Exploring a new structured professional judgment measure (impulsivity measure related to violence) after an average follow-up of 10 years: A study of Finnish offenders

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Abstract

Background: Identification of the risk factors underlying impulsivity related to violent acts is an essential component of risk assessment and management to reduce violent offending.

Aims: Our aim was to develop a clinically useful measure for assessing impulsivity related to violence. Our research questions were which items in the newly developed measure are associated with later violent recidivism and what is the measure’s predictive validity?

Methods: A new scale, the impulsivity measure related to violence (IMP-V), was studied by completing the scale, blind to outcome, from information in the forensic psychiatric examination reports of 63 of a 1-year referral cohort of 181 Finnish offenders. Data on reoffending for up to 15 years after release were collected from official criminal records.

Results: The predictive accuracy of the IMP-V continuous ratings was 78% and for the categorical summary risk ratings 77%. Univariate analyses of categorical summary risk ratings of the risk factors revealed that, with two exceptions, each additional score on the IMP-V was associated with a significant increase in violence recidivism.
Conclusions: These preliminary results indicate that the IMP-V is a promising decision-enhancing guide for assessing the risk of violence in impulsive people and that the measure is worth developing for use with impulsivity-prone offenders and forensic psychiatric patients. The IMP-V organises information on the nature of impulsivity in violence-prone persons and thus also creates opportunities for more effective risk management.

1 | INTRODUCTION

Impulsivity is an important multidimensional construct reflecting serious problems in maintaining stable adjustment with respect to behaviour, that is, affective and cognitive functions and actions (Evenden, 1999). Affective instability may be manifested as emotional disturbance; cognitive instability may be manifested as disturbances of thought content or thought processes; and actions may be taken without considering alternatives or consequences. Impulsivity is not a unitary construct but rather comprises several related phenomena, which are classified together (Evenden, 1999). The construct has been studied from various perspectives and several definitions have been proposed (Barratt, 1994; Eysenck, 1993; Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001; Nour-Mohammad, 2014). Studies suggest that impulsivity is composed of several factors. White et al. (1994) obtained two factors: cognitive and behavioural impulsivity. Moffitt (1993) has presented a developmental taxonomy, which connects impulsive antisocial behaviour to temperament and cognitive processes. According to Moffitt, neuropsychological dysfunction manifests in antisocial behaviours, underpinned by cognitive inhibitory deficits, sensation-seeking tendencies, and high activity levels.

Impulsivity is generally understood as a tendency to have spur-of-the-moment thoughts and to act on either internal or external stimuli without planning or forethought regarding consequences to self or others (Enticott & Ogloff, 2006; Hart & Dempster, 1997; Parker & Bagby, 1997). People with such a tendency are incapable of delaying gratification and act without considering the long-term consequences of their actions. Impulsivity as a risk factor for violence is embedded in some contemporary risk assessment aids on the grounds that the characteristic has been found to distinguish violent recidivistic offenders from nonrecidivistic ones (Prentky, Knight, Lee, & Cerce, 1995). The association between impulsivity and violent recidivism has been well documented (Edwards, Scott, Yarvis, Paizis, & Panizzon, 2003; Moffitt, Caspi, Harrington, & Milne, 2002). As impulsivity has been linked with most violent offending (Stanford et al., 2002), but not everyone with high impulsivity is violent, factors underlying impulsivity associated with violent acts may improve risk assessment and risk management aimed at reducing violent offending. No published study has examined specific underlying risk factors for impulsive violent offending, although some extrapolations can be made from studies that have examined impulsive aggression. Lambe, Hamilton-Giachritsis, Garner, and Walker (2018) demonstrated, for example, in a review that narcissism is relevant in understanding such violence.

Our aim was to develop a clinically useful measure for assessing impulsivity related to violence. Our research questions were which items on the newly developed impulsivity measure related to violence (IMP-V) are associated with later violent recidivism and what is the measure's predictive validity?

2 | METHOD

2.1 | Ethics

The study was approved by the supervisory ethical authorities in Finland, and permission to conduct the study was granted by the Finnish National Institute for Health and Welfare (THL).
2.2 Study design

The study used a retrospective follow-up design, whereby the scale measures were made from records by a trained researcher and the outcome measure was reconviction for a violent offence. The information on reconvictions was collected from the Finnish National Crime Register on May 18, 2015, and coded on to the database blind to scale ratings. The maximum possible length of the follow-up was nearly 15 years (1/1/2000–18/5/2015).

2.3 Sample characteristics

In Finland, the court may order offenders to participate in a forensic psychiatric examination. In 1999, 181 offenders were sent for examination. The final sample for this study composed of 63 offenders, once records had been excluded because of death, continued incarceration or hospitalisation, or due to missing records (eight cases) during the follow-up period. Although this group represents only a very small proportion of violent offenders in Finland, they constitute the group to whom violence risk assessments ordered by the court are conducted. We chose to use the records from the forensic psychiatric examinations, because of the comprehensive information gathered in them, enabling a structured risk assessment including individual and situational information.

2.4 The impulsivity measure related to violence

The development of the IMP-V builds on the early work of Wishnie (1977) and Webster and Jackson (1997). Webster extracted some of the salient characteristics of impulsive persons summarised by Wishnie in the 1977 book: *The Impulsive Personality: Understanding People with Destructive Character Disorders*. Webster created a list of 20 items founded on the characteristics described by Wishnie. This list was later developed further by Webster, Logan, and Weizmann-Henelius, resulting in the IMP-V, an aide-memoire of 12 items to guide the assessment of impulsivity related to risk of violence in accordance with structured professional judgment principles.

The current version of the IMP-V measure has 12 dynamic individual-level risk factors (Table 1), which were generated from the conceptual, theoretical, and empirical literatures on impulsivity, and impulsivity related to violence (Duggan & Howard, 2009; Esbec & Echeburua, 2010; Goldman, 2014; Howard, 2015; McCloskey, Noblett, Deffenbacher, Gollan, & Coccoaro, 2008; McMurrar, 2009). These are coded on a 3-point ordinal scale from 0 (not

| IMP-V risk factor | Definitions |
|------------------|-------------|
| 1. Acting on the spur of the moment | Impulsive acting without considering consequences |
| 2. Gratification today | Inability to delay gratification |
| 3. Self-esteem | Low self-esteem |
| 4. Emotional expression | Impatient and short-tempered |
| 5. Lifestyle planning | Difficulties making plans for the future |
| 6. Perception of others | Others should be doubted or distrusted |
| 7. Anxiety tolerance | Feelings of anxiety are felt as an urge to act |
| 8. Worth estimation | Feels entitled to be served and get what he/she wants |
| 9. Hopelessness/self-destructiveness | Hopelessness feelings lie behind self-destructive acts |
| 10. Interpersonal relationship | Relationships are unstable and often conflict-ridden |
| 11. Substance use | Substances are used to cope with emotional pain |
| 12. Insight | Limited understanding of factors related to own violent behaviour |

Note. IMP-V: impulsivity measure related to violence.
present), 1 (partially present) to 2 (present), rendering a total possible score of 0–24. Finally, based on IMP-V scores, a more subjective overall judgment is formed, summarising the assessed person’s impulsivity related to violence on a 3-point scale: low, moderate, and high risk.

2.5 | Procedure

The IMP-V was rated in 2014–2015 from the 1999 files by one of the authors (GWH), who did not know the offenders concerned or their longer term outcomes during rating and data entry. The forensic psychiatric examination reports, which had been prepared for use in courts of law, were obtained from the National Institute for Health and Welfare (THL) and were used for rating and assessing the subjects’ propensity for impulsivity related to violence. A Finnish translation of the IMP-V was used in the study. The THL is responsible for organising forensic psychiatric examinations in Finland. The examinations are in-patient evaluations, which take an average of 8 weeks to complete. The information base for these evaluations is extensive, comprising criminal justice records; health care, school, and employment records; psychological evaluations; and interviews conducted by a multiprofessional team, as well as behavioural observations and information supplied by family members.

After all impulsivity scale data had been entered, the National Crime Register was examined to determine reconvictions and the dates on which reoffenders had been released from prison. In accordance with the Criminal Records Act, Section 10, for custodial sentences of 5 years or less, entries are deleted from the criminal records after 5, 10, or 20 years, depending on the length of the sentence. For sentences exceeding 5 years, entries are not deleted. Nevertheless, all data are deleted from the criminal records after the person has died or reached the age of 90 years (Finlex, 2003). Information on the release of the forensic psychiatric patients from psychiatric hospital care and dates of in-patient care after release from forensic psychiatric hospital care were checked from the National Registers for Social Welfare and Health Care, which are maintained by THL. Information on possible deaths and causes of death was collected from Statistics Finland. The maximum follow-up period was defined as from 1/1/2000 to 18/5/2015.

2.6 | Outcome measure

The retrospectively generated risk assessments produced using the IMP-V were then compared with the known outcome for each subject. The outcome was defined as whether or not any new violent conviction, as defined by Finnish law, had been recorded in the official national record during the follow-up period.

2.7 | Data analyses

Analyses were conducted using SPSS for Windows version 24. Fisher’s exact test was used with chi-square statistics to compare differences in characteristics between violent recidivists and nonrecidivists. The mean of the participants’ ages, the total IMP-V scores, and scores on the individual risk factors between the recidivists and nonrecidivists were analysed with an independent-samples t test. The IMP-V risk factors were analysed by binary logistic regression analyses to obtain effect sizes (odds ratio) of the factors, which were independently associated with violent recidivism, and to determine the likely ability of the model to predict recidivism. A cut-off score of 8.5 was assessed as an indicator of risk.

Receiver operating characteristic analysis was used to evaluate the notional capacity of the IMP-V to predict violent recidivism. Sensitivity, specificity, positive predictive value, negative predictive value, number needed to detain, diagnostic odds ratio, and area under the curve (AUC) were calculated. Cronbach’s alpha was used to evaluate internal consistency of the IMP-V risk factors. Analyses were considered significant <0.05.
3 RESULTS

The index offence of 56 (89%) of those in the sample was of violence, six had been convicted of arson and one a crime against property. Fifty-two (82.5%) were prisoners and 11 (17.5%) were forensic psychiatric patients. Ten of the patients had been found not guilty by reason of insanity and were therefore detained in a hospital because of psychotic disorders. One patient was detained due to intellectual disability. Two of the patients had been diagnosed with personality disorder, one with antisocial personality disorder and one with borderline personality disorder. Most (57, 90.5%) of the sample were men and only six were women. The average age at the time of the forensic psychiatric examination in 1999 was 32.5 years (SD = 11.1, range 17–62 years), with little difference between the men [M] and women [W] in this respect (M 32.5, SD = 11.2, range 17–62; W 32.8 years, SD = 10.3, range 18–48). Violence prior to the index offence was found in about half, and non-violent criminality in nearly three quarters of the sample. The most common diagnoses were substance abuse and personality disorder, with full details in Table 2.

Time at risk (living in the community) was established for 51 (81%) of the offenders; their average time in the community was 10 years and 1 month (range 2 to 15 years, 2 months). The prisoners had been at liberty for 10 years and 3 months (range 2 years, 1 month to 15 years, 3 months) and the forensic mental health patients 8 years and 3 months (range 4 years, 1 month to 14 years).

During the follow-up period, 24 (38%) people were rearrested for a further violent crime: 23 men and 1 woman. None of the psychiatric patients in the sample had committed a violent offence during the follow-up period. Significantly more recidivists than nonrecidivists had a violent criminal history prior to the index crime, $\chi^2 (1) = 7.9, p < 0.005$. Recidivists were also significantly younger (mean = 27.2, SD = 6.3 years) than those who did not reoffend (mean = 35.8, SD = 12.1 years) at the time of the 1999 assessment; $t_{(61)} = 3.2, p = 0.002$. A significantly greater proportion of those who reoffended violently than those who had not reoffended had been diagnosed with a personality disorder, $\chi^2 (1) = 7.8, p < 0.005$; all diagnosed personality disorders were in Cluster B, 11 in the recidivist group with antisocial personality disorder but just four among the nonrecidivists, whereas only one recidivist had a borderline personality disorder compared with seven in the nonrecidivist group. Six recidivists (25%) and seven nonrecidivists (18%) had been diagnosed with unspecified personality disorder. Substance abuse diagnoses were found significantly more often among the violent recidivists than among the nonrecidivists, $\chi^2 (1) = 4.9, p < 0.026$.

| TABLE 2 | Background information on violent recidivists and nonrecidivists |
|---------|---------------------------------------------------------------|
| Variable | Violent recidivists | Nonrecidivists | Total |
|         | $n = 24$ | $n = 39$ | $n = 63$ |
| Index crime | | | |
| Violent | 22 (91.7) | 33 (84.6) | 55 (87.3) |
| Non-violent | 2 (8.3) | 6 (15.4) | 8 (12.7) |
| Criminal history | | | |
| Violence | 18 (75.0) | 15 (38.5) | 33 (52.4) |
| Non-violent | 18 (75.0) | 24 (61.5) | 42 (66.7) |
| Main psychiatric diagnosis | | | |
| None psychiatric diagnosis | 1 (4.2) | 2 (5.1) | 3 (4.7) |
| Psychotic disorder | 0 (0) | 10 (25.6) | 10 (15.9) |
| Personality disorder | 22 (91.7) | 23 (59.0) | 45 (71.4) |
| Depression | 0 (0) | 3 (7.7) | 3 (4.8) |
| Substance abuse/dependent | 23 (95.8) | 28 (71.8) | 51 (81.2) |
| Intellectual disability | 0 (0) | 2 (5.1) | 2 (3.2) |
| Brain injury | 1 (4.2) | 0 (0) | 1 (1.6) |
The Cronbach’s alpha of the IMP-V was 0.922, which shows that the internal consistency of the IMP-V items was high. The IMP-V mean total score was significantly higher among the recidivists (14.0; \( SD = 5.5 \)) than the nonrecidivists (7.1; \( SD = 6.7; t_{(61)} = 4.3, p = 0.001 \)). Student’s \( t \) tests also showed significantly higher mean scores among recidivists than nonrecidivists on each of the individual IMP-V items among the recidivists than among the nonrecidivists on all items (Table 3).

The distribution of the categorical summary risk ratings for the individual IMP-V risk factors is presented in Table 4. Most of the items had an expected range of ratings, which may be seen as an ability to discriminate between persons with impulsive features and those who do not have these features. The link between the categorical IMP-V summary risk ratings and violent recidivism was significant, \( \chi^2_{(2)} = 15.8, p < 0.001 \) (Table 5).

Univariate analyses of odds ratios with 95% confidence intervals (CIs) of categorical summary risk ratings of the individual IMP-V risk factors revealed that, with two exceptions, each additional score on the IMP-V was associated with a significant increase in violence recidivism (Table 6). The exceptions were worth estimation and hopelessness/self-destructiveness. The relationship between substance abuse and recidivism appeared strong, but significance could not be calculated due to a concentration of “2” scores in the violent recidivist group (a “ceiling effect”).

Receiver operating characteristic analyses were performed to assess the predictive validity of the IMP-V item scores and the categorical summary risk assessments; although this was not a prospective study, raters had been blind to outcomes. The AUC value for the sum scores for violent recidivism was 0.781 (standard error, SE = 0.06; 95% CI [0.667, 0.892]; \( p < 0.001 \)) and for the categorical summary risk assessment 0.775 (SE = 0.06; 95% CI [0.653, 0.896]; \( p < 0.001 \)). At a cut-off of 8.5 points, sensitivity was 87.5% for total IMP-V scores, and at a cut-off of 1.5 points 83.3% for the categorical summary risk assessment. Specificity scores were 66.7% for the item scores and 64.1% for the categorical summary risk assessment. The positive predictive values were 55.6% and 52.1%.

### TABLE 3  The distribution of the mean values of the risk ratings of the individual IMP-V risk factors for the violent recidivists and nonrecidivists

| Risk factor                          | Violent recidivism | Mean  | SD   | \( t \) | \( p \) |
|--------------------------------------|--------------------|-------|------|--------|--------|
| 1. Acting on the spur of the moment  | No                 | 0.38  | 0.63 | 2.61   | 0.011  |
|                                      | Yes                | 0.83  | 0.76 |        |        |
| 2. Gratification today                | No                 | 0.48  | 0.68 | 3.47   | 0.001  |
|                                      | Yes                | 1.13  | 0.80 |        |        |
| 3. Self-esteem                       | No                 | 0.53  | 0.75 | 3.85   | 0.001  |
|                                      | Yes                | 1.29  | 0.81 |        |        |
| 4. Emotional expression              | No                 | 0.50  | 0.78 | 2.41   | 0.019  |
|                                      | Yes                | 1.00  | 0.83 |        |        |
| 5. Lifestyle planning                | No                 | 1.00  | 0.96 | 3.09   | 0.003  |
|                                      | Yes                | 1.67  | 0.57 |        |        |
| 6. Perception of others              | No                 | 0.45  | 0.64 | 2.70   | 0.009  |
|                                      | Yes                | 0.92  | 0.72 |        |        |
| 7. Anxiety tolerance                 | No                 | 0.78  | 0.89 | 2.20   | 0.032  |
|                                      | Yes                | 1.25  | 0.74 |        |        |
| 8. Worth estimation                  | No                 | 0.20  | 0.52 | 2.11   | 0.039  |
|                                      | Yes                | 0.54  | 0.78 |        |        |
| 9. Hopelessness/self-destructiveness | No                 | 0.43  | 0.64 | 2.05   | 0.045  |
|                                      | Yes                | 0.79  | 0.78 |        |        |
| 10. Interpersonal relationships      | No                 | 0.53  | 0.75 | 2.85   | 0.006  |
|                                      | Yes                | 1.08  | 0.78 |        |        |
| 11. Substance use                    | No                 | 1.10  | 0.96 | 4.07   | 0.001  |
|                                      | Yes                | 1.92  | 0.28 |        |        |
| 12. Insight                          | No                 | 1.00  | 0.91 | 2.82   | 0.006  |
|                                      | Yes                | 1.58  | 0.58 |        |        |

Note. SD: standard deviation; \( t \): student’s \( t \) distribution; IMP-V: impulsivity measure related to violence.
respective, the negative predictive values 91.8% and 89.1%, and the number safely discharged 11 and 9. The number needed to detain was 2 in both the IMP-V sum scores and the categorical summary risk assessment analyses, that is, two people would have had to be detained to prevent one recidivist.

### TABLE 4
The distribution of the categorical summary risk ratings of the individual IMP-V item risk factors

| IMP-V risk factor | Low<sup>a</sup> | Moderate<sup>b</sup> | High<sup>c</sup> |
|-------------------|----------------|----------------|----------------|
|                   | n (%)          | n (%)          | n (%)          |
| 1. Acting on the spur of the moment | 37 (57.8) | 19 (29.7) | 8 (12.5) |
| 2. Gratification today | 31 (48.4) | 20 (31.3) | 13 (20.3) |
| 3. Self-esteem | 30 (46.9) | 16 (25.0) | 18 (28.1) |
| 4. Emotional expression | 35 (54.7) | 14 (21.9) | 15 (23.4) |
| 5. Lifestyle planning | 19 (29.7) | 10 (15.6) | 35 (54.7) |
| 6. Perception of others | 32 (50.0) | 24 (37.5) | 8 (12.5) |
| 7. Anxiety tolerance | 25 (39.1) | 17 (26.6) | 22 (34.4) |
| 8. Worth estimation | 49 (76.6) | 9 (14.1) | 6 (9.4) |
| 9. Hopelessness/self-destructiveness | 36 (56.3) | 21 (32.8) | 7 (10.9) |
| 10. Interpersonal relationships | 31 (48.4) | 20 (31.3) | 12 (20.3) |
| 11. Substance use | 18 (28.1) | 8 (12.5) | 38 (59.4) |
| 12. Insight | 19 (29.7) | 15 (23.4) | 30 (46.9) |

Note. IMP-V: impulsivity measure related to violence.
<sup>a</sup>The risk factor is not present.
<sup>b</sup>The risk factor is partially present.
<sup>c</sup>The risk factor is present.

### TABLE 5
The categorical IMP-V summary risk ratings according to the violent outcome

| Risk category | Recidivists | Nonrecidivists | Total |
|---------------|-------------|----------------|-------|
|               | n (%)       | n (%)          | n (%) |
| Low<sup>a</sup> | 4 (16.7) | 25 (64.1) | 29 (46.0) |
| Moderate<sup>b</sup> | 5 (20.8) | 7 (18.0) | 12 (19.0) |
| High<sup>c</sup> | 15 (62.5) | 7 (18.0) | 22 (34.9) |

Note. IMP-V: impulsivity measure related to violence.
<sup>a</sup>The risk factor is not present.
<sup>b</sup>The risk factor is partially present.
<sup>c</sup>The risk factor is present.

This first testing of the IMP-V produced several important preliminary results, in particular, confirming that it is likely to be useful for assessing risk of violence in impulsive offenders. The results indicate that, with increasing number of IMP-V risk factors coded as present or partly present, the risk of violent recidivism was higher. The distribution of the categorical summary risk ratings across low, moderate, and high levels on individual IMP-V items in relation to the known outcomes (violent recidivism/nonrecidivism) showed acceptable variability. This distribution indicates that the measure under development is sensitive enough to capture a range of behaviours and characteristics of impulsivity-prone persons. The difference in mean total scores between the violent recidivists and nonrecidivists also

### DISCUSSION

This first testing of the IMP-V produced several important preliminary results, in particular, confirming that it is likely to be useful for assessing risk of violence in impulsive offenders. The results indicate that, with increasing number of IMP-V risk factors coded as present or partly present, the risk of violent recidivism was higher. The distribution of the categorical summary risk ratings across low, moderate, and high levels on individual IMP-V items in relation to the known outcomes (violent recidivism/nonrecidivism) showed acceptable variability. This distribution indicates that the measure under development is sensitive enough to capture a range of behaviours and characteristics of impulsivity-prone persons. The difference in mean total scores between the violent recidivists and nonrecidivists also
indicates that, among offenders, the measure is able to identify people who have a propensity for committing violence, whether or not the offence for which they were incarcerated was a violent one.

Our findings show that accuracy of prediction of future violent recidivism among offenders with impulsive tendencies was fair, using both the IMP-V scores and the categorical summary risk ratings. The AUC values obtained were in line with studies showing a robust association between impulsivity and aggression in men with features of antisocial and/or borderline personality disorders and in extremely violent criminals (Shorey, Elmquist, Anderson, & Stuart, 2016; Væray, Western, & Andersson, 2016). Affective dysregulation or instability and a tendency to act out, because of inability to control and modulate one’s affective state when in state of heightened affect is also found in antisocial and narcissistic personality disorders (Chapman, Leung, & Lynch, 2008; Roussos & Siever, 2012; Shedler & Westen, 2004).

The categorical summary risk ratings did not, however, offer better predictions than the prediction based on IMP-V scores as a continuous rating, although the decision regarding the categorical degree of risk was made

### TABLE 6
Odds ratios (OR) with 95% confidence interval (CI) of categorical summary risk ratings of the individual IMP-V risk factors and violent outcome

| IMP-V               | Rating | OR      | 95% CI            | p    |
|---------------------|--------|---------|-------------------|------|
| 1. Acting on the spur of the moment | Low    | Reference | <0.018 |        |
|                     | Moderate | 3.46 | [1.07, 11.17] |      |
|                     | High    | 7.78 | [1.28, 47.22] |      |
| 2. Gratification today | Low    | Reference | <0.004 |        |
|                     | Moderate | 3.75 | [1.06, 13.31] |      |
|                     | High    | 9.37 | [2.14, 41.05] |      |
| 3. Self-esteem      | Low    | Reference | <0.001 |        |
|                     | Moderate | 3.89 | [0.98, 15.42] |      |
|                     | High    | 12.00 | [2.91, 49.54] |      |
| 4. Emotional expression | Low    | Reference | <0.018 |        |
|                     | Moderate | 5.40 | [1.37, 21.20] |      |
|                     | High    | 3.86 | [1.07, 13.94] |      |
| 5. Lifestyle planning | Low    | Reference | <0.001 |        |
|                     | Moderate | 27.00 | [2.50, 291.19] |      |
|                     | High    | 18.00 | [2.15, 150.40] |      |
| 6. Perceptions of others | Low    | Reference | <0.021 |        |
|                     | Moderate | 3.70 | [1.21, 12.57] |      |
|                     | High    | 5.95 | [1.13, 31.26] |      |
| 7. Anxiety tolerance | Low    | Reference | <0.008 |        |
|                     | Moderate | 7.50 | [1.78, 31.68] |      |
|                     | High    | 4.77 | [1.12, 18.78] |      |
| 8. Worth estimation | Low    | Reference | <0.129 |        |
|                     | Moderate | 2.75 | [0.64, 11.72] |      |
|                     | High    | 4.40 | [0.72, 26.72] |      |
| 9. Hopelessness/self-destructiveness | Low | Reference | <0.071 |        |
|                     | Moderate | 2.13 | [0.68, 6.68] |      |
|                     | High    | 6.50 | [1.08, 39.11] |      |
| 10. Interpersonal relationships | Low | Reference | <0.008 |        |
|                     | Moderate | 4.63 | [1.30, 16.43] |      |
|                     | High    | 6.67 | [1.60, 27.83] |      |
| 11. Substance abuse/dependence | Low | Reference | <0.001 |        |
|                     | Moderate | cnbc |       |      |
|                     | High    | cnbc |       |      |
| 12. Insight         | Low    | Reference | <0.002 |        |
|                     | Moderate | 16.00 | [1.69, 151.11] |      |
|                     | High    | 16.00 | [1.88, 136.44] |      |

Note. IMP-V: impulsivity measure related to violence.

*OR could not be calculated due to a concentration of score “2” in the violent recidivist group.

= indicates that, among offenders, the measure is able to identify people who have a propensity for committing violence, whether or not the offence for which they were incarcerated was a violent one.
according to the structured professional judgment approach, giving weight to specific items and incorporating information regarding idiographic relevance of the factors for the individual under assessment (Guy, 2008). Over 87% and 83%, respectively, of the offenders who had been rated according to their IMP-V score or judged according to their categorical summary risk rating to be at high risk of violent recidivism were correctly captured; they had indeed engaged in violent recidivism during the follow-up period.

The univariate analysis of odds ratios showed that an additional score on most of the individual risk factors on the IMP-V increased the risk of violence in impulsive persons. The increase in risk was particularly high on the risk factors lifestyle planning and insight. In the former, “difficulties making plans for the future” may be regarded as a form of impulsivity (Enticott & Ogloff, 2006; Hart & Dempster, 1997; Parker & Bagby, 1997) and was even included as a specific item in the Barratt impulsiveness scale (Patton, Stanford, & Barratt, 1995) so perhaps this item does not, in fact, add to assessment of risk of recidivism among people prone to impulsivity. By contrast, varying levels of insight and awareness due to cognitive impairment may be an important addition. These have been observed in many psychiatric and neurological conditions (O’Rourke, 2013). Lack of insight and awareness of symptoms of disorders may lead to disregard of increasingly impulsive behaviour and its risks. Although studies examining the relationship between insight and violence have given only a weak association, researchers on risk assessment tools have emphasised the importance of including insight as a factor in risk assessment tools (Bjørkly, 2006; Douglas, Hart, Webster, & Belfrage, 2013). Our study suggests that a combination of impulsivity proneness with poor insight may underlie violence.

Studies of impulsivity in substance-dependent individuals have shown a clear link between impulsivity, substance abuse disorders, and pathological aggression (Brady, Myrick, & McElroy, 1998). Substance abuse seems to be a crucial risk factor in the assessment of impulsivity related to violence, although the relationships between these three problems could not be fully evaluated in the present study. It seems that because impulsivity and substance misuse are so closely linked, substance misuse may cease to be a discriminator in a sample defined by impulsivity. Two of the IMP-V risk factors, worth estimation and hopelessness/self-destructiveness, were not found to be statistically significant, which was unexpected. Worth estimation, defined as entitlement and heightened self-regard, might be expected to lead to outrage when demands are not met, which may in turn lead to violent behaviour against others. The hopelessness/self-destructiveness item also did not reach statistical significance at the 0.05 level (though was only slightly short, at 0.07). A possible association here should be retested in a larger sample. In the meantime, there remains the possibility that these constructs are more closely associated with harm to self rather than to others. The ideal of further investigation here though is supported by the strong evidence of a link between self-harm and harming others (Sahlin et al., 2017).

4.1 Limitations

Although our study provides preliminary evidence supporting the use of the IMP-V for predicting violent recidivism in people who have problems with impulsivity, it has some important limitations. Authorship bias is a consideration. Studies authored by those who have developed a device have reported predictive validity results around twice as high as studies reported by independent authors (Singh, Grann, & Fazel, 2013). However, the fact that at the time of completing the IMP-V the rater was blind to all post release data may mitigate authorship bias. Another definite shortcoming of the present study is the lack of interrater reliability evaluation. Finally, our sample was too small to allow for the full range of variation likely to be encountered among offenders, for example, it included only a subset of the very few offenders in Finland in the selected year who had a psychiatric assessment.

An obvious strength of our study is the follow-up of up to 15 years, with a minimum of 2 years and an average of 10 years. Furthermore, the clear-up rate for the most serious violent crimes is very high in Finland, so it is possible that we can rely on smaller samples than might be the case in some other jurisdictions (Statistics Finland, 2017). Specifically, the clear-up rate was about 83% during the 15 years long follow-up. Other strengths are that the sample
was drawn from offenders from the entire country who had been committed for a forensic psychiatric examination in 1999 and that the forensic psychiatric examinations are very extensive in patient evaluations providing an excellent basis for rating the subjects on all 12 risk factors. Nevertheless, only just over half of this cohort (56%) was included, so by definition a highly selected sample, amounting to just 0.2% of all offenders against the person for the year. In future, therefore, the measure should be studied with larger and more representative samples. Finally, as the risk factors do not contain any cultural element, which is specific to Finnish circumstances, a future finalised version of the IMP-V scheme should be tested in other European and North American countries. Because only a few women were included in the study sample, the use of the scheme with women also remains to be explored more fully.

5 | CONCLUSION

This study provides preliminary results on the psychometric properties of the IMP-V measure, indicating that the measure is worth developing. It would seem to hold promise as a means of predicting and preventing violent recidivism in impulsive offenders and forensic psychiatric patients. The use of the IMP-V supplies information on the nature of impulsivity in violence-prone persons and thus also creates opportunities for more effective risk management.

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**How to cite this article:** Weizmann-Henelius G, Putkonen H, Rissanen T, Eronen M, Webster CD. Exploring a new structured professional judgment measure (impulsivity measure related to violence) after an average follow-up of 10 years: A study of Finnish offenders. *Crim Behav Ment Health*. 2019;29:57–68. https://doi.org/10.1002/cbm.2107