Writing Abilities in Compulsive Prisoners

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INTRODUCTION

Classic studies in the literature have found links between academic failure and criminal offending and suggest that many incarcerated young people have experienced significant behavioral and learning problems in school, which could result in criminal outcomes and poor academic performance. The objective of this study was to analyse writing disorders in impulsive and compulsive prisoners. The sample was composed of 194 male prisoners, of which 81 had been diagnosed with Antisocial Personality Disorder and 113 with Obsessive Compulsive Personality Disorder. Male participants were recruited at the Granada Prison Center. They completed the Demographic, Crime, and Institutional Behavior Interview; the International Personality Disorder Examination (IPDE); The Symptom Checklist (SCL-90-R) and Assessment Battery of Writing Processes (PROESC in its Spanish acronym). We found that prisoners with writing disorders generally have difficulties in the skills necessary to write properly due to impulsive and compulsive behavior.

Keywords: impulsive, compulsive, prison, PROESC, writing

Research has found links between academic failure and criminal offending and suggest that many incarcerated young people have experienced significant behavioral and learning problems in school, which could result in criminal outcomes and poor academic performance. The objective of this study was to analyse writing disorders in impulsive and compulsive prisoners. The sample was composed of 194 male prisoners, of which 81 had been diagnosed with Antisocial Personality Disorder and 113 with Obsessive Compulsive Personality Disorder. Male participants were recruited at the Granada Prison Center. They completed the Demographic, Crime, and Institutional Behavior Interview; the International Personality Disorder Examination (IPDE); The Symptom Checklist (SCL-90-R) and Assessment Battery of Writing Processes (PROESC in its Spanish acronym). We found that prisoners with writing disorders generally have difficulties in the skills necessary to write properly due to impulsive and compulsive behavior.

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Moreover, those with writing difficulties have deficits in regulating mental operations in writing, which, in turn, leads to longer writing latencies, inter-letter intervals, and writing durations along with a greater number of orthographic errors, signs that are typical of dyslexia (Afonso et al., 2015; Nigro et al., 2015; Suzuki and DeKeyser, 2017; Nicolson and Fawcett, 2019). Dyslexia, however, is caused by multiple genetic and environmental risk factors as well as the interplay between them. At the brain level, dyslexia has been associated with impaired structure and function, particularly in the reading and language networks of the left hemisphere (Benitez-Burraco and Murphy, 2019). The neurocognitive influences on dyslexia are also multifactorial and involve phonological processing deficits as well as weaknesses in other oral language skills and processing speed. Peterson and Pennington (2015) have also examined contextual issues such as how dyslexia manifests across languages and social classes. Such problems with regard to orthographic representations (reading latencies, writing the words, choice between homophones of the same stimulus) have been described by Martínez-García et al. (2019). A number of studies suggest that superior cognitive abilities such as language are linked with compulsive behavior (Brainerd et al., 2020; Piette et al., 2020; Ramey et al., 2020).

Disorders involving emotional dysregulation such as impulsivity and compulsivity are often examined to understand individual differences in personality disorder. In accordance with Morse (2017), a focus on emotion dysregulation, impulsivity and compulsivity is central to understanding how trait impulsivity and compulsivity could contribute toward explaining criminal behaviors. Impulsivity and compulsivity characterize a wide range of disorders, and, in some cases, they appear to overlap; for instance, many disorders can be characterized by both impulsivity and compulsivity, either simultaneously or at different times (Grant and Chamberlain, 2019). Impulsive behaviors can often be controlled, while compulsive behaviors may require more specialized and multifactorial (biological, psychological, and social) interventions, as they are often part of a more serious problem. Impulsivity and compulsivity are traits that are thought to underlie violent behavior (Fitzpatrick et al., 2020; Olver et al., 2020). According to The American Psychiatric Association [American Psychiatric Association (APA), 2013] impulsivity can be defined as the execution of unplanned, rapid actions taken without consideration of the possible negative consequences, whilst compulsivity is defined as the occurrence of repeated behaviors, the goal of which is to reduce or avoid anxiety or distress [American Psychiatric Association (APA), 2013]. Namely, the behavior of impulsive patients aims to alleviate anxiety or discomfort, and to satisfy the desire for pleasure, excitement, or gratification. The behavior of compulsive has an exaggerated sense of threat from the outside world and perform rituals/routines in order to neutralize the threat or reduce harm (Figee et al., 2016; Hollander et al., 2016). Further, compulsive misbehavior is regarded as all behavior that is presented as something planned and/or conscious, and in no case is a spontaneous act (Chamberlain et al., 2018).

The behaviors shown by impulsive patients aim to alleviate anxiety or discomfort, and to satisfy the desire for pleasure, excitement, or gratification. Patients at the end of the compulsive spectrum have an exaggerated sense of threat from the outside world and perform rituals/routines such as obsessive-compulsive behaviors in order to neutralize the threat or reduce harm. This latter point marks compulsive or risk-averse behaviors that are characterized by an overestimation of the probability of future harm. Thus, some compulsive patients engage in behaviors or rituals to achieve short-term benefits (stress relief) in spite of the long-term negative consequences (Figee et al., 2016; Hollander et al., 2016).

Recent advances in the understanding of the neural circuits involved in impulsivity and compulsivity have shown that many psychopathological disorders share these two dimensions (impulsivity and compulsivity). Despite the fact that impulsivity and compulsivity are noted for their role in different aspects of response control, there is a high probability that both are mediated by related neural circuits, albeit linked in different ways to motivational and decision-making processes. For example, according to Suhas and Rao (2019), an increase in frontal lobe activity is associated with compulsive disorders such as obsessive-compulsive disorder (OCD) whilst a decrease in frontal lobe activity is involved in impulsive disorders such as antisocial disorder.

Dyslexia may appear due to damage or malfunction in these neural circuits and also in the areas with which they are connected. The complex functions that are linked to these areas could help to explain the possible relationship between compulsivity and oral and written language pathologies. However, to the best of our knowledge, no studies have yet been conducted to demonstrate the relationship between writing disorders and compulsive and criminal behaviors. Thus, the objective of this study is to analyse writing disorders in impulsive and compulsive prisoners.

METHODOLOGY

Participants

The current study included 194 men, 81 of which had been diagnosed with ASPD with a mean age of 36.86 years (SD = 9.32) and 113 diagnosed with OCPD with a mean age of 38.78 years (SD = 8.47). Male participants were recruited at the Granada Prison Center. Participants were screened using the International Personality Disorder Examination (IPDE; Loranger et al., 1994). The inclusion criteria were to be between 18 and 55 years old, suffering from either ASPD or OCPD and to be literate. Participants were excluded according to the following criteria: being older than 55 years, having a physical impairment, psychiatric illness (schizophrenia or depression), neurological disorder, or currently undergoing psychopharmacological treatment (see Tables 1, 2).

Procedure

Potential participants were interviewed individually to check whether they meet the inclusion criteria, after which they were offered the opportunity to participate in the research. After agreeing to participate, they completed the IPDE (Loranger et al., 1994).
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TABLE 1 | Sociodemographic variables and those related to drug abuse, alcoholism history, alcohol, and drug quit treatment and crimes between groups.

|               | ASPD  | OCPD | χ² |
|---------------|-------|------|----|
| Marital Status (N) |       |      |    |
| Single        | 41    | 48   |    |
| Married       | 10    | 35   |    |
| Divorced      | 12    | 15   |    |
| Widower       | 1     | 0    |    |
| Convive with couple | 17   | 15   | 10,916** |
| Level educational (N) |   |      |    |
| Not elementary | 17    | 16   | 1,575 |
| Elementary    | 33    | 51   |    |
| Secondary     | 21    | 31   |    |
| High school   | 8     | 12   |    |
| Degree        | 2     | 3    |    |
| Crime 1 (N)   |       |      |    |
| Against life and integrity | 10   | 13   | 3,417 |
| Against freedom | 4     | 7    |    |
| Against property; public estate | 46   | 52   |    |
| Against Public Health | 8    | 20   |    |
| Gender violence | 13   | 21   |    |
| Crime 2(N)    |       |      |    |
| No crime      | 19    | 34   | 8,416 |
| Against life and integrity | 15   | 10   |    |
| Against freedom | 1     | 6    |    |
| Against property; public estate | 34   | 40   |    |
| Against public health | 10   | 16   |    |
| Gender violence | 2    | 7    |    |
| Alcohol and Drug Abuse History (N) |   |      |    |
| No consume    | 11    | 33   | 10,487** |
| Drug abuse    | 37    | 42   |    |
| Alcohol       | 4     | 12   |    |
| Alcohol and drug abuse | 29   | 26   |    |
| Drug Abuse (N) |       |      |    |
| Never         | 14    | 54   | 25,370*** |
| Sometimes     | 33    | 39   |    |
| Frequently    | 22    | 9    |    |
| Always        | 6     | 7    |    |
| Very much     | 6     | 4    |    |
| Alcohol abuse (N) |       |      |    |
| Never         | 22    | 37   | 8,216* |
| Sometimes     | 40    | 61   |    |
| Frequently    | 9     | 9    |    |
| Always        | 5     | 6    |    |
| Very much     | 5     | 0    |    |
| Alcohol and drug quit treatment history (N) |   |      |    |
| Never         | 18    | 45   | 9,965** |
| Currently in prison | 34   | 32   |    |
| Throughout life in prison | 21   | 19   |    |
| Out of prison | 8     | 17   |    |

*p < 0.05; **p < 0.01; ***p < 0.001.

TABLE 2 | Mean, Standard deviation.

|               | ASPD Mean (SD) | OCPD Mean (SD) | F     | η |
|---------------|---------------|----------------|-------|---|
| Total SCL-90  | 4.34 (2.63)   | 38.12 (19.11)  | 0.596 | 0.003 |
| Total positives symptoms | 52.83 (23.85) | 49.20 (23.01)  | 1.141 | 0.006 |
| Index symptomatic distress | 25.99 (18.87) | 27.08 (19.60)  | 0.151 | 0.001 |
| Somatizations | 37.59 (23.96) | 4.86 (25.06)   | 0.831 | 0.004 |
| Obsessions and compulsions | 44.69 (21.25) | 42.88 (21.52)  | 0.339 | 0.002 |
| Interpersonal sensitivity | 42.65 (22.45) | 42.96 (2.28)   | 0.010 | 0.000 |
| Depression    | 41.57 (2.00)  | 43.54 (19.19)  | 0.478 | 0.002 |
| Anxiety       | 4.03 (2.73)   | 35.42 (2.10)   | 2.418 | 0.012 |
| Hostility     | 51.67 (2.26)  | 37.34 (14.22)  | 33.745*** | 0.148 |
| Phobic anxiety | 4.18 (15.49)  | 42.46 (16.82)  | 0.918 | 0.005 |
| Paranoid Ideation | 55.34 (17.60) | 54.33 (18.18)  | 0.149 | 0.001 |
| Psychoticism  | 47.78 (15.44) | 45.15 (16.51)  | 1.257 | 0.007 |

Significance level and statistical power of The Symptom Checklist (SCL-90-R).

**p < 0.01; ns = not significant.

Participants then underwent an individual session in which they completed the measures described below. At the beginning of the session, the participants were reminded of their right to abandon the study at any moment and were asked to sign a written informed consent form if they agreed to participate. At the end of the session, participants were debriefed and thanked for their participation. All participants were informed about the aims of the study and provided written informed consent. Ethical approval for this study was obtained from the Research Ethics Committee of the Regional Government of Andalusia.

Measures

Demographic, Crime, and Institutional Behavior Interview

The interview was designed specifically for this project with the aim of gathering socio-demographic data, information regarding the types of crimes committed and any punishment or prison sentences received according to the Spanish justice system (Royal Decree 1201/1981, 8 May, Articles 107 & 108).

International Personality Disorder Exam

(IPDE: Loranger et al., 1994; Spanish version developed by López-Ibor et al., 1996). This is a diagnostic instrument based on a semi-structured clinical interview, designed according to DSM-5 criteria [American Psychiatric Association (APA), 2013]. The items consist of open questions, multiple-choice questions, and yes/no questions. The items are classified according to the following six categories: work, self, interpersonal relations, affection, reality check, and impulse control. In addition, the IPDE includes a screening questionnaire that reduces the interview administration time by identifying the personality
disorders that the person is unlikely to suffer from and then excluding further questions regarding these disorders. The administration of the IPDE takes between 60 and 90 min and must be carried out by trained and experienced professionals. The reliability and stability indices obtained for the IPDE vary between 0.70 and 0.96 (Loranger et al., 1994). The instrument is considered one of the most useful and valid tools for assessing personality disorders for research purposes (López-Ibor et al., 1996).

The Symptom Checklist-90-R (SCL-90-R)
This is a symptom scale developed by Derogatis (1994) that evaluates the degree of psychological distress a person has experienced in the past week. It consists of 90 items (or 52 in the reduced version) using Likert scales with five response options. The instrument is structured according to nine primary dimensions: somatizations (SOM), obsessions and compulsions (OBS), interpersonal sensitivity (IS), depression (DEP), anxiety (ANX), hostility (HOS), phobic anxiety (FOB), paranoid ideation (PAR), and psychopathy (PSIC). There are seven additional items targeting sleep disorders, eating disorders, death-related thoughts, and feelings of guilt. The following three global indices of distress are derived from these scales: the Index of Global Severity (IGS) indicating current levels of perceived distress, Total Positive Symptoms (TPS) indicating the total number of present symptoms, and the Index of Positive Symptomatic Distress (PSD) evaluating the response style toward symptoms. Reliability studies show that the nine dimensions reach values close to or greater than $\alpha = 0.70$ and the concurrent and predictive validity of the inventory and its subscales have been confirmed, using as criteria other clinical evaluation instruments, screening scales, psychiatric diagnoses, structured evaluation protocols, or recidivism indicators (Derogatis and Savitz, 2002). We used the Spanish adaptation of the inventory (González-de Rivera et al., 2002).

Battery for Evaluation of Writing Processes (PROESC)
This is an individually applied test, created by Cuetos Vega et al. (2004), that aims to evaluate the main processes involved in writing and error detection. It consists of the following four subtests: (1) Dictation of Syllables; (2) Dictation of Words; (3) Dictation of Pseudowords; and (4) Dictation of phrases. It evaluates the following six aspects: Mastery of the phoneme- grapheme conversion rules; Knowledge of arbitrary spelling or lexical spelling; Command of spelling rules; Mastery of the rules of accentuation; Use of capital letters; and Use of punctuation marks. The manual of the instrument (Cuetos Vega et al., 2004) reports an internal consistency of 0.82 (coefficient alpha).

RESULTS
To address our study hypotheses, we proceeded to check whether the writing processes evaluated through PROESC differed between the groups. To do this, a Multivariate Analysis of Variance (MANCOVA) was carried out, for a between-group unifactorial design, using educational level as a covariate; group (ASPD and OCPD) as the independent variable, and the variables derived from the Battery for the Evaluation of the Writing Processes in the Dictation mode (Syllables, Words with Lexical Spelling, Words with Spelling Rules, Pseudowords, Pseudowords with Rule-based Spelling, Accent Phrases, Capital Phrases, Punctuation Mark Phrases) as dependent variables. This analysis revealed statistically significant differences between the groups [Wilks’ Lambda $= 0.237$, $F(8, 184) = 73.962; p < 0.001$].

Given that the MANCOVA showed a statistically significant main effect of group, we conducted univariate ANCOVAs for each of the levels of the dependent variable (Syllables, Words with Lexical Spelling, Words with Spelling Rules, Pseudowords, Pseudowords with Rule-based Spelling, Accent Phrases, Capital Phrases, Punctuation Mark Phrases) as dependent variables. This analysis revealed statistically significant differences for Syllables [$F(2, 191) = 5.647; Mce = 62.136; p < 0.004$], the scores being higher for the ASPD group than for the OCPD group; for Words with Lexical Spelling [$F(2, 191) = 18.406; Mce = 311.671; p < 0.001$] with the ASPD group showing lower scores than the OCPD group; for Words with Rule-based Spelling [$F(2, 191) = 12.064; Mce = 131.034; p < 0.001$], with the ASPD group showing higher scores than the OCPD group; for Accent Phrases [$F(2, 191) = 12.064; Mce = 248.984; p < 0.001$] with the ASPD group showing higher scores than the OCPD group; for capital Phrases [$F(2, 191) = 8.532; Mce = 90.185; p < 0.001$] with the ASPD group showing higher scores than the OCPD group; for Punctuation marks [$F(2, 191) = 33.589; Mce = 185.664; p < 0.001$] with the ASPD group showing higher scores than the OCPD group (see Table 3).

### Table 3 | PROESC: Mean, standard deviation, significance level, and statistical power of writing (PROESC) of the groups.

| SUBTEST               | ASPD MEAN (SD) | OCPD MEAN (SD) | F      | $\eta$ |
|-----------------------|----------------|----------------|--------|--------|
| Syllables             | 20.01 (3.35)   | 19.40 (3.42)   | 5.647**| 0.056  |
| Words with lexical    | 18.90 (4.02)   | 18.98 (4.79)   | 18.406***| 0.162  |
| spelling              |                |                |        |        |
| Words with rule-based | 19.69 (3.72)   | 19.15 (4.97)   | 13.958***| 0.128  |
| spelling              |                |                |        |        |
| Pseudowords           | 16.12 (3.75)   | 15.45 (4.38)   | 8.271***| 0.080  |
| Pseudowords with      | 9.30 (2.42)    | 8.78 (2.86)    | 7.281** | 0.071  |
| rule-based spelling   |                |                |        |        |
| Accent phrases        | 4.05 (4.70)    | 4.02 (4.89)    | 12.064***| 0.112  |
| Capital phrases       | 9.23 (2.88)    | 8.26 (3.65)    | 8.532***| 0.082  |
| Sentences             | 3.98 (3.11)    | 3.76 (3.13)    | 23.589***| 0.198  |
| Punctuation marks     |                |                |        |        |

**$p < 0.001$; *p < 0.01$.
DISCUSSION

In the present study we evaluated writing disorders among a sample of impulsive and compulsive prisoners. In particular, we sought to confirm the original observation of an orthographic lexical disorder in OCPD prisoners, which could be similar to dyslexia. First, the OCPD group showed lower scores on Syllable Dictation in comparison with the ASPD group. For example, they have written, in Spanish, the syllable /wi/ instead of /güi/, or /zoo/ instead of /zo/ creating a real word from a syllable. Many OCPD prisoners added accents to the syllables and were doubtful with regard to the use of the /h/ at the beginning of the syllable. Moreover, most of the OCPD prisoners eliminated the last /-s/ or even added it in other cases, whilst they also changed /-l/ to /-r/, or /ch/- to /x-/ /zoo/ instead of /zo/ creating a real word from a syllable. Although these findings have never been described by other authors, Nicolson and Fawcett (2019), Nigro et al. (2015), and Zou (2017) claimed that many spelling rules are not highly familiar to people with dyslexia, and the same could be true for people with OCPD. Therefore, there are not studies that related OCPD to dyslexia, but the biological bases of compulsivity share multiple brain areas and neural circuits with language and communication (Ardila, 2016).

Second, the OCPD group showed higher scores on Words with Lexical Spelling in comparison with the ASPD group. This is a novel finding that could be explained by the characteristics of the OCPD profile. According to Nicolson and Fawcett (2019), this kind of tasks could represent a great challenge for dyslexia, on both adults and children. Even though many rules are not familiar to people with dyslexia, Nigro et al. (2015) suggested that, due to memory abilities, other spelling rules are sufficient to produce correct spellings and this could explain why the OCPD group performed better on this task.

Third, the OCPD group obtained lower scores on Words with Rule-based Spelling in comparison with the ASPD group, that is the OCPD group made spelling mistakes according to the basic rules of writing. For instance, they did not respect the Spanish writing rules regarding the use of /m/-/ before /p/ and /b/, adding /u/- to the syllable /gue/ for the proper spelling (/ge/ instead of /gue/). They also failed to correctly use the Spanish graphemes /y/, /j/ and /g/ (injectar for inyectar). These results are extremely novel, given that there are no recent studies that have examined spelling disorders in OCPD prisoners, although Afonso et al. (2015) and Suzuki and DeKeyser (2017) found that the word length effect affected dyslexics due to the cost of additional graphemic processing. In sum, it appears that people with OCPD and dyslexia make similar writing mistakes.

Fourth, the OCPD group obtained lower scores on Pseudowords and Pseudowords with Rule-based Spelling than the ASPD group. This finding could be explained by the fact that OCPD sufferers are strict and inflexible with orthographic rules or the OCPD group in our study have not acquired them (Cain et al., 2015). In addition, the results of this experiment suggest that the orthographic representation of new words or pseudowords is constructed through semantics and phonology, and we have already seen in the previous results (the OCPD group showed lower scores on Syllable Dictation and words with Rule-based Spelling compared with the ASPD group) that the OCPD group had great difficulties with rule-based structures. These pseudowords are easily transformable into words (for instance, “olcho” to “cho” or “zampeño” to “San Pedro”). These results are congruent with those of Martínez-García et al. (2019) and Suzuki and DeKeyser (2017), indicating that semantic and phonological training could help with new words.

Fifth, regarding formal aspects, the OCPD group obtained lower scores on Accent Phrases, Capital Phrases and Phrases with Punctuation Marks than the ASPD group. This could be due to an alteration in certain cognitive elements of written composition such as the implementation of grammatical judgments and syntactic-semantic composition. These striking and novel findings are consistent with the results reported by Gutiérrez-Fresneda and Díez-Mediavilla (2017) who demonstrated that the main characteristics of dyslexia are related to the use of collocation and syntactic structure, along with formal aspects such as capital letters and punctuation marks.

In conclusion, prisoners with writing disorders are generally lacking the skills needed to write as a consequence of compulsive rather than impulsive behavior. OCPD is characterized by pervasive patterns of preoccupation with orderliness, along with perfectionism that is manifest in the preoccupation with details, rules, order, and organization. Moreover, OCPD sufferers show mental and interpersonal control at the expense of flexibility. This perfectionism could explain why people with OCPD perform behaviors or tasks in a recurring and repetitive way. These types of behaviors are also characteristics of dyslexia. Whilst no studies have been conducted to confirm this possibility, dyslexia and compulsivity share common biological bases (D’Mello and Gabrieli, 2018; Suhas and Rao, 2019). We have found that OCPD prisoners show many signs of dyslexia such as slow preparation and production of words, which is an accord with the study by Afonso et al. (2015) which confirmed that problems of slow and poor spelling in developmental dyslexia persist into adulthood.

It is important to acknowledge certain limitations of the present study. The first limitation could be due to the selection of men instead of a mixed gender sample, although we have evaluated crimes such as gender abuse, which is understood to mean male to female aggression, and the prison population contains five times more men than women. The second limitation is related to the measures used, which might involve the cognitive processes implied in language such as learning, attention, working memory, and executive functions. The third limitation is associated with the lack of dyslexia and control groups. In order to overcome these limitations, future research studies could include these new groups and could also attempt to evaluate the cognitive processes involved in language. However, the main strength of this study is that it is the first to analyse each part of the PROESC separately.
DATA AVAILABILITY STATEMENT
The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT
The studies involving human participants were reviewed and approved by University of Granada. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS
The main idea of this study and the exhaustive bibliographic search was developed by LM-L, FL-T, and FS. LM-L and FL-T took the samples from the participants. LM-L, FL-T, and FS wrote the manuscript and revised the text in its different versions. All authors participated in the statistical analysis.

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