for EUPD that might reduce both symptoms and risk.

Psychopathy is a disorder of personality which is known to be associated with an increased risk of violence. Studies of psychopathy in women over the last three decades suggest that gender role stereotypes influence how psychopathy is diagnosed in women (58–60). For example, it has been argued that sadistic and cruel attitudes (which exist in both sexes) are expressed differently by gender; so that women express their sadism in verbal, not physical ways; such as gossiping, excluding others from social groups, and criticising others (61, 62). Logan (63) suggests that, in comparison to similar males, females with psychopathic traits typically undermine the self-esteem and emotional wellbeing of their victims. But it might also be argued that verbal sadism is qualitatively different from physical sadism in terms of causing injury or death; to the point that apparent similarity may be meaningless. Further, the image of the gossiping, critical woman is another stereotype which may do little to help understand women's capacity for cruelty and the extent to which this is essentially different from male cruelty. It may also distort assessments of violence risk in women if verbal cruelty is included; Skeem et al. (64, 65) suggested that female capacity for violence is underestimated by clinicians, particularly when they suffer from psychiatric disorders.

It has been suggested that for women, mental illness is a more important risk factor for violence than for males. For example, Hodgins (66) estimated that women with mental illness were 27 times more likely to be registered for a violent crime than those women without. However, what is puzzling about such data is that one might then expect rates of violent crime to be higher in women given that mental illness rates in women have been repeatedly reported as both high, and higher than in males (67, 68). Similarly, if mental illness were a risk factor for violence by women, then one might expect psychosis and other Axis 1 diagnoses to be frequently made in inpatient forensic services, but this is not the case. In inpatient forensic services for women, EUPD is the commonest diagnosis (69), but psychosis is by far the commonest diagnosis in male forensic inpatients (70). This difference in diagnosis may indicate that women's violence is attributed more commonly to their personality disorder than mental illness, and is differently formulated compared to male patients.

Although women with mental illness appear to have higher rates of violence than women in the general population (52, 71), this may reflect a general underreporting of violence by women, especially if victims of female violence are children or family members, and if injuries may not be severe enough to warrant medical attention (72, 73). Women with mental illness may be better able than men to seek care and treatment. Mental illness is often used to explain female violence to children in a way which is not applied to males who attack children (74), including fatal violence. In the criminal courts, lawyers may seek to present their female clients as mentally ill, in order to make them seem both "normal" and sympathetic (75).

It is possible that forensic psychiatrists who evaluate women for criminal trials are influenced by gender role stereotypes that portray women who violate social roles as mentally ill. Psychiatrists may be invited to provide formulations that support legal strategies that depict a female defendant as a victim not a perpetrator, in terms of past trauma and a mental illness diagnosis. In homicide cases, the defence may seek to argue that the defendant was a victim of violence and coercive control and portray the deceased as cruel, a bully, or coercive and controlling. Such a defence is rarely successful and most women who kill their partners then change their defence to diminished responsibility on the grounds that they were suffering from a mental illness (often some form of PTSD due to being victimised by the deceased). Although some might seek to argue that women who are exposed to violence are justified in fatal assaults on their perpetrator, it should be remembered that for many years, men who killed their wives would seek to justify their actions on the grounds that they were being "nagged" or belittled by their wives. This kind of defensive strategy was condemned by feminist lawyers on the grounds that it rested on gender role stereotypes about women being "nags"; but one might argue that gender role stereotypes include narratives about men always being coercive and controlling and women always being victims.

The recent media attention on the case of a British woman, Penelope Jackson, provides an example of this phenomenon. Mrs. Jackson killed her husband, then called the ambulance and police to say that she had done so. Her crime was statistically highly unusual, given that she was a woman, in her seventh decade, with no prior record of violence or criminality and no other risk factors for violence. At trial she presented herself as a victim of coercive control, but the jury did not accept this and she was convicted of murder. Exposure to trauma was offered as an explanation for her violence, which made her seem more "normal" as a woman, and may have mitigated the sentence that she would receive.

Risk factors for violence by women appear similar to those for men: a history of delinquency in childhood, substance misuse and intergenerational transmision of violence (76). Psychological formulations of violence are crucial to the process of violence risk assessment, which is a key professional activity for forensic psychiatrists and psychologists in prisons and secure hospitals. However, violence risk assessments that are frequently used to assess individual risk profile are usually validated in males, making their use in female prisoners and patients questionable (77). Such violence risk assessments typically also rely on functional links between mental disorder and violence, and be based on samples of mentally ill violence perpetrators. These tools may therefore overlook relational components to violence, which is commoner in women (78).

## CARING FOR WOMEN IN FORENSIC SECURE UNITS AND PRISONS

The criminal justice system has been criticised for neglecting the specific needs of women; the (79) Corston Report highlighted that "women have been marginalised within a system largely designed by men for men." This is concerning, as numbers of female prisoners are rising globally; approximately 105,000 more women are in prison today compared to ten years ago (80, 144). This trend is of importance to forensic mental health practitioners, as incarcerated females are more likely than both the general population and male prisoners to suffer from mental health problems, engage in self-harming behaviour and commit suicide (81, 82). Despite this, men are still consistently more likely to be admitted to secure inpatient settings than women (83, 84).

When women are convicted of violent crime, they will be detained in prisons or secure psychiatric units, just as men are. However, in general female violence perpetrators are seen as lower risk than their male counterparts, and the female prison estate is far smaller than the men's. In terms of secure psychiatric care, there are less than 10 high secure beds for women in England and Wales (compared 700 for males). Most female forensic patients are cared for medium or low secure services. In the United Kingdom, only 10% of patients detained under restriction orders are female (these are orders reserved for individuals deemed to pose a high risk of harm to others); and the proportion of women is decreasing, despite the numbers of restriction orders increasing between 2003 and 2016 (85).

There has been considerable debate about how best to provide gender sensitive care in forensic settings (86, 87). There seems to be some consensus that care and treatment needs to be segregated by sex (88); and services that have seen mixed sex services have also had reports of boundary violations between staff and patients, abuse of female patients by male patients and a lack of dignity for females in secure care (89).

Concern about the approach to female forensic care led to the United Kingdom's Department of Health releasing new guidance in 2002 and 2003 (90, 91), which invited services for women to focus on women's experience of trauma and on relational security ((92). This is in contrast to male services which emphasise enduring risk of violence and physical security. There remain concerns that female services still use models of care designed for male offenders and only later adapted, with little information about the necessity and value of any gender-based adaptations. (93, 94).

There has been some study of the value of gender-sensitive approaches in forensic services, mainly within correctional settings (95). Most of these gender sensitive approaches involve (a) increased attention to trauma in the lives of female prisoners and (b) increased availability of therapy. For example, Walker et al. (94) demonstrated the benefits of psychodynamic interpersonal therapy in women's prisons in England in reducing self-harm, and an offender personality disorder (OPD) strategy for women has also been developed, bringing mental health professionals together with probation workers to provide psychologically informed treatment and risk management (93). Dedicated facilities in Australia have been developed for women with complex psychological issues (96) and Zielinski et al. (97) describe group therapy as an effective intervention for incarcerated women who have experienced sexual victimisation. In secure hospitals, psychological treatment programmes for women with dual diagnoses have also been introduced (98). Services need to make special provision for detained women (whether in prison or secure care) who are mothers and/or pregnant at the time of detention. Friedman et al. (99) highlight that perinatal mental illness rates are likely to be higher in prison and that pregnancy, lactation and menopause all affect prescribing choices in complex ways. Some sex-specific needs are undeniable; in the United States, around 4% of women enter prisons pregnant, and most are of child-bearing age (100).

Across the international literature, there appears to be an emphasis on understanding the experience of trauma in the lives of violent women, and its relevance for planning treatment and care (101, 102). Such a trauma-informed approach is seen as gender sensitive, yet as mentioned previously, levels of childhood adversity are similar in both male and female prisoners. Exposure to trauma in childhood is a risk factor for violence for both sexes; especially physical child abuse and witnessing domestic violence by carers, neither of which are specific to female children. De Vogel et al. (103) noted that women in forensic services were severely traumatised and had more complex histories of victimisation than men; but it is possible that women feel more able to discuss these histories than men do, and it is possible that men are not even asked about childhood trauma nor adult trauma because of gender role stereotypes (104). The relationship

between childhood trauma and later violent offending is complex, and may be mediated by post-traumatic disorders but it is not confined to women (105, 106).

Overall, as Tolland et al. (107) highlight, there is a lack of available literature reviewing the value of gender specific interventions; and (it might be added) what the purpose of these interventions are for the women in custody. Given that the women are detained for having posed a serious risk of harm to others, it would make sense to try and demonstrate that both gender specific and trauma-informed interventions make some contribution to the formulation that links mental illness trauma exposure and violence. Of course, incarcerated women want compassion and better access to health care (108); but will this also help them reduce their risk of cruelty to others? Does providing trauma treatment improve later violence risk? If so, then males also need this intervention, and the more that is provided, the better the cost-offset benefits will be in terms of length of stay and detention. Trauma-informed therapies have been shown to work for men and women (109), suggesting that perhaps the genders are indeed more alike than different (13).

Why female forensic services should be trauma informed but not male services is puzzling; and would seem to reflect a kind of bias toward presenting violent women as victims not perpetrators. However, given that most victimised women do not perpetrate violence, the functional link between trauma exposure and violence risk will be complex to formulate. This is crucial for detained women, especially those in prison who will have to demonstrate reduction of risk to others before they can be released. If a female prisoner has done no psychological "work" on her offence and her capacity for cruelty, then she is unlikely to present successfully at a parole hearing. There are a large number of women in prison who are not able to access therapeutic interventions that address their violence and cruelty to others; is especially those who have killed family, partners or children.

Women may be detained in prisons and secure settings for long periods because of ambivalence about how to assess their risk (107). Women stay longer in medium and high secure units in England and are more frequently re-admitted compared to men (89). Exaggeration of risk may arise because of the rarity of female violence (especially if the crime has a high public profile and is disturbing) or because detained women may show high levels of disturbed behaviour (107). Detained women often use verbal abuse against staff, which takes a heavy emotional toll on professionals; and is viewed as far greater than working with men by forensic clinicians (92, 110).Three Canadian studies found that women are more frequently secluded than men (111–113), which may suggest either professional anger or helplessness with women who are perceived as "difficult" or threatening. In a Swedish study, (114) noted that when women in forensic care deviated from feminine gender norms, efforts were made to "normalise" their behaviour in order for them to become "acceptable."

In summary, the needs of violent women resemble those for violent men in terms of common risk factors, especially previous mental health issues, early childhood adversity and substance misuse. However, there may important differences in terms of the level of physical violence inflicted on others and women's apparently increased willingness to direct violence to their own bodies in the form of self-harming behaviour. These differences may also be influenced by gender role stereotypes in the women themselves as well as the criminal justice systems (115, 116).

Parkes and Freshwater (69) rightly point out the dangers of caring for women in forensic settings, from becoming embroiled in gang mentalities (117), being on the receiving end of demeaning attitudes of staff (118) and the risk of becoming re-traumatised in secure care (119). However, these are equally as likely consequences for men in similar circumstances.

## LEGAL RESPONSES TO FEMALE VIOLENCE AND GENDER ROLE STEREOTYPES

Violent women violate gender role stereotypes because (a) they are unusual as perpetrators and (b) unusual compared to non-violent women. There has been some exploration of how the criminal justice system may support stereotypes of women as essentially passive by depicting violent women as mentally ill, vulnerable or coerced in some way. For example, in a Canadian study, women were twice as likely to be found unfit to stand trial following a violent crime than men, even after controlling for age, psychosis, forensic history and offence severity (120). They are also more likely to be declared mentally ill and diverted to hospital for treatment following homicide and subsequent legal insanity evaluations (121). Wilson et al. (122) found that forensic experts were more likely to mention and explore substance use issues for men, and stress and relationship problems with women. There is some anecdotal evidence that when women are charged with violence alongside male co-defendants, the defence strategy will argue that the women were coerced by antisocial partners into committing acts of violence as if they were passive participants who lacked autonomy. Carlyle et al. (123) showed that media outlets portrayed female IPV perpetrators as emotional with a history of abuse, and needing assistance from male accomplices when carrying out violent acts.

Women who abuse and assault children are often presented as "monsters," and the defence will seek to normalise them in the criminal court. Wilczynski (74) has argued that mental illness is used to explain women's violence to children in legal settings because this "explanation" not only reduces legal culpability and public condemnation but also to enable female violence perpetrators to fit better into the gender role stereotype of a "normally mentally unwell" woman. Another example of this may be found in the "offence/defence" of infanticide, used in cases of infant deaths at the hands of a woman when the "balance of her mind was disturbed"; feminists have criticised this as medicalising offenders and ignoring wider societal causes for such crimes (124, 125). This phenomenon may also extend to sentencing outcomes. Women who have sexually offended tended to receive more lenient sentences than their male counterparts (126). This suggests a denial of female violence in the court, as well as a reluctance to understand or accept female violence outside of mental illness (127).

Violent and cruel women seem to attract more social condemnation than their otherwise similar male counterparts (128). Women convicted of offences involving violence and cruelty attract excessive and emotional attention from social and press media and responses appear to be polarised. As described above, if children are involved, women may be more likely to be seen as "monsters"; they may also be held to blame not only for their own actions, but for the actions of their male partners, if those partners are not available to be publicly condemned (for example, Rose West and Ghislaine Maxwell).

## GENDER ROLE STEREOTYPES AND WOMEN WORKING AS PROFESSIONALS IN FORENSIC SETTINGS

We conclude with some discussion about how gender role stereotypes might influence the work of women who work as professionals in forensic domains. Female forensic psychiatrists have long operated within traditionally male-predominant systems: namely those of medicine, law and the criminal justice system (129). Numbers of senior female clinicians are rising, but men still outnumber women in this field (130). The same gender imbalance seen in the forensic patient cohort is mirrored in forensic psychiatrists; in the United Kingdom 38% of forensic psychiatrists are women, compared to 25% in the United States (130, 131).

Most forensic services involve the control of male violence perpetrators by male custodians, and female professionals are still a minority. They may feel under pressure to behave like their male counterparts, and fear being perceived as "soft" in terms of discipline or boundaries in secure psychiatric settings. They may be encouraged to work with female offenders, as if they had something in common with them or could understand them better; and they may be assumed to be more at risk than their male colleagues of being attacked or offended by patient behaviours. Mercer and Perkins (132) explored female staff experiences of working with sexual offenders. Female nurses reported that they became absorbed in a stereotyped discourse in a "male" institutional space that assigned them sexual identities as opposed to professional. Therapeutic work related to sexual offending risk was deemed as "a job for the boys," who also provided "safety" and security' within the unit. The authors concluded that in this environment, female staff constructed themselves as "both at risk and inviting risk," as a product of their gender.

The challenges of being female in such masculine environments are multiple. Forensic units are largely comprised of male patients with antisocial tendencies, many of whom will have had traumatic childhoods and dysfunctional or abusive relationships with their primary attachment figures, usually their mothers. The power imbalance between female clinician and male patient is especially obvious in such a setting, and may give rise to a host of difficult emotions, from humiliation to rage and perhaps sexual arousal.

Crewe (133) reported that incarcerated men may sexualise female staff presence, objectifying them and undermining their professional authority. There is evidence that female forensic workers are more likely to enter into boundary-violating sexual relationships with their patients (134). There is a complexity here which is that females in forensic settings are arguably in powerful "male" roles, and their patients in "female" roles in terms of passivity; but male forensic patients are often detained in secure settings because of their capacity for manipulation and deceit (135). Theodorou and Ali (136) highlight the dangers of reducing sexual boundary violations by female professionals into female "victim" and male "perpetrator" roles. However, in terms of professional ethics, the female professional has "abused" their male victim, and their hostility to their patients may be sexualised *precisely because* of the power discrepancy which is denied.

Gender roles may also influence the type of work that professionals engage with; the role of expert witness in the court is a traditionally male one, from which women have been historically excluded (137). In the United States, it is reported that female forensic psychiatrists are less likely to undertake work as an independent expert in the criminal court. Here, female forensic psychiatrists are also twice as likely to believe that gender is a factor in the selection of forensic experts in the court when compared to their male counterparts (130). In a commentary on the study by Price et al., Hackett (138) identified potential "hassle factors" as a possible explanation for this perception. She suggested that such factors might include subtle disrespect toward the expert (e.g., failing to provide information) and unrealistic last-minute time demands, and recommended that these be explored.

For those women that do become involved in such work, Ednie (129) highlighted different communication styles for men and women, as women used more indirect and less arrogant styles, which in turn are linked to lower credibility. Daftary-Kapur et al. (139) found that female experts were more likely to be recipients of intrusive questioning. Overall, jurors rate male experts as more likeable, believable, trustworthy and confident (140). Although Kaempf et al. (141) did not find a significant effect of expert witness gender, they did find that females were more likely to report being improperly addressed in the court, suggesting that subtle differences in attitudes are present. Some studies found some advantages of being female experts, e.g., within family court settings or in cases of battered women (137, 142).

The literature on the impact of gender role stereotypes and expert evidence is largely American and it is not possible to say with confidence that the same patterns exist in other parts of the world. The reasons for this may be influenced by social role theory and normative gender expectations: men are generally expected to be more controlling, assertive and independent than women, traits that are favourable when undertaking work in the criminal justice system (143). It is clear that there are gender differences at play in this domain, and further exploration of gender role stereotypes is needed internationally, especially within inquisitorial systems.

## DISCUSSION

We have set out here some evidence to support a claim that that gender role stereotypes may be active and influential in

forensic psychiatry: in terms of how violence is formulated, which diagnoses are made in violence perpetrators, how violent women are "seen" differently to men and how the law may treat violent women differently. We do not claim that this brief paper is definitive: the study of gender role stereotypes is vast and we have touched on only a few aspects here. We are limited by data mostly from western societies. However, we argue that there is enough existing evidence to suggest that gender role stereotypes may be operating in subtle or not so subtle ways in the forensic domain, and may affect how both male and female violence perpetrators are seen by professionals, and how female professionals are seen by others.

Violence is not usual human behaviour; and violent women are unusual people. It can therefore be hard to establish evidence in this field, especially given that forensic services are a minority of mental health provision. We have a particular concern that failure to take women's cruelty seriously may lead to them being deprived of the kind of interventions that might help them desist from future cruelty. We suggest that focussing only on female violence perpetrators as traumatised, without paying due attention to their perpetrator experience, may be especially disabling for women; and deny them agency over their future risk in ways that are not the case for their male counterparts. Conversely, despite similar rates of childhood adversity in both genders, we are concerned that male offenders are not receiving trauma-based interventions that might make a difference to both mental health and future risk.

Gender role stereotypes are also perpetuated by the international media. Extensive attention is paid to violent women, particularly women who kill, inflict cruelty on children or who are involved in sexualised offences. Women appear to be typecast into roles of coerced victims, or accomplices to male partners. Alternatively, they are portrayed as monsters beyond retribution, as they have violated their expected roles as wives, mothers and partners.

Within the profession, there are more women than before; but still less than in other branches of medicine and psychiatry. There is a paucity of evidence examining gender bias within forensic settings. There does appear to be some evidence that female expert witnesses are viewed differently, and less favourably, to males in court settings. We wonder if forensic psychiatry is still seen as a largely male subspeciality, and if so, whether gender role stereotypes influence this. There is also some evidence to suggest that gender bias exists as part of daily life for female forensic professionals working in secure settings, prohibiting them from carrying out particular therapeutic tasks and typecasting them into dependent roles.

Overall, we suggest that it is time for the training of forensic clinicians to include close attention to gender role stereotypes and how they might consciously or unconsciously affect formulations of violence and its management. There may be ethical aspects to consider, especially if the influence of gender role stereotypes leads to offenders and professionals being treated unfairly and unjustly. Additionally, we recommend further research into the experience of both female patients and offenders, as well as female mental health professionals, who are navigating systems designed by men, for men.

In summary, it is disparities of power and vulnerability that have traditionally driven discourses of sex and gender; disparities that also exist within the field of forensic psychiatry. This paper is an invitation to increase awareness of gender as a social construct, which may be operating in forensic settings. If we do not explore and address these issues, there is a risk that forensic services will parallel the societies that caused such damage to our patients, and patient care will be affected in ways that are harmful.

## AUTHOR CONTRIBUTIONS

SA and GA discussed the scope of the manuscript and jointly contributed to the final manuscript. Both authors contributed to the article and approved the submitted version.

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# Decision-Making Within Forensic Psychiatric Investigations: The Use of Various Information Sources by Different Expert Groups to Reach Conclusions on Legal Insanity

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**Background:** Which type of information experts use to make decisions regarding legal insanity within forensic psychiatric investigations (FPI) is relatively unknown, both in general and when considering variations due to case context. It is important to explore this area to be able to counteract the effects of various kinds of cognitive bias.

**Method:** The aim was to explore whether FPI expert groups differed regarding case-specific as well as general use of information types required to make decisions on severe mental disorder (SMD). Three FPI case vignettes were presented to three professional groups involved in FPIs in Sweden ($n$ = 41): forensic psychiatrists ($n$ = 15), psychologists ($n$ = 15), and social workers ($n$ = 11). The participants reported which types of information they required to reach conclusions regarding SMD in each case. They also reported which types of information they had used within general FPI praxis during the previous year and the information types' perceived usefulness.

**Results:** The expert groups differed somewhat regarding what type of information they required for the cases (e.g., results from cognitive testing), but some information was required in all cases (e.g., client's self-report). Regarding the preliminary assessment of SMD in the three cases, minor differences were found. Within the general FPI praxis, experts reported using several information types, while the general perceived usefulness of these sources varied.

**Discussion:** The professional groups relied partly on a "core" of information sources, but some case-specific adaptations were found. The professional groups' inclination to suspect SMD also varied somewhat. This indicates a need to explore the potential consequences of these similarities and differences.

**Keywords: decision-making, forensic psychiatric investigation, psychiatric assessment, legal insanity, expert evaluation, court order**

## INTRODUCTION

The decision-making processes within forensic psychiatric investigations (FPI) are highly complex and vary between cases, and experts may even disagree on its conclusion (1). In order for the conclusions reached to be valid, FPIs need to be performed according to the best available current evidence on complex decision-making (2, 3). Since empirical data regarding FPI decision-making processes is largely lacking, it is important to begin with outlining what kind of information these decision-making processes are based on and relate this to the confirmed risk of the FPI experts' decision-making processes being affected by different biases (i.e., risks resulting in unequal legal treatment) (4). The present study explored what types of information sources were generally used in FPI praxis in Sweden and tested their application within various case contexts, illustrating the current information basis for the FPI's decision-making processes and also discussing specific high-risk areas for bias.

In research on decision-making in general, and complex decision-making in forensic investigations in particular, the dual-process theory (5) has been used (2). The dual-process theory has, since its initial conception [e.g., (6)], undergone changes (3, 7), but the central dividing of type 1 processing from type 2 processing remains. Decisions based on the more automatic type 1 processing are made quickly and virtually effortless, but when more complex problems emerge, type 1 processing should be replaced by the analytical type 2 processing. Type 2 processing requires considerably more focus and nuanced evaluation of information to solve the problem as appropriately as possible based on available facts. These two processes enable individuals to solve problems either fast/automatically or slow/analytically, but type 1 processing is the "default," and this kind of processing increases the risk of unwanted bias effects on decisions (8). Within FPI decision-making, this could be detrimental to the integrity of the conclusions due to rule of law (i.e., everybody is equal before the law and only relevant factors should impact legal decisions).

To provide reliable and accurate conclusions to the court, FPI experts need to make skilled observations and conclusions with as little influence of bias as possible (9). The term "bias" is often used to describe an individual's emotional involvement in a situation, but it can also be used to describe systematic cognitive errors that a person makes (10). It is very difficult to make decisions free from bias (both cognitive and emotional) (11, 12), and professionals are not immune. In fact, it has been suggested that experts could be even more vulnerable to bias if they trust too much on their own experience, which can decrease their effort to conduct a thorough examination of all available facts in a case (9, 13). Even when motivated to be unbiased, experts in forensic decision-making nevertheless seem to be susceptible. Since FPIs include making complex decisions, there is reason to believe that experts could be susceptible to various forms of bias (4). One such bias is the "bias blind spot," which refers to the common human tendency of recognizing bias in other individuals but fails to do this in oneself (14). This tendency to underestimate one's own bias compared to their colleagues has been identified in studies on forensic mental health professionals (10, 15). Neal and Brodsky (10) argued that such a bias induce overconfidence in the expert's own judgment which could lead to risky decision-making, including rejecting other professionals' divergent ideas which, if considered, potentially could have reduced the impact of bias and improved the decision validity.

Regarding bias in forensic sciences, Dror (16) presented a theoretical model outlining seven sources of bias (and underlying causes) that can affect experts within forensic sciences. The most basic kinds stem from human "wiring" (i.e., "cognitive architecture and the brain", "training and motivation"), others come from the environment, culture, and experience (i.e., "organizational factors," "base rate expectations"), and others are from the specific case context (i.e., "irrelevant case information," "reference materials," "case evidence"). Additional research confirms professional training as a factor biasing forensic decision-making (17). To minimize bias in forensic work, these sources of bias must be understood, and through understanding how they occur, counter-measures can be developed (16, 18). In the hierarchy of expert performance (HEP), the "observation" and the "conclusion" elements in expert decision-making are distinguished, designating when bias can cause different experts to reach different conclusions based on the same information. Within this model, Dror (16) discusses, among other things, the concept of "biasability," which includes the potential effect of irrelevant contextual information and other biases that may influence decisions. By using HEP, Dror (18) argues that research studies can be organized and conceptualized and a clear theoretical framework can be obtained; at the same time, there will be focus on reliability and biasability issues that cut across expert domains. Based on this model, it could be assumed that, by using more and more varied information sources, the impact of such different kinds of bias on decision-making could be diminished and increase the chance of type 2 processing to permeate the FPI decision-making process within various professional groups working with FPIs. Related to this, the importance of multi-method assessment has also been argued for, within research on psychological assessment praxis, gathering information from different sources and perspectives is a vital part of state-of-the-art psychological assessments today (19). This approach decreases the risk of bias affecting decisions [e.g., (20)] as well as increases the accuracy of decisions especially when standardized methods are used to inform the clinical assessment (21).

The forensic psychiatric investigations within the Swedish justice system differs in some respects to those of other countries. A central focus of the FPI is the legal concept of severe mental disorder (SMD), a psycho-legal term used in Sweden to differentiate between offenders who are normally sentenced to forensic psychiatric care rather than imprisonment (22, 23). When experts come to opposing conclusions regarding SMD, it may lead to diminished public confidence in the reliability of these assessments as well as in forensic psychiatric praxis in general (24). According to the legislative bill preceding the criminal code (25), the construct of SMD primarily encompasses psychotic states (e.g., delusions, thought disorders) or equivalent mental states, including severe personality disorders (e.g., with severe obsessive–compulsive traits and/or severe impulsive

breakthroughs) and certain neuropsychiatric disabilities, which should be equivalent in degree to a psychotic state with impaired or loss of reality orientation [i.e., related to the concept "legal insanity"; see Svennerlind (23) and Bennet and Radovic (26) for a discussion]. In 2020, 529 FPIs were conducted in Sweden (men: $n$ = 462), and 57% of the FPI clients were considered to have an SMD at the time of the crime (27). These investigations are performed on behalf of the court by the National Board of Forensic Medicine, Department of Forensic Psychiatry (DFP). An FPI is based on comprehensive, multi-professional assessments conducted within a team setting, where the court questions whether the person's mental state corresponds to a SMD at (a) the time of the crime and (b) at the time of the FPI (27). For a suspect in custody, an FPI lasts for a maximum of 4 weeks, during which the client is taken from police custody to stay at the ward at the DFP.

While the FPI team structure in Sweden includes four professional groups—forensic social workers, forensic psychologists, forensic psychiatrists, and nursing staff—England and Wales only include two physicians, of which one must be a psychiatrist who contributes to the assessment (28). In the United States, forensic mental health experts (including psychiatrists and psychologists) conduct assessments (and can be retained by one side or another in a case to testify in court) (4, 29), while in Norway two general specialists in psychiatry or one specialist in clinical psychology and one psychiatrist are appointed to make the assessment (30). In other parts of the world, such as Indonesia, it is also physicians/psychiatrists who conduct this kind of forensic assessments (1). Although Holland requires the participation of more than one professional group apart from psychiatrists [most often psychologists; see Messina et al. (31)] within assessments, Sweden's routine inclusion of four different expert groups in FPIs is unique in the European Union (28) and, to the best of our knowledge, in the world. In Sweden, each profession not only conducts their own assessment and writes a report submitted to the court but they also work together with a representative from all other professional groups in a team setting. As a standard, three team conferences are held during the course of an FPI. However, only the first three groups give an opinion regarding SMD from their different professional perspectives. The forensic psychiatrist, who has the overall responsibility for the FPI, gives the final recommendation regarding SMD (yes/no) to the court based on the different reports. Hence, despite the differences between Sweden and the other countries described above, Sweden is similar to many other countries regarding which professional group has the overall responsibility for the SMD decision delivered to the court. The assessment of SMD shall therefore be based on the perspectives and methods used by the respective professional groups, and the documents guiding each group's FPI praxis within DFP are described below.

The forensic social worker is responsible for providing documentation regarding psychosocial functioning and illustrating the person's life history. They formulate how previous experiences may have affected the person later in life and investigate the person's level of psychosocial functioning. This includes an investigation of relevant factors in the person's childhood, adolescence, and current situation [e.g., employment, substance abuse, criminal lifestyle, and social aspects of mental disorders (32)].

The forensic psychologist focuses on various aspects of psychological dysfunction and on psychiatric disorders, considering also various factors that could affect cognitive functioning (e.g., substance use, traumatic brain injury). Various psychological tests and other assessment methods are often used to illustrate the clients' cognitive and personality functioning in a standardized manner. This information is then related to the person's psychological functioning at the time of the crime and of the FPI (33).

The forensic psychiatrist is responsible for the FPI as a whole and writes two reports; first, a medical–psychiatric assessment and, second, the final summary FPI report (34, 35). Examples of aspects to consider in the medical–psychiatric assessment from a psychiatric perspective are familial heredity (e.g., mental illness, somatic diseases), psychiatric and physical medical history/current state (i.e., previous psychiatric diagnoses, epilepsy, somatic injuries), substance use/abuse, the client's behavior during the FPI (including the attitude toward their crime), and how such aspects could have affected the client's mental state at the time of the crime and FPI. The final FPI report is based on the above-mentioned medical–psychiatric assessment, the other professional group's reports, and a report from the nursing staff at the FPI ward (e.g., clinical impressions and behavior observations during the client's stay).

In sum, a vast amount of information can be acquired when conducting an FPI, and by having three professional groups considering the information both separately in their respective reports and together during the team meetings, an FPI is indeed a highly complex decision-making process that, as such, can be vulnerable to various kinds of bias. As previously mentioned, there has been some international research illustrating the case and/or assessment context's influence on the expert's conclusions regarding (a) legal insanity [see (36, 37)] and (b) SMD (i.e., the approximate equivalent to legal insanity in Sweden) (38, 39). However, to the best of our knowledge, no previous research has explored what kind of information forms the basis for these decisions, thus shaping the decision-making process of FPIs in Sweden either in a general manner or when the case context is varied.

The purpose of the present study was to explore whether FPI experts from different professional groups (i.e., forensic psychiatrist, forensic psychologist, forensic social worker) differed regarding how many information sources and which types they would require to make decisions on SMD in different types of cases (see part 1). The aim was also to explore the use of information in general FPI praxis, focusing on which types of information they had based their FPI decisions on during the past year and how useful these different types of information had been (see part 2 and part 3). The research questions were the following:

Part 1

1. Do the professions differ regarding how many information sources they required to conduct their FPI assessment in three different case contexts (here case vignettes)?

2. Do the FPI experts adapt their type of required information to these three case contexts?
3. Do the professional groups differ in their conclusion regarding SMD at the time of the (a) crime and (b) FPI within these case contexts?

Part 2 and Part 3

4. Do the professional groups differ regarding (a) what type and (b) how many information sources they have used during the past year and also (c) how helpful they perceive these different information sources to have been?

# MATERIALS AND METHODS

This study was part of the research project "Decision-making in forensic psychiatric investigations: theory and practice," with the purpose to illustrate the decision-making process within FPIs at the National Board of Forensic Medicine in Sweden. The project's data was collected during November and December 2019. The project was approved by the Swedish Ethical review authority (Dnr: 940-16).

## Participants

A list of all experts currently working with FPIs at the DFP in Sweden was compiled and, *via* e-mail, informed and invited to participate ($n$ = 66, one participant was excluded due to long-term sick leave): forensic psychiatrists ($n$ = 27, of which seven were residents in forensic psychiatry, specialists in general psychiatry), forensic social workers ($n$ = 19), and forensic psychologists ($n$ = 20). If the invitee agreed to participate, they were instructed to respond to the e-mail, sign the attached informed consent form, and choose among the specified time slots for participation. After two subsequent reminders *via* e-mail, 33 experts, in total, expressed their interest. However, since some more experts who had expressed their interest to participate were not available on the suggested dates (e.g., short-term sick leave, holiday), additional time slots were suggested, resulting in the participation of eight additional experts. The final sample ($n$ = 41) consisted of 15 forensic psychiatrists (with three residents), 15 forensic psychologists, and 11 forensic social workers. The participation rate from the initial invitation was 62%.

## Instrument and Measures

Three case vignettes were used to gather both quantitative data (i.e., concerning the use of certain information sources and the conclusions noted in a response form) and qualitative data (i.e., answers to open-ended questions generating written responses, not presented here). Before reading the vignettes and answering its response form, a semi-structured interview was conducted with the participants [see Svensson et al. (40), for more information].

### The Response Form

The response form and case vignettes were created by clinicians both within the DFP (MK, PA, and OS) and in general mental health practice (ASLB). A non-clinical researcher also participated (SR) in order for the material to be suitable tools for answering the research questions. The response form (see **Figure 1** for overview) was pilot-tested by one representative from each profession with whom the list of information sources was also discussed to see if any source needed to be changed or added. On the first page of the response form, the participants were given a brief introduction to the three-part structure of the form, and background variables were also collected regarding (1) how many FPIs they had participated in and (2) their profession (i.e., forensic psychologist, forensic social worker, or forensic psychiatrist). The response form consisted of three parts. In part 1 of the response form, the participants read the three case vignettes describing the clients undergoing an FPI, with varied psychiatric profile and context behavior during the FPI, and although the crime was the same (aggravated assault), its context also differed (e.g., victim, setting). Each case vignette was created not only with a particular ideal type in mind (here a type of case that was considered to be fairly common in the FPI context and also related in different manners to the nuances of the SMD construct) but also somewhat ambiguous and not presented as clear cut regarding either the psychiatric problem profile or SMD. The case vignettes are summarized in the discussion below.

### Vignette 1

A 23-year-old man was charged with aggravated assault on a university classmate. He was described during the FPI to be reserved and suspicious, having told the FPI team that his classmates had laughed behind his back (cited as one reason for the assault). He had confessed and said that he had been drinking a couple of bottles of beer before the assault. He tells the FPI team that he has had a normal childhood, had friends, and had no current or historical alcohol or drug abuse but that he has been lately drinking more beer than usual. It has been hard for him to cope with school which had led to sleep difficulties, increased stress, and irregular eating routines. His life data (i.e., principally record-based information) indicated no contact with a child psychiatrist but that he later, in life, had sought psychiatric care for depression, anxiety, and increasing isolation (but never medicated). His childhood seemed to have been happy, and his relatives stated that no behavior problems were observed during his youth. He had passing grades during primary school and high school. At 20 years old, he moved to a new city for university studies, where he had problems finding new friends. In intellectual testing, his overall IQ level was within the normal range, but his results regarding processing speed were within the lower part of the normal range. Taken together, this vignette was meant to reflect a person with possible psychosis by highlighting different key characteristics, such as suspiciousness/paranoia, the nature of violence, and distorted perception of reality. However, the subtlety of symptoms and potential soundness of his interpretation of his classmates' behavior (where information was lacking) could be arguments against SMD in this case.

### Vignette 2

A 29-year-old man was charged with aggravated assault on an acquaintance. During the FPI, he greeted the team

politely, quickly took command of the situation, and appeared accommodating and carefree upon social interaction. However, it soon became clear that he could not handle being contradicted, and he asked, in a threatening manner, if there was any other investigator who might understand his situation better. Such behavioral changes between being accommodating and threatening had also been noted by the staff during his stay at the ward. He had consumed alcohol and anxiolytics/sedatives at the time of the assault, and he stated that he was innocent. The records showed no contact with psychiatric care during his childhood, but as an adult, he had been treated for depression and anxiety. His parents divorced when he was 10, and he has had no contact with his father since. He has passing grades from primary school to high school and stated that he had friends and also had a few (although short) romantic relationships. He admitted substance use but denied drug problems. He was initially positive toward intellectual testing, but soon after starting such, he discontinued the testing due to it being a "bad test of intelligence" and a "waste of time." The clinical impression during testing and the tests that were completed before his discontinuation indicated a normal (at least not significantly low) IQ level. He said that he often felt misunderstood and often wondered if people were out to get him or wanted to sabotage him. He also mentioned in the interviews that he used "markers" at his door to be sure that no one had entered the apartment when was not home or was sleeping and that he had a bulletproof vest at home, although it also became clear that he did not have a criminal lifestyle. This case vignette was meant to reflect the ideal type of a personality syndrome (including antisocial traits) by highlighting his grandiose, manipulating behavior and need for control. However, the symptoms of paranoia (depending on their severity and impact on reality monitoring where information was lacking) may nevertheless indicate an SMD.

## Vignette 3

A 25-year-old man was charged with aggravated assault on his mother. There was no indication that he was under the influence of alcohol or drugs at the time, he denied current alcohol and drug use, and he did not talk about his feelings or thoughts concerning the assault. His life situation at the time of the assault was fraught with irritation. He was a probationary employee, and he thought that his boss was an "idiot" and that his workplace was too noisy. During the investigation, he largely only answered questions which needed a "yes"/"no" response. On the rare occasions that he made eye contact, the quality was perceived as peculiar (e.g., too intense or too erratic). His facial expressions were rather sparse, and he did not express either strongly negative or positive emotions. According to records, he lived with his mother, had never met his father, and had no current nor previous psychiatric contact. He had completed primary school with passing grades but discontinued high school since he did not like it there (he said the teachers and classmates were "stupid"). He had no current or historic romantic relationship and did not want to answer questions regarding friends. The general intellectual testing indicated a verbal intelligence level, the task processing speed was below the normal range, and there was a perceptual intelligence level within the normal range. The ideal type behind this case reflects a person who primarily has neuropsychiatric problems (e.g., autism), highlighting factors such as his impaired psychosocial functioning and normatively deviant social interaction patterns. However, the severity of the psychiatric symptoms, disturbed reality monitoring, and impaired psychosocial functioning (i.e., unclear factors in the vignette) could make an SMD possible in this case.

After reading each vignette, the participants were asked to list down the types of information that they would require to be able to make an SMD decision. They were also asked to note their preliminary assessment of SMD/no SMD and their preliminary psychiatric diagnostic hypothesis and present arguments for and against their SMD assessment and diagnostic evaluations.

In part 2 of the response form, based on a list with 18 different information sources (see **Table 1**), the participants marked all types that they often used while working with FPIs (including determining a diagnosis). All information sources were specified, apart from no. 18 ("other sources"), which gave the participants a chance to name themselves the information sources that they used and that had not been mentioned previously in the list.

In part 3, the participants ranked the information sources in the 18-item list mentioned above according to how much they considered each source to have been of help in their FPIs during

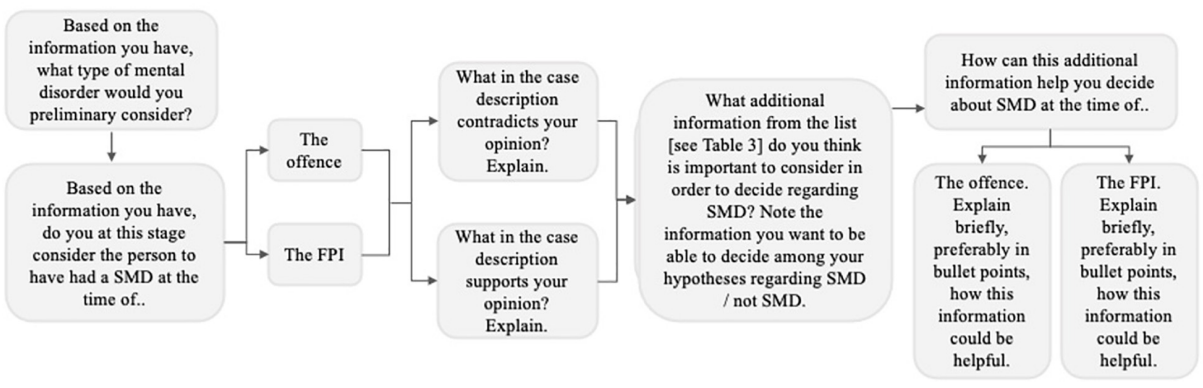


**FIGURE 1 |** Flowchart representing the sequence of the questions in the case vignette part (part 1) of the response form.

**TABLE 1 |** The sample's and the professional groups' use of information in general FPI-praxis (part 2), in the three cases (part 1), and in their perceived usefulness of the information sources (part 3).

| | Type of information source | Part 2: percent of participants who used the information in general FPI-praxis | Part 1: percent of participants who requested the respective sources of information in each case | | | Part 1, continued $\chi^2$ test; differences between professions in requested information sources for each case | Part 3: the overall most commonly reported alternative (%/*n*) |
|---|---|---|---|---|---|---|---|
| | | | Case 1 | Case 2 | Case 3 | | |
| 1 | Information (verbal and non-verbal) from interviews conducted by forensic social worker | 85% (*n* = 35) | 76 (*n* = 31 Pg: 10 Sw: 9 Pt: 12) | 83 (*n* = 34 Pg: 11 Sw: 10 Pt: 13) | 85 (*n* = 35 Pg: 11 Sw: 10 Pt: 14) | 1: $\chi^2$ (2, *n* = 41) = 1.04, *p* = 0.595<br>2: $\chi^2$ (2, *n* = 41) = 1.61, *p* = 0.445<br>3: $\chi^2$ (2, *n* = 41) = 2.77, *p* = 0.250 | 6 (32%, *n* = 13) |
| 2 | Information (verbal and non-verbal) from an interview with a forensic psychologist | 93% (*n* = 38) | 95 (*n* = 39 Pg: 15 Sw: 9 Pt: 15) | 95 (*n* = 39 Pg: 15 Sw: 9 Pt: 15) | 95 (*n* = 39 Pg: 15 Sw: 9 Pt: 15) | 1: $\chi^2$ (2, *n* = 41) = 5.73, *p* = 0.057<br>2: $\chi^2$ (2, *n* = 41) = 5.73, *p* = 0.057<br>3: $\chi^2$ (2, *n* = 41) = 5.73, *p* = 0.057 | 6 (41%, *n* = 17) |
| 3 | Information (verbal and non-verbal) from a medical interview (psychiatrist) | 93% (*n* = 38) | 95 (*n* = 39 Pg: 15 Sw: 9 Pt: 15) | 93 (*n* = 38 Pg: 14 Sw: 9 Pt: 15) | 90 (*n* = 37 Pg: 13 Sw: 9 Pt: 15) | 1: $\chi^2$ (2, *n* = 41) = 5.73, *p* = 0.057<br>2: $\chi^2$ (2, *n* = 41) = 3.10, *p* = 0.211<br>3: $\chi^2$ (2, *n* = 41) = 2.72, *p* = 0.256 | 6 (56%, *n* = 23) |
| 4 | Observations from the ward where the person stayed during the investigation | 93% (*n* = 38) | 100 (*n* = 41 Pg: 15 Sw: 11 Pt: 15) | 93 (*n* = 38 Pg: 14 Sw: 10 Pt: 14) | 100 (*n* = 41 Pg: 15 Sw: 11 Pt: 15) | 1: No analysis possible, all answered yes.<br>2: $\chi^2$ (2, *n* = 41) = 0.07, *p* = 0.966<br>3: No analysis possible, all answered yes | 6 (44%, *n* = 18) |
| 5 | Results on subtests or full-scale values in intelligence tests | 93% (*n* = 38) | 39 (*n* = 16 Pg: 8 Sw:2 Pt: 6) | 34 (*n* = 14 Pg: 9 Sw: 2 Pt: 3) | 56 (*n* = 23 Pg: 11 Sw: 3 Pt: 9) | 1: $\chi^2$ (2, *n* = 41) = 3.30, *p* = 0.192<br>2: $\chi^2$ (2, *n* = 41) = 7.04, *p* = 0.030[a]<br>3: $\chi^2$ (2, *n* = 41) = 5.61, *p* = 0.060 | 4 (34%, *n* = 14) |
| 6 | Results from psychological descriptive tests of cognitive functions | 80% (*n* = 33) | 49 (*n* = 29 Pg: 10 Sw: 4 Pt: 6) | 44 (*n* = 18 Pg: 9 Sw: 4 Pt: 5) | 68 (*n* = 28 Pg: 12 Sw: 6 Pt: 10) | 1: $\chi^2$ (2, *n* = 41) = 3.06, *p* = 0.216<br>2: $\chi^2$ (2, *n* = 41) = 2.51, *p* = 0.285<br>3: $\chi^2$ (2, *n* = 41) = 1.92, *p* = 0.381 | 3 (37%, *n* = 15) |
| 7 | Results from psychiatric self-assessment forms | 68% (*n* = 28) | 54 (*n* = 22 Pg: 12 Sw: 2 Pt: 8) | 59 (*n* = 24 Pg: 12 Sw: 4 Pt: 8) | 51 (*n* = 21 Pg: 12 Sw: 2 Pt: 7) | 1: $\chi^2$ (2, *n* = 41) = 9.75, *p* = 0.008[a]<br>2: $\chi^2$ (2, *n* = 41) = 5.24, *p* = 0.073<br>3: $\chi^2$ (2, *n* = 41) = 9.90, *p* = 0.007[a] | 3 (32%, *n* = 13) |
| 8 | Results from performance-based tests that examine how the person processes stimuli and solves tasks | 61% (*n* = 25) | 54 (*n* = 22 Pg: 7 Sw: 5 Pt: 10) | 24 (*n* = 10 Pg: 4 Sw: 1 Pt: 5) | 61 (*n* = 25 Pg: 9 Sw: 6 Pt: 10) | 1: $\chi^2$ (2, *n* = 41) = 1.61, *p* = 0.446<br>2: $\chi^2$ (2, *n* = 41) = 2.08, *p* = 0.352<br>3: $\chi^2$ (2, *n* = 41) = 0.40, *p* = 0.818 | 3 (37%, *n* = 15) |
| 9 | Results from projective tests that require association | 29% (*n* = 12) | 22 (*n* = 9 Pg: 4 Sw: 1 Pt: 4) | 15 (*n* = 6 Pg: 3 Sw: 1 Pt: 2) | 32 (*n* = 13 Pg: 3 Sw: 4 Pt: 6) | 1: $\chi^2$ (2, *n* = 41) = 1.45, *p* = 0.484<br>2: $\chi^2$ (2, *n* = 41) = 0.63, *p* = 0.727<br>3: $\chi^2$ (2, *n* = 41) = 1.53, *p* = 0.464 | 7 (27%, *n* = 11) |

*(Continued)*

**TABLE 1 |** (Continued)

| | Type of information source | Part 2: percent of participants who used the information in general FPI-praxis | Part 1: percent of participants who requested the respective sources of information in each case | | | Part 1, continued $\chi^2$ test; differences between professions in requested information sources for each case | Part 3: the overall most commonly reported alternative (%/*n*) |
|---|---|---|---|---|---|---|---|
| | | | Case 1 | Case 2 | Case 3 | | |
| 10 | Reports from the police (for example the person's behavior at the crime scene, at the time of arrest, in custody) | 90% (*n* = 37) | 98 (*n* = 40 Pg: 14 Sw: 11 Pt: 15) | 98 (*n* = 40 Pg: 14 Sw: 11 Pt: 15) | 90 (*n* = 37 Pg: 11 Sw: 11 Pt: 15) | 1: $\chi^2$ (2, *n* = 41) = 1.77, *p* = 0.411<br>2: $\chi^2$ (2, *n* = 41) = 1.77, *p* = 0.411<br>3: $\chi^2$ (2, *n* = 41) = 7.68, *p* = 0.021[a] | 6 (44%, *n* = 18) |
| 11 | Reports from prosecutors | 34% (*n* = 14) | 27 (*n* = 11 Pg: 4 Sw: 4 Pt: 3) | 27 (*n* = 11 Pg: 4 Sw: 4 Pt: 3) | 22 8 (*n* = 9 Pg: 3 Sw: 3 Pt: 3) | 1: $\chi^2$ (2, *n* = 41) = 0.86, *p* = 0.649<br>2: $\chi^2$ (2, *n* = 41) = 0.86, *p* = 0.649<br>3: $\chi^2$ (2, *n* = 41) = 2.48, *p* = 0.883 | 8 (24%, *n* = 10) |
| 12 | Reports from lawyers | 22% (*n* = 9) | 17 (*n* = 7 Pg: 4 Sw: 1 Pt: 2) | 17 (*n* = 7 Pg: 4 Sw: 1 Pt: 2) | 17 (*n* = 7 Pg: 3 Sw: 1 Pt: 3) | 1: $\chi^2$ (2, *n* = 41) = 1.61, *p* = 0.445<br>2: $\chi^2$ (2, *n* = 41) = 1.61, *p* = 0.445<br>3: $\chi^2$ (2, *n* = 41) = 0.67, *p* = 0.713 | 7 (32%, *n* = 13) |
| 13 | Reports from witnesses or other third parties related to the crime | 88% (*n* = 36) | 98 (*n* = 40 Pg: 14 Sw: 11 Pt: 15) | 93 (*n* = 38 Pg: 15 Sw: 10 Pt: 13) | 83 (*n* = 34 Pg: 15 Sw: 6 Pt: 13) | 1: $\chi^2$ (2, *n* = 41) = 1.77, *p* = 0.411<br>2: $\chi^2$ (2, *n* = 41) = 2.03, *p* = 0.361<br>3: $\chi^2$ (2, *n* = 41) = 9.49, *p* = 0.009[a] | 5 (44%, *n* = 18) |
| 14 | Reports from interviews with relatives or other third parties related to the person's functional level | 85% (*n* = 35) | 90 (*n* = 37 Pg: 15 Sw: 9 Pt: 13) | 78 (*n* = 32 Pg: 13 Sw: 11 Pt: 8) | 98 (*n* = 40 Pg: 15 Sw: 10 Pt: 15) | 1: $\chi^2$ (2, *n* = 41) = 2.72, *p* = 0.256<br>2: $\chi^2$ (2, *n* = 41) = 9.09, *p* = 0.011[a]<br>3: $\chi^2$ (2, *n* = 41) = 2.79, *p* = 0.247 | 4 (39%, *n* = 16) |
| 15 | Reports from interviews with relatives or other third parties related to the person's personality | 71% (*n* = 29) | 68 (*n* = 28 Pg: 12 Sw: 6 Pt: 10) | 76 (*n* = 31 Pg: 13 Sw: 7 Pt: 11) | 78 (*n* = 32 Pg: 12 Sw: 9 Pt: 11) | 1: $\chi^2$ (2, *n* = 41) = 1.92, *p* = 0.381<br>2: $\chi^2$ (2, *n* = 41) = 1.89, *p* = 0.388<br>3: $\chi^2$ (2, *n* = 41) = 0.31, *p* = 0.852 | 3 (37%, *n* = 15) |
| 16 | Physical examination | 63% (*n* = 26) | 24 (*n* = 10 Pg: 4 Sw: 1 Pt: 5) | 20 (*n* = 18 Pg: 2 Sw: 0 Pt: 6) | 27 (*n* = 11 Pg: 3 Sw: 0 Pt: 8) | 1: $\chi^2$ (2, *n* = 41) = 2.08, *p* = 0.352<br>2: $\chi^2$ (2, *n* = 41) = 7.04, *p* = 0.030[a]<br>3: $\chi^2$ (2, *n* = 41) = 9.75, *p* = 0.008[a] | 2 (39%, *n* = 16) |
| 17 | Biological factors (for example, drug trials, EEC, brain imaging studies) | 83% (*n* = 34) | 49 (*n* = 20 Pg: 10 Sw: 6 Pt: 9) | 63 (*n* = 26 Pg: 9 Sw: 8 Pt: 9) | 46 (*n* = 19 Pg: 8 Sw: 4 Pt: 7) | 1: $\chi^2$ (2, *n* = 41) = 0.40, *p* = 0.818<br>2: $\chi^2$ (2, *n* = 41) = 5.62, *p* = 0.755<br>3: $\chi^2$ (2, *n* = 41) = 0.736, *p* = 0.692 | 3 (37%, *n* = 15) |
| 18 | Other factors (specify) | | | | | Not included | |

*Red (2), rarely useful; orange (3), sometimes useful; yellow (4), often useful; light green (5), almost always useful; dark green (6), always useful; light blue (7), source not used; blue (8), do not know if this source is useful or not; Pg, forensic psychologist; Sw, forensic social worker; Pt, forensic psychiatrist.*

[a]*Alpha-level set to $p < 0.05$, but after Bonferroni correction for multiple comparisons, $p = 0.003$. No values reached a statistical difference after Bonferroni correction.*

the past year. Each source was rated on a scale between 1 and 6 (anchors: 1 = never useful, 6 = always useful) or answered by ticking either of two boxes: "source not used" or "don't know if this source is useful or not". In part 3, the participants specified, for each source and in short formulations, how this information source had been useful in FPIs (e.g., "having had previous treatment contact with psychologist" or "mental illness in the family").

The list of information sources was based on information sources commonly used in FPI praxis (e.g., psychiatric journals, documents from the criminal investigation), but the formulation of the sources was then guided by a previous research on state-of-the-art psychological assessment (19) to include life data (information about the person's life, such as marriage and children, life events, and education), self-report data (information that the individual shares about himself—for instance, *via* psychiatric journal and in interviews), test data (information from completed tests), and observation data (observations of the person, such as referent interviews with physicians, teachers, or relatives).

## Procedure

The data was collected principally for 2 weeks: the first week on two consecutive days at one of the departments of DPF and the subsequent week on two consecutive days at the other department. The participants were instructed to not discuss the interview questions and vignettes with co-workers until the entire data collection was completed to minimize external influence on the answers. To further minimize this risk, the data collection was carried out during as few days, as closely together, as possible. Since some experts expressed interest but were unavailable on the specific dates, eight participants were included after these two data collection weeks. Adding eight more participants was considered important enough to risk minor contamination of them as data sources since statistical power was critical.

Before the participants read the vignettes and answered its response form, they also participated in a semi-structured interview [see Svensson et al. (40) for more information]. Before the interview, the participants were given information about the purpose of the study and signed the informed consent form. After the interview, the participants received the vignettes and response form (answered alone in a secluded room). The concluding participation took approximately 1.5 h, after which the participants were instructed to put their individually coded response forms in a blank envelope and put this in a sealed letter box which was emptied after their participation (all participants gave answers to this form).

## Data Analysis

Statistical analyses were conducted (SPSS 26) on the use of information sources to identify which sources the FPI experts (1) required for each of the three case vignettes and (2) had used in their FPI praxis during the past year and (3) the perceived usefulness of each information source during that year. The alpha level was set to $p < 0.05$ using Bonferroni correction when required. The grouping by professional experience was restructured to obtain numerically more equal group sizes. For part 1, a between–within-subjects ANOVA was used to examine the same information sources' perceived relevance to the three cases. The dependent variable was the number of information sources requested for each case. To analyze the consensus between professions and cases regarding which information source to base their decisions on in the respective cases, Cohen's Kappa was also used. The Kappa values were interpreted based on McHughs (41) approach: 0–0.20 = no/negligible agreement, 0.21–0.39 = minimal agreement, 0.40–0.59 = weak agreement, 0.60–0.79 = moderate agreement, 0.80–0.90 = strong agreement, and ≥90 = almost perfect agreement. A $\chi^2$ test for independence was also performed for each vignette case to explore potential differences in the proportions of the professional group's opinion regarding suspected SMD/no SMD. For part 2, a one-way ANOVA was used to investigate the number of information sources that the professions reported to have used during the previous year. Three participants had missing values and were excluded from this analysis. For part 3, Kruskal–Wallis $H$-test was performed regarding how useful the different professions perceived the various information sources used during the previous year to be.

# RESULTS

In terms of profession and level of experience (see **Figure 2**), two $\chi^2$ goodness-of-fit tests indicated no significant differences in the proportion of profession groups by experience level represented in the sample, $\chi^2$ (8, $n$ = 41) = 3.32, $p$ = 0.913, and no significant difference regarding the represented professions' level of experience, $\chi^2$ (4, $n$ = 41) = 5.46, $p$ = 0.243. However, the tests of normality showed that the variable experience was not normally distributed (all Shapiro–Wilk > 0.775, all $p < 0.062$). This variable was therefore not used as an independent variable in the analyses.

## Part 1: Differences Between the Professions' Use of Information in the Three Cases

Part 1 incorporated research questions 1–3. Numerically, forensic psychologists requested most sources of information in all three case vignettes, while forensic social workers requested the least, and psychiatrists varied the most between the case context in how many information sources they requested (see **Table 2** and **Figure 3**). The tests of normality for the number of information sources requested in cases 1, 2, and 3, respectively (i.e., three variables), were not significant (all Shapiro–Wilk > 0.924; all $p > 0.223$).

A between–within-subjects ANOVA was conducted to investigate if the professions differed regarding how many information sources they requested in each of the three cases (between-subjects factor: profession; within-subjects factor: number of requested information sources for cases 1, 2, and 3, respectively) (see **Figure 4**). The results of Box's test and Levene's test were not significant for either case (all $p > 0.52$). The multivariate test showed a significant main effect and a large effect size for type of case [Wilks' Lambda = 0.76, $F(2,37)$ = 5.65,

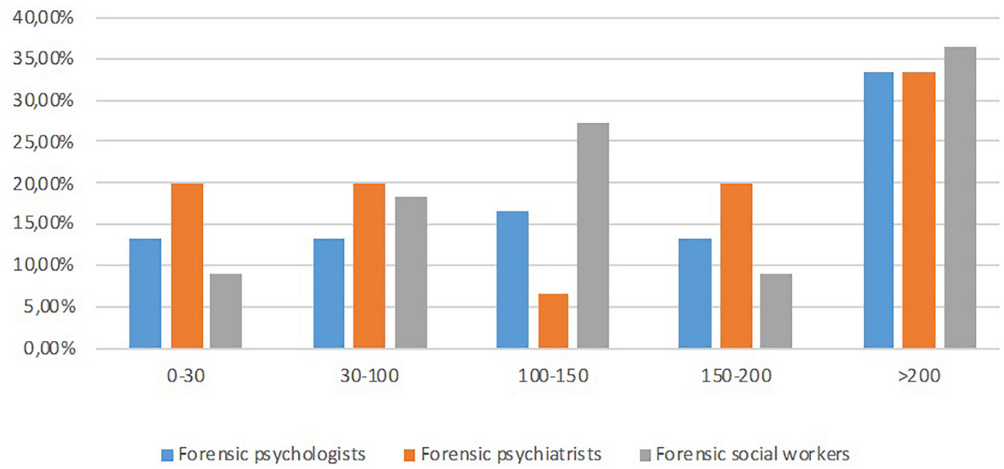


**FIGURE 2 |** Percent of participants by profession and experience.

**TABLE 2 |** Mean values (and standard deviations) of number of information sources in each case vignette by profession and experience.

| Case | Profession | | | Experience | | | | |
|---|---|---|---|---|---|---|---|---|
| | Forensic psychologist ($n$ = 15) | Forensic social worker ($n$ = 11) | Forensic psychiatrist ($n$ = 15) | 1–30 ($n$ = 6) | 30–100 ($n$ = 7) | 100–150 ($n$ = 8) | 150–200 ($n$ = 6) | >200 ($n$ = 14) |
| Case 1 | 11.53 (3.2) | 9.18 (3.45) | 10.86 (2.97) | 11.50 (3.56) | 10.00 (2.08) | 9.12 (2.74) | 9.83 (4.07) | 11.85 (3.37) |
| Case 2 | 11.00 (3.09) | 9.27 (2.83) | 9.80 (2.98) | 10.00 (2.96) | 10.14 (1.95) | 8.37 (3.24) | 10.16 (3.92) | 11.07 (2.84) |
| Case 3 | 11.40 (3.11) | 9.45 (2.42) | 11.73 (2.63) | 11.16 (3.12) | 11.14 (3.18) | 9.62 (2.61) | 11.16 (3.06) | 11.57 (2.82) |

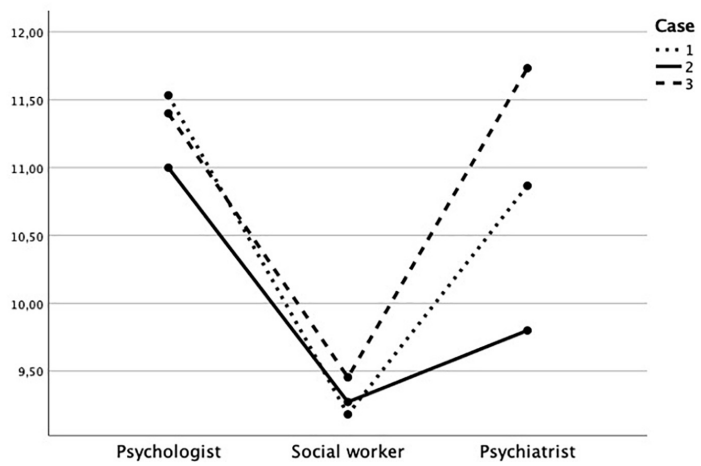


**FIGURE 3 |** Mean values of information sources requested by each profession in each case.

$p$ = 0.007, $\eta^2$ = 0.23]. There was no significant interaction between type of case and profession [Wilks' Lambda = 0.78, $F(4,74) = 2.42$, $p = 0.056$, $\eta^2 = 0.12$]. The result of the univariate test of within-subjects effects for type of case was significant [$F(2,76) = 3.46$, $p = 0.037$, $\eta^2 = 0.08$]. The result of the univariate test of between-subjects effects for profession was not significant [$F(2,38) = 1.77$, $p = 0.184$, $\eta^2 = 0.09$]. Taken together, the professional groups wanted to use the most information sources in case 3 and the least in case 2, but the professional groups did not differ significantly regarding how many they requested.

Different types of information were relevant for different cases. The Kappa statistic was used to determine an expert's consistency over the three cases regarding which types of information were considered relevant. Due to the many

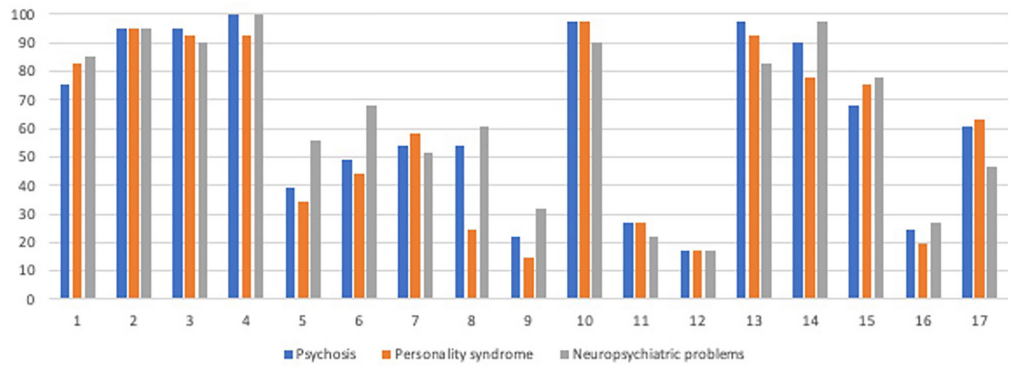


**FIGURE 4 |** Percentage of participants who requested the information source per case.

comparisons made, differences found at $p = 0.05$ between cases regarding information sources were reported here for transparency's sake, but only those which met the Bonferroni-corrected alpha-level were referred to as significant (adjusted: $p = 0.003$; 17 analyses made—see **Figure 4** for an overview of all results). The significant differences are outlined below.

## Reports From Relatives/Third Party: Personality and Functioning

Regarding source 13, reports from witnesses/third party about the crime, a minimal agreement between cases 2 and 3 was found ($\varkappa = 0.33$), with this source being considered the most important in case 1, but it was not significant after correction ($p = 0.018$). Regarding source 14, interview with relatives/other third party regarding functional level, a significantly minimal agreement between cases 1 and 3 was found ($\varkappa = 0.38$, $p = 0.002$), where this source was often deemed relevant for case 3 but not for case 1. Regarding source 15, interview with relatives/other third-party regarding personality, this differed significantly between both cases 1 and 2 ($\varkappa = 0.70$, $p < 0.001$; more relevant to case 2) and between cases 2 and 3 ($\varkappa = 0.66$, $p < 0.001$; more relevant for case 3). Although the agreement was also minimal between cases 1 and 3 (more relevant for case 3), this was not significant after Bonferroni correction ($\varkappa = 0.39$, $p = 0.011$).

## Tests of Cognitive Functioning

Regarding the use of source 5, results from intelligence test, significantly weak agreements were found between cases 1 and 2 ($\varkappa = 0.48$, $p = 0.002$) and between cases 2 and 3 ($\varkappa = 0.48$, $p = 0.001$) but with only a non-significant minimal agreement between cases 1 and 3 ($\varkappa = 0.38$, $p = 0.009$). Regarding question 6, descriptive psychological tests of cognitive functions, significantly weak agreements were found between all cases: 1 and 2 ($\varkappa = 0.51$, $p = 0.001$), 1 and 3 ($\varkappa = 0.52$, $p < 0.001$), and 2 and 3 ($\varkappa = 0.44$, $p = 0.001$). These two sources were considered most important in case 3, less so in case 1, and the least in case 2. Regarding source 8, performance-based tests, a significantly weak agreement was found between cases 1 and 3 ($\varkappa = 0.46$, $p = 0.003$). These low levels of agreement were due to the source being considered more important in case 3 than in case 1. Although the agreement was also minimal between cases 1 and 2 ($\varkappa = 0.34$, $p = 0.008$; more relevant for case 1 than for case 2). This was not significant after Bonferroni-correction.

## Self-Report Forms

Regarding source 7, results from psychiatric self-report forms, its importance differed between cases 1 and 2 ($\varkappa = 0.70$, $p < 0.001$; significant and with varying agreement), between cases 1 and 3 ($\varkappa = 0.56$, $p < 0.001$), and cases 2 and 3 ($\varkappa = 0.46$, $p = 0.003$; both significant and with weak agreement). Taken together, this source was considered most important in case 2, less so in case 1, and the least in case 3.

## Reports From Police

Regarding source 10, reports from police, this information was considered less important in case 3 compared to those in cases 1 and 2 (both significant comparisons: $\varkappa = 0.38$, $p = 0.002$). However, a significant and perfect agreement was found between cases 1 and 2 ($\varkappa = 1.0$, $p < 0.001$; all participants considered this information source important in these two cases).

To ascertain whether there were differences among the three professional groups regarding which information sources they requested in each of the three cases, $\chi^2$ tests were performed. Significant results were found for six information sources—for example, psychologists and psychiatrists requested intelligence testing results more often in case 2 than the other professions did ($p = 0.030$), psychologists and psychiatrist requested self-reported psychiatric symptom forms in case 1 ($p = 0.008$) and case 3 ($p = 0.007$) more often than social workers did, and psychiatrists requested physical examination more often in case 2 ($p = 0.030$) and case 3 ($p = 0.008$) than the other professions did (see **Table 1** for all results). However, none was significant after Bonferroni correction ($p = 0.003$).

## Different Professions' Conclusion Regarding SMD

To examine the professions' preliminary assessment regarding SMD at (a) the time of the crime and (b) the time of the FPI, a $\chi^2$ test for independence was performed for each case. Only in case 1 (i.e., ambiguous psychosis) was a difference (at $p = 0.05$) found between the professions regarding SMD at the time of the FPI: forensic psychologists leaned toward SMD more often than expected [$\chi^2(1,41) = 4.90$, $p = 0.030$] and forensic social workers leaned toward SMD less often than expected [$\chi^2(1,41) = 5.88$,

**TABLE 3 |** Percentage of the professional groups' assessment regarding severe mental disorder in each case at the time of the crime and at the forensic psychiatric investigations.

| | Case 1 | | Case 2 | | Case 3 | |
|---|---|---|---|---|---|---|
| | The crime (yes/no) | The FPI (yes/no) | The crime (yes/no) | The FPI (yes/no) | The crime (yes/no) | The FPI (yes/no) |
| Forensic psychologist | 93%/7% | 93%/7% | 7%/96% | 0%/100% | 67%/33% | 60%/40% |
| Forensic psychiatrist | 73%/27% | 73%/27% | 7%/96% | 7%/93% | 60%/40% | 53%/47% |
| Forensic social worker | 64%/36% | 45%/55% | 18%/82% | 18%/82% | 45%/55% | 45%/55% |

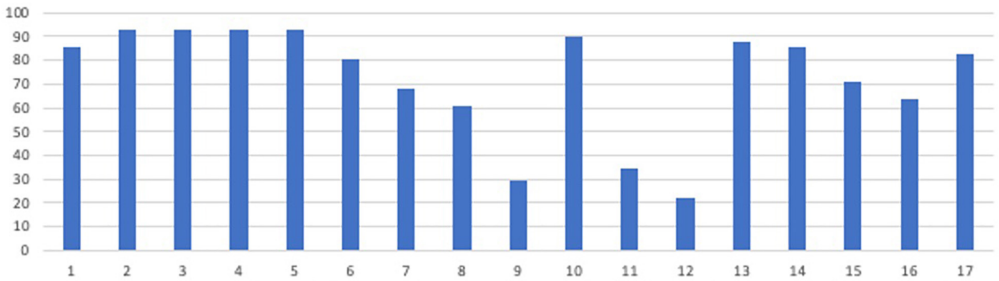


**FIGURE 5 |** Percentage of participants who considered the information source important in FPIs in general.

$p$ = 0.020] (see **Table 3** for distributions). However, these differences were not significant after Bonferroni correction (adjusted to $p$ = 0.008; six analyses were made). Furthermore, regarding case 1, forensic psychologists and psychiatrists were more consistent in their leaning towards SMD both at the time of the crime and the FPI, while forensic social workers were more divided between for/against SMD. A similar pattern was found in case 3 (i.e., ambiguous neuropsychiatry), but in case 2 (i.e., ambiguous personality disorder), all professions were consistent in their leaning predominantly against SMD (see **Table 3**).

## Part 2: Information Sources Used in FPIs During the Previous Year

Part 2 incorporated research question no 4. A one-way ANOVA was conducted to investigate the number of information sources that the different professions reported to have used in their investigations during the previous year (forensic psychologist: $M$ = 13.10, SD = 2.56; forensic psychiatrist: $M$ = 13.53, SD = 2.03; forensic social worker: $M$ = 13.50, SD = 3.10). The main effect of profession was not significant [$F(2,35) = 0.13$, $p = 0.877$, $\eta^2 = 0.01$].

## Part Three: The General Usefulness of Various Information Sources

Part 3 incorporated research question number 4 (see **Table 1** and **Figure 5** for an overview). Kruskal–Wallis $H$-test was used to identify significant differences between professions regarding the perceived usefulness of different information sources in their general FPI praxis. Due to the many comparisons, only questions with significant differences between professions were reported here (all others, non-significant, Kruskal–Wallis test: $H < 3.48$, $p > 0.175$). The significant differences between professions found with Kruskal–Wallis test were explored with *post hoc* comparisons using Dunn's pairwise test and a Bonferroni-adjusted $p$-value (see **Table 1**). There were differences among professions regarding source 1 [interview with forensic social worker, $\chi^2$ (2,38) = 9.00, $p$ = 0.011], and Dunn's pairwise test showed that forensic social workers perceived this source as more useful than forensic psychologists did ($p$ = 0.008). Significant differences were also found regarding source 2 [interview with forensic psychologist, $\chi^2$ (2,38) = 9.83, $p$ = 0.007], where forensic psychologists perceived this information as more useful than forensic psychiatrists did ($p$ = 0.008). Regarding source 9 [use of projective tests, $\chi^2$ (2,19) = 7.40, $p$ = 0.025], it was shown that although all professions perceived this source as generally not useful in FPIs, forensic psychologists perceived this source as even less useful than forensic social workers did ($p$ = 0.020).

Regarding source 12 [reports from lawyer, $\chi^2$ (2,18) = 7.40, $p$ = 0.025], forensic psychologists perceived this source as more useful than forensic psychiatrists did ($p$ = 0.028). Regarding source 17 [biological factors, $\chi^2$ (2,36) = 10.88, $p$ = 0.004], Dunn's pairwise test showed that forensic psychologists considered this information as more important than both forensic psychiatrists ($p$ = 0.048) and forensic social workers ($p$ = 0.007) and also that forensic psychiatrists generally perceived this source as not useful, while forensic psychologists and forensic social workers were more positive.

# DISCUSSION

Regarding research questions 1–3, the present study showed that the FPI experts adapted their use of various types of information sources to the different types of cases, but on an overarching level, no significant result regarding the number of information sources used in the case vignettes by different professional groups was found. There were indications that professional groups (here psychologists and social workers) differed in whether they

leaned toward SMD or not in case 1 (hereafter ambiguous psychosis). Numerically, most participants suspected SMD in the ambiguous psychosis case, and least suspected SMD in case 2 (hereafter ambiguous personality disorder). However, in case 3 (hereafter ambiguous neuropsychiatry), the experts from all professional groups were more equally divided for/against SMD (approximately 50–50%/60–40% division between for/against suspected SMD) at this stage of the case vignette. Regarding research question 4, regarding the use and perceived usefulness of information sources in FPIs during the previous year, a profile was found with minor numerical differences, which means that the professional groups overall agreed regarding the use and how useful they thought the different information sources were, again with some minor differences. Since some information sources were only considered to be useful sometimes in general FPI praxis, the relevance of case context and case-specific adaptation of the FPI was highlighted by these results.

## Impact of Case Context on the Use of Information Sources in FPIs

In all three cases, observations from the FPI ward were almost unanimously requested by all participants. Hence, regardless of the type of case and profession, how the person behaved at their time at the ward was considered important information. This is hardly surprising since observations from the ward are relevant to all three professional groups' assessment (e.g., staff–client interactions, verifying self-reported information such as psychiatric symptoms through actual behavior). This result contributes to the international research field on forensic psychiatric decision-making, but international comparisons are needed to investigate the importance of this information source in other countries with different kinds of FPI praxis, especially where FPI experts assess the client at a jail or in an ordinary psychiatric ward. This also actualizes the question regarding FPIs that are conducted when the client is not in custody, a praxis that differs within countries. If information from the FPI ward is considered to be such a central information source, it would be important for future research to investigate how experts conducting FPIs with clients who are not in custody compensate for this lack of clinical observation information.

Other information sources were considered more relevant in certain case contexts than others, such as interview with relatives/other third-party regarding personality, which was deemed less relevant in the ambiguous psychosis case than in the other two cases, and also various psychological tests of cognitive functioning which were deemed more important in the ambiguous neuropsychiatry case than in the others. Conversely, information from psychiatric self-report forms was considered most important in the ambiguous personality disorder case compared to that in the ambiguous neuropsychiatry case. Considering the nature of the information source, this indicates that it was more important to ascertain the severity of psychiatric symptoms (e.g., whether the paranoid symptoms should be considered on a psychotic level or not) in the ambiguous personality disorder case than in the ambiguous neuropsychiatry case. It could also indicate that the information regarding psychiatric symptoms obtained specifically by self-report would be less informative for the ambiguous neuropsychiatry case than for the other cases. Information in reports from police were also considered more important (by all professions) in the ambiguous psychosis case and personality disorder case, indicating that observations of behavior during the arrest and/or transcripts of interrogations were especially important in these types of cases compared to when neuropsychiatric problems are suspected. Taken together, these results could be interpreted in light of differences in *why* the different case characteristics could be considered as SMD. For psychosis or a paranoid reaction of psychotic magnitude, it would be central to have information on how the person behaved at the crime scene (e.g., were delusional ideas expressed, was the person disoriented, etc.), which is often included in police reports. For neuropsychiatric and/or suspected intellectual disability, the SMD decision is more related to the severity of impaired functioning in several areas (e.g., cognitive capacities, everyday functioning), which are ascertained more accurate by testing during the FPI or by interviewing referents (e.g., parents, staff at the client's housing facility).

### Differences Between Professions on the Use of Information Sources

Regardless of the type of case, forensic psychologists generally requested the most information sources, and forensic social workers generally requested the least. Among the forensic psychiatrists, there was more case-related variation (i.e., most for the ambiguous neuropsychiatry case and least in the ambiguous personality disorder case). Otherwise, information source-specific discrepancies between professions were indicated—for example, that social workers did not request intelligence tests to the same extent as psychologist and psychiatrists. The reason for these exploratory patterns in the present study could be due to the fact that forensic psychiatrists and psychologists should have more diagnostic focus in their assessments (i.e., assessments should include cognitive functioning, medical history) (33, 34). Furthermore, forensic social workers, in general, should focus on the client's psychosocial functioning, which manifests itself most clearly through their present and historical social interventions, thus comprehensively described in documents from the social services. Social services documentation is multifaceted and contains a wealth of information about various areas of functioning (e.g., economy, having been in social services' custody as a child, whether their parents had required welfare support during their childhood) and also on stays in treatment facilities for substance abuse paid for by social services (i.e., documentation often includes a care journal from such treatment facilities) (32). Hence, even though forensic social workers requested less information sources, the difference was minor, and the source that they primarily request may in itself include a number of life history information sources. If the professional group's information seeking routines have been developed or routinely adapted over time to the guiding documents (32–35) and the clinician does not consider the information selection carefully in each case, this could lead to bias in requesting what is "always done" and failure to evaluate the need for the information source based on specific case characteristics [see HEP hierarchy;

(16)]. Due to the observed variations over the different cases for certain types of information (e.g., intellectual testing), the risk of this kind of bias seemed relatively low in the present study, but if a routine has emerged, extraneous information could be collected, which could create bias due to decision-making being affected by case-irrelevant information. Since it is not always known exactly which kind of information will be available in various registries, the experts need to balance the risk of collecting extraneous information against missing the inclusion of possibly important information. Since this may vary between cases, no general guideline can be established. However, for an expert to always know why he/she is requesting a certain type of information in *the specific case* would be the bare minimum criterion to mitigate such a risk.

### How to Proceed With Further Investigation

The participants were only given limited information in the cases, and they requested information from several different sources, including a self-report perspective (i.e., the client's), observation perspective (e.g., from the ward, from referents), test perspective (i.e., standardized test results), and a life perspective (e.g., records from criminal, medical, social registries) [(19); see also (42)]. To use this type of strategy, collecting data from multiple perspectives using their respective methods has been presented as best practice to get a more nuanced clinical picture and as a way of diminishing the impact of bias (19, 20). Information from different sources, methodologically and theoretically, increases the chance of contradictions within the data, which increases the chance of type 2 processing and thereby the possibility to make well-founded decisions. Various information sources from different perspectives were requested by experts in the present study, indicating a diminishing of risk-making decisions based on insufficient data and type 1 processes (8). This praxis should be considered an important aspect of evidence-based decision-making within FPIs. However, to investigate whether there is no structural bias regarding what kind of weight these information sources are assigned, qualitative studies on these processes are needed.

### Differences in the Inclinations of Professional Groups Regarding SMD

Regarding the ambiguous psychosis case, forensic psychologists leaned toward SMD at the time of the FPI more often than expected, while forensic social workers did so less often than expected. Even though this difference was not significant after Bonferroni correction, it was considered important to note for future research, especially since there were indications of more similarity in SMD leanings between forensic psychologists and psychiatrists than among forensic social workers who were more divided between for/against SMD. This difference between professional groups concerned primarily the ambiguous psychosis case and ambiguous neuropsychiatry case since all professional groups were consistent in their leaning predominantly against SMD in the ambiguous personality disorder case. Based on earlier findings (17) and Dror (2) categorization of types of sources of bias, the possible reason for such differences between professions could be explained by the bias occurring due to education and training, the professionals interpreting the case using different perspectives based on their professional training (2, 17), or due to praxis developed to suit the DFP assessment guidelines—for example, the forensic social workers may, in general, not have considered the level of psychosocial functioning as sufficiently impaired in the ambiguous psychosis case, while the other two professions who bases their SMD decision on the assessment of more similar factors (e.g., psychiatric symptoms, cognitive profile, personality functioning) were more in agreement regarding SMD. This highlights both the positive and negative aspects of the FPI team structure. As mentioned, the Swedish teamwork with three to four professional groups routinely participating in the FPI assessment praxis is likely unique (28). Since the results indicated that the professional groups sometimes differ regarding their view on SMD, this could indicate that each profession indeed investigates and analyzes SMD from different perspectives (biological, psychological, and social). If so, each profession could contribute with a different knowledge from the perspectives of the biopsychosocial model on mental health [e.g., (43)] within the decision-making process regarding SMD, which, in turn, may increase the chance of a more holistic assessment in the final report written by the forensic psychiatrist. Nevertheless, since SMD is a dichotomous concept in Sweden, such differences between professionals could create problems in the team's general decision-making process if the different perspectives are not clearly described in such discussions and in reports. Since the lack of consistency in conclusions between FPI experts is considered to be generally negative (1, 42), different SMD conclusions from different professional groups could also be complicated for the court when a decision must be taken in a specific case.

## General Use of Information Sources and Their Perceived Importance in FPIs

Changing focus from the case vignette results into the general use of information sources in FPI praxis, the professional groups did not differ regarding how many information sources they had used in FPIs during the past year. The fact that the groups generally used similar types of information sources as in the case vignettes could be considered positive. Information considered important/valid to the professional groups' decisions within FPIs generally overlap those used when FPIs are framed in various contexts, and if professionals also do not base their decisions in widely varying sources, it should increase the chance of the team being receptive to other professions' conclusions. Interestingly, comparing part 1 and part 2 results, a certain discrepancy occurred between what information sources the different professions requested in specific cases and which they used in general. The information sources less often requested in the three case vignettes than in general FPI praxis concerned, first, various cognitive test results and, second, physical examination. There could be several reasons for this difference. First, experts could believe that they request this information, but actually do not, or that all case vignettes were perceived as being in a relatively "initial stage" of the FPI, and these three sources could be considered more relevant at a later stage of the FPI (e.g., for more nuanced differential diagnosis). What speaks for the latter explanation is that, when considering the results from

part 3, these information sources were, on average, perceived by participants to be "useful sometimes" (i.e., only in some cases). In other words, based on part 2 and part 3, some sources may not be considered important in all FPIs, but to test certain differential diagnostic decisions relevant for SMD hypotheses, they could be of central importance. Based on these results, there seems to be a group of "core" information sources which are almost always considered important in all types of cases (e.g., to talk to the client), while others (e.g., tests of cognitive functioning) are important only in certain types of cases. Therefore, based on this information, it would not be advisable to create standardized FPI guidelines on the level of specific interventions (e.g., always interview a certain category of referents, always conduct a certain kind of psychological testing, etc.) since this could increase the risk of routinely collecting extraneous information that would not contribute relevant insights to the case but only increase the risk for bias.

Overall, experts collect and use a large amount of information sources in FPIs, and when processing this large amount of multifaced information, the risk for bias introduced by irrelevant case information increases, and they are also likely to experience a high cognitive load which pose another risk for biased decision-making. When considering the case specific-level of the taxonomy (2), this may not be the biggest problem in Swedish FPIs since the FPI experts actually did differ in their assessments between cases through adaptation (i.e., did not use the same approach in all case types). However, a potential general bias regarding how experts proceed with investigating a specific type of case (i.e., according to the kind of psychiatric problem) could nevertheless be relevant (e.g., having one specific approach when suspecting psychosis and another for autism). This aspect should be investigated further in future studies. The risk for bias due to a high cognitive load seems greater in Swedish FPIs due to the time limit (maximum: 4 weeks) and to the complexity of the cases [i.e., high cognitive load both to organizational level and case-level factors within the decision-making process; see HEP model (2)]. As has been observed in the results from the interviews preceding the vignette (40), the professionals considered stress to be one of the most detrimental aspects for their decision-making in FPIs, such as not having time to gather all information that one would, under less stressful circumstances, have done. Stress increases the risk of type 1 processes [including increasing the risk of bias (8)], and since there is a limited number of forensic experts working with FPIs (44) an increased workload could affect their decisions due to sometimes conducting more (and sometimes less) FPIs in parallel. Based on the current results, where many information sources were requested, it is likely that when experiencing a cognitive load or high stress levels, experts could be motivated to reach a conclusion fast, decreasing their motivation/ability to gather information from all these sources or listen to contradictory evidence (45). This could increase the risk for bias by limiting the amount of information to a restricted number of perspectives, and the conclusions risk being premature. Hence, even though the FPI experts' inclination of gathering information from several different perspectives could reduce the risk of bias, such as tunnel vision [see (45)], a high cognitive load due to stress could decrease this ambition.

## The Information Sources' Perceived General Usefulness

In general, in FPI praxis, from a methodological assessment perspective (20), experts tended to consider information regarding self-report data and observation data as the most useful. Other useful information sources, but less consistently considered so, were intelligence tests (i.e., test data) and referent conversations with relatives/third party (i.e., observation data). The results from part 3 also indicated that the psychologists and social workers valued their own interviews more than the other profession's to reach their conclusions. This could be considered natural since the objective of their respective reports is to base their decisions on their professional perspective. However, it could also be an indication that each profession tends to value their own contribution more than the contribution of others (e.g., blind spot bias, in-group preference). This can be linked to the findings of Neal and Brodsky (10) regarding the professionals making forensic psychiatric assessments perceiving themselves as less vulnerable to bias and therefore relying too much on their own work compared to that of others. Similar results were obtained in Commons et al. (15) where forensic psychiatrists markedly underestimated their own biases compared to their peers. Since Neal and Brodsky (10) did not include any other profession in their study, it is not possible to know whether this was an issue. To diminish the effect of the blind spot bias, the cross-professional team discussions (a core aspect of Swedish FPI praxis) of this entails a discussion of data collection and conclusions and comparing results and impressions. At least in theory, this should increase the opportunity for new interpretations of obtained results from other professional perspectives, in turn increasing the chance that one's original hypothesis is questioned, activating type 2 processing (8). Hence, teamwork could be seen as an advantage in Sweden's approach to FPI praxis since this could decrease the risk for certain bias, but if the team members rely most on their own opinion anyway and are not really open to changing their mind in light of new data from other professions, the beneficial effect of team discussions on increasing analytical type 2 processing (i.e., forcing the professional to try a change of perspective on the obtained assessment results, testing alternative explanations) would be lost. An open and non-judgmental atmosphere, something that decreases with stress, could therefore be considered a cornerstone for teamwork to increase the chance of evidence-based decision-making within FPIs. Although teamwork could be considered an advantage, it must be noted the experts regardless are exposed to other kinds of HEP model types of bias, due to human nature (e.g., fatigue, antipathy/sympathy toward a client), that could influence the forensic expert when conducting a FPI (1, 2), and also due to processes such as group think (e.g., inflated sense of certainty when ideas are endorsed by the group). These processes therefore need further investigation. More overarching organizational issues regarding FPIs and their relationship to increase or decrease the risk for bias also need further research—for example, a potential advantage in Sweden's as well as Finland's and Portugal's [see (28)] approach to FPI praxis could be that forensic assessment experts are not retained by one party within

a criminal case, as in the United States, but are employed by a governmental authority separate from the courts. Such an organizational structure could diminish pressure on the experts to reach specific conclusions in FPIs [e.g., lowering the risks for bias due to no relationship to parties who want the expert to "support their side"; see (4)]. When the expert is not paid per conducted FPI (i.e., the expert is employed by the government as an available resource to the courts), the risk of bias due to stress could potentially be also lowered.

### Limitations and Future Directions

By using the case vignette method, all participants were exposed to the same contexts and got to appraise the use of different information sources providing the conditions for examining reliability both within and between professional groups. However, a list of options regarding information sources was used instead of asking about free text responses, which could have affected—directed or impaired—the pattern of information sources reportedly used. To decrease this risk, a pilot study including representatives of each profession was conducted to capture factors missed by the researchers, and the participants were also given an opportunity to give a free text response if they used other information sources (i.e., "other factors"). Since only a few participants used this option, the risk of having missed important information sources used in FPIs is considered small. Although participation was anonymous, the number of participants was quite small, and it is possible that the participants may have adjusted answers based on social desirability (e.g., due to the risk of being recognized). Unfortunately, there was no way to investigate this factor in the present study, but due to the obtained variation within professional groups, this could be considered a less important risk.

## CONCLUSION

This study contributes empirical data to further the evidence-based decision-making praxis in FPIs. Although there was a core profile of the types of information sources usually requested in all three case vignettes, such as interviewing the client and observations from the ward, the FPI experts made some case-specific adaptations—for example, with psychosis and personality disorder, reports from the crime scene were considered especially important, while for neuropsychiatry, it was the level of cognitive and everyday functioning. This could also be related to the Swedish law regulating which psychological conditions can be considered as SMD and why. Differences in leanings toward/against SMD were found. The forensic social worker group was, in general, more internally divided at the stage where these case vignettes were presented, while forensic psychologists/psychiatrists were more in agreement of SMD at this stage. The core profile of information used in the three case vignettes was also mirrored in general use in FPI praxis, where the client's self-report and the clinician's observations were considered the most useful types regardless of case context, while some information types (e.g., cognitive testing) were only useful sometimes (i.e., varied with case context). Forensic social workers requested the least number of information sources within the cases, while forensic psychologists requested the most, but the difference in absolute numbers was minor and could be affected by the professional group's different assessment focus in FPIs due to guidelines. In conclusion, this study indicates how to increase the chances of more analytic processing within FPI praxis and indicate areas for future research to diminish the risk of bias within the complex decision-making of FPIs.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Regional Ethical Committee in Gothenburg; Dnr: 940.16. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

MK, PA, and A-SLB were responsible for the study design and for producing the stimulus material for the study. OS, MK, and A-SLB were responsible for the data collection. OS and LG were responsible for the literature review. LG, MK, and OS conducted the analyses. LG and MK wrote the first manuscript draft. All authors revised the manuscript and contributed to the text.

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PERSPECTIVE
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# Conducting Randomized Controlled Trials of Complex Interventions in Prisons: A Sisyphean Task?

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Randomized Controlled Trials (RCT) are the "gold standard" for measuring the effectiveness of an intervention. However, they have their limitations and are especially complex in prison settings. Several systematic reviews have highlighted some of the issues, including, institutional constraints e.g., "lock-downs," follow-ups, contamination of allocation conditions and a reliance on self-report measures. In this article, we reflect on our experiences and will describe two RCTs. People in prison are a significantly disadvantaged and vulnerable group, ensuring equitable and effective interventions is key to reducing inequality and promoting positive outcomes. We ask are RCTs of complex interventions in prisons a sisyphean task? We certainly don't think so, but we propose that current accepted practice and research designs may be limiting our understanding and ability to test complex interventions in the real-world context of prisons. RCTs will always have their place, but designs need to be flexible and adaptive, with the development of other rigorous methods for evaluating impact of interventions e.g., non-randomized studies, including pre-post implementation studies. With robust research we can deliver quality evidence-based healthcare in prisons – after all the degree of civilization in a society is revealed by entering its prisons.

**Keywords: prison, randomized controlled trials, interventions, offending, mental health**

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## INTRODUCTION

Randomized Controlled Trials (RCT) have long been heralded as the "gold standard" for measuring the effectiveness of an intervention, due to their ability to reduce bias and show cause-effect relationships. In this article we will briefly summarize the evidence base for the effectiveness of complex mental health interventions in prison settings, while also identifying the recurrent issues. We will then focus predominantly on our experience of conducting prison-based RCTs and ask the question are prison RCTs of complex interventions a sisyphean task?

To date, there has been a surprising number of systematic reviews of interventions or prisoners/forensic populations (1–21). These reviews have assessed the evidence base in a number of different ways, for example discrete sub-populations [e.g., adolescent offenders (1, 8) female offenders (2, 6, 12)]; offense types [e.g., violent offenses (4, 19)]; specific interventions [e.g., psychotherapy (3, 9, 11)]; or the impact on specific outcomes [e.g., health outcomes, violent behavior or reoffending (10, 12, 14, 21)], with many having a broad inclusion of primary studies designs (9, 12, 13).

Of relevance here are two reviews (17, 21). The first reviewed RCTs of a range of psychological therapies for prisoners with mental health problems (17). Across 37 identified studies, they found a medium effect size for psychological therapies (0.50, 95% confidence interval [0.34, 0.66]), however effects did not appear to be sustained over time. Where trials had used a fidelity measure these were associated with lower effect sizes. The authors also undertook a qualitative analysis of the difficulties of conducting RCTs in prisons. The issues included:

- Post-treatment follow-up - high rates of release, rapid turnover of prisoners, and short duration of stay leading to difficulties with initial recruitment and loss to follow-up.
- Institutional constraints - constraints on the scheduling of sessions, "lock-downs," high attrition rates partly due to scheduling changes and inmate infractions.
- Small sample sizes.
- Contamination of treatment and control conditions due to the closed communal setting of the prison.
- Not being able to blind the participants to intervention/treatment as usual; and
- Reliance on self-report measures.

The second review examined RCTs of psychological interventions, delivered during incarceration but focused solely on recidivism as the outcome (21). Of 29 RCTs, psychological interventions were associated with reduced reoffending (OR 0.72, 95% CI 0.56–0.92), but after excluding smaller studies there was no significant reduction in recidivism (OR 0.87, 95% CI 0.68–1.11). The number of studies was not large, which the authors suggested supports the evidence that there are significant challenges of doing high-quality research in prisons. Also, many of the studies had a risk of bias, mainly around randomization, intervention deviations and difficulties associated with masking staff and participants to the assigned intervention.

In this context we will now reflect on our own experiences of conducting two prison-based RCTs: Critical Time Intervention (22, 23) and Engager (24, 25). Both studies started with a pilot trial followed by a full RCT. Both interventions were through-the-gate interventions, with baseline assessments completed in prison and then follow-up after release from prison. The two studies are described below and in **Table 1**.

## CRITICAL TIME INTERVENTION (CTI)

CTI is an intensive form of mental health case management, operational at times of transition between prison and community and designed for people with severe and enduring mental illness. CTI case managers, routinely mental health nurse, psychologists, or social workers, provided direct care where and when needed, for a limited time period. They began their involvement when the individual was still in prison. For sentenced prisoners, this started 4 weeks before release. For remand prisoners, or those with unpredictable dates of release, intervention starts as soon as the person is known to the prison mental health team. The holistic intervention involves working with the individual and their families (where possible), as well as active liaison and joint working with relevant prison and community services. Five key areas are prioritized: (1) psychiatric treatment and medication management, (2) money management, (3) substance abuse treatment, (4) housing crisis management and (5) life-skills training. CTI is not prescriptive, it responds to the needs of each individual, thus looks slightly different for each person, but still within the five-priority area framework. The intervention includes four phases. Phase 1 is conducted while the person is in prison and requires the development of a tailor-made discharge package based on a comprehensive assessment of the individual's needs. Phases 2 and 3 focus on intensive support post-release and then handing over primary responsibility to community services and phase 4 fully transitioned care to community services to provide long-term support. The aim is that phases 2–4 are completed within 6 weeks of release from prison.

We conducted a multicentre, parallel-group randomized controlled trial across eight English prisons (originally planned for three sites, but additional sites had to be added, discussed below), with follow-up at 6 weeks and 6 and 12 months post-release. A sample of 150 male prisoners were included with eligibility criteria of being: convicted or remanded; cared for by prison mental health teams; diagnosed with severe mental illness, and; with a discharge date within 6 months of the point of recruitment. Of these 150, 72 were randomized to the intervention and 78 were randomized to the usual release planning provided by the prison. Engagement with community mental health teams at 6 weeks was 53% for the intervention group compared with 27% for the control group [95% confidence interval (CI) 0.13% to 0.78%; $p = 0.012$]. At 6 months' follow-up, intervention participants showed continued engagement with teams compared with control participants (95% CI 0.12% to 0.89%; $p = 0.029$); there were no significant differences at 12 months (23).

## ENGAGER

The Engager intervention is designed to engage individuals with common mental health problems in the development of a pathway of care for release and resettlement in the community. It is a manualised, person-centered intervention aiming to address mental health needs as well as to support wider issues including accommodation, education, social relationships, and money management. The intervention is delivered in prison between four- and 16-weeks pre-release and for up to 20 weeks post-release. Experienced support workers and a supervisor with experience of psychological therapy deliver Engager. The practitioner and participant develop a shared understanding of the participant's needs and goals, recognizing the links between emotion, thinking, behavior and social outcomes. A plan is developed, based on agreed goals, and including liaison with relevant agencies and the participant's social networks. A mentalisation-informed approach underpins all elements of the intervention. Use of existing practitioner skills is also key to intervention delivery.

We conducted a two-group parallel randomized superiority trial in three prisons. Men serving a prison sentence of 2 years

**TABLE 1 |** Study information for CTI and Engager.

| | CTI | Engager |
|---|---|---|
| Date | 2007 (pilot trial) 2012–15 (full trial) | 2014–15 (pilot trial)<br>2016–19 (main trial) |
| Geographical Location | 8 prisons – North West England and South East England | 3 prisons – North West England and South West England |
| Inclusion/Exclusion Criteria | Inclusion:<br>• Men (sentenced or remand)<br>• With severe mental illness<br>• In contact with the prison in-reach team<br>• Released from prison within the lifetime of the study<br>• Release would be to an agreed geographical area local to the prison<br>• Severe mental illness was defined as major depressive disorder, hypomania, bipolar disorder and/or any form of psychosis including schizophrenia, schizoaffective disorder and any other non-affective non-organic psychosis.<br>Exclusion:<br>• Did not have severe mental illness<br>• Were to be released outside the agreed geographical discharge area<br>• Posed security/safety issues that would compromise researcher/practitioner safety in prison or the community<br>• Were unable to give informed consent<br>• Had previously participated in the trial during an earlier period in custody. | Inclusion:<br>• Men serving a prison sentence of 2 years or less<br>• With between 4 and 20 weeks remaining until release<br>• Released to the geographical area of the study<br>• Willing to engage with services and research procedures<br>• Were identified as likely to have depression, anxiety, or ptsd currently or following release<br>Exclusion:<br>Men awaiting trial (remand)<br>With severe mental disorder and/or on the caseload of the prison in-reach team<br>Who were under the offender personality disorder pathway service;<br>With active suicidal intent;<br>Who presented a serious risk of harm to the researchers or intervention practitioners<br>Unable to provide informed consent. |
| Sample Randomized | 150 | 280 |
| Data Collection Points | Baseline (prison) Post-release follow-up – 6 weeks, 6 and 12 months | Baseline (prison)<br>Post-release follow-up – 1, 3, 6, and 12 months |
| Age; Mean (SD) | 36.3 (9.8) | 34.5 (10.6) |
| Ethnicity, *n* (%)[a]WhiteEthnic Minority | 72 (48) 78 (52) | 261 (93)<br>16 (6) |
| Most Common Diagnosis (*n*; %)[b] | Schizophrenia (108; 72) | Depression (206; 74) |

[a] *The difference in ethnic minority groups within the two studies reflects the different prisons. Much of CTI recruitment came from the four south east prisons which have higher rates of prisoners from ethnicity minority groups than prisons in the north west and/or south west.*

[b] *In both studies diagnosis was researcher assessed. In CTI assessed using OPCRIT (Operational Criteria Checklist for Psychotic and Affective Illness) and Engager participants were screened in using the Patient Health Questionnaire-9 (PHQ-9), the Generalized Anxiety Disorder-7 (GAD-7) and the Primary Care PTSD Screen (PC-PTSD).*

or less were individually allocated 1:1 to either intervention (Engager plus usual care) or the control (usual care alone) group. The primary outcome was the Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM) (26), six months after release. A total of 280 men were randomized (25).

## OUR PERSPECTIVE – WHAT WORKS?

Intervention allocation in CTI and Engager was at the individual level and so our perspective here focuses on this type of design. However, there are several alternative designs such as cluster, preference and benchmarking controlled trials [we refer the reader to (27, 28)]. Overall, we agree with the reviews (17, 21) in that prison RCTs are possible. In both studies participant engagement was positive, with high levels of consent and enthusiasm for the interventions, but also being involved in the research process. However, the unique prison context can make standard trial procedures and standard assessments of study quality more difficult to achieve.

### Pilot Trials

In both our studies we undertook pilot trials. For CTI (22) the focus of the pilot was very much about testing if the intervention could produce an outcome, while in Engager (24) the pilot trial explicitly examined trial design and recruitment building on earlier feasibility work (29), but importantly also had an embedded realist[1]-informed formative process evaluation, which focused on how the intervention was working (30). Both pilot trials provided invaluable knowledge and supported the development of relationships with the recruitment sites. On reflection, had the CTI pilot (22) formally tested recruitment and eligibility rates, then perhaps we could have better predicted the slow recruitment rates faced and negated the need to add so many other sites. Slow recruitment was due to a complex interplay of lengthy delays in approval and other operational delays such as change in healthcare providers, which meant that men became ineligible to take part due to not being released within the study period.

[1] Realist evaluations are theory driven and focus on evaluating "what works in which circumstances and for whom?", rather than merely 'does it work?.

The difference between these two pilot studies also reflects the fast pace of change we have seen in our understanding of intervention development and testing, and the improved guidance on feasibility and pilot trials (31). The UK Medical Research Council (MRC) published a framework on developing and evaluating complex interventions in 2000 (32), it was revised in 2006 (33), but has been very recently updated again in 2021 (34) – clear evidence of this fast pace. In addition, our theorical understanding of acceptability, often a key outcome in feasibility and pilot trials, has advanced with the work of Sekhon (35), using this framework may have added significant depth of understanding of the anticipated and experienced acceptability from the perspective of the intervention delivers and recipients.

## Blinding

Single-, double-, and triple-blinding are commonly used in RCTs. A single-blind study blinds the participant from knowing which study trial arm they have been assigned. A double-blind study blinds both the participants and researchers to allocation. And triple-blinding involves blinding the participants, researchers, and statistician.

The review above (17) highlighted that blinding was problematic. Blinding participants where the intervention is a psychological therapy and/or person facing is difficult, if not impossible. In CTI (23), we were able to blind the researcher and statistician data. We were able to blind the researcher to allocation as there was no face-to-face contact with the participants after baseline data collection, which was before participants were randomized. In Engager, we were only able to blind the statistician. In our Engager pilot trial (24) we tested and reported on our attempts to blind the researchers, but researchers were unblinded very quickly. Due to the frequent contact the researchers had with participants, participants were keen to share their experiences with the researchers and/or the researchers saw the participants with the Engager Practitioners due to the closed confines of the prison. We considered a range of workable solutions to maintain blinding, such as using a article-based self-complete outcome measure for participants but decided against this due to literacy problems and the likely increase in incomplete data. In the main Engager trial (25) the researchers knew trial arm allocation, this was a positive in that it allowed for the continued building of rapport between the researcher and participant to facilitate follow-up rates but may have diluted the relationship building effects of the intervention. Both studies could have considered adaptations to their design to allow recruitment to each arm to be staggered, but this lengthens the overall study time and cost.

## Outcome Measures

How we measure outcomes in forensic populations is notoriously complicated and the reason why there is little agreement about which outcomes to use (36). Forensic settings and forensic populations are diverse. For example, settings can include, police custody, prison, probation services in the community and secure forensic hospitals. Even within the same setting there is diversity, for example, secure forensic hospitals have different security levels and different provider organizations. Services may also be viewed as having diverse goals including clinical, legal and public safety. In addition, forensic populations may have multiple and varied problems. For example, personality disorder, mental illness, learning disability, substance abuse and offending behavior, with many co-occurring, leading to many combinations of potentially relevant outcomes.

To confound this further there are also different type of outcomes. Objective outcome measures can be viewed as outcomes such as rehospitalisation, reoffending and death, and are usually obtained from administrative datasets. In our CTI study (23) our primary outcome was based on information collected from participants electronic health records. While on the surface this would seem to avoid the limitations associated with self-report data e.g., social desirability, honesty, introspective ability, latent nature of the measures, missing data, it was not without shortcomings. The data was only as good as the quality of the written records, and at times this was poor, something highlighted by other researchers (37). We also planned to supplement this with information from UK health registries, however due to accessibility issues, likely data quality and an inability to join data from different registries, we were unable to progress this. A recent systematic review of 160 RCTs accessing routinely collected heath data, found only a very small proportion of UK RCTs (about 3%) and highlighted issues with access, quality and a lack of joined-up thinking between the registries and the regulatory authorities (38). In both CTI and Engager we had planned to obtain offending data, but faced similar issues to the health data in terms of protracted approval processes.

Over recent years there has been an explosion of the number of subjective outcomes available. There have been a number of reviews (36, 39, 40) of outcome measures in forensic settings, identifying a large number of questionnaire-based instruments, focusing mainly on risk and clinical symptoms, neglecting quality of life, functional outcomes and patient involvement. In the most recent review, a total of 435 measures were identified. Of the 10 most frequently used, half of the instruments were primarily focused on risk. Only one instrument, the Camberwell Assessment of Need: Forensic Version (CANFOR) (41), had adequate evidence for its development and content validity.

In our Engager trial (25), outcome data was primarily subjective and significant work went into deciding which outcomes to use, with the aim of selecting a set of outcome measures that captured the most important areas of the Engager intervention. We adopted a four-stage approach involving; a single round Delphi survey to identify the most important outcome domains; a focused review of the literature, testing of these measures in the target population to assess acceptability and the psychometric viability of the measures and a consensus panel meeting to select the primary outcome measure for the trial and key secondary outcome measures. In addition, we actively sought the input of our Peer Research Group (42) throughout this process. After the four stages the CORE-OM (26) and CANFOR (41) both received the same number of votes to be the primary outcome measure. We opted for the CORE-OM (26) as the primary outcome measure. It had marginally superior psychometric properties, could be administered in a

highly scripted fashion that would reduce researcher bias, some items were of little relevance to a prison population and there were issues with the CANFOR being able to demonstrate change over-time (43, 44). There is also some criticism of the reliability of the scoring system for the CANFOR. We had considered using outcomes based on practitioner records, however, it quickly became clear that these were not recorded in a sufficiently consistent way to merit inclusion. They were not undertaken at set time points, were often subjective in terms of focus, and suffered from missing data.

Ultimately, even going through this process of selecting the primary outcome, we found problems with the CORE-OM. The before and after changes for individuals did not match the journey of rehabilitation and recovery detailed in the depth process evaluation (45), where we found that the intervention was more effective when practitioners developed an in-depth understanding of the participant. It may therefore not to be sensitive enough to detect small unpredictable steps in recovery resultant from the intervention for individuals with lifelong experiences of adversity. It also highlights the problems of reducing very complex interventions down to just one outcome, it may be that we just do not have adequate outcomes to test such complex interventions. We tried to use the PSYCLOPS (46) questionnaire, an idiographic measure designed to detect changes in person specific problems, but the prison environment rendered it unworkable because once released individuals' problems were almost entirely different.

## Intervention Fidelity

One of the reviews highlighted above showed that studies including a measure of fidelity were associated with lower effect sizes (17). Intervention fidelity, like outcomes, is a complex area with a lack of agreement about the appropriate indicators of fidelity and how these should be measured (47, 48). It is argued that any assessment of fidelity should look at the intervention designer-, provider- and recipient-levels (49). However, it is likely that the delivery of an intervention as complex, person-centered and flexible to the individual as CTI or Engager will be harder to evaluate than simpler "one dose fits all" designs.

In CTI, fidelity was assessed using an adapted version of the fidelity scale used in the Critical Time Intervention – Task Shifting study (50) at eight time points over the course of the trial. However, a more reliable and detailed way to assess fidelity would have been for the CTI manager to complete a checklist per participant against the core CTI principles. This would have allowed more detailed analysis of what each participant received, mapped against their needs. There was variation in fidelity to the intervention across the different CTI managers.

In Engager, fidelity was assessed by creating an intervention delivery timeline which depicts practitioner and supervisor start and end dates, instances of training sessions, research team-engager supervisor supervision and periods of prison "lockdown," where practitioners were unable to access the prison sites to deliver the intervention. Practitioners and supervisors also kept records of contacts in the form of daily activity logs (documenting time spent with participants, or activities related to participants e.g., arranging appointments, liaison with other services) and recorded session case notes (documenting intervention delivered and received).

We recognized however that this only measures superficial aspects of fidelity (reach and dose) and not the multiple mechanisms designed to be at play in such a complex intervention (30). There is, however, little published regarding fidelity in complex behavioral interventions and there needs to be more published on fidelity results (51).

## Process Evaluation

The biggest difference between CTI and Engager was the complexity and depth of the qualitative components. In CTI, we undertook a nested qualitative study. At that time even this was relatively unheard of in RCTs (52). Jump five-years and we were undertaking one of the most in-depth process evaluations for complex health interventions (30, 45). Even after the publication of the MRC guidance in 2000 and 2006, process evaluations have often been small qualitative add-ons to trials and of little importance to the main trial findings, although more recent guidance emphasizes the importance of detailed analysis (53). The parallel mixed method process evaluation in Engager not only provided evidence of breadth and depth, and from multiple perspectives about what was delivered to participants, but also allowed us to focus in on how team dynamics and underlying beliefs and values affected implementation, and to propose what might be done to support practitioners further to optimize delivery. Documenting suboptimal implementation, was important for trial result interpretation and development of future practice. The use of realist-informed methods allowed us to interrogate the intervention mechanisms by assessing if delivering the specified intervention components produce the hypothesized outcomes. This gave us insight into how the intervention can have a sustained effect when delivered well. We showed how consistent delivery across time could lead to the several mechanisms being activated, often repeatedly, to achieve incremental but sustainable change (25, 45). It also allowed us to examine more deeply what "meaningful change" meant for the intervention participants in ways that standard outcome measures cannot assess.

# DISCUSSION

Are conducting RCTs of complex interventions in prisons: A Sisyphean task?

No, far from it. In our experience they can be conducted, are a key tool in developing evidence-informed practice and for some interventions provide the best approach to test effectiveness. But there is also a need for flexibility so that we are not unduly limited by a specific set of perspectives. For us there are some key must dos. Pilot and/or feasibility trials to help minimize risks to the main trial e.g., ensuring testing of recruitment and follow-up rates, developing effective relationships with the prisons so they see the value of research. A robust process evaluation is key, for understanding what was delivered but more importantly how was

it delivered and how it produces change, how interventions work has often received little attention in prison research.

Areas where we need to improve are our understanding how best to assess fidelity and our choice of outcome measures, is this user led vs standardized measures vs. bespoke, or should we use a combination. Plus, we need to work to improve access to routinely collected data, other European countries, such as the Nordic countries are much more advanced here. We also need to work with the prison system to ensure they see the value in supporting independent, external research to reduce protracted approvals. We must not get overly fixed on some traditional aspects of rigor. Alongside flexible adaptive RCTs we also propose the development of rigorous methods for evaluating impact of interventions in non-randomized studies e.g., pre-post implementation studies. Before-after health or quality of life questionnaire data can be examined alongside processes of care, economic data and depth qualitative process evaluation analyses. Where novel interventions are adopted as treatment as usual there is a place for robust service evaluations of routinely collected data, where research ethics would not be required.

It was Fyodor Dostoyevsky who said: "The degree of civilization in a society is revealed by entering its prisons" and therefore we continue to undertake prison research, despite some of its challenges. We strive to reduce health inequalities and drive-up quality healthcare for a group of people who are significantly disadvantaged and vulnerable (54–57) so that we can live in a more civilized society.

## DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author.

## AUTHOR CONTRIBUTIONS

CL drafted the first version of the article. SL, JS, CH, SR-B, CQ, RB, and JS revised the article. All authors accepted the final version of the article. All authors contributed to the article and approved the submitted version.

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# "You Want Them Pretty, but Not Too Intelligent!": Everyday Talk and the Continuum of Men's Violence Against Women in Forensic Institutional Care

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The forensic setting houses persons with offence convictions who are also in receipt of ongoing mental healthcare–a criminal justice system and healthcare meeting-point. Extant literature highlights how this context is laden with interpersonal and institutional difficulties unique to a secure context that must provide care and custody concurrently. Our central argument is that the intertwining and interdependent cultural and custodial elements of forensic healthcare environments are integral and influential to care, culture, and conduct within such institutions–including concerning misogynistic everyday talk and the continuum of men's violence against women therein. We argue that the institution is a continuation of contemporary social issues experienced within community life (e.g., misogyny), as the boundaries of such institutions are porous–polis values traverse physical brickwork. This paper analyses ethnographic data from two male wards that are situated within a UK inpatient forensic mental health hospital. Ethnographic fieldwork occurred over 300 hours–overtly participating in, exploring, and recording the daily life of the community. Five excerpts of ethnographic data are presented, which evidence the gendered ward environment and highlight a series of encounters pertaining to problematic social life, which are the upholding of heteronormative gender roles, hegemonic masculinity, and misogyny. These views are problematised within the sexual offending rehabilitative context by considering the clinical risk associated. Further, we argue that to only focus on the end of the continuum often viewed as most serious (e.g., rape) ignores a pervasive cultural landscape of the polis in wider community, beyond the institution, that facilitates the more commonly experienced end of the continuum related to misogynistic values, encounters, and talk. We evidence how social norms and habitualised gendered actions permeate the institution, which bring into question the rehabilitative efficacy of the hospital. This paper embraces a feminist lens to explore everyday social interactions and the embodied experience of the female ethnographer within a male-dominated forensic setting. We contribute to the literature by newly theorising the influences of hierarchical heterosexual gender roles, violent language in forensic settings, and misogynistic attitudes and practice, on the care for, and rehabilitation of, patients.

**Keywords: Violence Against Women and Girls (VAWG), forensic mental health, sexual offending, sexual violence, rehabilitation, hegemonic masculinity, misogyny, ethnography**

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## INTRODUCTION

The forensic mental health context has been described as unintentionally toxic (1) and the environment has been described as "a particularly volatile place to live" [(2), p. 2581]. Inpatient care within forensic institutions is fraught with challenges for those in receipt of care and for those who provide support to such individuals. Caregivers within forensic psychiatric institutions must perform care and custody concurrently, wherein role conflict occurs and professional and personal values are challenging–institutional work is emotional work (3). The complex and sometimes toxic social environment can sharply contrast the positive and supportive therapeutic relationships that are integral to care practice which promote recovery. The complex social environment has been more thoroughly discussed within an earlier publication (4), however this paper focusses on misogynistic attitudes which are linked to Violence Against Women and Girls (VAWG) evidenced within the ethnographic data. The normalisation of values that subjugate women in a workplace setting can influence a setting's staff; this is doubly pertinent in secure services, as they're argued to instil emotional isolation from family, friends, and colleagues (3). For the ethnographer in this study, the everyday talk, and the continuum of men's violence against women in forensic institutional care, made for an uncomfortable period of fieldwork.

### Interpersonal Recovery: The Value of Social Relationships

The notion that individuals do not recover in isolation (5–7) and that relationships are central to recovery is supported within this paper. Within mental healthcare, professionals are encouraged to build reciprocal relationships with patients, with mutuality underlying many models and theories of nursing care (8). The quality of therapeutic relationships has been noted to be important for promoting recovery (9, 10). Relationships have been argued to not just be an important part of a mental health intervention–"they *are* the intervention" (11) and the introduction and the nurturing of relationships hold an important therapeutic value (12, 13). Forensic mental healthcare increasingly adopts a multidisciplinary approach to teamwork, wherein staff collaborate "working to the same end, namely the successful treatment and rehabilitation of the patient" [(14), p. 104]. Within forensic mental health nursing McMurran et al. [(14), p. 96] highlight the (Department of Health supported) importance of values within daily practice, inclusive communications, psychosocial care (including social networks and relationships), and personal development, plus "a respectful attitude to the patients in their care." Secure setting work combines custody, therapy, and the culture of the setting.

Campling et al. (15) argue we are all constructions of our environment and of each other, developing our identities, learning patterns of communicating, and our social responses in the context of our social environment. Whilst formal therapy is integral to mental healthcare, the social environment and interactions—the everyday encounters—hold an important therapeutic value, contributing to the therapeutic milieu (16). Research within the forensic mental health context supports the notion that everyday encounters can be therapeutic, where staff who engage in relational small talk with the aim to socially connect with those in receipt of care is valued (12). However, such connexion can be facilitated by "lads talk" [(17), p. 177]. Whilst this may promote intra-group relations for males, such social encounters may also serve to support the oppression of women, depending on the content of the conversation.

### The Staff-Patient Relationship: Paternalism

The relationship between staff and individuals in receipt of care can be challenging, particularly within the forensic context (18, 19), and institutional and professional constraints within mental healthcare can limit the potential for mutuality (8). Staff are required to navigate a dual role, one of carer and one of custodian (20–22), with staff adopting both a "relational" and a "parentalistic and behaviour-changing" approach to care [(23), p. 359]. The paternal or parental model to care adopts a corrective approach where staff are viewed as promoting socially acceptable behaviour (24, 25). The behaviour of the patient then becomes the focus of care (23). Staff are conceptualised, in theory and frontline practice, as models for apt behaviour-this is an important recognition for the analysis section which follows in this paper.

This paternalistic model is underpinned by a disparity between staff (who are deemed well) and those who are in receipt of care (who are deemed unwell) where the role of helper and helpless is commonly reinforced in care (26). Providing care within a custodial context is challenging (27)-wherein it's integral to care that building and maintaining relationships occurs, however the environment is highly emotive (4). It is a long-standing position in medical sociology that medical knowledge "is socially contingent. It is argued that medical knowledge is socially constructed" [(28), p. 13]. Criticism of biomedicine and the dominance of clinical knowledge is well-rehearsed. What's relevant here is that social relations can be mediated by medical knowledge (29) and that medical knowledge is controlled by those who manage its means of production (30). This reiterates the importance of culture–clinical culture in this instance–within care settings.

### Rehabilitative Approaches for Sexual Offences

The Good Lives Model (GLM) is the dominant approach to offender rehabilitation within the UK, Canada, Australia, and New Zealand, which is underpinned by a risk-need theoretical approach (31). The GLM is known as a strengths based model and promotes the development of a self-determined life (32, 33). Sexual offending, has been argued to reflect "socially unacceptable and often personally frustrating attempts to pursue primary human goods" [(34), p. 90]. According to the GLM, sexual violence can be the result of one of two primary goods, mastery or relatedness. Mastery may be pursued in order to gain power over an individual (35). A risk factor outlined in the Structured Assessment of Risks and Needs (SARN) risk assessment tool in which"[a] view of heterosexual relationships where the male is seen as dominant and the female as submissive" is seen as problematic [(36), p. 103]. Thus, clinical assessment

tools support the notion that males who view women as submissive and engage in behaviour in which they strive to gain relational power over women is erroneous and laden with risk. Relatedness as a motivation for sexual offending proposes that the individual is aiming to achieve intimacy, but the utilisation of controlling behaviour is unlikely to lead to a satisfying level of intimacy (37, 38). However, the notion that the individual is aiming to achieve intimacy through sexual violence is debated within the feminist literature, with continuing arguments concerning "whether rape is about sex or whether it is about violence or power" [(39), p. 31]. The history and contemporary issues relating to these debates have been explored more thoroughly elsewhere [for example, see: (39–42)]. It is important to note that the motivations for rape as power (mastery) or sex (intimacy) underpin clinical rehabilitative work (e.g., the GLM and SARN risk assessment tool).

Walton and Hocken (43) highlight how third wave interventions with persons with sexual convictions evidence the importance of "thinking and language" (p. 154). Walton and Hocken (43) review Acceptance and Commitment Therapy and demonstrate the importance of value-consistent living, here-and-now (not past) attention, and coaching-style/language within caregiving. Contemporary sex offender literature highlights the requirement for support and management concurrently, that offenders' needs are important when working towards preventing future victimisation, that dynamic risk factors are important to consider and support (and that static risk factor analysis alone is misguided)—also that persons with sexual convictions can be both specialist and generalist offenders, which brings into the field elements of social exclusion, social capital, community inclusion, housing, employment, education, welfare, culture, etc. Walton and Hocken (43) conclude that interventions should assist people to "better respond to challenges in life" (p. 165). This contemporary holistic stance to work with persons with sexual convictions further illustrates the importance of care contexts and the norms and values therein.

## The Continuum of Men's Violence Against Women and Girls

The continuum of men's violence against women and girls was first coined by the feminist scholar Liz Kelly, who developed the theoretical framework to explore how women's experiences of men's violence are linked. Continuum thinking considers how "individual acts [exist] on a continuum [which] means seeing how they work *together*—in the context of a gender-unequal society—to produce particular effects on women's lives" [(44), p. 53]. The continuum approach supports a more nuanced understanding of VAWG that goes beyond othering those who enact the most violent gendered behaviour (e.g., sexual offending) and considers "gendered patterns of violence and experience[s]" that permeate everyday life for women [(45), p. 1]. Sexual violence has been suggested to be underpinned by the normative roles of heterosexual relationships, which are "imbued with the dominance-submission dynamic…where male aggression and female passivity are integral to the socially constructed roles" [(39), pp. 33–4].

These gendered norms are the "shared beliefs about what women or men do. They ascribe specific attributes, characteristics or roles to individuals because of their gender and are maintained by social approval or disapproval" [(46), p. 27]. Hegemonic masculinity is the culturally dominant form of masculinity within society, which "signals a position of cultural authority and leadership" and is often unevenly distributed amongst men [(47), p. 44]. The dominant form of masculinity promotes "attitudes and practices…that perpetuate gender inequality, involving both men's domination over women and the power of some men over other (often minority groups of) men" [(48), p. 113]. The roles of men and women which are often constructed as hierarchical and heteronormative whereby "[t]he nature of manhood is power, the nature of womanhood is subordination to power" underpins the continuum [(49), p. 20]. Therefore, the proposition is that gender roles and attitudes can become normalised in such a way which can support sexual violence and exists on a continuum of violence against women. The more common forms of sexual violence are often "defined by men as acceptable behaviour, for example seeing sexual harassment as 'a bit of fun' or 'only a joke', and they are less likely to be defined as crimes within the law" [(50), p. 49]. Thus, the continuum conceptualises incidents which fit outside the boundaries of criminality and considers the everyday encounters, which may be experienced as innocuous moments. This paper explores these gendered experiences during ethnographic fieldwork undertaken within an inpatient forensic mental health hospital in the UK.

The Me Too and Time's up movements, which have been argued to mark a major shift in gender equality (51), have reignited debates about sexual harassment (52). The notion that the individuals engaging VAWG are the deviant few, as represented by the media as rare instances, are argued to be unhelpful when gender inequality and VAWG is pervasive. Furthermore, attention often turns to individual women to become responsible for their own safety. Such an agentic approach is underpinned by neoliberalism which individualises problems and actions, rather than looking towards interventions that lay responsibility for problems, and resources to fix, within systems, institutions, agencies, etc. Thus, by "locating women as responsible for our safety, such campaigns also diminish the accountability not only of perpetrators, but of society and the state" [(46), p. 45]. Furthermore, such attention on women's safety work is a distraction from the wider issues linked to gender inequality, which "makes it harder to situate experiences of men's violence against women as a cause and consequence of gender inequality, rendering it instead an individual problem with an individual solution" [(46), p. 45].

A problematic victim-blaming narrative underpins much of the discussion around VAWG. It is proposed that the "structural and systemic nature of gender inequality, and the ways this plays out in everyday actions and interactions…[should be] a starting point for prevention" [(53), n.p.]. The continuum of VAWG provides a holistic, more nuanced view, which is suggested

to more appropriately capture the experiences of women in everyday life.

## The Permeable Institution: Societal Issues

The notion that cultural and social norms (e.g., gender stereotypes and beliefs about masculinity and aggression) are supportive of violence against women is recognised (54). It is thus argued that cultural norms and practices, including inegalitarian attitudes towards women, infiltrate the exterior walls of institutions which aim to rehabilitate individuals who have engaged in gender-based violence. The permeability of institutions is often debated. Institutions have been conceptualised as a total institution in which a "barrier to social intercourse with the outside" exist [(55), pp. 15–16]. However, whilst it has been suggested that modern institutions have developed their permeability in various ways (e.g., short-stay patients, and for those in receipt of care: contact with those outside of the institution) (56), practices have been argued to be influenced by cultural, political, economic and legal factors (57). Thus, it is argued that political and socioeconomic elements from wider society permeate our porous institutions (58)—"the process of institutional infusion, in which an outside institution proffers attitudes, practices, and resources that individuals may draw on to shape their material and interpretive experiences within a host institution" (p. 175) is evidenced by Ellis (58), where religion is the example. This paper argues, through highlighting salient data from an institutional ethnography, that the social environment in forensic mental healthcare is influenced by heteronormative views of gender which are upheld by the macrosystem (i.e., at a societal level) and that such secure environments are unlikely to escape the wider oppressive system which reinforces patriarchal ideals both in subtle, but also at times, in overt ways.

# METHODS

## Ethical Approval

A favourable ethical opinion was obtained from a NHS Research Ethics Committee, which specialised in qualitative research and the Mental Capacity Act (2005) (16/LO/0471). Residents' capacity to consent was assessed by the responsible clinician at the hospital, in accordance with Mental Capacity Act guidelines (59).

## Participants

The UK forensic mental health hospital cared for individuals with a history of offending or had presented with challenging behaviour and had been assessed as requiring care for their mental health. Residents were commonly detained under the Mental Health Act (1983/2007), with varying restrictions relating to their perceived risk to themselves and others. Informed consent was provided by the signing of consent forms from 14 staff (8 female, 6 male) and 9 male residents from two wards. Consent, however, was continually negotiated during fieldwork (60). A relational ethical approach was adopted to navigate the everyday ethical considerations when conducting research within a highly emotive environment. For self-care and fieldwork-reflection the researcher attended therapy during fieldwork, provided by the supervisory team, including a psychotherapist.

## Participant Observation

Overt participant observation was adopted in order to understand daily life at the hospital. The first author spent over 300 h within the inpatient forensic mental health hospital, observing and participating within daily life. Engagement in everyday conversations facilitates the observation of events and meaningful social intercourse (60), which is pertinent for the development of trust and the building of rapport (61). Ethnography is thus an embodied experience in which "evocative fieldnotes, vignettes, personal memories of taste, smell, conversations, music, angst and anger, joy and friendships, hard won familiarity and being marginal" [(62), p. 12] is central to the method.

Reflexivity is central to qualitative inquiry and is noted to "not simply [be] about researchers themselves, but also about how we are seen by the people we do research with and the power relations within these contexts" [(63), p. 451]. Thus, as noted earlier within this paper, the ways in which the ethnographer is perceived by the community is revealed through the interactions between the researcher and the members of the community, which also highlights cultural norms and accepted practices.

## The Female Ethnographer

It has been well documented that the gender of the ethnographer is integral to the ways in which the researcher is perceived and treated by the community. Gender not only shapes the encounters experienced by the ethnographer (64), but also reveals the role of gender within the community. For example, Ng (65) notes that exploring the inequalities and differences between the researcher and the community can lead to fruitful endeavours. Moreover, individuals within the community ultimately "transfer onto them [the researcher] definitions and images that belong to their own culture" [(66), pp. 67–68]. Female ethnographers often note their status as a female to be advantageous. For example, Haddow (67) found that gaining and maintaining access to an all-male community was promoted by their female status due to the community perceiving women as easier to get along with who don't present a threat to the male hierarchy. However, this was not without tension and Haddow (67) was indeed sexualised. Female ethnographers often write about their preparation for fieldwork and consider how their gender may present them with challenges, particularly when the community is all-male (68). The disclosure of abusive encounters in the field are presented as a warning to other junior or novice researchers so that they are prepared for fieldwork (69, 70). Fieldwork is a gendered process–both the process of creation of ethnographic data and the process of being in-the-field within patriarchal settings.

## Ethnographic Writing: Telling Tales of the Field

Ethnography aims to explore the other through participation within the daily lives of the community, however, such an endeavour is ultimately "experientially based" and adopts the

approach of "I-witnessing" [(71), p. 53]. The community, then is perceived through the ethnographer's eyes and thus "ethnography is always partly autobiographical." [(66), p. 65]. Ethnographic writing, or indeed their tales derived from their time conducting fieldwork, ultimately reflect the "personalised seeing, hearing, and experien[ces]" of the researcher [(72), p. 222]. Within this paper, ethnographic narratives are used as a powerful tool to "generate a sense of being there for the reader" [(73), p. 276], which are presented in the form of vignettes. Vignettes allow the reader "to sense some of the evocative power, embodiment, and understanding of life that comes through the concrete details of narrative" [(74), p. 9]. Thus, the narrative vignettes are deeply personal and include intimate details of the researcher, including their inner narrative and the emotions experienced. Ethnographic writing is produced "through which ethnographers render their experiences accessible to readers" [(73), p. 275], in which experiences or descriptions of the scene have been provided to evoke the reader to understand the embodied experience of the researcher. The narrative vignettes presented within this paper have been selected because they "aptly illustrate recurring patterns of behaviour or typical situations in that setting" [(75), p. 175] with a particular focus on gender roles.

## Data Analysis

Within ethnography, the data collection and analysis stages of research are often intertwined (76). For example, during fieldwork, the writing of the fieldnotes were found to heighten and focus the "…interpretive and analytic process" [(75), p. 100]. Emerging insights were added as additional headed sections following the write-up of observations in which accompanying theoretical codes or insights were noted. The research adopted a constructionist ontological position which appreciates that social phenomena are constructed (77). An emic approach to knowledge was adopted which aims to understand the local interpretation (78) of community life at the hospital in which "components of a cultural system from the perspective of the group being studied" is considered [(79), p. 16]. The aim then was to understand the perspectives of those who work and reside at the hospital, adopting an inductive approach.

## Strengths and Limitations

This paper considers gender role stereotypes within the inpatient forensic mental health context, which has synergies with other important work in this field (80). A limitation of this research is that the demographic details, such as, age and ethnicity, were not collected within this research; meaning that the sample cannot be situated (81). Furthermore, an understanding of the importance of these influences (and biases/hierarchies) would have been advantageous for the exploration of intersectionality. For example, hegemonic masculinity not only reinforces power structures relating to gender, but also sexuality (48) and race (82). A commitment to such notions of masculinity serves to marginalise those who do not fit the social norms of masculinity (83) and this commitment may indeed have been performed within the institutional community. Racial abuse experienced by staff and those in receipt of care is prevalent within the forensic mental health context (4), thus intersectionality would undoubtedly be relevant to the arguments presented within this paper.

# RESULTS AND VIGNETTE STRUCTURE

This paper focuses on data from two male wards in order to critically explore our data pertaining to gender roles, masculinity, and heteronormativity. Our central argument is that the intertwining and interdependent cultural and custodial elements of forensic healthcare environments are integral and influential to care, culture, and conduct within such institutions–including concerning misogynistic everyday talk and the continuum of men's violence against women therein. A series of narrative vignettes are presented, which illuminate the gendered environment and the upholding of normative gender roles, some of which include the subjugation of women. Details not pertinent to the analysis have been changed to maintain confidentiality and pseudonyms have been used throughout. The five vignettes are presented, then discussion occurs after the presentation of data. This string of continuous ethnographic data has been selected in order for the reader to experience the fieldwork setting uninterrupted. The five vignettes are arranged in escalation order, from more commonly experienced to less commonly experienced, to demonstrate the continuum.

## Vignette 1: "That's a Bit Girly"

> We were on a community visit to a local bowling alley. I sat with the occupational staff, Jessica and Nicole, on a tall stool, which overlooked the lanes being occupied by the residents. It was nearing the end of the session; the lights turned off above the isle lanes, indicating that time was up. The residents gathered in the foyer. We stepped outside. The taxi wasn't waiting as it usually was. Nicole walked away a little to phone the taxi company and indicated that'll it'll probably be here shortly. Toby sat down on the grass with Jessica, I joined them. It was a nice day as we basked in the sunshine. It was Summer, the grass was a little overgrown with bunches of daisies. Toby started to make daisy chains. I started looking for a daisy that had a long and sturdy-looking stem. I found one, picked it, and began handing it over to Toby commenting: "This looks like a good one." Nicole started walking back over saying the taxi was just coming, she looked up the road. I turned to see the taxi pulling in. I stood up. Nicole looked down at what Toby was doing, she frowned and scoffed: "That's a bit girly isn't it?! Daisy chains! Come on, the taxi is here."

## Vignette 2: "You Want Them Pretty"

This vignette is an observed moment at the hospital between a male staff member, Mark, and a male resident, Jacob. This interaction took place after seven months in the field.

> I was invited by Mark to accompany him on leave with Jacob, a resident on the ward. Jacob was approximately 20 years his junior. We crossed the road and stood in the doorway of an abandoned shop. Jacob lit his cigarette. He was looking down at his phone and swiping. After taking a long drag on his cigarette, he turned the screen, showing it to Mark and continued to hold his breath before exhaling: "Look at her, what do you think?"

Jacob asked. "Yeah, she's nice, she's pretty," Mark responded. Jacob asked: "Yeah, you think?." "You want them pretty, but not too intelligent! That was the problem with my ex, she was really pretty and intelligent, it caused us problems," Mark responded. "Oh yeah?" Jacob replied with a slight chuckle. "Yeah mate," Mark responded raising his eyebrows as a signal of the certainty of his statement. I stood a little distance away from Mark and Jacob, remaining silent. I felt ignored and overlooked as a bystander to this inappropriate kind of male locker room talk.

I reflected at the time: Jacob was the newest member to join the resident community on one of the male wards. The day before I overheard a conversation between two members of female staff. They were discussing Jacob and his comments to female staff. He kept referring to them as "woman." They were annoyed and talked about how they had been challenging him on this, but he seemed to find it amusing. They said that this was becoming problematic and agreed that they needed to keep challenging him on this, it wasn't okay. I'd noticed that before this, Jacob had called me woman and I challenged him on this and asked him not to call me "woman" –I had a name. Jacob merely laughed in response.

## Vignette 3: "Her Name Is Slopey Shoulders"

I was on one of the male wards, it was mid-morning. I was by the ward kitchen door, which had a glass panel, I looked to see if the cooking session with occupational therapy had started yet. I heard someone coming down the corridor, I glanced over to see if it was Jarred who usually cooks during this time. I could see it was a female member of staff who I hadn't met before. I began introducing myself as Daniel appeared, he overheard the conversation. He beckoned loudly "Don't you know her name, it's slopey shoulders?" (Slopey shoulders is used to describe someone who is devoid of responsibility. They are viewed as someone who does not carry any weight of responsibility on their shoulders). I had prepared myself for a meeting such as this. Daniel had started to call me this name and it was starting to get annoying. I planned to challenge him, but only when it was staff that was present. I didn't want to divert the focus from my observations or interactions with the community. The new member of staff was stood facing me, Daniel was behind her a few feet away. I looked at Daniel, shook my head and replied "No, that's not my name." I turned to face the female member of staff and smiled: "So, my name is Emma, I'm a researcher…." Daniel interrupted again "Yes, it is, it's slopey shoulders!." He'd walked closer to where we were stood. I turned and remarked "No, it's not." The female member of staff began walking away and said, "Oh leave it you two." She walked back down the corridor, away from us, she was gone. Daniel stepped towards me and moved his body slowly and purposefully, standing tall with his shoulders back, like he was squaring up to me, almost ready for a fight. "That's what we call you, slopey shoulders," he was towering over me now, his body positioned in a threatening manner but his speech contrasted this? he spoke as if this was all a joke, just banter. My mind turned to the security camera–I knew we were in shot. I looked up at Daniel, "please don't call me that, my name is Emma." I felt the vibration of the security alarm on my lower back and the sound of the alarm, it was jarring. I turned to look to see what the message was on the display. I could see Daniel had begun walking away quickly whilst glancing at his alarm. He was gone.

## Vignette 4: "You Need to Be Careful, You're Pretty and Young"

It was the afternoon, I headed over to one of the male wards. I opened the first door with the heavy set of keys and placed these back in my pouch that was secured to my belt. I hovered by the Perspex window which provided a view into the staff office from the security airlock. A staff member clocked me. I smiled and mouthed "hi." They were talking to another member of staff and moved over towards the door release situated in the office. I heard the click of the door being released. I opened the door and entered the ward. Joe, a resident, was across the room, near to the kitchen. He smiled and nodded, I smiled back. I noticed there were a couple of tabloid papers on one of the dining room tables, they looked new, perhaps today's paper. One of them had been left open, on a page with a large photograph of a woman in underwear.

Andrew was stood near the staff room door: "Oi, come here for a moment" He nodded his head to the side to invite me over towards him. "I need to have a chat with you" he beckoned across the ward. I walked over to him expecting us to have the chat on the main ward. He turned around to face one of the side room doors. He tugged at the leather rope to pull his set of keys out of his trouser pockets and proceeded to swing them upwards, he caught them with his hand, clashing the set of keys together as he closed his fist. He unlocked the door and headed into one of the side rooms; it was a small room. He stepped in and turned around to address me, leaving only a foot between us. Andrew is taller than me, which felt very noticeable now we were stood in close proximity. I had to tilt my head back to look up at him. My mind was racing: What did he need to talk to me about? He started talking about James, one of the residents that I knew well. "James has a history with young women." I was nodding my head to indicate my knowledge of this. I did know about his previous offence. He continued: "You need to be careful, you're pretty and young." I understood what Andrew was saying but I felt uncomfortable with his comments about my looks and my age. I also knew that I wasn't quite as "young" as he seemed to think I was. He said "okay?" to indicate that we were done. We left the side room to join the ward.

I reflected at the time: I understood James' history. I didn't consider my appearance or perceived young age as risk factors. I reflected on this interaction during a clinical supervision session. We discussed how my attributes were positioned as risky within the hospital environment. It was almost as if my looks and apparent young age were being pathologised–*I* was somehow the risk? it was my fault, and my responsibility to manage this. This also wasn't the first time I had been called young. Another time I was on the same male ward with three male residents. One of the men brought up the topic of tattoos and asked if I had any. Another male resident commented, before I had the chance to respond myself, that of course I didn't, I was far too young to even have a tattoo. I was 29 at the time.

## Vignette 5: "He Had His Hands Down His Trousers"

It was the afternoon, after lunch. A few of the residents were sat in the communal area, watching the TV on the sofas. The music channel was on. One of Ed Sheeran's songs was playing

"kissed her on the neck and then I took her by the hand…my pretty little Galway girl." I sat down next to Johnathan, who I knew quite well. We exchanged pleasantries and chatted about the music session that happened earlier that day. We sat in silence for a few moments. I glanced at the TV and then looked around the ward to see a staff member coming down one of the corridors from the bedrooms. They headed to the office. I soon realised that Johnathan had his hands down his trousers–he was pleasuring himself! I stared back at the TV, which meant I could face away from him. I thought for a moment. My mind was racing. Should I say something? Had anyone noticed? I searched around with my eyes trying to not move my head from the direction of the TV. It didn't seem like anyone had, the residents were still watching TV, one of them was laying on the sofa, not facing us. I looked straight ahead at the clock so I could see out the corner of my eye–just to cheque. Did he still have his hands down his trousers? Were his hands still moving? They were. I could see his head was back and his eyes were closed. I asked myself: Why am I still sat here? I didn't want to draw any attention to it, is that why I was still there? I decided that I needed to leave. I slowly stood up and headed to the staff base, not looking back.

When I entered the staff base, there were a few female staff members. I stood, probably looking quite shocked, as one of the staff members looked at me. Their attention was suddenly on me. I explained what happened. There seemed to be some shock. I was asked if I was okay. I indicated that I was.

I reflected afterwards: This felt like the most attention that I'd received from the staff. They were usually busy. I understood. But this felt different. The female staff took the time to cheque in with me and run through what had happened. It felt caring. We didn't know each other well. It clearly felt important that we explored what had happened. I felt numb. This seemed in contrast to the staff's reaction.

## DISCUSSION

The cultural and custodial elements of forensic healthcare environments are integral to care, culture, and conduct. The social environment is influenced by contemporary social issues as the boundaries of such institutions are porous. Misogynistic everyday talk and the continuum of men's violence against women are thus important to explore, which have implications for the therapeutic milieu. The researcher experienced sexual harassment and violence during fieldwork (e.g., vignette 5) and such experiences are prevalent in modern mental healthcare. Indeed the Care Quality Commission (84) has called for national guidance to improve sexual safety on mental health wards, following reports of sexual harassment and violence in mental healthcare in the UK. Such reports have been filed by staff and individuals in receipt of care, which include both staff and those in receipt of care as perpetrators from a range of settings, including acute adult wards, forensic units, and child and adolescent units. The experience of the researcher, then, is not uncommon and perhaps, unsurprisingly, such experiences have been shared by other ethnographers, albeit in different contexts. Writing of the sexual assault that Grenier [(69), p. 8] experienced, they conclude that "this type of incident can occur even in the course of our everyday lives" and it's important to consider that such moments only serve "to highlight a reality shared by numerous female ethnographers."

As noted earlier, the ways in which individuals interact with the ethnographer reveals much about cultural norms and practices, and ethnographers are often sexually positioned by participants during fieldwork (63, 67, 69). The experience of the researcher within this study highlights how she was viewed by those encountered at the institution and, importantly, reveals the power relations embedded within the context. This paper explores everyday social interactions and the embodied experience of the female ethnographer within a male-dominated forensic setting through a series of ethnographic observations evidencing a series of encounters rooted in patriarchal views of women that underpin gendered violence.

The forensic mental health environment has been described as a "male space … [which] promote[s] gendered inequality" [(85), p. 15]. Salient issues evidenced within the ethnographic work include heteronormative gender roles, hegemonic masculinity, and misogynism. Interactions between staff and those in receipt of care underpin therapeutic work and within forensic mental health, a corrective behavioural approach is commonly adopted (23). Within the institution, this approach was adopted to uphold gendered norms (e.g., vignette 1) when a resident was discouraged from engaging in "girly" activities (e.g., making a daisy chain). As noted previously within this paper, the corrective approach aims to promote socially acceptable behaviour (25), and in this instance, the behaviour that was being corrected represented the upholding of heteronormative gender roles. Hegemonic masculine attitudes and practices are upheld by both men and women, but such rigid ideas of masculinity can harm men (48) or serve to constrain men (47). In vignette 1 Toby was discouraged from engaging in the supposed feminine activity which upholds the values attributed to hegemonic masculinity, however in the context of mental health rehabilitative work, such an activity could be viewed as therapeutic. Thus, the upholding of rigid gender norms and the teaching of these were values, that permeated the secure setting, directed the content of the regime.

Hierarchical and heteronormative roles in which the male is dominant and the female undertakes a submissive position within relationships underpins the continuum of Violence Against Women and Girls (VAWG) (49). Furthermore, these socially constructed roles create the foundation for coercion as normative (39). The "lad's talk" presented within vignette 2 where Mark shares with Jacob that "[y]ou want them [women] pretty, but not too intelligent!" is underpinned by rigid heteronormative gender roles. Whilst it is recognised that the "relationship between gender and violence is complex…in many societies, women are viewed as subordinate to men and have a lower social status, allowing men control over, and greater decision-making power than women" [(86), p. 81]. Mark shares his views of the desirable attributes of women, in which she is "not too intelligent," perpetuates this notion that men should be dominant in heteronormative interpersonal relationships (i.e., notions linked to hegemonic masculinity). The adherence to rigid gender roles increases the "likelihood of violence against women" [(87), p. 279] and reproductions of restrictive notions

of masculinity is a "key aspect of complicity of violence against women" [(88), p. 11]. Forensic mental health settings should examine their gendered values and wherein steps towards gender equality might be forged.

Hegemonic masculinity is now problematised within the sexual offending rehabilitative context. The GLM approach to offender rehabilitation aims to assist individuals to achieve their goals through appropriate methods in order to manage their risk of reoffending. Thus, clinical work would aim to challenge the views of those who use inappropriate methods of obtaining primary goods, for example, seeking intimacy through violence or controlling behaviour, or indeed aim to obtain dominance over another individual through sexual violence. Ward and Brown (37) further explain how "[s]ome of these [risk] factors are causally related to offending behaviour in a fundamental way (for example, antisocial attitudes)." It is argued that Mark's comments exhibit an antisocial attitude towards women and such views can be associated with sexual offending, which have the potential to reinforce existent "cognitive distortions" for individuals. It is claimed that these comments can normalise already problematic views of heterosexual relationships which may be described by clinicians as cognitive distortions. The sharing of information through "innocuous personal stories" has been found to assist in the building of trust between forensic patients and staff [(12), p. 755] and whilst interpersonal relationships have been suggested to be the first step in rehabilitation/recovery, such comments that undermine women are out of the scope of appropriate conversations. From a rehabilitative perspective then, the institution would aim to challenge such distortions associated with the degrading of women (e.g., that women should not be intelligent).

In vignette 2, Mark, whilst relating to Jacob on an interpersonal level by sharing his views of heteronormative dating, is also adopting a paternalistic approach and teaches Jacob what is desirable when searching for a female partner. Research conducted within the forensic setting found that "[t]he term 'lad's talk' described an informal feature of life, when common interests replaced difference in upholding masculine values…with sport and sex acting as metaphors of masculinity" [(89), p. 177]. The researchers found that male nurses adopted an othering approach when referring to those in receipt of care, except, interestingly, when referring to themselves as men, thus indicating the inter-group relatedness of being male. As noted earlier, the building of relationships is fundamental for promoting relationship-enabling care, which lays the foundation for the teaching of acceptable behaviour (25). However, it's important to consider how the upholding of hegemonic masculinity, which are situated at a societal level (the macro) reinforces male dominance and the oppression of women, even in everyday talk, which may seem innocuous if it's considered to be removed from or not connected to the deviant few (e.g., those who engage in sexual violence). It is therefore argued that the "extent to which male dominance and the oppression of women is embedded in the ways that we see the world and conduct ourselves in it means that we cannot simply divorce ourselves from that system if we wish to do so" [(90), p. 46]. Overt staff attitudes towards women and rigid gender roles were evidenced within everyday talk, which not only serve to undermine clinical-rehabilitative work, but also highlights the embedded and normalised nature of VAWG.

It is argued that oppressive attitudes of women permeate institutions and are evidenced in everyday encounters, which has implications across the criminal justice system. For example, it has been argued that the "police and courts operate within the context of a society shaped by patriarchy, … [which are] still characterised by high-levels of victim-blaming and rape-supportive beliefs" [(91), p. 267]. Forensic mental healthcare and rehabilitative contexts too are situated within this system. The ethnographer's perceived level of "prettiness" and "youth" was viewed as a risk factor for one of the male residents, and the intervention to manage this risk was to be managed by the ethnographer by "being careful." This approach is underpinned by a victim-blaming rhetoric. In this sense, the personal is indeed political–the researcher has been advised to navigate the risks associated with her perceived attributes, however, it's important to recognise how this individual experience is understood at "multilevel contexts, [including] institutional as well as socio-historical and geopolitical" (92). Thus, the victim-blaming narrative upholds the notion that women should implement safety work, which is located at the individual level, rendering the victim as responsible—such a view, as discussed earlier in this paper, is problematic.

Moving on to vignettes 3 and 4, whilst name-calling may seem innocuous, such discriminatory behaviours "violate dignity to create a hostile environment" and can be enacted through "derogatory comments that undermine…identity" (92). The researcher experienced bullying and threatening behaviour both verbally (e.g., name-calling) and physically (e.g., one of the members of staff "squared up" and towered over the female researcher). Discrimination-compliant culture "that perpetuates or ignores acts of everyday sexism, racist microaggressions, homophobic and other workplace "banter" (92). was evident within the institution and, within this research, is linked to hegemonic masculinity.

Further, it is proposed that:

> Failing to recognise and address the ways in which gendered inequalities pervade all areas of social life, including our own, heightens the risk that they will be reproduced unchallenged within the field of engaging men too [(90), p. 46].

It is important to consider the everyday conversations that occur between staff and patients within the offending context and understand how such social interactions may represent a wider inegalitarian rhetoric, which may serve to normalise VAWG and, from a clinical-rehabilitative perspective, criminogenic attitudes and behaviour. Thus, whilst mutual engagement may positively influence the staff-patient relationship and promote recovery, gendered attitudes held by some staff serve to undermine therapeutic practices and rehabilitative work.

## CONCLUSIONS AND IMPLICATIONS

Practices, including everyday talk, which promote the subordination of women are supportive of violence against

women (86) and approaches which aim to challenge such views underpin violence prevention strategies (54). Thus, violence prevention strategies aim to promote gender equality by "challenging stereotypes that give men power over women" [(86), p. 80]. The notion that men can engage in work to challenge the inequalities experienced by women is an area which has been importantly receiving much attention. For example, Jewkes et al. (93) argue that men shouldn't only be viewed as perpetrators of violence but as allies in the prevention of Violence Against Women and Girls (VAWG). Furthermore, targeted approaches which focus on particular men (e.g., those convicted of crimes relating to violence against women) limits the impacts of interventions evading wider social transformation (48). Thus, a continuum approach to VAWG allows for a broader understanding of the structural and systemic issues experienced by women and aims to look beyond an othering approach in which certain men are seen as the problem (50). Such defensive thinking contributes to a disengagement with a more nuanced understanding of VAWG, which serve to undermine experiences of gendered patterns of violence that "permeate everyday life for women" [(45), p. 1], which may be overt or indeed subtle.

Within this research, the therapeutic milieu was influenced by hierarchical heteronormative gender roles, violent language in forensic settings, victim-blaming and misogynistic attitudes and practice, on the care for, and rehabilitation of, patients. Hegemonic masculinity was observed to reinforce gender order in various ways. For example, by constraining activities considered outside of masculine norms and reinforcing notions that men should be in a position of power and women should undertake a submissive role—particularly within heterosexual relationships. Hegemonic masculinity is not informed by fixed ideas of gender roles but is fluid. Ideas of masculinity are reinforced through social practices (47) and thus, there are continual opportunities for growth and change. Divergent forms of masculinity exist and forms that challenge existing power structures between men and women are being realised—however, not without its challenges (88). Further, within the custodial environment, masculinity presents particular challenges, with exaggerated masculinity viewed as a coping or survival strategy. However, within the Therapeutic Community model, principles of collective responsibility, empowerment, and citizenship underpin community life (94). Such an environment is incongruent with hegemonic masculinity and community members experience the dismantling of these conceptions of masculinity through therapy and community living (95). The Therapeutic Community model creates an environment in which everyday constructions of hypermasculinity can be challenged and new constructions of hegemonic masculinity can be embraced and supported, by all community members including staff. Our previous paper advocated for the Therapeutic Community model within forensic environments in response to the challenging interpersonal environment in which racism, violence and bullying was observed by the ethnographer (4). Once again, this model is advocated for, particularly within the context where individuals are undertaking rehabilitative work related to sexual offending, so that everyday social encounters can be underpinned by an egalitarian ethic, one that challenges the gender inequalities which pervade social life and indeed our institutions, and contribute to the continuum and the continuation of VAWG.

## DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by NHS Research Ethics Committee. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

The ethnography was conducted by EJ as part of her doctoral studies at the University of Nottingham. MJ was a supervisor on this doctoral work. This paper has been prepared by EJ and MJ. Both authors contributed to the article and approved the submitted version.

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# High Security Settings in Flanders: An Analysis of Discharged and Long-Term Forensic Psychiatric Patients

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**Background:** Two Forensic Psychiatric Centres (FPC) were implemented the last decade in Flanders in Ghent (2014) and Antwerp (2017). FPCs are forensic institutions for forensic psychiatric patients with a high recidivism risk and a high security need. The objective of FPCs is to create a care process with sufficient flow (from high to lower forms of security), and transitions (from specialized forensic care to regular psychiatric care).

**Aims:** To examine the characteristics of the high security population in FPCs, treatment length, number of discharges, and discharge locations and to determine the profile of long-term patients within an FPC.

**Methods:** A retrospective file study of an admission cohort of 654 patients admitted to FPC Ghent or FPC Antwerp was conducted. Sociodemographic, clinical, judicial and risk characteristics were analyzed. Bivariate analyses were used to test the difference between two groups: the group that was discharged to a lower security level vs. the group of long-term patients.

**Results:** Most patients had psychosis and personality disorders, while comorbidity was also high. Judicial histories were extensive, with many sexual index offenses. During a 6-year follow-up period, the number of referrals back to prison was low. Nearly a third of the population was discharged to a setting with a lower security level. Long-term patients typically presented with more personality disorders, higher psychopathy traits and higher risk scores and were more frequently subjected to coercive measures during treatment.

**Conclusions:** The Flemish FPC population is characterized by a high proportion of sex offenders as well as a high proportion of personality-disordered patients. It is this last group, and the group with elevated psychopathy traits, who remain for longer than expected and is difficult to resocialize. This study further highlights the need for clear criteria to assess the conditions of these long-term patients in Flanders.

**Keywords: high security, internment, forensic psychiatric center, long-term treatment, referrals**

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## INTRODUCTION

High security institutions are commonplace among international mental health systems and provide specialist care for patients with enduring psychiatric problems in combination with a high risk of further violence. Research indicate that patients in high security settings in western countries were predominantly Caucasian male, between 28 and 38 years old on average (1–8). Judicially, index offenses are presented in a diverse manner across studies, making comparisons difficult. Nevertheless, the majority appeared to be admitted for violent offenses and in one in five cases even life crimes (4, 5). In most studies the prevalence rate of sex offenses was <10% (3, 4, 9), while some studies reported up to 25% of sex offenses (7). Clinically the most common psychiatric diagnoses involved psychotic disorders (3, 4, 6). In Italy, a diagnosis of personality disorder was negatively associated with admission to a high security forensic unit (3). In contrast personality disorders and substance use disorders were frequently found in Dutch high security populations (10). Treatment length was variable: the median hospital stay in high security institutions in England and Wales was 6.9 years (5), and in Norway, it was <1 year (1). Delayed discharge from secure units included poor response to treatment, ongoing safety issues, and lack of suitable step-down facilities (11). Research further indicated other factors related to long-term treatments in secure settings, e.g., psychopathology severity, crime severity, psychotic disorder, history of violence, substance misuse, and non-cooperation with treatment (12–16). After treatment in high security, most discharges (66%) were to an institution with a lower security level; 29% were sent to sheltered housing or outpatient settings, and 5% were referred back to prison (2). In Norway, 35% of referrals were sent back to prison (1). In England and Wales, almost one in five (18.8%) was readmitted to a high security institution after 5 years (5). In Norway, this was the case for one in four patients (1).

Secure forensic services are expensive and highly restrictive; treatment length therefore should be as short as possible and as long as needed. Yet, there are concerns about long-term stays in secure services. What constitutes a 'long-term' patient is however not clearly defined and differs between countries (17). For example, experts from nine European countries (Italy, Finland, Germany, Ireland, Letland, Poland, Slovenia, Spain, and Switzerland) considered treatment periods between four to 10 years long-term, whereas experts from the Netherlands, England, and Belgium reported that stays of more than 10 years were not unusual (18). In England, one in five patients in high security hospitals had been there for more than 10 years, and a similar proportion had been in medium security for more than 5 years (11). Some if not most of long-term patients are considered treatment resistant and are labeled as 'longstay' patients. In these patient the shift is less on treatment and more on care and quality of life (19). The Netherlands was the only country with clear criteria to determine longstay status, which can be attributed to patients who have been treated in two separate forensic hospitals for 6 years or more, with no discernible progress (18). In a recent update, the cutoff of 6 years for such status in the Netherlands was abolished (20).

### High Security Forensic Psychiatric Centers Within the Flemish Forensic Care System

Under Belgian law (Act of 5 May 2014, modified by the Potpourri III Act of 4 May 2016), after having committed a crime, people deemed to lack criminal responsibility because of insanity (not guilty by reason of insanity, NGRI) are not punished, but submitted to an internment measure either by investigation or judgment courts. Internment is a security measure with a 2-fold purpose, namely, to protect society and to permit compulsory psychiatric treatment for the forensic patients (further referred to as internees). The Chambers for the Protection of Society (part of the tribunal for the execution of sentences) are responsible for the execution of the internment measure. Treatment referrals by the court are based on the least restrictive measure to protect the public from additional violence, with the highest level of security (Forensic Psychiatric Center; FPC) to the lowest level (community care). In Belgium, treatment can be provided either within a general psychiatric or a forensic psychiatric setting. In Wallonia (southern part of the country), forensic or secure settings have been implemented since 1930. However, in Flanders (northern part of the country), specialized forensic psychiatric care saw a slow start. A prevalence study in September 2004 showed that only 6.7% of Flemish internees were treated in a forensic psychiatric facility (21). Some internees remained in detention for unnecessarily long periods: in December 2013, the average length of detention was 4.8 years, with 14.4% remaining for more than 10 years (22). The European Court of Human Rights (ECHR) criticized the Belgian state for detention of internees in unsuitable facilities, and solicited the government to take structural measures (ECHR 2016, No. 113/2018). In recent decades, the Federal Department of Public Health and Justice and the regional Department of Welfare introduced reforms with a positive impact on expanded forensic care for internees. Among others this resulted in the implementation of two FPCs (FPC Ghent in November 2014, and FPC Antwerp in August 2017) for the group of internees with high security needs and high risk profiles. High security refers to material security (an escape-proof building), procedural security (extensive internal regulations), and relational security (via the Early Recognition Method) (23). Placement in a FPC is mandatory, which implies that neither the FPC nor the internee can refuse placement. Only with severe incidents, unattributed to pathological loss of control, can this realm be initiated by the FPC for a (temporary) return to prison. In other forms of care (e.g., medium security), patients agree to conditions of admission, with institutions using strict inclusion and exclusion criteria. Both the FPC Antwerp (182 beds, with 18 beds for women) and the FPC Ghent (264 beds for male internees) are federal forensic institutions funded partly by the Ministry of Justice (facility services, security, and operational management) and partly by the Ministry of Health (care, medication, and medical fees). FPCs treat internees to reduce new criminal offenses, by removing underlying causes of criminal behavior and rendering them more manageable. As stated, the goal is a responsible return to society: reintegration allows for intermediate forms, from progression to a less secure setting

to independent living. Along with the biopsychosocial model (24), the Risk-Need-Responsivity model (25) and the Good Lives Model of rehabilitation (26) are used as theoretical frameworks. Crime analysis and risk assessment in combination with the psychiatric diagnosis form the basis of treatment for all patients. Insight into crime, while dealing with rules and standards, was problematic for internees in the past; for many, treatment in other settings had often gone awry, with safety incidents and rule violations. The ability to deal with boundaries is a necessary treatment objective. At the initial phases of FPC Ghent, average treatment duration was anticipated as 4 years for patients with intellectual disability and 3 years for others, with a large standard deviation. This presumed that long-term treatment settings for treatment resistant patients would soon be available.

## Current Study

Following implementation of high security beds, the current internment policy in Flanders has two objectives. The first is to provide adequate treatment for internees with a high risk and high security profile, avoiding unnecessaraily long detention periods. The second objective is to create a care process with sufficient flow (from high to lower forms of security), and transitions (from specialized forensic care to regular psychiatric care). This study investigates if those objectives were met. The aims of the study are to:

1. Determine sociodemographic, clinical, judicial and risk characteristics of the high security population.
2. Determine treatment length in high security, the number of discharges, and discharge locations.
3. Examine the profile of long-term high security patients.

# METHOD AND PROCEDURE

This study ($N = 654$) includes all current or past admissions to either FPC Ghent or FPC Antwerp in a six-year period, i.e. from the opening of FPC Ghent (17.11.2014) until census date (16.11.2020). Judicial data were obtained via the Central Criminal Register and detention records. Other data were obtained from periodic multidisciplinary reports, submitted by the FPC to the CPS. Demographic, clinical, and risk characteristics were also analyzed.

Only information collected during treatment for clinical or legal purposes was used in this study. The research project was formally approved by the local Ethics Committee of the FPCs. Furthermore, the local ethics committee waived the requirement for ethics approval as approval is not required for studies analyzing anonymized data, in accordance with national legislation (law of 7 may on Experiments on Humans) and institutional requirements.

# MATERIALS

## Sociodemographic Variables

Information on gender, age at first admission, nationality, and residence status was gathered.

## Judicial Variables

For several offenses, the index was classified based on the most serious offense, then clustered into categories: life offenses (murder/manslaughter or attempted murder/manslaughter) > sexual violent offenses (hands-on) > other violent offenses (assault and battery, arson, property crime, threats, or stalking) > other offenses (thefts, and sexual hands-off offenses). The total number of sentences on the record was calculated. A patient was considered a first offender if there were no other convictions and/or internment measures except for the current internment measure.

## Clinical Variables

On a clinical level, previous admissions to a medium-security unit were taken into account. Psychiatric diagnoses were classified in FPC according to either the fourth or fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM). The most recent diagnosis was used. The number of DSM- diagnoses was evaluated. Diagnoses were qualified by the first or primary diagnosis and then clustered into the following categories: personality disorders, psychotic disorders, paraphilic disorders, and other disorders (such as substance-related disorders, or mood disorders). Some diagnoses were calculated irrespective of whether they were established as primary or additional diagnoses: substance misuse, personality disorder, intellectual disability, and paraphilic disorder. Mean intelligence scores were calculated with various testing. The presence of psychopathy was determined on the basis of the Psychopathy Checklist-Revised [PCL-R; (27)]. This score indicates the extent to which psychopathic characteristics were present. The maximum score on the PCL-R is 40, whereas a score of 30 or more is considered by the original author as indicative of psychopathy. In Europe, a score of 25 or more was considered to be indicative of psychopathy (28).

## Risk Profile

Risk profile was defined on the basis of Historical, Clinical and Future - Revision [HKT-R; (29)] The HKT-R is a risk assessment tool used to predict violent and general recidivism. The tool consists of three domains and 33 risk factors: the historical (H) domain (12 risk factors), the clinical (K) domain (14 risk factos), and the future (T) domain (7 risk factors). All risk factors are rated on a 5-point scale, ranging from 0 to 4, where 0 indicates that the indicator is very low risk for the patient, given the circumstances; a score of 4 means there is a high risk. For this study, the numerical score was used to determine the risk level: 0 to 42 = low risk, higher than 42 to 55 = moderate risk, 55 or higher = high risk. In clinical practice the HKT-R is scored every year in order to monitor treatment progress on relevant risk factors. For this study the most recent score was used. The HKT-R was assessed in two possible follow-up situations: either with professional supervision in the FPC and without professional supervision (in society). Scores with more than two missing items were excluded from the analyses (8.3 %, $n = 54$) to ensure that only valid scores would be used. HKT-R assessments were not done by the researchers for the purposes of this study but took place as part of usual care by the

clinical team (psychologists in collaboration with criminologists), who had all pursued certified training. According to Fleiss (30) critical values for single measures the interrater reliability for the total HKT-R score was good in previous research (ICC =0.62). Also, according to the classification of Rice and Harris (31), the predictive validity was moderate to large (2 years: AUC =0.78; 5 years: AUC =0.68) (32).

### Treatment

Treatment duration for all patients (admission until census date or discharge date), admitted patients (admission date until census date), and discharged patients (admission date until discharge to a stepdown facility) was analyzed, as well as the place of discharge: stepdown facility (medium security, low security, regular psychiatric service, community care)[1], prison, or other (e.g., absconding for more than 1 week or death). Place of residence at admission was also determined. For internees admitted directly from prison, the last detention period before admission to the FPC was assessed. During treatment, it was analyzed whether a patient was subjected to coercive measures, as well as the number of coercive measures. Coercive measures concerned seclusion (defined as a placement in a therefore designed, secured room, restricting the patient's freedom to leave it), chemical restraint (referred to medication that is administered against the patient's will, by force or by psychological pressure), and mechanical restraint (defined as applying any external mechanical devices for limiting the patients movement).

## DATA ANALYSIS

The data analysis was performed with IBM-SPSS v. 27, Chicago IL, USA. Differences between subpopulations were tested with the Chi-square or Fisher's Exact test in the case of categorical variables, and with the independent *t*-test (normally distributed data) or the Mann-Whitney U test (non-normally distributed data) for continuous variables. The significance level was set at.05. *Post-hoc* comparisons were performed with Bonferroni correction where appropriate. There were missing data with respect to the psychiatric diagnosis (0.6%, $n = 4$), IQ score (26.1%; $n = 171$), PCL-R score (60.9%, $n = 398$), and the HKT-R score (17.7 %; $n = 116$). Valid percentages are provided throughout the text. For comparison analyses, the group of long-term patients (defined as treatment duration of 5 years or longer) was compared to the group of patients discharged to a lower level of security.

## RESULTS

### Descriptive Analyses of Patient Profiles

The FPC population mainly concerned a male population (97.7%, $n = 639$) with Belgian nationality (83.8%, $n = 548$). Moreover, 27 patients (4.1%) were not entitled to stay in Belgium. The mean age at first admission was 42.4 years ($SD = 12.25$, range = 18–77). A small minority was 65 years or older (4.4%, $n = 29$) or 25 years or younger (7.3%, $n = 48$). Intelligence scores were available in 483 files (73.9%) and showed a mean population IQ of 78.7 ($SD = 17.74$, range = 41–140). Nearly half of the population (44.2%, $n = 289$) had been previously treated in a medium security setting prior to admission in the FPC.

On average, internees were subject to 1.7 internment measures ($SD = 1.26$, range = 1–11). The index offenses were life offenses (18.7%, $n = 122$), or sexual violent offenses (26.8%, $n = 175$), along with other violent offenses (42.5%, $n = 278$), or other offenses (12.1%, n = 79). The criminal record included an average of 7.2 convictions or internment measures ($SD = 7.04$, range = 1–45). A minority was regarded as first offenders (15%, $n = 98$).

The primary DSM diagnoses were psychotic disorders (35.7%, $n = 232$), personality disorders (34.8%, $n = 226$), paraphilic disorders (14.0%, $n = 91$) and other disorders (15.5%, $n = 101$). On average, 3.6 DSM diagnoses per internee were classified ($SD = 1.71$, range = 1–10). When all diagnoses were considered, in 63.8% ($n = 415$) there was a personality disorder, 59.8% ($n = 389$) a substance misuse problem, 22.5% showed intellectual disability ($n = 146$), and 23.1% ($n = 150$) showed a paraphilic disorder.

The PCL-R total mean score in the assessed population (39.1%, $n = 256$) was 24.6 ($SD = 7.39$, range = 5.0–37.9). More than half (54.3%, $n = 139$) of the screened population had a PCL-R total score of 25 or greater and a third (32.0%, $n = 82$) had a score of 30 or greater. The mean HKT-R total score was 64.0 ($SD = 16.63$, range = 12.36–106.00) during treatment and 73.0 ($SD = 16.10$, range = 15.45–109.18) during immediate release. The risk of new violent crimes in- and outside the treatment center was estimated as high in the majority of the population (71.4–86.8%), based on the HKT-R.

### Characteristics of Admissions and Discharges

Most patients were admitted in FPC Ghent (66.5%, $n = 435$), followed by FPC Antwerp (33.5%, $n = 219$). Nearly the entire population (99.2%, $n = 649$) was admitted from prison; the other five internees were transferred from lower security settings. The time in prison prior to FPC admission was 1745.5 days or 4.8 years ($SD = 2040.73$, range = 3–11,212). Over a quarter (28.8%, $n = 187$) stayed in detention for more than 5 years and 14.8% ($n = 96$) for more than 10 years. The mean length of stay for the total population until the census date was 1,033.7 days or 2.8 years ($SD = 575.59$, range 1–2,191).

On the census date (16.11.2020), 393 patients (60.1%) remained in treatment and 261 patients (39.9%) were discharged. Discharged patients were those who completed treatment and were discharged to a lower security level ($n = 202$), and other patients that no longer resided in FPC for other reasons, e.g,. deseased during treatment or sent back to prison. Of the referrals to prison, one was by court decision ex officio, to be subsequently deported to his country of origin (Iraq). A transferal to prison was requested by the FPC due to delayed treatments, combined with continued threatening behavior in two cases, while in the other 13 cases after a serious physically violent incident in which the

[1]This classification was made, not based on research, but on structural and procedural security institutions currently used, according to the researchers' estimate, not intended as a definitive classification of security level.

**TABLE 1 |** Discharged patients at census date.

| | Total population $N = 654 = 100\%$ | |
|---|---|---|
| | *n* | % |
| **Discharged after treatment completion ($n = 202$)** | | |
| Medium security | 108 | 16.5 |
| Regular medium security unit | 70 | |
| Medium security unit for sex offender | 21 | |
| Longstay unit | 10 | |
| Forensic unit for intellectually disabled persons | 7 | |
| Low security | 49 | 7.5 |
| Psychiatric unit | 31 | |
| Unit for intellectually disabled persons | 18 | |
| Regular psychiatry | 23 | 3.5 |
| Regular psychiatric hospital | 12 | |
| Regular unit for intellectually disabled persons | 8 | |
| Home for elderly | 3 | |
| Community care | 22 | 3.4 |
| Forensic sheltered housing | 5 | |
| Regular sheltered housing | 3 | |
| Independent living | 14 | |
| **Discharged for other reasons ($n = 59$)** | | |
| Transfer other FPC | 11 | 1.7 |
| Time-out | 1 | 0.2 |
| Expelled to country of origin | 5 | 0.8 |
| Released by court | 1 | 0.2 |
| Referred to prison | 16 | 2.4 |
| Absconded for more than seven days | 14 | 2.1 |
| Deceased during treatment | 11 | 1.7 |
| Deceased due to natural cause | 8 | |
| Suicide | 3 | |

safety of personnel could no longer be guaranteed. **Table 1** shows more details on all discharged patients.

The mean duration of treatment in the patients discharged to a lower security level was 1,070.4 days or 2.9 years ($SD = 468.50$, range = 39–2,143). Those discharged to a lower security level mainly occurred to residential settings (89.1%) and to a much lesser extent to the community (10.9%). More than half of the 202 discharged patients (53.5%) were sent to a medium security facility. Other patients were referred to a low security facility (24.3%), a general psychiatric facility (11.4%), or a community setting (10.9%) (see **Table 1** for details). The mean duration of treatment for patients still in treatment at census date was 1,067.2 days or 2.9 years ($SD = 617.30$ days, range = 1–2,191). During treatment, coercive measures were imposed on half of the population (49.4%). On average this concerned 3.2 coercive measures ($SD = 7.03$, range = 0–74).

## Long-Term Patients

At the census date, 393 patients were in treatment. One fifth of this population (20.4%, $n = 80/393$) were in treatment for more than 5 years. **Table 2** summarizes characteristics of the long-term population vs. the discharged group, along with some discernible differences. On the clinical level, there was a difference in patients with a personality disorder [$\chi^2_{(1)} = 6.49$, $p = 0.01$], IQ score ($U = 4040.50$, $z = -1.99$, $p = 0.05$), and the PCL-R total score ($U = 747.50$, $z = -3.80$, $p < 0.001$). At the judicial level, the length of prior detention differed ($U = 5264.50$, $z = -4.56$, $p < 0.001$). In terms of risk assessment, there was a difference in total HKT-R scores [$t_{(200)} = 5.23$, $p < 0.001$ and $t_{(199)} = 5.69$, $p < 0.001$]. More coercive measures were found in the long-term group [$\chi^2_{(1)} = 17.77$, $p < 0.001$] more frequently ($U = 5483.00$, $z = -4.75$, $p < 0.001$), but there were no differences found in demographic variables.

# DISCUSSION

## Descriptive Analyses of Patient Profiles

The first objective of the present study was to provide a description of the high security population in Flemish FPCs. In terms of age, nationality, gender, average intelligence, and previous admission to a medium security setting, these data were in line with previous research on medium security internees, and largely in line with high security populations in other countries (4, 8, 18, 33). We found some patients with an illegal residence status, constituting a small (4.1%) but problematic group. Apart from a difficult search for a suitable setting in the country of origin it is also almost impossible to transfer such patients to a less secure setting in Flanders, due to residence status and lack of access to social security.

Compared to Flemish medium security populations and most of the high security populations in Italy and England, the high proportion of violent sexual offenses was striking (3, 4). Furthermore, it was remarkable that personality disorders for a primary diagnosis constituted a third of the Flemish high security population, while in Scotland and Italy this was only the case in a minority part of the population (3, 34). In countries such as the Netherlands, where partial responsibility is used, many personality disorders were also found (35). We can only conclude that Flemish psychiatrists-judicial experts - even in a dichotomous system of accountability - are more likely to conclude that these patients were unable to control their behavior. According to De Page and Goethals (36), cultural differences may also play a role in the Belgian context. They compared diagnoses formulated for patients who had been diagnosed by clinicians of both communities and found diagnostic biases for comorbid psychotic and personality disorders. In Wallonia psychotic diagnoses were found more frequently and in Flanders this was the case for personality disorders (33). Multiple diagnoses were actually found, and a high number of substance misuse disorders were part of the current study, which is in line with other research (10, 33).

As expected, the proportion of internees with an increased degree of psychopathy and/or a high recidivism risk was higher than the medium security population (33). Psychopathy and high recidivism risk are vital, as

**TABLE 2 |** Characteristics patients discharged after treatment completion versus long-term patients.

| | Discharged after treatment completion ($n = 202$) | | Long-term treatment patients ($n = 80$) | | |
|---|---|---|---|---|---|
| | *n* (%) | *M* (*SD*) | *n* (%) | *M* (*SD*) | *p* |
| **Demographics** | | | | | |
| Belgian nationality | 184 (91.1) | | 72 (90) | | 0.78 |
| Illegal resident status | 0 | | 1 (1.3) | | 0.28 Fisher |
| Age at admission (years) | | 44.6 (12.80) | | 42.8 (11.29) | 0.36 MWU |
| **Judicial variables** | | | | | |
| Index offense | | | | | 0.72 |
| Life offenses (or attemps) | 37 (18.3) | | 17 (21.3) | | |
| Sexual violent offenses (hands-on) | 64 (31.7) | | 29 (36.3) | | |
| Other violent offenses | 72 (35.6) | | 25 (31.3) | | |
| Other offenses | 29 (14.4) | | 9 (11.3) | | |
| First offenders | 32 (15.8) | | 6 (7.5) | | 0.06 |
| Number of convictions on Central Criminal Record | | 6.0 (5.65) | | 7.2 (6.31) | 0.07 MWU |
| Duration of detention prior to admission (days) | | 1858.9 (2143.35) | | 2656.3 (1965.40) | <0.001** MWU |
| **Clinical variables** | | | | | |
| IQ score | | 76.0 (19.12) | | 80.4 (16.75) | 0.05* MWU |
| Number of DSM-diagnoses | | 3.6 (1.68) | | 3.9 (1.89) | 0.17 MWU |
| Substance misuse (comorbidity) | 121 (59.9) | | 46 (57.5) | | 0.71 |
| Personality disorder (comorbidity) | 116 (57.4) | | 59 (73.8) | | 0.011* |
| Intellectual disability (comorbidity) | 65 (32.2) | | 18 (22.5) | | 0.11 |
| Paraphilic disorder (comorbidity) | 59 (29.2) | | 27 (33.8) | | 0.46 |
| Psychiatric disorder primary diagnosis | | | | | 0.18 |
| Psychotic disorder | 71 (35.1) | | 26 (32.5) | | |
| Personality disorder | 46 (22.8) | | 27 (33.8) | | |
| Paraphilic disorder | 40 (19.8) | | 16 (20.0) | | |
| Other disorder | 45 (22.3) | | 11 (13.8) | | |
| PCL-R^ total score | | 21.9 (7.43) | | 27.4 (6.42) | <0.001** MWU |
| **Risk assessment** | | | | | |
| HKT-R^^ total score "in" | | 56.2 (15.48) | | 68.6 (15.75) | <0.001** |
| HKT-R^^ total score "out" | | 65.5 (15.40) | | 78.6 (14.47) | <0.001** |
| **Coercive measure** | | | | | |
| Subjected to coercive measure | 66 (32.7) | | 48 (60.0) | | <0.001** |
| Number of coercive measures | | 1.3 (3.42) | | 4.6 (7.61) | <0.001** MWU |

*^PCL-R, Psychopathy Checklist Revised; ^^HKT-R, Historic, Clinical and Risk Management - Revision.*
**p < 0.05. **p < 0.01.*

they often form exclusion criteria in settings with lower security levels.

## Characteristics of Admissions and Discharges

The second objective of the study was to provide an overview of admissions, discharges and treatment length. In Flanders, the vast majority of patients were transferred directly from prison to the FPC and referrals cannot be refused. In contrast, almost half of patients admitted in English high security settings were referred by another hospital (4, 6), and admissions can be refused (6). The time spent in prison before FPC admission was extensive, with more than a quarter in detention over 5 years. Compared to high security admissions in for example England, waiting times for admission were considerable [e.g., 0.3 years in (37)].

We anticipate that the current situation will change over the coming years, since the first high security institution only opened in 2014, such that the waiting list was extensive. We already observed a decline in detention periods. During the first 5 years, the last detention period prior to admission to FPC lasted 5.2 years (38), whereas it was 4.8 after 6 years in the current study. In the meantime, clinicians are challenged by this situation. Patients who underwent long detention periods often have attitudes which were adaptive in correctional settings (such as distrust of staff, intimidating behavior, and concealment of symptoms), but which became maladaptive once released (39). In addition, the crime analyses and therapy becomes difficult with a long period between offenses and the start of the therapy. The long waiting time for admission may further explain why the population in

FPCs was older compared to those in international studies (4, 6).

The mean length of treatment for the whole group was 2.8 years, which is lower than high security settings in England (5.9 years; 18) and in the Netherlands [8 years in 2017; (40)]. Of course, high security settings in Flanders had been implemented only seven years ago.

During treatment, three patients committed suicide, which is in line with previous research. For example, in the United Kingdom, compared to the general population, the suicide risk was found to be seven times higher in male patients and over 40 times higher in female patients (5).

One of the objectives at the start of the FPCs was to keep referrals to prison as low as possible. Since this concerned only a small minority (2.4% of the total number of patients admitted), this can be considered low compared to other research (1, 2). In Flemish medium security units, nearly one third of patients failed to complete the inpatient forensic treatment programme established to reduce recidivism in violent offenders, even though they were aware of the fact that non-completion would result in a return to prison due to breach of judicial conditions (41). This is worrysome, because non-completion of treatment is related to elevated levels of reoffending, even compared to offenders that were not offered treatment at all (42).

After completed treatments in FPC, the data showed that almost a third of the population (30.9%) could be discharged with a positive recommendation. As is customary in other settings, most discharges were made to a medium security institution. According to Jamieson and Taylor (4), this had more to do with a shortage of settings with lower security and certain clinical preferences, vs. an actual security need: this hypothesis could not be tested in the current study.

## Long-Term Patients

The third objective of the study was to gain more insight into long-term patients. As such, this group was compared to the discharge group, who had already completed treatment.

Treatment length in high security should be as long as needed, but also as short as possible, the goal being a transfer to a less secure setting. However, we identified a group of 80 patients who had remained over 5 years at the census date. At the start of the FPC, treatment duration of 3 to 4 years was anticipated. Six years later, it became clear that this target was not realistic for a subpopulation. Some patients take a longer time to progress, while others will remain too high a risk to be discharged. In other countries (the Netherlands and Germany) such patients are referred to other settings, with less focus on continued treatment and more on care and quality of life in a high security setting. The first high security longstay facility in Flanders will be built in the coming years.

In long-term patients, we found more comorbid personality disorders, higher psychopathy scores, longer detention periods, higher estimated risk of recidivism, and more coercive measures were used. These findings are in line with expectations. Length of stay was associated to seclusion during treatment (43). In the report of the *National Institute for Mental Health,* patients with a personality disorder were often considered untreatable and difficult to manage in both mainstream and forensic care (44). It was questioned whether personality pathology - demanding significant treatment – can be met in secure settings (18). In addition, patients with a high degree of psychopathy are known to make less progress in treatment, causing more incidents and less likely to be resocialized (41, 45). Long-term patients had a higher mean IQ vs. discharged patients in our study, whereas mixed results have been found in the literature for treatment length in intellectually disabled patients (11, 46). Since we did not find a difference with respect to the number of intellectually disabled patients, and more than a quarter of the patients were not tested for IQ, our findings must be interpreted with caution.

## Limitations

One strength of the current study is that the total population in high security settings in Flanders was analyzed. Yet, there still are internees with a high security profile in prison on the waiting list, which indicates that no definitive statements can be made about the entire high security population. Another limitation in the study was inherent to its retrospective nature. It was only possible to rely on information that was already collected in treatment, resulting in missing data. This may have biased results regarding intelligence scores, psychopathy, and risk level. In terms of risk assessment, the amount of missing HKT-R data can be explained by a relatively short hospital stay for a number of patients, and also due to a different risk assessment instrument used for sex offenders.

# CONCLUSION

In Flanders, there was great need for high security beds over the last few decades, with FPCs filling this link. In our study, we described the profile of admitted patients, determined how their treatment proceeded, and focused on the subgroup of long-term patients. Based on our study, we can conclude that high security internees were those with complex needs, clinically and judicially. The prototypical high security internee is a middle-aged Belgian man, interned after committing a violent crime, having multiple and complex psychiatric problems and a history of serious delinquent behavior. Due to circumstances in Flanders, admission to FPCs occur after a long detention period, making treatment more difficult.

Comparing international forensic psychiatric populations remains difficult. Important differences with regard to the legal system, the organization of forensic psychiatric care, characteristics of local patient groups, and local available treatment facilities all play a key role. Nevertheless, some important differences stand out. The Flemish population is characterized by a high proportion of sex offenders as well as a high proportion of personality-disordered patients. It is this last group, and the group with elevated psychopathy traits, who remain for longer than expected and is difficult to resocialize. The FPCs were established with a goal of resocializing every patient eligible for treatment. After 6 years, treatment was successful for almost one in three internees. However, for another part of the population, resocialization would go less

smoothly. In future research, we must distinguish two groups of long-term residents: first, a group who needs long-term treatment, yet is still within the scope of reduced crime risk, enabling transfer at a later stage; second, a group who is treatment-resistant with little prospect of recovery or release while remaining at high risk of reoffending. This last group of so-called longstay patients is difficult to manage in a treatment facility. Many European countries face similar problems despite formal (separate services for longstay patients) or informal care (17). In our view, strict criteria are needed to identify longstay patients, who are best managed in separate longstay institutions that focus on care and quality of life within a restricted environment.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## AUTHOR CONTRIBUTIONS

IJ, GG, GV, and LD contributed to conception and design of the study. IJ, ID, and JB organized the database. IJ performed the statistical analysis and wrote the first draft of the manuscript. GG, GV, ID, LD, and JB wrote sections of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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