Shared Risk Formulation in Forensic Psychiatry

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Patients in forensic mental health care have a difficult journey through inpatient rehabilitation and re-integration into the community. Risk assessment guides this progress, usually with clinician-based processes that use structured risk-assessment tools. Patients' understanding of their own risk is important to inform risk assessment and the chances of successful rehabilitation. The emergence of shared decision-making approaches provides an opportunity to consider shared risk assessment and formulation. We reviewed the literature to explore models of patients' involvement in risk assessment and the impact on outcomes in forensic mental health care. We conducted searches of three databases (Medline, PsychINFO, and EMBASE) to identify papers that employed shared risk understanding for violence risk. Additional records were identified through review of citations, with articles being selected using a predetermined set of inclusion and exclusion criteria. We found five studies that met the inclusion criteria for patient involvement in risk assessment with measurement of construct or predictive validity. The studies employed diverse methodologies, but they suggest that patient involvement in assessing risk is feasible when correlated with staff ratings. There is encouraging evidence of the predictive validity of self-rated risk alongside staff-rated risk assessment.

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Shared decision-making (SDM) is a tool proposed in recent years to enhance service-user involvement in mental health care decisions, although this movement has often lacked careful evaluation.[1] Tilley *et al.*[2] described user involvement as the extent to which the patient is involved in defining problems and setting the targets that constitute the plan of care. In mental health, SDM is considered a middle ground between paternalism and autonomy, and a potential alternative to coercive interventions.[3] A recent meta-analysis found equivocal results for the impact of SDM on outcomes for persons with psychosis, a small effect enhancement of subjective sense of empowerment, and a trend toward a reduction in coercive interventions with SDM.[4]

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In forensic mental health care, a recovery framework must balance a patient's best interests with public safety concerns.[5] Forensic recovery presents dual issues of enhancing autonomy while also giving due consideration for public safety. Care is provided within a coercive framework. A recent meta-synthesis of forensic patient accounts of recovery called for developments to enhance patient inclusion to increase patients' sense of safety and understanding in the process of forensic recovery.[6] Similar themes have been found in the more recent work of Livingston[7] in patients and family members defining success in forensic recovery. It is possible that important information that could guide risk-management plans may be overlooked if patients are not involved in the process. Risk assessment plays a key role in guiding the decision-making processes of risk management.

SDM brings together patients and treatment teams in making health care decisions. Being involved may enhance patients' sense of self-efficacy and responsibility by contributing to important decisions regarding their care. In addition, it gives clinicians a chance to get a better view of the patients' insight into the issues pertaining to their risks. Ap-

plied to risk assessment, this involves a joint process of contributing to an understanding of key risk issues and effective risk management.

Given the above, we sought to explore examples of SDM as applied to risk assessment and management of violence in forensic psychiatry. To do so, we conducted a literature review of quantitative studies of shared risk formulation using structured risk-assessment tools in forensic mental health practice. The aims of the review were to describe the methodologies employed and the settings where they were applied, and to examine their reliability and validity.

Methods

Eligibility Criteria

Original studies, systematic reviews, and meta-analyses focusing on shared risk assessment, formulation, or decision-making in forensic psychiatric or correctional settings for mentally disordered offenders with problems of violence were considered for this study. The studies were all in English and had a published status. Studies were identified by searching electronic databases and by scanning reference lists of relevant articles. The search was conducted in the following databases: Ovid MEDLINE 1946 to present, Ovid MEDLINE In-Process and Other Non-Indexed Citations, PsycINFO 1806 to present, Embase Classic + Emblem 1947 to present.

Search

The following search terms were used in all databases: (forensic or prisons or offend), (shared or collaborate) and (risk assessment or risk formulation or treatment plans or care plans). Search strategies were agreed upon by both authors. A total of 245 articles were identified in the search. The retrieved records were screened by reviewing the title and the abstract, and 10 papers were fully reviewed by both authors for final inclusion. Each stage of the selection process was carried out by both investigators. Eligibility assessment was performed independently in an unblended standardized manner by both investigators.

Results

As shown in Fig. 1, five papers met the inclusion criteria (Table 1). Four of the five studies were carried out in forensic inpatient settings,[8-11] including maximum-, medium-, and minimum-security levels of rehabilitating forensic patients, and two were separate analyses of the same study in a forensic outpatient service.[12,13]

Settings

Of the inpatient settings, Bjorkly's[9] case report was carried out in a well-staffed medium-security forensic psychiatry unit which receives patients with a history of violence for long-term treatment. Fluttert's[8] work was carried out in a maximum-security forensic psychiatry hospital with 189 male patients. The remaining settings were integrated forensic hospitals in Australia[10] and Ireland.[11] The study from The Netherlands[12] included three outpatient forensic psychiatry clinics with 632 patients and 58 case managers, with 310 subjects included in the study. The second report from this study is a subset analysis of 196 of these subjects.[12] The patients in the Dutch study differed from the other studies in that they were predominantly diagnosed with personality disorders, with only eight percent having a psychotic disorder.

Shared Risk Assessment and Effectiveness

Bjorkly[9] presented a case illustration of a risk management approach based on progression ladders, called ProLad. It is a structured contingency management approach for preventing relapse of violence, and it is tailored to individual needs, which require patients to be actively involved in making plans for progress in conjunction with their nurses. The starting point is to establish a therapeutic relationship and involve patients in the planning as soon as possible. The scope is to work on several goals simultaneously to address risk issues and to focus on personal growth. In the case study, the subject was able to identify the early signs of auditory hallucinations and worked in collaboration with nurses to intervene at the initial stages of relapse. The author presented this case as an example of the feasibility of shared risk assessment.

Fluttert *et al.*[8] developed and evaluated a tool called the Early Recognition Method (ERM). The ERM is a guided process in which staff and patients develop a shared understanding of early signs of aggression and implement plans to reduce violence. The ERM was implemented in four phases. In the first phase, the intervention was explained to the patient. Second, a list of early signs of aggression was prepared by the patient with help of the nurse mentor. In the third phase, the patient and staff mentor

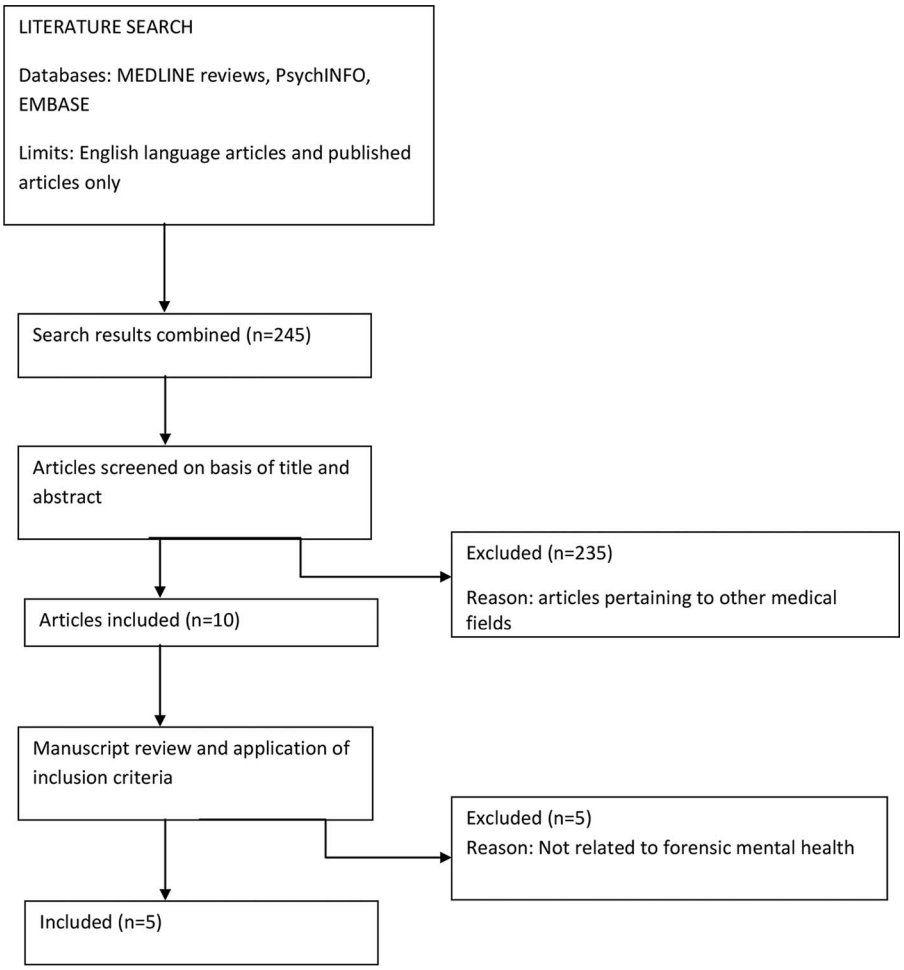

Figure 1. Summary of study selection and exclusion (flow diagram).

together monitored patient's behavior to detect early signs of aggression. In the fourth phase, preventive actions were listed in the early detection plan and were implemented to help the patient de-escalate and regulate their behavior. Each session lasted for 30 minutes and was made a part of existing weekly evaluations. The subjects received their usual treatment and the early recognition method in a phased manner where the subjects acted as their own controls in a crossover design. Of the 189 patients eligible for the study, 168 participated; refusers had higher psychopathy scores and more substance-abuse diagnoses. The outcome measures were the number of seclusion events and the severity of inpatient incidents of aggression as rated on the Staff Observation Aggression Scale–Revised (SOAS-R). The study showed that implementation of ERM led to a decrease in the frequency of seclusion events from 219 events in the control phase to 104 in the intervention phase [$\chi^2 = 22.82$, $p < .001$], and the rate of seclusion events per patient per month reduced from a mean of 0.13 to 0.05 ($p < .001$). There was also a reduction in SOAS-R severity of incidents from 1.38 to 0.50 ($p < .001$).

Abou-Sinna and Luebbers[10] investigated whether staff and patient co-ratings of the Camberwell Assessment of Needs–Forensic (CANFOR-S) tool were related to traditional staff-only rated measures of risk and need as measured with the Health of Nations Outcome Scale–Secure (HoNOS-S) and the Historical Clinical Risk-20 (HCR-20). The setting was an Australian forensic hospital with 72 forensic patients. The authors reported that the CANFOR-S completed jointly by patients and their primary nurses were positively correlated with the clinical and security scales of the HoNOS-S as well as the clinical and risk management scales of the HCR-20.[10] The authors suggested that shared risk assessment processes

Table 1 Review of Studies on Shared Risk Formulation in Forensic Population

Study	Location	Setting	Sample Size	Tools Employed	Study Design	Outcomes
Bjorkly[9]	Norway	Medium secure forensic psychiatry unit	1 case report	Progression ladder; criterion-based, stepwise intervention to reduce risk	Literature review and a case illustration	The case illustrated a successful progression toward self-management of violence and personal growth.
Fluttert *et al.*[8]	Norway	Maximum secure forensic psychiatry unit	189 eligible men; 168 were involved in the intervention	Staff Observation Aggression Scale–Revised (SOAS-R) Early Recognition Method (ERM)	Naturalistic, one-way, case-crossover design; cases were their own controls	A significant decline in the number of seclusions and lower severity of violence were observed after intervention.
Rana Abou-Sinna and Leubbers[10]	Australia	Secure forensic psychiatry unit	72 (66 men, 6 women)	Camberwell Assessment of Needs–Forensic (CANFOR-S) Health of Nations Outcome Scale–Secure (HoNOS-S) Historical Clinical Risk-20 (HCR-20)		CANFOR-S nurse and patient ratings of total needs positively correlated with HoNOS-S clinical and security scales, as well as HCR-20 clinical and risk assessment scales.
Troquete *et al.*[12]	The Netherlands	Three outpatient forensic psychiatry clinics	310 patients (201 in intervention group), 58 case managers	Short-Term Assessment of Risk and Treatability (START) Client Self-Appraisal (CSA) based on START	Cluster randomized controlled trial	The primary outcome consisted of the proportion of clients with one or more violent or criminal incidents in the 6 months before the end of follow-up. No difference was found between treatment as usual and the START/CSA group.
Van den Brink *et al.*[13]	The Netherlands	Outpatient forensic psychiatry clinic	196 patients	Short-Term Assessment of Risk and Treatability (START) Client Self-Appraisal (CSA) based on START	Naturalistic outcome study using the intervention group from Troquete *et al.*[12]	CSA critical vulnerabilities and key strengths were significant univariate predictors of recidivism. The best predictive model involved both the case managers' rating from START and the CSA measure of risk and protective factors. (AUC 0.70, 95% CI, 0.60–0.80).
Daroven *et al.*[11]	Ireland	Secure forensic psychiatry unit	58 men	DUNDRUM 3+4 completed separately by staff and patients	Prospective, naturalistic, observational cohort study, single-blind design	Patients rated themselves more optimistically than the clinicians. Clinicians' scores predicted more accurately the move between levels of security. Higher concordance between staff and patient scores correlated with lower levels of security and further progress.

AUC = area under the curve; CI = confidence interval.

were feasible and that patients could be successfully engaged in identifying risks and needs.[10]

Davoren *et al.*[11] performed a prospective naturalistic cohort study employing the DUNDRUM Toolkit, a structured professional judgment measure of rehabilitative progress and risks. They employed staff and patient versions of the same tools that were designed to measure progress across program participation (DUNDRUM 3) and risks (DUNDRUM 4). The self-rated versions were created with the involvement of service users. The DUNDRUM 3 and DUNDRUM 4 tools were rated independently by staff and patients, with the patients' self-ratings being withheld from the clinical teams and review tribunals who made decisions about progress during the follow-up period. Higher scores on the DUNDRUM scales indicated higher risk and less successful rehabilitative progress. The authors' hypothesis was that increased concordance between staff and patient ratings of risks and needs would predict clinical progress and conditional discharge over the 14-month follow-up period.[11]

Only male patients were enrolled in the study; the response rate was 66 percent, and the final sample size was 58 subjects.[11] Results showed that the patients' self-ratings on the DUNDRUM-3 and DUNDRUM-4 were overall significantly lower than staff ratings; that is, patients considered themselves to be further along the road to recovery than clinicians did. Cross-correlation showed highly significant correlations between clinician-rated DUNDRUM 3 and self-rated DUNDRUM 3 scores (Spearman correlation coefficient $r = .566$, $p < .001$) and between the clinician-rated DUNDRUM 4 recovery scale and the self-rated DUNDRUM 4 recovery scale ($r = .712$, $p < .001$).[11] Patients moving from higher to lower levels of security during the follow-up period had lower (better) scores on the clinician-rated DUNDRUM 3 program completion scale; lower clinician-rated DUNDRUM 4 scores predicted the same movement, whereas the self-rated scales did not predict the positive movement. Clinician ratings predicted the negative movements, but the patient ratings did not predict those movements, nor did the self-rated scores predict movement between levels of security or conditional discharge.[11] However, an interesting finding was that concordance between clinician and patient ratings increased during progression from high- to medium- to low-security settings, and greater concordance meant being closer to discharge. The authors considered that concordance between clinician and patient ratings could be a useful index of the degree to which understanding of risks has become shared.[11]

The final study, the Risk Assessment and Care Evaluation (RACE) study,[12,13] has been reported in two ways, as the results of a randomized control study and as a predictive study within the intervention arm only. The study was a cluster randomized controlled trial of staff- and patient-completed versions of the Short-Term Assessment of Risk and Treatability (START) tool among patients primarily diagnosed with personality disorders compared with treatment as usual.[12] The START is a risk assessment tool consisting of 20 items scored as risk factors and strengths. The research team developed a client version of the START called the Client Self-Appraisal (CSA). In the intervention arm, clinicians and patients each completed their own assessments of the START and CSA and then discussed the patient's key strengths and critical vulnerabilities to inform care planning for each year. The control group used neither the START nor the CSA, providing treatment as usual. The primary outcome was recidivism at six-month follow-up. There were 310 subjects in the study, of whom 201 received the intervention (64.8%) and had care plans developed according to the RACE protocol; 72 subjects (23.2%) received the intervention more than once (two to four times).[12] Interestingly, there was no significant effect on violent recidivism between the control and intervention groups (odds ratio = 1.46, 95% CI 0.89–2.44, $p = .15$), which suggests that neither the START nor the CSA utilized in this way contributed to more effective community care plans.[12]

Van den Brink *et al.*[13] conducted a second analysis of the 201 subjects in the RACE study who completed the full START and CSA assessments to explore the concurrent and predictive validity of staff- and patient-rated measures. A total of 196 subjects (98%) were able to complete the CSA, suggesting it is a feasible instrument. Concordance of client and staff assessments was good for critical vulnerabilities and key strengths, indicating general alignment between staff and patients about the most important issues. Concordance at an individual level for key risk and predictive factors was limited, however, with staff generally recording higher risks and vulnerabilities than patients. Predictive modeling of the START

and CSA results for violent and criminal recidivism was considered. Client self-assessments of critical vulnerabilities and key strengths were significant univariate predictors of recidivism and indeed were superior to staff-rated scores. The best predictive model involved both the case managers' ratings from the START and the subjects' self-appraisal of risk and protective factors (area under the curve = 0.70, 95% CI 0.60–0.80).

Discussion

This review found a small but significant literature of structured approaches to including patient voice in risk assessment and management in forensic mental health care. From the early case study of Bjorkly,[9] there are now three lines of research looking at structured approaches to risk assessment and management in forensic settings. These are structured violence risk intervention using the ERM, two models of staff- and patient-completed structured professional judgment tools (the DUNDRUM and START), and joint staff–patient needs assessment. While some of the data are exploratory, two studies are well-designed, controlled intervention studies.

The study showing greatest effectiveness was the ERM approach, which is notable as both a shared risk analysis and a structured intervention to reduce violence in persons with serious mental illness.[8] Linking risk understanding directly to nursing interventions, Fluttert *et al.*[8] demonstrated efficacy in reducing institutional violence. The RACE studies,[12,13] which looked at the patient-rated version of the START, are impressive field tests of these concepts, although they focused on a different patient group than that found in most forensic settings. These studies demonstrated the feasibility of including client perspectives into risk and protective factors, the significant univariate association of client self-ratings to adverse outcomes, and the contribution of self-ratings to the best fit for outcomes when a multivariate analysis was used.[12,13] Patient involvement in needs assessment was also found to be feasible by Abou-Sinna and Luebbers.[10]

Finally, the comparisons of structured patient and staff ratings of program completion and future risk needs in the DUNDRUM tools suggest that this is a promising approach to understanding patient and staff evaluation of risk and treatment progress.[11] The suggestion that agreement between staff and patients on these dimensions increases later in the inpatient rehabilitation process raises the possibility that agreement between the patient and the clinician could be a useful index in progress in the recovery journey.

Taken together, these studies demonstrate the feasibility of shared approaches to risk assessment and management and present suggestive evidence of positive impact on inpatient and outpatient outcomes in certain ways. The relationships are, however, complex. Interestingly, Troquete *et al.*[12] found no difference between the group who used the START and CSA and the control group, even though START/CSA factors were predictive of recidivism. This may mean that relevant factors identified using the START/CSA were not integrated effectively into care plans. The ERM design did include integration with interventions and showed a strong impact on institutional violence. Reduction in frequency and severity of anger incidents stresses the need of close collaboration in developing treatment strategies as well as managing risks. The validity of patient self-rating of risks is underscored by the strong correlation between patient and staff ratings of risk[9,10] and the finding by van den Brink *et al.*[13] that client ratings independently predicted violent or criminal behaviors at the six-month follow-up.

There is consensus across the studies of the significance of user involvement and collaboration in risk assessment and management. However, the paucity of research in this area is underscored by the mere handful of papers found in our review. Eidhammer *et al.*[14] pointed out in their 2014 review of three studies of SDM in forensic mental health, two of which are included here, that there may be feasibility issues in the methods of encouraging patient collaboration by adapting tools such as the START and the DUNDRUM 3 and 4 as patient-rated tools. What works as a clinician tool may not capture patient perspectives well. Tools that require and guide staff–patient collaboration in both the risk assessment phase and the intervention phase of SDM, such as the ERM, may be more acceptable and more effective than simply having the patient complete an assessment tool. Patient collaboration needs to be a defined ongoing clinical activity assisted by tools, but it is unlikely to be achieved simply by completion of a tool as a one-time exercise. There is ample qualitative evidence for the desire for patient involvement in forensic recovery processes,[6,7] and these few studies can start to guide clinicians in how to approach SDM.

Limitations and Future Research Directions

This review is limited by the small number of studies published to date, restricting this to a narrative review only. Nonetheless, we selected this approach to identify promising practices that might inform future studies. The studies are diverse and use different approaches to SDM. We believe it is important to demonstrate that SDM is both feasible and has predictive power similar to staff-rated tools. If that is so, the added benefits of patient involvement can then be explored to see if it adds incrementally to forensic outcomes.

These studies require replication and expansion. The ERM represents a model of shared clinical intervention that is very promising, but it has not been replicated. The application of the staff- and patient-rated DUNDRUM 3 and DUNDRUM 4 should be studied longitudinally to understand its potential efficacy and whether the correlation between security level and staff–patient concordance can be shown in a longitudinal design. Similarly, structured professional judgment tools with self-rated opportunities represent an integration of patients into risk-management decision-making that needs further exploration. There may be other models, such as patient involvement in shared risk-formulation parallel processes that are developing in correctional rehabilitation (e.g., Shaw *et al.*[15]). Case–control and randomized, controlled designs are needed to evaluate the effectiveness of these interventions so that the nature and magnitude of the effects of shared risk can eventually feed into evidence-based approaches to forensic care.

Most of the samples were composed of male forensic patients, and future research needs to include women. Furthermore, work needs to be done to identify the components of a successful shared risk-assessment program to facilitate practice change. Future studies should also focus on knowledge translation by identifying barriers to and facilitators of implementing these innovations in routine forensic practice.

References

1. Stringer B, Van Meijel B, Vree de W, Van der Bijl J: User involvement in mental health care: the role of nurses. A literature review. J Psychiatr Ment Health Nurs 15:678–83, 2008
2. Tilley S, Pollock L, Tait L: Discourses on empowerment. J Psychiatr Ment Health Nurs 6:53–60, 1999
3. Charles C, Gafni A, Whelan T: Decision making in the physician-patient encounter: revisiting the shared treatment decision-making model. Soc Sci Med 49:651–61, 1999
4. Stovell D, Morrison AP, Panayiotou M, Hutton P: Shared treatment decision-making and empowerment-related outcomes in psychosis: systematic review and meta-analysis. Br J Psychiatry 209:23–8, 2016
5. Simpson AI, Penney SR: The recovery paradigm in forensic mental health services. Crim Behav Ment Health 21:299–306, 2011
6. Shepherd A, Doyle M, Sanders C, Shaw J: Personal recovery within forensic settings–systematic review and meta-synthesis of qualitative methods studies. Crim Behav Ment Health 26:59–75, 2016
7. Livingston JD: What does success look like in the forensic mental health system? Perspectives of service users and service providers. Int J Offender Ther Comp Criminol 62:208–28, 2018
8. Fluttert AJF, Meijel Van B, Nijman H, *et al*: Preventing aggressive incidents and seclusions in forensic care by means of the "Early Recognition Method." J Clin Nurs 19:1529–37, 2010
9. Bjorkly S: Risk management in transitions between forensic institutions and the community: a literature review and an introduction to a milieu treatment approach. Int J Forensic Ment Health 3:67–75, 2004
10. Abou-Sinna R, Leubbers S: Validity of assessing people experiencing mental illness who have offended using the Camberwell Assessment of Need–Forensic and Health of the Nation Outcome Scales–Secure. Int J Ment Health Nurs 21:462–70, 2012
11. Davoren M, Hennessy S, Conway C, *et al*: Recovery and concordance in a secure forensic psychiatry hospital: the self-rated DUNDRUM-3 programme completion and DUNDRUM-4 recovery scales. BMC Psychiatry 15:61, 2015
12. Troquete NAC, van den Brink RHS, Beintema H, *et al*: Risk assessment and shared care planning in out-patient forensic psychiatry: cluster randomized controlled trial. Br J Psychiatry 202: 365–71, 2013
13. Van den Brink RHS, Troquete NAC, Beitema H, *et al*: Risk assessment by client and case manager for shared decision making in outpatient forensic psychiatry. BMC Psychiatry 15:120, 2015
14. Eidhammer G, Fluttert FA, Bjorkly S: User involvement in structured violence risk management within forensic mental health facilities: a systematic literature review. J Clin Nurs 27:16–24, 2014
15. Shaw J, Higgins C, Quartey C: The impact of collaborative case formulation with high risk offenders with personality disorder. J Forensic Psychiatr Psychol 28:777–89, 2017