New Psychoactive Substances and Violence within a UK Prison Setting

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\textbf{ABSTRACT}

\textit{Background and aims:} New Psychoactive Substances (NPS) have affected prison populations, threatening the safety of prisoners and staff. We investigated the prevalence of substance use within a prison in the United Kingdom, focusing on NPS and its links with violence and impulsivity. \textit{Method:} Cross-sectional questionnaire of 158 male category C prisoners with a mean age of 34.82 years \((\text{SD}=8.78)\). During their current sentence, 23\% reported NPS use (NPS), 11\% “traditional substances” (TD), 23\% both, and 43\% no substance use (ND). Lifetime use was reported as 62\% NPS, 20\% TD, and 18\% ND. \textit{Findings:} More participants used NPS exclusively than participants using TD exclusively, although the definition of NPS is problematic. The odds of violence against other prisoners, staff, and property were higher for NPS users and they were more likely to be impulsive compared to other groups. However, there was no significant interaction between NPS use and impulsivity in participation in violent acts. \textit{Conclusion:} NPS use is a complex term and is prevalent in the prison, impacting on levels of violence and influenced by impulsivity. The findings emphasize the need for tailored treatment and prevention initiatives for NPS users.

\textbf{Introduction}

New (or Novel) Psychoactive Substances (NPS) refers to a large group of substances that differ widely in their effects (European Monitoring Center for Drugs and Drug Addiction (EMCDDA), 2018). They often replicate the effects of “traditional” illicit drugs (e.g., cocaine, heroin, and cannabis) and can be classified according to their chemical structure, their psychoactive effects, or based on being plant-based or synthetic (United Nations Office on Drugs and Crime (UNODC), 2022). The definition of NPS is problematic; it is reliant on substances being detected and monitored, and changes in law, making this a rapidly changing and ever-evolving group of substances (Peacock et al., 2019).

The use of NPS worldwide appears to be decreasing however, within marginalized groups including prisoners, evidence suggests use remains prevalent (United Nations Office on Drugs & Crime, 2022). A recent systematic review reported synthetic cannabinoids were the most prevalent within prisons (Vaccaro et al., 2022), and this is one of the largest categories of NPS, often known as “spice” or “mamba” (Shafi et al., 2020).

Her Majesty's Inspectorate of Prisons (HMIP) 2019–2020 report indicated violence in prisons was rising. Due to the Covid-19 pandemic, subsequent reports described a decrease in violence due to increased time prisoners have spent in their cells (HMIP, 2022). Violence in prison has been attributed to substance use, particularly NPS (EMCDDA, 2018; HMIP, 2017; Prisons and Probation Ombudsman (PPO), 2018). A recent study of prison staff working with NPS users suggested 91\% had witnessed at least one episode of aggression with 53\% reporting resultant direct harm (Corazza et al., 2020).

Impulsivity is a personality trait which can result in behaviors such as acting without planning, seeking pleasurable sensations, and risk-taking (Cyders, 2012), often with reduced fear of negative or long-term consequence (Kaliski, 2015). It has been linked to violence (Coid et al., 2006) as well as substance use (de Wit, 2009) making impulsivity a risk factor for both (Bonta & Andrews, 2017). Research has suggested NPS users are more impulsive than other substance users and non-drug users, which may suggest and increased chance in engaging in violent behavior (Vreeker et al., 2017). However, the links between violence, impulsivity and NPS use are poorly understood. This study aimed to address this gap by exploring the prevalence of substance use in a selected prison, exploring factors (age, sentence length, and impulsivity score) that could distinguish NPS users, and examining the relationship between NPS use, violence, and impulsivity.

\textbf{Method}

HMP/YOI Wealstun is a category C male adult prison in West Yorkshire, United Kingdom. The study used an

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opportunistic sample of all serving adult (18 and over) male prisoners (n = 797) where 158 participants responded (20% response rate). During their current sentence, 11% reported using ‘traditional drugs’ not including NPS (TD users, n = 17), 46% reported using substances including NPS (NPS users, n = 73), and 43% reported not using any substances (ND users, n = 68). Lifetime use of “traditional drugs” not including NPS was reported as 20% (n = 32), lifetime use of NPS was 62% (n = 97) and no lifetime use of substances was 18% (n = 29).

Data were collected via a self-reported questionnaire where participants answered questions about their lifetime and current sentence substance use (dependent variable), their engagement in violent acts towards other prisoners, against staff, and against property, and completed a validated measure of impulsivity (Substance Use Risk Profile Scale) (Woicik et al., 2009).

Prevalence was explored using a McNemar test; a multinomial logistic regression was used to examine whether age, sentence length and impulsivity predict substance use; and logistic regressions was used to explore odds of engaging in violent acts.

Ethical approval was obtained from Her Majesty’s Prisons Probation Service (NRC reference number 2018-312), and the University of Lincoln School of Psychology Research Ethics (reference number PSY1819288).

**Results**

The demographics of the sample by substance use group is presented in Table 1. Having a previous prison sentence was a risk factor for NPS use and marriage was a protective factor against.

During their current sentence, 46% of participants reported using NPS, of which 23% reported using NPS exclusively. Use of TD exclusively was reported by 11% of participants. Analysis suggested there were 2:1 times as many NPS only users than TD only users.

Mean impulsivity score was highest among NPS users, lowest for ND users, with TD users being intermediate. Table 2 shows independent associations between impulsivity, age, sentence length and NPS use.

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**Table 1.** Demographic characteristics of our sample of offenders (n = 158).

| Age group (years) | Respondents | ND (n = 29) | NPS (n = 97) | TD (n = 32) | $\chi^2$ (likelihood ratio (d.f.)) and trend |
|-------------------|-------------|-------------|--------------|-------------|-----------------------------------------|
| 18-24             | 13 (8.3)    | 5 (18.5)    | 6 (6.2)      | 2 (6.2)     | 13.7 (8) Age is not a risk factor         |
| 25-34             | 67 (42.9)   | 8 (29.6)    | 43 (44.3)    | 16 (50.0)   |                                         |
| 35-44             | 51 (32.7)   | 10 (37.0)   | 36 (37.1)    | 5 (15.6)    |                                         |
| 45-54             | 22 (14.1)   | 3 (11.1)    | 11 (11.3)    | 8 (25.0)    |                                         |
| 55+               | 3 (1.9)     | 1 (3.7)     | 1 (1.0)      | 1 (3.1)     |                                         |

**Table 2.** Independent association between age, sentence, impulsivity and NPS use.

|          | TD (n = 32) | ND (n = 29) | OR CI | OR CI |
|----------|-------------|-------------|-------|-------|
| Age      | 1.01        | 0.95 – 1.06 | 0.97  | 0.91 – 1.03 |
| Sentence | 0.99        | 0.98 – 1.01 | 1.00  | 0.98 – 1.01 |
| Impulsivity | 0.87* | 0.77 – 0.99 | 0.77*** | 0.67 – 0.90 |

Odds ratio (OR); CI = confidence interval. Note: *p ≤ 0.05; ***p ≤ 0.001.
age, sentence length, and NPS use. Lower impulsivity scores were significantly associated with odds of being a ND or TD user compared with being a NPS user (Figure 1). Age and sentence length were not significantly associated with increased odds of being a ND or TD user compared with being a NPS user.

Figure 2 shows percentages of participants who reported on different categories of violence they had participated in within the prison. As shown, verbal assault to prisoner and prison officer jointly accounted for around 41% of violence reported. For NPS users, verbal assault to prisoner accounted for most violence committed followed by verbal assault to prison officer and then physical assault to prisoner (21%, 18%, and 15%, respectively, Figure 3).

Table 3 shows independent associations between NPS use, impulsivity, and perpetration of violence against property, other prisoners, and staff. Overall, 23% of NPS users and 3% TD users reported some sort of violence against property (cf. non-drug users reported no violence against property). Relative to NPS users, the odds of engaging in violence against property decreased and was statistically significant for the TD group. The results for the ND group were due to zero participants reporting stealing or damaging property. Consequently, the model was unable to function fully without these data. This suggests NPS users participated in more violent acts against property than TD and ND users.

The odds of perpetrating violence against other prisoners decreased and was statistically significant for both TD and ND users compared to NPS users. More than a quarter (42%) of NPS users and 22% of TD users reported perpetration of violence against other prisoners (cf. 14% of ND users). This suggests that NPS users participated in more violent acts against prisoners than TD and ND users.

Just over a third (39%) of NPS users and 22% of TD users reported perpetrating violence against staff (cf. 7% of non-drug users). The odds of engaging in violence against staff decreased for both the TD and ND user group compared to those in
the NPS group, with only the difference for the ND user group being statistically significant (Table 3). This suggests that NPS users participated in more violent acts against prison staff members than ND users. Table 3 also shows that high impulsivity scores were significantly associated with increased odds of perpetrating violence against property, other prisoners and staff. However, there was no significant interaction between NPS use and impulsivity on violence. This suggests there is an independent contribution of NPS use and impulsivity on the reported violence in the prison.

**Discussion**

The study findings are consistent with previous research showing NPS as the most widely used substances in prison (Ceranic Ninic et al., 2017; UserVoice, 2016; Vaccaro et al., 2022), and evidence for a link between NPS use and impulsivity (Vreeker et al., 2017). The measurement of impulsivity may be a useful screening method to identify vulnerabilities and help prevent prisoners engaging in, or developing a significant problem with, NPS use. The results indicate there are higher odds that NPS users will engage in institutional violence, therefore it can be suggested NPS treatments employ a holistic approach, focusing on addressing violence, impulsivity and substance use together to promote behavior change. Overall, this study emphasizes the need for further enquiry into NPS use within prison, building on the emerging research and ensuring that treatment responses are evidence based.

There are methodological limitations to consider. Defining NPS remains problematic and the participants in this study reported they did not know what they had ingested reporting that all substances were known as “spice” supporting the limitations noted by UNODC (2022) when using self-report methods for NPS. Data were collected by retrospective self-report, relying on memory to provide accurate responses. Questions concerned personal matters and socially unacceptable behavior, and demand characteristics may have influenced responses. Response rate and reliability of data may have been influenced by prisoners’ fear of potential punishment when disclosing engagement in illegal behaviors which was highlighted by prisoners who chose not to participate, stating they feared adjudications. Age as a variable to predict NPS use may have been influenced by the skewed sample and needs further exploration. Generalizability of results may be limited by the research taking place in one adult male prison. Several participants did not answer all questions due to readability and design of the questionnaire. Future research would benefit from a review of materials to improve clarity.

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**Table 3. Independent association between NPS use, impulsivity and violence.**

|          | VAProp | VAPris | VAS       |
|----------|--------|--------|-----------|
|          | % (n)  | OR     | CI        | % (n)  | OR     | CI        | % (n)  | OR     | CI        |
| TD       | 3.1 (1)| 0.11** | 0.01–0.85 | 21.9 (7)| 0.38** | 0.15–0.97 | 21.9 (7)| 0.43   | 0.17–1.10 |
| ND       | 0.0 (0)| 0.00   | 0.00–inf  | 13.8 (4)| 0.22** | 0.07–0.68 | 6.9 (2) | 0.12** | 0.03–0.51 |
| Impulsivity | 1.31***| 1.13–1.51| 1.24*** | 1.12–1.37| 1.22*** | 1.10–1.35|

Odds ratio (OR); CI = confidence interval; VAProp = violence against property; VAPris = violence against prisoners; VAS = violence against staff. Note: *p ≤ 0.05; **p ≤ 0.01; ***p ≤ 0.001.
