

Impact of Substance Use and Gender-Based Violence on Mental Health and Decision-Making under risk and under ambiguity: Insights from the Iowa Gambling Task in Incarcerated Populations

Impacto del consumo de sustancias y la violencia de género en la salud mental y la toma de decisiones bajo riesgo y ambigüedad: perspectivas de la Tarea de Iowa en población encarcelada

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- **Recepción:** 19 - julio - 2024
- **Aprobación:** 06 - diciembre - 2024
- **Publicación online:** 20 - diciembre - 2024

Citación: Miranda Gálvez, A. y Mata Martín, J. (2024). Impact of Substance Use and Gender-Based Violence on Mental Health and Decision-Making under risk and under ambiguity: Insights from the Iowa Gambling Task in Incarcerated Populations. *Maskana*, 15(2), 111 - 130. <https://doi.org/10.18537/mskn.15.02.07>



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Resumen

Research on inmates' decision-making, health, temperament, and psychopathology highlights the importance of mental health and rehabilitation in prisons. The study focuses on the high prevalence of mental disorders, examining personality and decision-making, particularly in those with substance abuse and domestic violence histories. It emphasizes the need for targeted interventions in correctional settings. This study assessed decision-making under ambiguity and risk in 51 male inmates from the Provincial Prison of Granada, including those with histories of drug abuse, domestic violence, or neither. Decision-making was evaluated using the Iowa Gambling Task, while mental and physical health were measured with the SF-36, personality with the TCI-R, and psychopathology with the MCMI-IV. No significant differences in decision-making were found across prisoner groups. However, those with substance abuse and domestic violence histories exhibited consistently poor

Abstract

La investigación sobre la toma de decisiones, la salud, el temperamento y la psicopatología de los reclusos destaca la importancia de la salud mental y la rehabilitación en las prisiones. El estudio se centra en la alta prevalencia de trastornos mentales, examinando la personalidad y la toma de decisiones, particularmente en aquellos con antecedentes de abuso de sustancias y violencia doméstica. Se enfatiza la necesidad de intervenciones específicas en los entornos penitenciarios. Este estudio evaluó la toma de decisiones bajo ambigüedad y riesgo en 51 reclusos varones de la Prisión Provincial de Granada, incluyendo a aquellos con antecedentes de abuso de drogas, violencia doméstica o ninguno de estos. La toma de decisiones se evaluó mediante la tarea de Iowa Gambling, mientras que la salud mental y física se midió con el SF-36, la personalidad con el TCI-R, y la psicopatología con el MCMI-IV. No se encontraron diferencias significativas en la toma de decisiones entre los grupos de reclusos.

decision-making. The domestic violence group scored significantly lower in Block 5 compared to those without such histories. This group also showed greater physical limitations, emotional dependency, and compulsive behaviors. The substance abuse group exhibited higher novelty seeking, antisocial behavior, aggression, borderline personality disorder symptoms, alcohol abuse, and depression. The study underscores the impact of substance abuse and domestic violence on decision-making, psychological traits, and physical health among incarcerated men. It highlights the need for tailored interventions to address specific cognitive and behavioral issues, which could enhance rehabilitation outcomes and reduce recidivism.

Palabras Clave: ecision-making, substance abuse, domestic violence, rehabilitation, psychopathology.

Sin embargo, aquellos con antecedentes de abuso de sustancias y violencia doméstica mostraron una toma de decisiones consistentemente deficiente. El grupo de violencia doméstica obtuvo puntuaciones significativamente más bajas en el Bloque 5 en comparación con aquellos sin tales antecedentes. Este grupo también presentó mayores limitaciones físicas, dependencia emocional y comportamientos compulsivos. El grupo de abuso de sustancias mostró mayor búsqueda de novedad, comportamiento antisocial, agresividad, síntomas de trastorno de personalidad límite, abuso de alcohol y depresión. El estudio subraya el impacto del abuso de sustancias y la violencia doméstica en la toma de decisiones, los rasgos psicológicos y la salud física entre los hombres encarcelados. Destaca la necesidad de intervenciones personalizadas para abordar problemas cognitivos y conductuales específicos, lo que podría mejorar los resultados de la rehabilitación y reducir la reincidencia.

Keywords: Toma de decisiones, abuso de sustancias, violencia doméstica, rehabilitación, psicopatología.

1. Introduction

In recent years, research within correctional environments has significantly expanded, aiming to understand the complexities of prison life better and develop effective rehabilitation strategies (Derlic, 2020; Santora et al., 2014). A key area of focus has been former inmates' social reintegration challenges, with studies highlighting the difficulties they encounter in reintegrating into society (Larsen et al., 2019; Miranda et al., 2022). In parallel, mental health has been identified as a critical factor for prisoners in managing stress (Kristofersson & Kaas, 2013; Unver et al., 2013) and navigating the inherent tensions of the prison environment. Research indicates that addressing mental health needs can lead to significant reductions in psychological disorders such as depression (Alemayehu et al., 2019; Girma et al., 2021; Tadesse et al., 2022), anxiety (Leigh-Hunt & Perry, 2015; Stawinska-

Witoszynska et al., 2021), and self-destructive behaviors (Stijelja & Mishara, 2022; Vinokur & Levine, 2019). These findings underscore the importance of mental health interventions in correctional settings, suggesting a critical gap in understanding how such interventions can support long-term rehabilitation and successful reintegration.

In comparison to the general population, a significantly higher proportion of incarcerated individuals struggle with mental health disorders (Butler et al., 2022; Zgoba et al., 2020). Prevalence rates among prisoners vary widely, ranging from 15% to 82%, with higher figures typically associated with conditions such as antisocial personality disorder and substance abuse disorder (Beaudette & Stewart, 2016; Brinded et al., 2001; Magaletta et al., 2010).

This indicates a critical need for specialized mental health care within correctional settings. In addition to these conditions, prisoners also exhibit elevated rates of depression, anxiety, and stress-related disorders (Fazel & Baillargeon, 2011; Liu et al., 2021), further complicating their rehabilitation and reintegration efforts. Systematic reviews highlight the disproportionately high incidence of major depression and psychosis in this population (Fazel & Danesh, 2002; Fazel & Seewald, 2012), suggesting that addressing these mental health issues is crucial for reducing recidivism and supporting successful reentry into society. These findings point to a significant gap in the comprehensive mental health care needed within correctional systems.

In addition to mental health challenges, incarceration exacerbates pre-existing conditions (Kaeble et al., 2015). Furthermore, concerns about inmates' physical health are well-documented, with numerous studies highlighting significant deterioration and underscoring the necessity of comprehensive healthcare services within prison settings (Allen et al., 2010; Dumont et al., 2012). Recent investigations continue to explore the intricate interplay between physical and mental health issues among incarcerated populations (Applegate et al., 2024).

Individuals with mental health disorders and substance use disorders are disproportionately represented in carceral systems, with multiple reviews highlighting significantly elevated rates of substance use disorders among this population (Fazel et al., 2006; 2017). Epidemiological research has established a strong link between drug use and intimate partner violence, emphasizing the need for integrated interventions (Moeller & Dougherty, 2001). Furthermore, certain personality disorders, such as antisocial personality disorder and substance use disorder, have been notably associated with both drug abuse and domestic violence (Vicens et al., 2011), suggesting that these factors may act synergistically in exacerbating violent behaviors. Impulsivity and mood disorders are also critical risk factors that may increase the likelihood of violent behavior, particularly in individuals involved in both drug use and domestic conflicts. These findings underline the complexity of

addressing violence in correctional populations, pointing to the need for targeted therapeutic strategies that address both substance abuse and the psychological factors contributing to violent behavior.

In the realm of personality assessment, the literature investigating personality dimensions in prison populations using the TCI-R is sparse (Allnutt et al., 2008; Balcioglu et al., 2021). Previous studies indicating that novelty-seeking is a prominent trait in the assessment of risk and behavior in drug abusers (Churchwell et al., 2012; Hartman et al., 2013; Howard et al., 1997). This trait is characterized by a strong inclination toward seeking new experiences and a tendency toward impulsivity, potentially contributing to heightened experimentation with psychoactive substances and increased engagement in risky behaviors. Moreover, the MCMI-IV (Millon et al., 2015) is a widely used tool that has been frequently applied in correctional settings to explore various dimensions of personality (Fakhrzadegan et al., 2017; Hamzeloo et al., 2016; Mohino et al., 2008; Retzlaff et al., 2002; Young et al., 2011; Yousefi et al., 2022). Previous research has highlighted the link between personality disorders and intimate partner violence, with common disorders among perpetrators including narcissistic, antisocial, histrionic, obsessive-compulsive, and borderline personalities (Collison & Lynam, 2021; Craig, 2003; Ehrensaft et al., 2006).

Dependency in perpetrators of gender-based violence can manifest in various forms, including control and possessiveness (Johnson, 2006; Monterrosa & Hattery, 2023), as well as emotional manipulation (Capezza et al., 2021; Johnson & Greenberg, 1995; Kuijpers et al., 2021), within a cycle of violence aimed at maintaining the bond with the victim. In contrast, compulsivity in these individuals (Macía et al., 2022; Van Hoey et al., 2021) is characterized by repetitive aggressive behaviors despite negative consequences, driven by a lack of impulse control. This highlights the complex psychological dynamics at play in gender-based violence. Additionally, drug consumption has been linked to increased impulsivity (Jentsch et al., 2014; de Wit, 2009; Verdejo-García et al., 2019) and violence (Hines & Douglas, 2012; Jarnecke et al., 2022;

Zhong et al., 2020), suggesting that substance use can exacerbate violent tendencies. These findings underscore the need for addressing both dependency and compulsivity, as well as the role of substance abuse, in the prevention and treatment of gender-based violence.

We focused primarily on the Iowa Gambling Task (IGT; Bechara et al., 1994; Bechara, 2007) to investigate decisional competencies. The IGT has proven invaluable for assessing decision-making capabilities, particularly among incarcerated individuals (Flórez et al., 2017; Hughes et al., 2015; Nestor et al., 2018; Yechiam et al., 2008). The IGT is a computerized neuropsychological task designed to measure decision-making. The IGT is considered a useful method for assessing decision-making and was developed as a task to evaluate risk predictions during decision-making (Bechara et al., 1994; Steingroever et al., 2018). In the IGT, participants are presented with 4 virtual decks of cards (labeled A, B, C, and D) and are asked to choose 100 times from these decks. In each selection, they win or lose money with the deck they selected, and the goal is to win as much money as possible. With each selection, participants can win or win and lose simultaneously; each deck differs in the ratio of gains to losses. The decks labeled C and D are considered advantageous, as they result in more monetary gains and fewer losses in the long term. Participants were not initially informed about each deck's relative risks and benefits; they acquired this information through feedback. Over time, with each selection, participants gradually became aware of the relative risks and benefits, which helped them understand the long-term effects of each deck.

The IGT learning process is gradual; numerous IGT studies have shown that during the early stages of the IGT, probabilities are unknown to participants. However, in the later stages, participants learn to choose more frequently from the advantageous decks (Krain et al., 2006; Toplak et al., 2010). Therefore, the IGT is typically delineated into two phases. The initial phase, encompassing the first 40 trials, is characterized by decision-making under ambiguity, wherein participants are unaware of the payoff probabilities. This phase gradually transitions into the late stage,

during which participants, particularly those without cognitive impairments, develop insights into the advantageous decks. The final 60 trials are indicative of decision-making under risk, as participants have assimilated knowledge from the initial phase and adjust their choices accordingly (He et al., 2012; Feldmanhall et al., 2016). In decision-making under ambiguity, individuals do not know the probabilities of positive and negative outcomes associated with their choices. Conversely, in decision-making under risk, these probabilities are known and can be considered when making decisions (Brand et al., 2007; Lauriola et al., 2007; Schultz et al., 2008).

Typically, healthy participants demonstrate a learning curve in the Iowa Gambling Task (IGT), gradually favoring advantageous decks over disadvantageous ones as they gain experience (Crone et al., 2004; Werner et al., 2009). In contrast, studies focusing on incarcerated individuals have revealed impaired decision-making abilities (Block et al., 2010; De Brito et al., 2013; Dolan et al., 2012; Miura & Fuchigami, 2016; Ross & Hoaken, 2011), suggesting a potential link between pathological decision-making patterns and criminal behavior. This impaired decision-making may reflect underlying cognitive and emotional factors that contribute to poor judgment and risky behaviors in incarcerated populations, highlighting the need for interventions aimed at improving decision-making skills to reduce recidivism.

Decision-making under ambiguity and risk has been extensively studied in problem gamblers. These individuals demonstrate various impairments in decision-making, with addiction linked to deficits under both risk conditions (Brand et al., 2005) and ambiguity (Roca et al., 2008). Similarly, in substance dependence, impaired decision-making under risk is frequently observed, highlighting a form of choice impulsivity prevalent among those with substance use disorders (Dixon et al., 2003; Petry & Casarella, 1999; Lawrence et al., 2009; Zois et al., 2014). In contrast, individuals prone to incarceration tend to make riskier choices under both ambiguous and risky conditions compared to healthy participants. However, conflicting findings exist, as some research suggests no

significant differences in overall performance between incarcerated adult offenders and non-incarcerated counterparts (Hughes et al., 2015).

Prison rehabilitation plays a crucial role in the social reintegration of incarcerated individuals. Educational programs that promote coping skills and resilience have been shown to be effective (King et al., 2022; Link & Williams, 2017). However, prisons face significant limitations in implementing appropriate initiatives, such as health education and coping strategies, which contribute to the relapse of many individuals following their release (Kant & Donovan, 2013). Furthermore, incarcerated individuals often face complex needs, such as substance abuse, mental health issues, and lack of housing, which not only hinder their reintegration but also increase the risk of recidivism (Andrews et al., 2006).

Therefore, the main goal of this study was to thoroughly evaluate decision-making competence

and conduct a comprehensive assessment of health-related variables, personality traits, and psychopathological disorders within correctional settings. Central to this investigation was the exploration of how decision-making abilities under conditions of risk and ambiguity vary among inmates with histories of drug abuse and domestic violence as compared to those without such backgrounds. Additionally, the study aimed to uncover and analyze observed differences in various mental health variables among these distinct groups of inmates. This research contributes to a deeper understanding of decision-making processes and mental health dynamics in incarcerated populations, offering insights that could inform targeted interventions and rehabilitation strategies within correctional environments.

Assessing these factors is critical for understanding this population's health needs and designing appropriate future interventions.

2. Materials and methods

2.1 Participants

The study included 51 inmates from the Provincial Prison of Granada. The sample was composed of three distinct groups: 15 inmates with a history of drug abuse, 20 inmates with a history of domestic violence, and 16 inmates with no history of drug abuse or domestic violence. All participants were male, aged 23 to 50 years ($M = 36.6$; $SD = 8.34$).

The participants volunteered to participate in the study, and among those who expressed their willingness, an additional selection process was carried out based on the established criteria. This process was supervised by the specialized technical staff at the correctional facility. The selection involved a detailed analysis of their criminal histories, which were rigorously evaluated to ensure that the participants met the study's criteria. Criminal records were a key factor in the selection process, as the aim was

to obtain a representative sample of different categories of inmates who met the program's requirements. The selection was based on the inmates' criminal histories as well as assessments using specific scales designed to measure the severity of addiction and incidents of domestic abuse. Inclusion criteria ensured a representative sample of the target populations within the correctional facility.

Due to errors in the coding of the questionnaires, the final sample size for the data collected from the administered questionnaires was 45, while the sample size for the IGT performance was 51.

Exclusion criteria were rigorously applied to maintain the integrity of the study. Inmates were excluded if they were older than 50 years, had significant physical illnesses, or suffered from

major psychiatric disorders such as schizophrenia and/or major depression. Additionally, inmates currently undergoing psychopharmacological treatment were also excluded from the study to avoid confounding effects on the research outcomes. All participants provided written informed consent.

Concerning the inclusion criteria, a detailed investigation of the participants' criminal histories was conducted to ensure they met the specific requirements for each group. For the drug abuse history group, only individuals with a history of substance abuse were included, excluding those with a history of domestic violence. In the case of the domestic violence group, participants with a history of domestic violence were selected, excluding those with a history of drug abuse. Finally, the third group was the control group, which consisted of participants who did not meet either of the two criteria, meaning they had no history of substance abuse or domestic violence. This rigorous selection process ensured a homogeneous and appropriate sample for analyzing the differences between the groups regarding their characteristics and behaviors.

The UGR Ethical Committee approved the experimental protocol (IRB-#2994/CEIH/2022) that complied with the APA ethical standards and the Declaration of Helsinki.

2.2 Measures

Iowa Gambling Task. Participants completed a computerized adaptation of the Iowa Gambling Task (IGT) developed by Bechara (2007). Over 100 trials, participants were tasked with maximizing monetary gains by selecting cards from four decks labeled A to D. Decks A and B presented significant potential gains alongside substantial losses (disadvantageous decks). In contrast, decks C and D offered smaller immediate wins but resulted in greater overall gains in the long run (advantageous decks). The mean net score is used as a measure of the subjects' learning process. A positive net score indicates that the participants have learned throughout the test. Conversely, a negative net score suggests that they have not learned the contingencies associated with the decks.

Regarding its psychometric properties, the IGT demonstrates good reliability, with internal consistency coefficients ranging from 0.60 to 0.80 and moderate to high test-retest reliability, with correlations between 0.60 and 0.80 (Schmitz et al., 2020).

Measures of performance. To analyze the behavioral data from the IGT, the trials are divided into five blocks, each consisting of 20 trials. Performance is evaluated by tallying the total number of advantageous choices and subtracting the total number of disadvantageous decisions made across the blocks of the IGT (Crone et al., 2004). This allows us to observe the IGT learning curve, where participants typically initially favor the disadvantageous decks (A and B). Still, over the course of the blocks, this preference shifts towards the advantageous decks (C and D).

Short Form-36 Health Survey (SF-36; Spanish adaptation by Alonso et al., 1995). The SF-36 questionnaire, which measures various aspects of physical and mental well-being in individuals, was administered to assess physical and mental health variables. The Short Form-36 Health Survey (SF-36) is one of the most widely used and evaluated generic health-related quality of life (HRQL) questionnaires. The SF-36 Health Survey consists of 36 items assessing positive and negative health states. The questionnaire covers 8 scales, representing the most used health concepts in major health surveys and aspects closely related to illness and treatment. The 36 items cover the following scales: Physical Functioning, Physical Role, Bodily Pain, General Health, Vitality, Social Functioning, Emotional Role, and Mental Health. Spanish adaptation of the SF-36, developed by Alonso et al. (1995), has been extensively validated and demonstrates strong psychometric properties (Vilagut et al., 2005). The instrument shows high reliability, with Cronbach's alpha coefficients exceeding 0.70 and reaching over 0.90 on scales such as Physical Functioning and Physical Role. Test-retest reliability studies also reported coefficients above 0.75, indicating temporal stability.

The TCI-R (Temperament and Character Inventory-Revised; Spanish version by Gutiérrez-Zotes et al., 2004) was used to assess personality

traits based on Cloninger's psychobiological model. This inventory evaluates temperament through dimensions such as Novelty Seeking, Harm Avoidance, Reward Dependence, and Persistence, and character through Self-Directedness, Cooperativeness, and Self-Transcendence, providing a comprehensive understanding of behavioral tendencies, emotional responses, and interpersonal dynamics. The Spanish adaptation demonstrates robust psychometric properties, with Cronbach's alpha coefficients exceeding 0.70 and high test-retest reliability (correlations > 0.80). Its factorial structure aligns with the theoretical model and shows adequate convergent and discriminant validity. The TCI-R is widely used in clinical settings for diagnosing and monitoring psychological disorders and in research on personality and psychotherapy.

The MCMI-IV (The Clinical Multiaxial Inventory, Millon et al., 2015) is used to assess personality disorders and other psychopathological conditions. It consists of 195 true/false items. It is a self-report tool designed to help clinicians identify personality pathology and psychopathy in adults (18 years or older) undergoing psychological or psychiatric evaluations or treatment. The MCMI-IV provides valuable clinical information through 25 scales, including 15 personality pathology scales, 10 clinical syndrome scales, and 3 modifying indices, such as an inconsistency scale and a validity scale. The instrument demonstrates high reliability and validity, with strong internal consistency (Cronbach's alpha coefficients above 0.80) and excellent test-retest reliability (correlations between 0.80 and 0.90). Regarding validity, it shows a clear factorial structure aligned with Millon's model, effectively measuring personality disorders and distinguishing between them. Additionally, it has high predictive validity, making it a reliable tool for predicting clinical diagnoses and treatment responses.

2.3 Procedure

After providing informed consent, participants were seated in the lab and completed all the questionnaires outlined in the study. After completing the questionnaires, participants

proceeded to the Iowa Gambling Task (IGT) (Bechara et al., 1994). During the IGT, each trial began with all four decks displayed simultaneously on the screen. Participants selected one deck using the left mouse button from the four available options during each of the 100 trials. Cumulative gains from their selections were continuously visible throughout the task, ensuring participants received ongoing feedback about their choices. After finishing the task, participants were asked whether they believed any deck was more advantageous than the others. If they indicated a preference, they were asked to identify which deck they considered the most favorable based on their experience during the task.

2.4 Analyses

For the behavioral analysis of the IGT, we investigated decision-making under ambiguity and risk across different groups of inmates (those with histories of drug abuse, domestic violence, or neither). Decision-making under ambiguity was assessed by analyzing the decks chosen in the first 40 trials when participants were unaware of the payoff probabilities. Decision-making under risk was evaluated based on the final 60 trials, where participants had acquired knowledge from the initial phase and adjusted their choices accordingly (Feldmanhall et al., 2016). ANOVAs examined differences in decision-making performance under ambiguity and risk among the groups. Separate ANOVAs were also performed to analyse differences in net scores among the groups. ANOVAs were used to compare multiple groups and determine whether the observed differences were statistically significant. Additionally, separate ANOVAs were conducted for the net scores of each group to obtain a more precise view of overall performance.

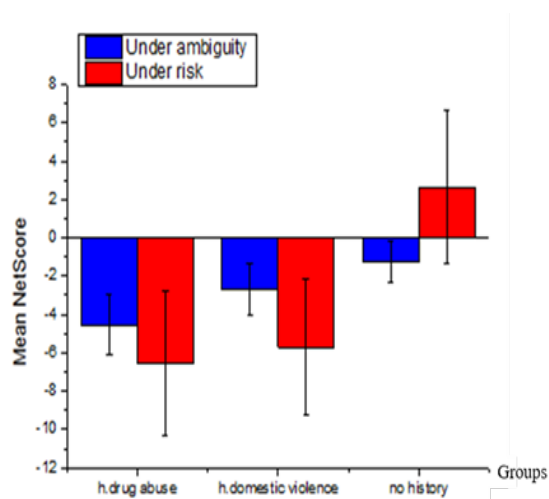
Unifactorial analysis of variance (ANOVA) was conducted for the variables measured by the questionnaires, using cohorts of inmates with varying historical backgrounds as the independent factor and questionnaire scores as dependent variables. Unifactorial ANOVA was employed, which is suitable for comparing responses based on a single independent variable (in this case, the historical background of the inmates). This

approach allowed for an exploration of how these backgrounds (substance abuse, domestic violence, or none) influenced their responses, providing a more comprehensive understanding of their psychological and behavioral characteristics.

All statistical analyses were performed using IBM SPSS Statistics 24 (IBM Corp., 2016). The significance level was set at .05; Greenhouse-Geisser adjustment was applied as necessary, and partial η^2 was used to measure effect size.

3. Results

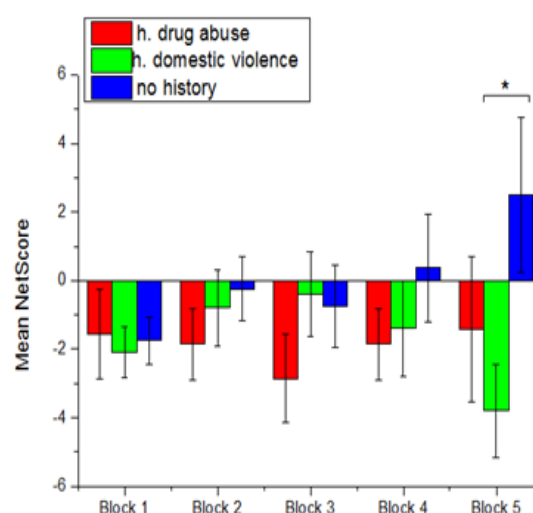
There were no significant differences between prison groups in the decision-making variables under ambiguity ($F_{(2,48)} = 1.32, p = .27$) and decision-making under risk. ($F_{(2,48)} = 1.7, p = .19$).



Note. Net score under ambiguity and risk. The figure illustrates that both the drug abuse history group and the domestic violence history group exhibit increasingly disadvantageous decision-making across the blocks, indicating a lack of learning. In contrast, the group without a history of drug abuse or domestic violence demonstrates some learning of contingencies over the blocks, although these differences are not statistically significant.

Figure 1. Net Score Under Ambiguity and Risk
Source: Own

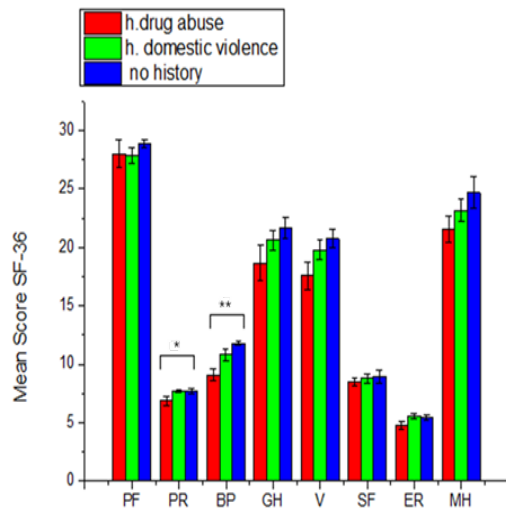
In Figure 2, notable findings revealed significant differences in Net Score among groups in Block 5 ($F_{(2,48)} = 3.19, p = .05$). Specifically, these differences are significant between the group with a history of domestic violence and the group without a history of drug use or domestic violence ($F_{(1,34)} = 6.67, p < .05$).



Note. Significant differences in Net Score were observed in Block 5, especially between the group with a history of domestic violence and the group without a history of drug abuse or domestic violence. * $p < .05$.

Figure 2. Net Score Differences Among Groups Across IGT Blocks
Source: Own

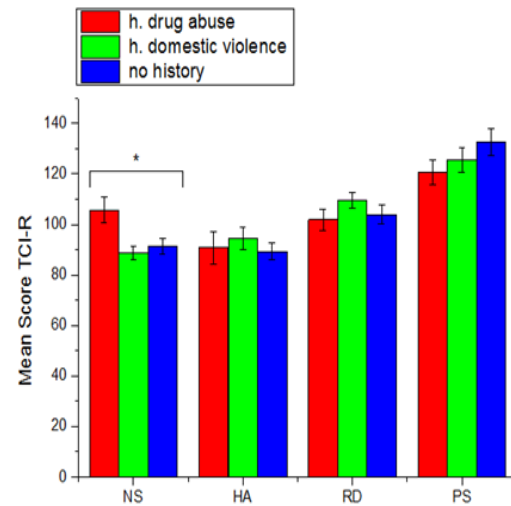
In the comparative analysis for the Short Form-36 Health Survey (SF-36; Alonso et al., 1995), statistically significant differences were identified among the groups in the “Physical Role” variable ($F_{(2,44)} = 3.646, p = 0.035$). Individuals with history of drug abuse reported a more limited perception of their ability to perform physical activities and fulfill daily responsibilities, in contrast to individual with history of domestic violence, who reported a more positive perception in this aspect. Regarding the “Bodily Pain” variable, participants with no history of drug abuse or domestic violence expressed a more acute and frequent perception of the physical pain they experienced ($F_{(2,44)} = 11.392, p < .001$).



Note. Traits. Physical Functioning (PF); Physical Role (PR); Bodily Pain (BP); General Health (GH); Vitality (V); Social Functioning (SF); Emotional Role (ER); Mental Health (MH). * $p < .05$ ** $p < .001$

Figure 3. Mean scores for the Short Form-36 Health Survey (SF-36)

Source: Own



Note: Traits. Novelty Seeking (NS); Harm Avoidance (HA), Reward Dependence (RD); Persistence (PS) * $p < .05$

Figure 4. Scores of Personality Traits (TCI-R).

Source: Own

	H. drug abuse	H. D. violence	No history	
	<i>M</i>	<i>M</i>	<i>M</i>	<i>p</i>
Schizoid	62.78	44.69	49.43	.228
Avoidant	52.14	39.07	29.93	.084
Dependent	65.21	85.76*	63.06	.048 *
Histrionic	75.85	76.30	57.81	.086
Narcissistic	64.21	70.00	54.93	.431
Antisocial	78.71*	46.76	45.37	.003 *
Agressive	62.21*	32.30	41.87	.013 *
Compulsive	81.07	98.15*	103.12	.009 *
Passive	45.85	25.53	32.18	.130
Self-Defeating	51.07	45.69	34.81	.228
Shizotypal	69.00	53.92	50.18	.150
Borderline	59.78*	41.07	34.50	.005 *
Paranoid	74.78	68.30	64.87	.720
Anxiety	47.57	45.23	37.50	.321
Histrionic	52.78	52.76	39.06	.141
Hypomania	66.57	59.38	51.43	.363
Neurosis	50.14	49.46	36.18	.098
Alcohol	81.35*	36.00	29.68	.000 *
Drug use	84.64*	39.30	37.62	.000 *
Psychotic	65.71	44.69	42.37	.069
Depression	41.78*	32.07	16.31	.008 *
Delusion	76.28	80.30	72.25	.790

Note: The asterisks indicate the most significant results within the table.

Table 1. Results on the MCMI-IV (The Clinical Multiaxial Inventory, Millon et al., 2015)

Source: Own

For the TCI-R (Temperament and Character Inventory-Revised; Spanish version by Gutiérrez-Zotes et al., 2004), significant differences were identified in the “Novelty Seeking” (NS) dimension ($F_{(2,44)} = 6.01, p = 0.005$). The group with a history of drug abuse exhibited higher scores in novelty seeking compared to other groups.

For the MCMI-IV (The Clinical Multiaxial Inventory, Millon et al., 2015), significant differences were found in the scores of various areas among the groups. In the group with a history of domestic violence, higher scores were observed in the areas of dependency ($F_{(2,42)} = 3.28, p < .05$) and compulsivity ($F_{(2,42)} = 5.38, p < .05$), suggesting a greater tendency toward

emotional dependence and compulsive behavior patterns in this group. In contrast, the group with a history of drug abuse showed elevated scores in variables related to drug use ($F_{(2,42)} = 17.44, p < .001$), antisocial behavior ($F_{(2,42)} = 6.84, p < .05$), aggressiveness ($F_{(2,42)} = 4.89, p < .05$), borderline personality disorder ($F_{(2,42)} = 6.17, p < .05$), alcohol abuse ($F_{(2,42)} = 22.41, p < .001$), and depressive symptoms ($F_{(2,42)} = 5.48, p < .05$).

Table 1 presents the median scores obtained by each group across the different variables assessed using the MCMI-IV. Additionally, the table highlights the differences observed between groups, emphasizing those cases where the differences are statistically significant.

4. Discussion

This study examined performance on the Iowa Gambling Task (IGT, Bechara et al., 1994) among a sample of incarcerated males, categorized into three groups based on their history: drug abuse, domestic violence, and no history of drug abuse or domestic violence. Additionally, we assessed other relevant variables in this population, such as the mental and physical health of the participants, as well as specific personality traits. This comprehensive approach enabled us to identify patterns and correlations that could be crucial for developing more effective interventions to enhance decision-making and overall well-being among incarcerated individuals.

The incarcerated population shows elevated rates of mental disorders compared to the general population (Gilmour, 2014). Disorders such as antisocial personality disorder and substance abuse are particularly prevalent among prisoners (Beaudette & Stewart, 2016; Brinded et al., 2001; Diamond et al., 2001). In our study, we found distinct perceptions among inmates regarding their physical condition and bodily pain, which varied based on their history. Specifically, prisoners with a history of drug abuse reported a more restricted perception of physical capability

and a higher incidence of bodily pain compared to other inmate groups. This suggests a possible correlation between drug use and physical decline (Cooper et al., 2022). Conversely, offenders involved in domestic violence exhibited a more positive perception of their physical abilities.

Regarding the personality variables studied in the research, one of the instruments used to assess specific dimensions was the TCI-R (Temperament and Character Inventory-Revised; Spanish version by Gutiérrez-Zotes et al., 2004). Our study found that individuals with a history of drug abuse scored notably higher in the novelty-seeking dimension. This aligns with prior research highlighting novelty-seeking as a prominent trait among drug users, influencing their risk assessment and behaviors (Churchwell et al., 2012; Hartman et al., 2013; Howard et al., 1997). Additionally, numerous studies have utilized the MCMI-IV (Millon et al., 2015) to explore various facets of personality within correctional settings (Fakhrzadegan et al., 2017; Hamzeloo et al., 2016; Mohino et al., 2008; Retzlaff et al., 2002; Young et al., 2011; Yousefi et al., 2022). Our investigation examined

MCMI-IV score profiles and found significant differences across different groups, revealing distinct psychological profiles. Specifically, individuals with a history of domestic violence exhibited higher scores in dependency and compulsivity, suggesting heightened tendencies toward emotional dependence and compulsive behaviors within this demographic. These findings parallel research by Teva et al. (2023), who observed elevated levels of compulsivity among violent prisoners, although their study did not specifically focus on perpetrators of gender-based violence. Our findings reveal that individuals with a history of drug abuse exhibit elevated scores in multiple domains, including antisocial behavior, aggressiveness, traits of borderline personality disorder, alcohol abuse, and depressive symptoms. These results emphasize the prevalence of antisocial tendencies observed in prior studies (Gori et al., 2014; Matsumoto et al., 2006). They also highlight the frequent occurrence of aggression and the presence of complex psychological issues such as borderline personality traits, concurrent substance abuse, and depression within this population of drug abusers.

Previous studies have employed the *IGT* (Bechara et al., 1994) to assess decision-making in prison populations (Nestor et al., 2018; Yao et al., 2019; Yechiam et al., 2008). While findings regarding *IGT* performance among incarcerated or justice-involved adults have been inconsistent, the majority suggest that adult offenders generally exhibit poorer performance on the *IGT* compared to community controls (Yechiam et al., 2008). Despite this, there remains a notable gap in the literature regarding exploring ambiguity and risk paradigms within this context. This study addresses this gap by pioneering an approach that integrates both paradigms. Our findings indicate no significant differences in decision-making under ambiguity or risk among different groups, reflected in comparable net scores across these conditions. Specifically, participants from diverse backgrounds within the prison setting exhibited similar tendencies in making uncertain and risky decisions.

Despite the lack of significant group differences, a notable trend emerged in task performance across blocks. Both the group with a history of drug abuse and the group with a history of domestic violence displayed a pattern of increasingly disadvantageous decision-making as the task progressed. Consistent with previous research, inmates tended to select disadvantageously and performed poorly on the *IGT* (Yechiam et al., 2008). Prior studies have suggested that a preference for disadvantageous decks in the *IGT* is associated with psychological factors such as an emphasis on gains over losses and difficulties in learning from feedback (Busemeyer & Stout, 2002; Yechiam et al., 2005). These tendencies may indicate underlying cognitive or behavioral issues related to the participants' histories.

Conversely, the group without a history of drug use or domestic violence showed some improvement over the course of the task, although these improvements did not reach statistical significance. This suggests a potential for more adaptive decision-making strategies in this group, possibly due to greater cognitive flexibility or learning capabilities. Moreover, significant differences in net scores were observed in Block 5, particularly between the group with a history of domestic violence and those without such histories. This finding underscores the nuanced differences in decision-making processes that specific background factors may influence.

One of the limitations of this study is that, although the inclusion and exclusion criteria were adjusted to ensure homogeneity within the groups, the sample did not include an external control group outside the prison setting. The participants in the control group were inmates without a history of drug abuse or domestic violence. However, they were still incarcerated individuals with other backgrounds that could have influenced the results. In future studies, it would be beneficial to adjust the inclusion and exclusion criteria to incorporate a broader range of factors and to increase the sample size. Additionally, it would be valuable to include a control group of participants without criminal records or prison history, allowing for more representative and robust results and a more accurate comparison between the populations studied.

In summary, this study has underscored the complexity of decision-making processes among incarcerated individuals with diverse backgrounds, highlighting the critical importance of considering individual histories when assessing cognitive functioning in correctional settings. By examining distinct groups based on their histories of drug abuse, domestic violence, or absence thereof, alongside assessments of mental and physical health and specific personality traits, we have identified subtle patterns that could

inform more effective intervention strategies. These findings are pivotal for designing tailored rehabilitation programs that address the specific needs of each inmate, aiming ultimately to enhance decision-making skills and overall well-being post-incarceration. Future research should delve deeper into the underlying mechanisms driving these findings to refine targeted interventions and support strategies for diverse prison populations, thereby improving their prospects for successful reintegration into society.

5. Conclusion and Implications

In conclusion, our study identified distinct patterns in decision-making and psychological profiles among inmates influenced by factors such as drug abuse and domestic violence. Drug abusers exhibited lower reported physical capabilities and higher levels of bodily pain, whereas individuals with histories of domestic violence reported more positive perceptions of their physical abilities. Both groups struggled

to learn from feedback and prioritize long-term outcomes in decision-making tasks. These findings underscore the need for tailored interventions to enhance decision-making skills and well-being among released inmates. It is critical to address specific needs such as physical rehabilitation and emotional management for individuals with a history of drug use and anger management and communication skills for those with violent behaviors.

6. Bibliographical references

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