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SUMARIO / SUMMARY / RESUMO

- Editorial 6

- Correlación entre conductas agresivas y patrones de personalidad en consumo de sustancias...7
  Correlation between aggressive behaviors and personality patterns in substance use
  Manon Rousselle Vicente. Universidad Europea del Atlántico (España).

- Evitación experiencial y ansiedad en deportistas de alto rendimiento……………………………………………………………………………………….21
  Experiential avoidance and anxiety in high-performance athletes
  Cristina María Calle Abarca. Universidad Europea del Atlántico (España)

- Evaluación en teoría de la mente y funciones ejecutivas en personas con consumo de sustancias…………………………………………………………………35
  Evaluation in the theory of mind and executive functions in population with drug abuse
  Andrea Sainz-Maza Fernández. Universidad de Almería (España).

- Implicaciones de la autoestima y el autoconcepto en el bienestar psicológico de los adolescentes españoles…………………………………………………………51
  Implications of self-esteem and self-concept in the psychological well. being of spanish adolescents
  Paula Gutiérrez Salmon, Juan Luís Martín Ayala. Universidad Europea del Atlántico (España).

- Eficacia de un programa de intervención basado en la terapia dialéctico-conductual en pacientes con trastorno límite de la personalidad……………………………………………………………………………………………67
  Efficacy of an intervention programme based on dialectical-behavioural therapy in patients with borderline personality disorder
  Andrea del Carmen García Saiz. Universidad Europea del Atlántico (España). Adrián Camus Bueno. Psicólogo.

- Efectividad de la rehabilitación neuropsicológica en pacientes con daño cerebral adquirido………………………………………………………………………………………89
  Effectiveness of neuropsychological rehabilitation in patients with acquired brain damage
  María Martin Hernantes. Universidad Europea del Atlántico (España).

Editorial

The current issue of the journal Psychology Research deals with a series of scientific articles with an attractive and varied subject, which begins with the work entitled "Correlation between aggressive behaviors and personality patterns in substance use".

This article addresses the great impact that substance use has in traumatic situations such as accidents, aggressive behaviors, sexual abuse, overdose, and mental disorders associated with consumption itself. The research aims to analyze the relationship between the consumption of alcohol, cocaine, cannabis and hashish with the main factors of personality and aggressive behaviors both at the intra-family level, such as partner violence and the expression of anger at the wheel. In addition, the relationship between personality factors and aggressive behavior of consumers in the general population is evaluated.

The following contribution has the purpose of correlating experiential avoidance and precompetitive anxiety (somatic, cognitive and self-confidence) to know the relevance of proposing interventions with Acceptance and Commitment Therapy (ACT) in the sports field. For this, descriptive and correlational analyzes were carried out on the variables of interest and the results show an interesting relationship between experiential avoidance and somatic anxiety, as well as cognitive anxiety.

On the other hand, the following article studies the neuropsychological alterations and alterations in social cognition caused by substance abuse. The aim of this work is to analyze the existence of significant differences in the functioning of the Theory of Mind (TdM) and Executive Functions (EF) in a population with a diagnosis of substance use disorder (SSD). In addition, it also seeks to establish differences in the alterations between both groups of drug-dependent patients.

From another point of view, and taking into account self-concept as an element that favors the sense of one's own identity, as well as self-esteem as the sum of judgments that the person generates about himself, in this article the most relevant results of different recent research that affects the importance of self-esteem and self-concept in psychological well-being. This systematic review includes clinical databases and data on the level of self-esteem and self-concept, comparing it with the psychological well-being of adolescents. The studies examined evaluate the relationship between gender, school performance, level of physical and mental activity, and parental educational styles with regard to self-esteem.

The fifth proposal explores Borderline Personality Disorder (BPD) as a serious mental health problem, evidencing the efficacy of Dialectical Behavioral Therapy (DBT) in addressing this pathology. The objective of this study is to verify the efficacy of an emotional management program based on DBT for patients who have a diagnosis of BPD, composed of four blocks: mindfulness, interpersonal efficacy, emotional regulation and stress tolerance, evaluating anxiety, depression, functioning global, emotional regulation, suicidal ideation and impulsivity.

Finally, a work is presented that analyzes the effectiveness of neuropsychological rehabilitation in patients with acquired brain damage (ACD). DCA is one of the main causes of disability in today's world, being able to produce both cognitive and physical alterations; reaching to limit the quality of life of these people. The work has the participation of subjects with moderate cognitive impairment attending two weekly sessions for four months to cognitive rehabilitation. The results provide interesting data about the improvement in those participants who have received neuropsychological rehabilitation in comparison with patients in the control group, which seems to indicate that cognitive rehabilitation is essential to help patients with ACD to improve the alterations in their cognitive functions .

Dr. Juan Luís Martín Ayala
Editor Jefe / Editor in chief / Editor Chefe

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CORRELATION BETWEEN AGGRESSIVE BEHAVIORS AND PERSONALITY PATTERNS IN SUBSTANCE USE

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Abstract. The strong social impact of drug use is a consequence of its impact on accidents, risky driving, aggressive behavior, risks of sexual abuse, overdose and mental disorders associated with substance use such as depression, anxiety, schizophrenia and personality disorders. The young age at which alcohol and other substances such as hashish, cannabis and cocaine are first consumed, and the symptoms that constitute the negative consequences of consumption at cognitive, somatic and behavioral levels, corroborate the need to carry out research in this field, taking into account different relevant variables (Graña, Muñoz & Navas, In press). The present research aims to analyze the relationship between the consumption of alcohol, cocaine, cannabis and hashish with the main personality factors and aggressive behaviors both at the intrafamilial level, as well as intimate partner violence and the expression of anger at the wheel. At the same time, personality factors are thought to be associated with the aggressive behavior of users in the general population. In order to test this relationship, a sample of general population users of some of these substances was selected in this research. The results obtained show that there is no correlation between the consumption of these substances with either personality factors or aggressive behavior in the different contexts. This result may be due to the small sample size or to the fact that we did not work with a clinical population sample.

Key words: Substance use, aggressive behavior, personality factors.

CORRELACIÓN ENTRE CONDUCTAS AGRESIVAS Y PATRONES DE PERSONALIDAD EN CONSUMO DE SUSTANCIAS

Resumen. El fuerte impacto social que representa el consumo de drogas es a consecuencia de su repercusión en accidentes, conducción de riesgo, comportamientos agresivos, riesgos de abuso sexual, sobredosis y trastornos mentales asociados al consumo de sustancias como son la depresión, la ansiedad, la esquizofrenia y los trastornos de personalidad. La corta edad con la que se empieza a consumir alcohol y otras sustancias como hachís, cannabis y cocaína, y los síntomas que constituyen las consecuencias negativas del consumo a nivel cognitivo, somático y comportamental, corroboran la necesidad de realizar investigaciones en este ámbito teniendo en cuenta diferentes variables relevantes (Graña, Muñoz & Navas, In press). La presente investigación tiene el objetivo de analizar la relación entre el consumo de alcohol, cocaína, cannabis y hachís con los principales factores de la personalidad y conductas agresivas tanto a nivel intrafamiliar, como la violencia en pareja y la expresión de la ira al volante. Al mismo tiempo se cree que, los factores de personalidad estarían asociados al comportamiento agresivo de las

personas consumidoras en población general. Para comprobar esta relación, en esta investigación se ha seleccionado una muestra de población general consumidora de alguna de estas sustancias. Los resultados que se obtuvieron muestran que no existe correlación entre el consumo de estas sustancias ni con factores de personalidad ni con conductas agresivas en los diferentes contextos. Este resultado puede ser debido a la escasez del número de la muestra o bien debido a que no se trabajó con una muestra de población clínica.

Palabras clave: Consumo de sustancias, conductas agresivas, factores de personalidad.

Introduction

Numerous empirical evidence corroborates the relationship between certain factors or personality traits (Impulsivity, Extroversion, Neuroticism, Openness, Sensation Seeking, among others) and drug use (Torres, García, Muñoz, Fernández-Palacios & Llopis, 1996). A study (Dembinska-Krajewska & Rybakowsky, In press), based on the Five Factor model analyzed the personality profiles of both users and non-users of substances (tobacco, cannabis, cocaine, and heroin). The results indicated that cocaine users scored higher than non-users on the Neuroticism personality factor and lower on the Responsibility factor. For cannabis, users scored higher on Openness and lower on the Agreeableness and Responsibility factors than non-users. Another study that confirms what was obtained in the previous one is the one by Allen and Holder (2013) because the results showed that people who obtained a lower percentage in both the Agreeableness and Responsibility factors show a higher predisposition to be cannabis users.

In one study it was shown that emotionally unstable subjects with a greater tendency to Neuroticism and Anxiety were more predisposed to the use of psychodepressant drugs, such as alcohol and anxiolytics. However, subjects with a high score in the Extraversion factor, with a tendency to impulsivity and psychopathic traits, would be more predisposed to the use of tobacco, cannabis, and cocaine (Fidel, Roncero & Casas, 2004).

Currently, it is known that personality interacts with a variety of biological, psychological, and environmental factors, which together delimit the individual response to substance use. On the one hand, the existence of patients with different personality traits who use different substances and, on the other hand, the existence of substance users with different personality disorders, which is a major impediment in determining the direction of the cause and effect relationship (Mangas, 2015).

With regard to aggressive behavior and drug use, it is difficult to consider them in isolation, as the negative consequences of drug use affect both the psychological and physical level but also behavioral.

Aggressive behaviors that lead to violence appear more frequently in substance users, finding a significant relationship between these aggressive behaviors and the use of alcohol, marijuana, cocaine, and other psychoactive substances(Rodríguez, Fernández, Hernández & Ramírez, 2006).

Research confirms that drug use and violence form a bidirectional feedback simultaneously as it has been shown that users are more likely to use aggression (Florenzano, Valdes, Serrano, Rodríguez & Roizblat, 2001). An example of this is, according to Mc Whinter & Florenzano (1998), that young people who habitually consume substances are more likely to engage in aggressive behaviors, so it is suggested that drug consumption is directly related to the aggressive world. This is reinforced by the idea pointed out by the authors Méndez and

Cerezo (2010), corroborating that there is a relationship between certain dysfunctional behaviors and substance use.

More specifically, a study by Harruf, Franciso, Elkins, Phillips, and Fernandez (1994), cited in Delgado (1994), showed that high doses of cocaine could lead to assaults and homicides. Often a combination of cocaine and alcohol consumption takes place, which results in the latter enhancing the effects of the former. To confirm this relationship between alcoholics and homicides, it should be noted that the reduction in murders that has been found in New York City is due to a decrease in cocaine use. Likewise, the combination of cocaine and alcohol causes the moment of euphoria and the sensation of well-being to be prolonged among its consumers; with a high percentage of aggressive and criminal behavior being found in these subjects (Graña, Muñoz & Navas, In press).

In the case of cannabis use, there are several cognitive and behavioral consequences. The most relevant behavioral symptoms could be: a) social isolation; b) alteration of interpersonal relationships due to increased aggression and hostility; c) decreased inhibitions; d) criminal behavior, such as driving under the influence of drugs (Nadal, 2008).

With respect to aggressive behaviors and drugs in the family context, it should be emphasized that intrafamilial abuse should be studied from an ecological perspective in which the different contexts in which people develop are taken into account, since all of them directly or indirectly affect their behavior. Therefore, the use of drugs or alcohol is considered by consumers as a lifestyle to improve their mood; however, it is a lifestyle that can generate emotional and mental disorders, which encourages aggressive behavior (Salazar, 2008).

The rate of aggressors, who show a high consumption of alcohol, is between 50% and 60%. With respect to the consumption of illegal drugs, the average has been found to be 20%. Consumption is more a precipitating factor than a causal factor of intimate partner violence (Arteaga, Fernández-Montalvo & López-Goñi, 2012).

It is highlighted that some authors come to consider that 45% of consumers arrested for alleged crimes within the family nucleus present personality disorders (Ziberman, Yadid, Efrati, Neumark & Rassovsky, 2018).

When we talk about the influence of drugs on aggressive driving behavior, first of all, we must differentiate between aggressive behavior and risk behavior. Aggressive behavior is characterized by intentionally causing physical or psychological harm, as opposed to risk behavior, although risk-taking behavior may cause harm indirectly. Depending on the person's goal, a behavior can be both risky and aggressive (Herrero-Fernández, Fonseca-Baeza & Pla-Sancho, 2014).

Substance use could be considered a risky behavior, as it causes a series of consequences that alter drivers' capabilities.

Human error is the main factor in two out of three traffic accidents. There are multiple causes that influence this factor, such as the consumption of psychoactive substances. The latest study on the prevalence of psychoactive substance use conducted by the Directorate General of Traffic concluded that 12% of Spaniards have consumed an illegal drug and/or alcohol before driving (EDADES, 2016).

Another influential element in the human factor is aggressive behavior or anger in driving. According to the study conducted by Cook (1996), it is stated that aggressiveness at the wheel is much more frequent than driving under the influence of alcohol.

There are a number of factors that determine aggressive driving behavior, such as cognitive, psychophysiological, emotional, environmental... Which can be altered by substance

use. Cocaine alters behavior by increasing the impulsivity of the consumer and even making him aggressive towards other drivers (Mihelj, Kos & Sedlar, 2018). It also causes an increase in traffic violations, thus making driving more dangerous (Ray, Fought & Decker, 1992).

In another study, it has been observed that regular alcohol consumption increases the predictive ability of rule violations with respect to personality variables and road rage (Valero, 2009).

Consequently, driving after drinking alcohol causes 40% of road accidents with fatalities, 15-35% of accidents causing serious injuries, and 10% of accidents with minor consequences. This should not ignore other psychoactive substances that also impair the psychophysiological conditions necessary for proper driving. Recent research has concluded that 10% of deaths in road accidents could be due to driving under the influence of illegal substances (Álvarez & Del Río, 1994).

Therefore, after reviewing the literature, the main objective of this study was to analyze the correlation between personality variables such as Neuroticism, Extraversion, Agreeableness, Openness, and Responsibility, and aggressive behaviors in different contexts (intrafamily and driving) with respect to substance use in the general population. This objective has been divided into sub-objectives or more specific objectives: a) to relate the most frequent personality patterns or traits with both alcohol consumption and psychoactive substance use; b) to relate aggressive behaviors such as driving anger, intimate partner violence, intrafamily violence, and anger as a trait-state, with alcohol consumption and psychoactive substance use; c) to relate the main personality factors with the variables that measure aggressive behavior in the general population of substance use.

We start from two hypotheses, which we intend to analyze:

"There is a significant correlation between alcohol consumption with the five personality dimensions (Neuroticism, Extraversion, Openness, Agreeableness, and Responsibility) and aggressive behaviors, as well as the consumption of psychoactive substances (cannabis, hashish, and cocaine) with these personality dimensions and aggressive behaviors."

"There is a significant correlation between personality factors such as Neuroticism, Extraversion, Openness, Agreeableness, and Responsibility, with a series of aggressive behaviors in substance use (alcohol, cannabis, hashish, and marijuana), such as intrafamily violence (violent interpersonal conflicts), the expression of anger experienced while driving, intimate partner violence, and the expression of anger as a trait-state."

Method

Participants

The research sample consisted of a total of 20 volunteers from the general population, with an average age of 37.35 years. The sample has been divided into 10 female and 10 male subjects. The inclusion and exclusion criteria for the selection of the sample was that all of them had to be habitual drivers, that is, they had to drive at least once a day, and that they had to consume alcohol at least once a week.

An information sheet was filled out by the subjects in the sample, in which the inclusion requirements appeared. They were asked if they consumed alcohol or any other substance such as cocaine, cannabis, or hashish. Alcohol consumption, being a requirement to be part of the

sample, was present in practically all the subjects. The consumption of other substances is also present, being 40% of people who do not consume cocaine, cannabis, or hashish. Regarding the frequency of cannabis consumption, the percentage obtained is 20% of monthly consumption. On the other hand, both in cocaine and hashish consumption the percentage is 15% of monthly consumption. Finally, the percentage of people who consume more than one of these substances is 10% monthly.

With respect to the asymmetric distribution, on the one hand, in the variable "Alcohol" a 1.05 was obtained and, on the other hand, in the variable "Quantity of cocaine, cannabis, and hashish consumption" a 1.67 was obtained. These results lead to the conclusion that both variables show a positive asymmetric distribution, since being greater than 0 the tail of the distribution points to the right, which indicates that the data on the consumption of both psychoactive substances and alcohol are usually asymmetric in this way: The majority of people in the general population in the study conducted consume relatively little, while fewer and fewer people consume large amounts. This statistical test has been carried out to verify that, indeed, the sample does not follow a normalized distribution, since the general population and not the drug dependent population tend to consume small or scarce amounts, which, as will be discussed later, causes little or no significant results to be obtained.

Finally, with respect to the years of driving, the mean obtained is 16.95 and the standard deviation is 13.15.

Measuring instruments

The internal consistency indices of the following scales (Cronbach's α) correspond to the data of the present research.

State Trait Anger Expression Inventory (STAXI-2). The Spanish adaptation of the STAXI-2 (Miguel-Tobal, et al., 2001) was used in the present study. In its revised form, the STAXI-2 includes an Anger State scale with three factors: Emotional-Feelings, Verbal, Physical. Sn Anger Trait scale with two factors: Temperament, Reaction. Snd an Anger Expression scale with four factors: Internalization or Internal Anger, Externalization or Anger Directed at Others, Control of Internal Anger, External Control of Anger Directed at Others. The overall internal consistency of the instrument items was an α= .83. The response style is based on a 4-point Likert-type scale (1 = Almost Never; 4 = Almost Always).

The instrument used is the Spanish version of FACES-IV (Martínez-Pampliega, Merino, Iriarte & Olson, 2017). It integrates 5 fundamental dimensions for the clinical family approach: Cohesion, Flexibility, Detachment, Chaos, Rigidity, Attachment. The internal consistency of the instrument as a whole was α= .41. It is composed of 42 items. It is a self-report questionnaire that is scored through a Likert-type scale ranging from 1 (Strongly disagree) to 5 (Strongly agree).

Neo-ffi, an abbreviated version of the original Neo-Pi-R instrument (Costa & McCrae, 1999), published in Spanish by Cordero, Pamos, & Seisdedos (2008). In the abbreviated version used in the research, the main personality factors are assessed: Neuroticism, Extraversion, Openness to experience, Agreeableness, Responsibility. The internal consistency of the instrument, as a whole, was α= .76. It is a questionnaire composed of 60 items, which must be answered indicating the degree of agreement: 0 total disagreement - 4 total agreement.

Driving Anger Expression Inventory (DAX). The Spanish adapted version (Herrero-Fernández, 2011) was used, composed of 50 items and a 4-point Likert response style (1=Almost never; 2=Almost always) that evaluates five modes of expression of anger at the wheel: Verbal Expression, Physical Expression, Expression by means of the Vehicle, Displaced

Expression, Adaptive-Constructive Expression. The internal consistency obtained from all DAX items in the present research was α= .91.

Conflict Tactics Scale, Spanish version (Loinaz, Echeburúa, Ortiz-Tallo & Amor, 2012). It evaluates violent and non-violent interpersonal conflicts between partners through 5 dimensions: Negotiation; Psychological Aggression; Physical Aggression; Sexual Coercion; Harm or Injury. It consists of 39 bidirectional items for the aggressor and for the victim with a Likert-type response format. For this research, only the frequency of the 5 dimensions was used unidirectionally, that is, only for the aggressor. The items used in this research, those referring to the aggressor, showed an internal consistency of α= .81.

Procedure

The first step was to contact the selected sample. They were provided with an informed consent in which the participants had the opportunity to know what the research consisted of, the purpose of the data that was going to be obtained, and they were completely free to give their consent or not. It is important to highlight the importance of explaining to users at this point that the research was completely anonymous.

Appointments were then made with each member of the general population sample. Once the appointments were made, the evaluations were carried out individually. First, the Neo-ffi instrument was applied to assess the main personality factors of the users. Then, the self-applied questionnaires related to aggressive behavior (DAX, STAXI-2, and FACES-IV) were administered. Finally, an instrument was applied to measure intrafamily violence, specifically intimate partner violence by means of the Conflict Tactics Scale.

Once all the data from each instrument had been collected, they were corrected so that the data and variables could later be inserted into the SPSS program.

Data design and analysis

The present study consists of a quantitative correlational research with the aim of establishing a statistical relationship between two variables. In this case, the possible correlation between personality traits and aggressive behaviors with substance use is investigated. The collection of the necessary information to carry out the statistics has been obtained through a series of self-reports.

To carry out the data analysis, the statistical package SPSS was used, which allows to obtain information from the different instruments applied in the research and to carry out an analysis and interpretation.

Firstly, Spearman's Correlation Coefficient, p (rho), was used to correlate, on the one hand, alcohol consumption with the variables of the instruments used and, on the other hand, the consumption of psychoactive substances (cocaine, cannabis, and hashish) with the variables of each instrument. This non-parametric statistic has been used since the variables of alcohol and substance use have been measured under an ordinal variable.

Secondly, we have also worked with Pearson's correlation analysis (r), which is a parametric test. With this statistic, correlations were made between the personality variables of the Neo-ffi and the aggressive behavior variables of the remaining questionnaires. In this correlation, only those variables of the instruments that measured aggressive behavior were selected in order to relate personality traits with aggressive behavior in the general population of substance users.

This analysis assumes that the variables follow a normal distribution, so before using this statistic a descriptive test was carried out to determine whether the variables followed a normal distribution (Gaussian bell).

Results

First, we proceed to summarize the main results obtained in the non-parametric Spearman's Correlation test.

With respect to the personality factors of the instrument used, on the one hand, in general terms the results show that there is no positive significance between alcohol consumption and personality factors. It is concluded that the amount of alcohol consumption, in this case daily, is independent of personality traits or factors in people. On the other hand, a significant personality factor with respect to substance consumption, the Extraversion factor, stands out. Showing the existence of a weak linear association between the variables of substance use and the extraversion dimension. With the rest of the factors, it should be noted that no significant relationship is found. However, it is observed that all the personality variables of the instrument, except Kindness and Responsibility, show a tendency to correlate positively with substance use.

In addition, through this statistic, we correlated, on the one hand, alcohol consumption with state-trait anger expression (Staxi-2 variables) and, on the other hand, the consumption of psychoactive substances with these same variables. With respect to alcohol consumption, it is concluded that there is no significant relationship between the consumption of this substance and the anger variables measured by the instrument, that is, anger as a state, as a trait, and as an expression. However, with regard to the consumption of psychoactive substances, three variables are found to show a positive level of significance. First, temper as a trait and reaction as a trait indicate a relationship with the variable of psychoactive substance use. Secondly, external control of anger, within the variable expression, indicates a slight level of significance with respect to substance use. Despite the fact that the rest of the variables of the instrument that measure anger do not show an existing relationship with substance use; it is noteworthy that all the variables of the instrument with the substance use variable (cocaine, hashish, and cannabis) indicate a positive linear correlation.

In the correlations between alcohol consumption and psychoactive substance use and intimate partner violence, no significant relationship was found. Related to this, it should be noted that in the Spearman correlations between, on the one hand, alcohol consumption and domestic violence and, on the other hand, consumption of psychoactive substances and domestic violence, no relationship was observed between consumption and the variables studied in the Faces-IV questionnaire to measure domestic violence.

To conclude this first section of analysis, it is interesting to note the significant correlation found where it is confirmed that the higher the consumption of psychoactive substances, the higher the index of anger expressed in physical violence and in the vehicle variable in driving. The adaptive-constructive expression when driving with alcohol consumption obtained a significant level showing a considerable negative correlation (See Tables 1 and 2).

Secondly, a parametric test, Pearson's Correlation, was performed.

The results obtained in each of the correlations indicate that there is only a positive significance between the personality factors with variables of two of the instruments analyzed. Broadly speaking, it is suggested that the personality factors Agreeableness, Extraversion,

Openness, and Responsibility show a tendency to correlate negatively with respect to the dimensions measured by the instruments used to analyze aggressive behavior.

First, there is a significant relationship between personality factors and aggressive behaviors towards the partner in two of its variables. On the one hand, kindness and physical violence and, on the other hand, kindness and psychological aggression. As Pearson's coefficient is less than 1, it is concluded that the correlation between these variables is inverse.

Secondly, the correlation between the personality variable neuroticism and the variable verbal aggression at the wheel is highlighted. And also, within this instrument, a relationship is observed between the extraversion factor and the constructive adaptive expression at the wheel. Being (r) close to 1 in both cases, the existence of a positive correlation is confirmed.

As a relevant general aspect, it should be pointed out that the few significances that have been obtained have mostly referred to cocaine, cannabis, and hashish consumption, obtaining a general tendency to correlate positively on the one hand with personality and on the other with aggressive behaviors, compared to alcohol consumption. Tables 1 and 2 show the correlations obtained between alcohol and psychoactive substances consumption and the forms of expression of anger at the wheel.

Table 1
Spearman correlation between alcohol consumption and road rage

		Verbal	**Physical**	**Vehicle**	**Displaced**	**Adaptive**
Consumption	(rho)	.25	.42	.15	.26	-.49
Alcohol (drinks/week)	(p)	.278	.066	.527	.259	.026

Table 2
Spearman correlation between psychoactive substance use (cocaine, hashish, and cannabis) and road rage

		Verbal	**Physical**	**Vehicle**	**Displaced**	**Adaptive**
Consumption	(rho)	.41	.51	.52	.34	-.37
Psychoactive substances (frequency/month)	(p)	.070	.021	.017	.144	.103

Discussion and conclusions

The main objective of this research has been to analyze the correlation between the consumption of alcohol and psychoactive substances (cocaine, hashish, and cannabis), the main personality factors such as Neuroticism, Extraversion, Openness, Agreeableness, and

Responsibility, and aggressive behaviors in different contexts (intrafamily and driving) in the general population.

Based on the stated objective, the first starting hypothesis was the following: "There is a significant correlation between alcohol consumption with personality and aggressive behaviors, as well as consumption of psychoactive substances (cannabis, hashish, and cocaine) with personality and aggressive behaviors." This hypothesis is rejected because the results obtained in the statistical tests do not show a significant correlation between the variables. On the one hand, in terms of alcohol consumption (measured in drinks per week), no sufficiently conclusive results have been found with the variables of the instruments measuring personality traits and aggressive behaviors. On the other hand, regarding the consumption of psychoactive substances (measured in frequency of consumption per month), no significant results were obtained between the variables. It should be noted that, unlike alcohol consumption, in the correlation between the consumption of psychoactive substances with personality variables and aggressive behaviors, some variables have shown a tendency to correlate. However, the scarcity of variables with an evident significance leads to the conclusion that there is no significant correlation between these variables. Therefore, there is no correlation between alcohol and psychoactive substance use with personality and aggressive behaviors in the general population.

The second starting hypothesis was, "There is a significant correlation between personality factors such as Neuroticism, Extraversion, Openness, Agreeableness, and Responsibility with a series of aggressive behaviors in the consumption of substances (alcohol, cannabis, hashish, and marijuana), such as the expression of anger experienced at the wheel, domestic violence and more specifically towards the partner, and the expression of anger as a trait-state." After carrying out the pertinent statistics to obtain the correlations of these variables, we concluded by rejecting the hypothesis from which we started, since the results obtained show that there are hardly any significant correlations between the personality variables and the variables of each of the instruments used to measure aggressive behavior. Significant correlations have only been obtained between some of the variables of the Neo-ffi and some of the variables of two of the instruments, Dax and Cts-2. This does not confirm or is said to be inconclusive to determine the existence of a correlation between the personality variables and the aggressive behavior variables.

A study concerning the variables measured by this research (Cabrera, Toledo, García, Mendoza & Baez, 2008) with the aim of determining the association between cannabis use with personality traits, family dysfunction, and other variables, confirms that there is a significant relationship between antisocial behavior, highlighting impulsive traits, and habitual cannabis use, as well as with anti-conventional behavior that includes behavioral disorders and both criminal and aggressive behaviors. Despite the fact that in the present study the results were not significant between alcohol and psychoactive substance use and aggressive behaviors at the intrafamily, couple, and driving levels, it should be noted that the correlation between these variables was mostly positive and of medium strength, which may indicate a tendency to share variability. Furthermore, in the study analyzed, a direct relationship between substance use and family dysfunction is observed, that is, poor affective relationships and poor communication between family members. This aspect, like the previous one, is not linked to what was obtained in the research.

The correlation found in a study (López et al., 2007) between cocaine dependence and personality disorders claims that there is a direct relationship between aggressive, antisocial, and pathological personality variables and cocaine addiction. This differs from the results obtained in this research.

Parallel to this, another study (Cervera et al., 2001) focused on the comorbidity between impulse control disorders, specifically those related to substance use and personality disorders. As a dissimilarity to the results obtained in the present investigation regarding the possible relationship between substance use and aggressive behaviors with personality, in this study an association between these aspects was obtained, pointing out two personality disorders (antisocial personality disorder and borderline personality disorder) associated with substance use and impulse control deficits.

After analyzing these three studies relating aspects of personality with substance use, it can be inferred that all of them have obtained significant data regarding their correlations. This may be due to the fact that most of the studies correlate substance abuse disorder with personality disorders using a larger sample, unlike in this research. Therefore, in order to extrapolate significant results, a larger clinical sample would be needed to be able to associate substance use with specific disorders or traits of the drug-dependent personality. Although the results obtained have not been mostly significant because such significance depends on the size of the sample; it has been possible to perceive that they show a tendency to obtain a positive correlation.

Regarding the relationship between aggressive behavior and substance use, a study (Muñoz-Rivas, Graña, Fernández & Rodríguez, 2002) that focused on analyzing the influence of antisocial behavior on drug use, obtained results that show the relationship between drug use and the emission of behaviors that deviate from the norms of social behavior. Likewise, it has verified the close relationship between a greater and more frequent consumption of illegal substances with a greater presence of behaviors against the norms, concluding that there is a relationship between drug consumption and delinquency, contrary to the results obtained in the present study. This divergence may be due to the small number of the sample to the possible extraneous variable of social desirability or to the breadth of contexts analyzed in the research with respect to aggressive behaviors.

If we compare the results obtained in the present study with another of the studies analyzed (Rodríguez, Fernández, Hernández & Ramírez, 2006), the difference lies in the fact that their results showed that a high percentage of young people had participated in fights both in the last year and in the last month. This percentage was directly related to the consumption of illegal drugs (cocaine, hashish, cannabis, and ecstasy), being this consumption a highly influential factor. This dissimilarity with respect to the present research may be due to the age range of the sample, since in the study analyzed the sample is composed exclusively of young people.

In an article whose objective was to describe the frequency and magnitude of social and intrafamilial violence under the effects of alcohol and drugs (Salazar, 2008), the results concluded that people under the effects of alcohol and drugs have a greater tendency to manifest their aggressive personality due to the fact that their consumption predisposes them to violent behaviors. It can be said that in the present research this relationship between consumption and domestic violence or, more specifically, towards the partner does not occur, possibly because the sample is not large enough because it is composed of the general population and not people dependent on consumption, both alcohol and psychoactive substances, or because of the breadth of situations in which violence is exercised, since the study analyzed focuses on domestic violence, including, in addition, social violence in general.

Finally, as a relationship between anger and aggression in general and in driving, a study stands out (Fernández-Herrero, 2012) whose data obtained show that the relationship between the degree of anger experienced at the wheel and anger experienced in general are positively related. This indicates that road rage and anger in general are two personality traits that are

related. In contrast, in the present study no significant relationships were found between the personality factors studied and road rage. This may be, as already indicated, due to the small number of the sample or to the personality variables studied here, since they are different from those of the aforementioned work. Likewise, it can be concluded that the personality variables analyzed by this author are more likely to be related to driving anger than the personality variables used in the present analysis. However, it should be noted that, in this case, the results obtained between these two variables show a tendency to correlate positively.

On the other hand, a positive asymmetric distribution has been detected, obtained in the variables of both alcohol and substance use, which implies many cases with low values, and as a consequence many of the correlations that should have been significant have not been.

This research is designed in such a way that one of the main practical applications is, once it has been determined that the relationship between drug use and aggressive reactions of drug users is very likely, to study in depth, not only their specific personality traits, but also the possible history of drug use as a trigger in people who show aggressive behaviors.

Finally, the limitations of the study include the size of the sample, which is very small, and the fact that it is made up of the general population. This research was designed with the aim of using a clinical sample with which it was expected to obtain significant results by treating the use as a substance use disorder and not simply as habitual or sporadic use. In short, it is likely that these characteristics of the sample have limited the results of the research, given that similar investigations have obtained significantly conclusive data by studying a larger number of subjects and all of them from a clinical population. Therefore, for future research it is advisable to use a larger number of subjects, specifically clinicians, in order to have a larger sample and to study substance use as a dependence disorder. In this way, it will be possible to work with a standardized sample. In addition, it would be convenient to use more objective instruments to avoid the possibility of social desirability in the results. Likewise, it would be convenient to analyze aggressive behaviors in a wide range of contexts, such as education among peers... in addition to those studied in the research.

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EXPERIENTIAL AVOIDANCE AND ANXIETY IN HIGH-PERFORMANCE ATHLETES

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Abstract. The main objective of this study is to correlate experiential avoidance and precompetitive anxiety (somatic anxiety, cognitive anxiety and self-confidence) to know if it is pertinent to propose future interventions with Acceptance and Commitment Therapy (ACT) in the sports field. A cross-sectional correlational observational design was used in a non-clinical sample of 93 high-performance athletes of both sexes between the ages of 15 and 46, using the AAQ-II and the CSAI-2R. Descriptive and correlational analyzes were performed on the variables of interest. The results reported a significant positive linear relationship between experiential avoidance with somatic anxiety and cognitive anxiety and a negative or inverse linear relationship with self-confidence. The results presented are aligned with previous research and with what is intended to demonstrate, how experiential avoidance precompetitive anxiety influences athletic performance.

Key words: Acceptance and Commitment Therapy, experiential avoidance, precompetitive anxiety.

Introduction

The traditional approach to sport psychology is based on first generation therapies (1950) adhering to behavioral principles of learning, followed by second generation (1970), also behavioral therapies mediated by cognitive and emotional processes (García, Fernández & Crespo,2017).

They include therapeutic strategies such as mental imagery, relaxation, self-talk, focused on increasing sports performance through the reduction of precompetitive stress and anxiety, control or change of private events considered problematic, emotional states and physiological sensations (Gustafsson, Lundqvist & Tod,2017).

However, these traditional orientations have their limitations, such as recurrence of symptoms, reduction of emotions and "negative" body states, paying less attention to

interpersonal relationships and quality of life of the person, which causes resistance from the psychological point of view and leads to subsequent abandonment of the therapeutic process (Dehghani, Vasoughi, Tebloenoun & Zarnagh,2018). In short, the aforementioned goals are not consistently related to a significant increase in sports performance, only to the extent that negative emotions and cognitions are replaced by more positive ones for the person (Castilla & Ramos,2012).

However, from a contextual-functional point of view it is not assumed that private events are positive or negative, nor that they cause in themselves greater or lesser performance in the athlete, so what is important would be to pay attention to the role played by private events, interaction, i.e., how the athlete relates to private events and how he/she reacts when these private events are activated (Wilson & Soriano,2014).

Therefore, more attention is paid to new perspectives, evolution of behavioral therapies (1st and 2nd generation) such as third generation therapies or contextual therapies: Acceptance and Commitment Therapy (ACT) (Hayes, et al, 2002), Dialectical Behavior Therapy (DBT) (Linehan,1993), Functional Analytic Psychotherapy (Kohlenberg & Tsai, 1991), Integrative Couple Therapy (IPT) (Jacobson et al., 2000), Behavioral Activation (BA) (Jacobson, Martell & Dimidjian, 2001) and Mindfulness-Based Therapy (MBT) (Segal, Williams & Teasdale, 2002). All these therapies do not focus on the elimination of cognitive symptoms in order to alter the person's behavior but are oriented towards altering the function of the symptoms through the context in which the symptoms are problematic (Soriano & Salas, 2006).

Acceptance and Commitment Therapy

Acceptance and Commitment Therapy (ACT) developed by Steve Hayes focuses on generating psychological flexibility by altering the function of private events by creating an extensive and flexible repertoire of actions in the direction the person wants to go, accepting private events within values and acting on them, connecting with the fully conscious present, being more experiential than dialectical methods based on contextualist philosophies (Hayes,2016).

Acceptance and Commitment Therapy (ACT), is a therapeutic approach that aims to modify the way we relate to our negative thoughts and emotions through psychological acceptance of discomfort and clarification of personal values to promote psychological flexibility, based on the theory of Relational Frames (TMR) and functional contextualism (Chin & Hayes, 2017).

The theory of relational frames is the theory on language and cognition that is used as the experimental basis of ACT (Luciano, 2016), it can be defined as "the concrete way of responding to a stimulus based on the relationship with another, given that without prior relational learning verbal regulation of behavior is not possible" (Salazar & Ballesteros ,2015).

Most of the time we see the world through our thoughts and emotions so what this theory brings us is to encourage a distancing of the cognitive content or experience of the person and its acceptance without avoiding, or resisting what is happening (Hayes, 2015). Therefore, Stephen Pepper (1942), coined the term functional contextualism to the

action of the organism, sensibly established in relation to both historical and situational context from a holistic approach, prioritizing the totality of the event and the parts that comprise it, fundamental in the basis of ACT (Hayes, 2015).

The main objective of ACT is to generate psychological flexibility in the face of different events, seeking to achieve a broad and flexible behavioral repertoire that allows the generation of actions, especially when efforts to control or avoid annoying private events are dysfunctional, oriented towards the goals or objectives of the person based on personal values (Prozzillo & Olivera, 2019).

Likewise, psychological flexibility is generated to decrease human suffering and increase the well-being of the person through six processes of change: *acceptance*; involves the active and conscious embrace of private events that create discomfort, *being present*; promoting ongoing contact with psychological and environmental events, *values*; vital directions, the qualities of an action, verbal rules that describe how the person chooses to live his or her life, *engaged action*; is the development of increasingly broad patterns of action linked to personal values, *cognitive diffusion*; which attempts to alter the undesirable functions of thoughts and other private events rather than attempting to alter their form, frequency or situational sensitivity and *the self as context*; leading the person to the sense of self as a place or perspective providing a spiritual and transcendent side creating distance by modifying the relationship between the person and the disturbing private event (Gloster, et al. , 2020)

In the absence of any of these processes, psychological rigidity or inflexibility is the root cause of human suffering and maladaptive functioning (Hayes, 2015).

From the ACT perspective, human suffering arises because of normal psychological processes, especially those involving language. On the basis that human language is responsible for both human achievement and human misery (Hayes,2015).

Human suffering is socially paired with thoughts labeled as negative, of helplessness and inability (among others). Thus, feeling discomfort (suffering is the consequence of avoidance), is experienced as opposed to being willing to act for what one would like to do with his life, feeling the obligation to feel good and consequently, actions are issued to avoid the discomfort arising from private events, focusing on avoiding discomfort, generating rigidity, instead of performing valuable actions for his life, the person is dedicated to futilely fight against his private events, in order to eliminate those unpleasant feelings or sensations that suffering carries with it. In that action of eliminating, generating a rigid behavior pattern, which is known as psychological inflexibility, there are costs, you lose "something", the contact with personal values, and that is when we talk about experiential avoidance (Wilson &Soriano, 2014).

Experiential avoidance

Experiential avoidance is a concept used from ACT to understand the process of psychopathology, in this process the person experiences discomfort or negative sensations, feels the need to do something, release or placate those sensations, so it will try to control or avoid those private experiences called, private events, involving the person something much further than a solution, a problem (Perez-Alvarez,2012).

It arises when the person is not willing to be in direct contact with their annoying private events (Rodriguez & Babiano, 2019) and develops a pattern of behavior conformed by actions of different topography, but the same function, of negative reinforcement (avoidance of discomfort) so that there is an alteration of the frequency of these and the contexts that create them (Hayes, 2019).

Although this pattern of behavior may seem effective in the short term, as it manages to decrease or suppress discomfort in the short term, if it becomes chronic, in the long term it can limit the person in their day-to-day life, increasing the initial discomfort and being dysfunctional (Hayes, 2015). Experiential avoidance is not intrinsically negative. It becomes negative when the person instead of taking valuable actions for his or her life engages in fighting against his or her private events (Hayes, 2019).

So, the relevance and pertinence of this variable and the subsequent application of ACT in the sports field, is given when it comes to avoid, escape and/or control internal events (thoughts, emotions) considered as negative and can affect sports performance (Salazar & Ballesteros, 2015).

Experiential avoidance, as mentioned above, is not always negative, but in the sporting environment it is considered destructive when the person is dedicated to trying to control their private events instead of performing valuable actions, or behaviors focused in this case to the performance of a good sporting performance. For example, when a soccer player is about to take a penalty kick, he focuses on being relaxed and having positive thoughts (avoiding nerves, anxiety), instead of focusing his attention on the position of the goalkeeper and the way in which he will take the penalty kick, focusing on private events that will not enhance the maximum sporting performance (Jiménez, 2006).

On the other hand, there is evidence of the involvement of experiential avoidance in the etiology, maintenance, and modification of various forms of psychopathology such as anxiety disorders (Patrón-Espinosa, 2013), in addition to being present when life does not seem satisfactory in general terms or when the desired results are not achieved, as may occur in the context that concerns us, the sport (Castilla & Ramos, 2013).

In addition, we can relate experiential avoidance to anxiety, because anxiety is a typical example of a private event that people avoid, both in the field of sport and in the clinical setting, not only because of its physiological properties, but also because of its verbal nature (Wilson & Soriano, 2014).

Anxiety

Precompetitive anxiety has been one of the most analyzed variables in different sport contexts, because when assessing the complexity of the task to be faced, the importance of the competition or the ability to carry it out successfully can lead to its appearance and, consequently, to a poor management of it (Baro, Garrido & Hernandez-Mendo, 2016).

Precompetitive anxiety is the response to a situation that is perceived by the person as aversive, and to which he/she responds with avoidance behaviors, such as worry

(worrying is usually an action to avoid discomfort), insecurity, lack of self-confidence. (Weinberg & Gould, 2010).

Cognitive anxiety within the sporting environment is perceived as negative thoughts, ideas or previous experiences about their performance that generate a series of barriers and stop the athlete from achieving the objectives set. It is shown in the form of uneasiness, feelings of insecurity, negative expectations, and loss of concentration (Prats & Mas, 2017).

On the other hand, somatic anxiety is the most physical component that occurs in our body, resulting from the increased activation of the autonomic nervous system. It is characterized by fear, panic, alarm, restlessness, obsessions, attentional changes, deconcentrating or intrusive thoughts of catastrophic type, which propitiate cognitive anxiety (Verdaguer, Ramon & Conti,2017). Another component is the self-confidence that the person has, specifically the athlete, so that if this decreases, the possibility of negative thoughts and unfavorable evaluation increases (Verdaguer, Ramon & Conti,2017). It is defined as the belief that we have of satisfactorily performing the desired behavior, which is equal to the idea that success will be achieved, so it is a determinant of performance (Pulido, 2015).

Recent research on ACT has obtained positive results in various psychological problems among which we find, anxiety (Eilenberg et., al,2017) and sports performance (Salazar & Ballesteros, 2015).

A study related to mindfulness showed that due to the negative consequences that can result from aiming to control or change what is being experienced in the sports context, in particular high-performance athletes, methods that use the conscious management or acceptance of our private events would be effective (Mañas et al., 2017).

Another study evinces that, the higher the degree of experiential avoidance, the lower the performance evaluation, stress control and mental ability, demonstrating the usefulness of ACT to optimize sports performance (Castilla & Ramos, 2012).

Finally, another study corroborates the efficacy of ACT as a first-order therapeutic treatment for anxiety disorders, emphasizing the role of experiential avoidance as the cause of the development and maintenance of negative thoughts and anxiogenic-based worries in these patients. It has been suggested that this experiential avoidance, i.e., this inability to be in contact with anxiety may generate that the avoidance strategy itself becomes a negative reinforcer of the individual's anxious state (Eilenberg, 2016).

The present study will focus on knowing the relationship between experiential avoidance and precompetitive anxiety because in the sports context there are few studies describing the relationship between experiential avoidance and anxiety in high performance athletes (Ruiz & Luciano,2009). Therefore, if these variables are described and to what extent they affect athletes, it will be easier to develop intervention programs or strategies focused on improving performance from the perspective of ACT.

The ACT is not based on the reduction of symptoms as other perspectives, so they do not have to generate actions of avoidance of discomfort, they will focus on performing actions according to their values, allowing them to carry over the annoying private events

and being able to focus all their attention on sports performance obtaining lasting results over time both sporting and personal level (Castilla & Ramos, 2012).

The general objective of this study is to analyze the relationship between experiential avoidance and precompetitive anxiety (composed of somatic anxiety, cognitive anxiety and self-confidence) in high-performance athletes.

The specific objectives are: to analyze the relationship between experiential avoidance and cognitive anxiety, experiential avoidance and somatic anxiety and experiential avoidance and self-confidence and to know if there are differences according to sex and age in the experiential avoidance response.

According to the data provided by the empirical evidence in the present study, we hypothesize that (1) the greater the experiential avoidance the greater the somatic anxiety, (2) the greater the experiential avoidance the greater the cognitive anxiety, (3) the greater the experiential avoidance the lower the self-confidence, and (4) there are no significant differences in experiential avoidance in terms of sex and age.

Method

Participants

We will work with a non-clinical sample of 93 high performance athletes, between 15 and 46 years old, men (46.24%) and women (53.76%) with the following inclusion criteria:

(1)To be practicing or practicing any sport within an institution (university, academy, national team, federation) consistently for at least 1 year, (2)to have participated or participate in their sport at a competitive level whether local, national or international and that involves them a commitment and involvement, (3) to be of Spanish nationality, or resident of Spain for at least 10 years, (4) dedication of at least 5 hours per week to sport, whether sport-specific training, physical or psychological preparation and (5)acceptance of informed consent.

As for the exclusion criteria: (1) presenting physical or psychological disability and presenting severe or serious mental disorder diagnosed as it could bias the results.

Design Type

The present research has a cross-sectional correlational observational design, with a non-clinical sampling, trying to quantify the spontaneous behavior that occurs in unprepared situations, collecting data through a more or less structured code the development of phenomena of interest (Nuñez, 2011). As in this case, experiential avoidance, and precompetitive anxiety in high performance athletes.

Study variables

The sociodemographic variables are: age, sex, academic level, sport practiced, hours spent per week, level of competition, nationality and population.

Instruments

To measure the **experiential avoidance** of athletes, the Acceptance and Action Questionnaire-II (**AAQ II**) was used (Ruiz, et al., 2012). This questionnaire aims to assess the extent to which people, faced with private events that may cause them discomfort, manage to accept them, and maintain their present goals and values, orienting their behaviors towards them. (Ribero-Marulanda & Agudelo-Colorado, 2017). Composed of 7 items, it has convergent, divergent and discriminant validity. In this study the importance of experiential avoidance is directly linked to the psychological inflexibility that can be generated in the management of anxiety. Some examples of items are: "I am afraid of my feelings", "I worry about not being able to control my worries and feelings", "my painful memories prevent me from leading a full life".

To measure **pre-competitive anxiety** (cognitive anxiety, somatic anxiety, and self-confidence) and to measure and study the construct in pre-competition situations, the **Competitive State Anxiety Inventory CSAI-2R**, Andrare, Lois and Arce (2007), authored by Elena M. Andrade, was used. The resulting adapted version consists of 18 items, distributed in three subscales for each construct: cognitive anxiety, somatic anxiety, and self-confidence. All statements are formulated in the same direction. The response mode is Likert-type with four alternatives, numbered from 1 (not at all) to 4 (very much).

Procedure

To carry out the research, we first searched for specific assessment instruments for each construct to be studied, by means of an exhaustive bibliographic search in different databases.

Next, we proceeded to prepare the informed consent, the sociodemographic data, and the AAQ-II and CSAI-2R questionnaires drafted consecutively.

The administration of the questionnaires was carried out through the application of Google Forms, in online mode, within a period between January 12, 2021 and January 26, 2021 in a randomized manner.

The questionnaires were distributed to a sample of accessible athletes from different national sports federations such as paddle tennis, sailing, athletics, judo, karate, soccer, field hockey, triathlon, rescue and lifesaving, motocross, field hockey, golf, surfing, dance, tennis, and fencing. With different levels of competition: local, national and international. They were disseminated through different social networks (Instagram and WhatsApp) to increase the sample as much as possible, requesting help to disseminate the survey to as many people as possible thus putting a snowball sampling.

Once the information from the tests was collected, it was corrected and analyzed using different data analysis techniques, which will be described below.

Data analysis

First, a descriptive analysis was performed, the qualitative variables were expressed by frequency distribution and the quantitative variables by the arithmetic mean, establishing a significance level of $p < .05$.

For data analysis, SPSS was used using the following statistical tests: to determine the possible association between the variables of interest, the Pearson bivariate correlations test was used, relating experiential avoidance (AAQ-II) with the three subscales relevant to the Precompetitive Anxiety Inventory (CSAI-2R) (somatic anxiety, cognitive anxiety, and self-confidence). To compare the sex variable and to know if it is a statistically significant variable in relation to experiential avoidance, Levene's test was performed. This was followed by Student's t-test for independent samples. Finally, we performed an ANOVA to describe whether there are significant differences between experiential avoidance and age.

Results

From a total of 110 of the total sample, through the inclusion and exclusion criteria, the final number of the sample was 93. 46.24% of the participants were men and 53.76% were women with an average age of 22.3. In addition, the average number of hours per week practiced is 13.35. Among the sports are field hockey, soccer, dance, swimming and lifesaving, paddle tennis, triathlon, surfing, cycling, tennis, fencing, motocross, karate, goal, athletics, and judo (See Table 1).

Table 1
Sociodemographic variables of the study sample

		Frequency	Percentage
Sex	Man	43	46.2%
	Woman	50	53.7%
	Total	93	
Academic level	First	4	4.3%
	Second	9	9.9%
	Bachelor’s	31	33.3%
	Professional	3	3.2%
	University Degree	46	49.4%
	Total	93	
Age	Mean:	22.3	
Level of competence	Local	4	4.3%
	National	63	67.74%
	International	26	27.9%
	Total	93	
Weekly practice hours	Mean	13,35	

Regarding the variables of interest, the relationship between experiential avoidance and somatic anxiety, experiential avoidance and cognitive anxiety, and experiential avoidance and self-confidence was analyzed using Pearson's correlation.

Between the scores of the questionnaires there is a positive linear relationship, that is, if you score high in one of the questionnaires in the other also, between the AAQ-II and CSAI-2R (somatic anxiety and cognitive anxiety) and a negative linear relationship, that is, the higher the score of one, the lower the score of the other, with the AAQ-II and the CSAI-2R (self-confidence). Comparing the correlations, the highest correlation is between experiential avoidance and somatic anxiety (0.454), followed by experiential avoidance and cognitive anxiety (0.445), and finally experiential avoidance and self-confidence (-0.260).

Next, the relationship between experiential avoidance and cognitive anxiety was shown to be statistically significant (0.000).

Table 2
Correlation between experiential avoidance and cognitive anxiety

	AAQII	A COGNITIVE
Pearson's correlation	1	.445**
Sig. (bilateral)		.000
N	93	93

Following the relationship between experiential avoidance and somatic anxiety, we can see that there is a statistically significant relationship between experiential avoidance and somatic anxiety.

Table 3
Correlation between experiential avoidance and somatic anxiety

	AAQII	A SOMATIC
Pearson's correlation	1	.454**
Sig. (bilateral)		.000
N	93	93

Finally, the relationship between experiential avoidance and self-confidence was analyzed, being statistically significant in an inverse manner.

Table 4
Correlation between experiential avoidance and self-confidence

	AAQII	SELF-CONFIDENCE
Pearson's correlation	1	-.260*
Sig. (bilateral)		.012
N	93	93

In addition, Student's t-test for independent samples was performed for the sex variable. It is used to check whether there are significant differences in the questionnaire administered, in this case with the AAQ-II. Finally, it was observed that there are no statistically significant differences between men and women (p=0.062).

As for the possible relationship between age and experiential avoidance (AAQ-II), the ANOVA test was used, indicating that there were no statistically significant differences between the different age groups (p=0.872).

Discussion and conclusions

The main objective of this study was to correlate experiential avoidance and precompetitive anxiety (somatic anxiety, cognitive anxiety and self-confidence) in a non-clinical sample of high-performance athletes of both sexes.

Overall, the results of the study show that there is a relationship between an increase in experiential avoidance and somatic anxiety, as well as an increase in experiential avoidance and cognitive anxiety, as was seen in the study of Castilla & Ramos (2013) where it is shown that the higher the degree of experiential avoidance, the lower the stress control, or what is the same, high levels of stress in the presence of experiential avoidance (Castilla & Ramos, 2012). Similarly, when experiential avoidance increases, self-confidence decreases, as was negatively correlated in a study of stress control with its relevant strategies (González Campos, Valdivia-Moral, Zagalaz Sanchez & Romero Granados, 2015). In addition to there being no significant differences between sex and age with respect to experiential avoidance.

It is important to highlight in relation to the evidence of ACT in the sports field, the study on the application of a specific ACT intervention program for the increase of chess sports performance, focused on trying to reduce the strategy of avoiding and controlling private events, thus demonstrating its effectiveness in a reduced number of sessions (Jimenez, 2006).

On the other hand, both virtues and limitations should be taken into account. Regarding virtues, it is important to highlight the importance and relevance of these variables in sports performance, and their great influence on emotional management when facing both training and competition.

In relation to the limitations, the most relevant one is related to the non-clinical sample, being more representative to carry it out with a clinical sample. In addition, the age range used is quite wide, thus limiting the study, being a generalized sample. The sample size would have to be larger, being more representative. Finally, as this is a fairly new topic, more evidence would be needed, despite the consistency of the findings on this topic, and the consistent evidence that exists about ACT in sports.

Regarding future lines, after knowing the results showing the correlation of experiential avoidance with precompetitive anxiety, and based on our justification, we would try to carry out a specific ACT program for high-performance athletes with the aim of reducing the indexes of our variables. In addition, the study could be replicated by expanding the sample size, with a similar age range, but with a greater number of people per age to obtain more significant results.

In the present study conducted with a non-clinical sample of 93 high-performance athletes aged between 15 and 46 years, and a wide variety of sports, the significant positive linear relationship between experiential avoidance with somatic anxiety and cognitive anxiety is demonstrated, i.e., more of one variable more of the other. As well as a negative or inverse linear relationship with self-confidence, that is, more of one variable, less of the other.

In our study group, there was no association between age and experiential avoidance and no influence with respect to sex and experiential avoidance.

Finally, the significant influence of experiential avoidance and precompetitive anxiety in high performance athletes and their negative influence is demonstrated. Therefore, it can be concluded that experiential avoidance and precompetitive anxiety are two variables of great influence on athletes. Thus, it would be necessary to propose a series of interventions through ACT in order to modify the functions that these constructs

have in their lives, without eliminating them, but learning to live with them, and orienting them towards valuable actions for each individual.

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EVALUATION IN THE THEORY OF MIND AND EXECUTIVE FUNCTIONS IN POPULATIONS WITH DRUG ABUSE

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Abstract. Research into neuropsychological alterations and alterations in social cognition caused by substance abuse has received special interest in recent decades due to the implications involved the design of therapeutic plans and the social consequences that this problem entails. The following project shows an experimental study in order to find significant differences in what refers to the functioning of the Theory of Mind (ToM) and the Executive Functions (EFs) in a population with a diagnosis for substance abuse disorder. ToM is the ability to assign thoughts and different intentions to the behavior and attitude of people. On the other hand, the EFs are the cognitive capacities to carry out the accomplishment of a task thanks to the planning. To verify the proposed objective, two groups were used in the clinical sample: 10 participants with alcohol use disorder and 10 patients with cocaine use disorder, compared to a control group of 20 people of general population. Besides this, it is sought to establish differences in the alterations between both groups of drug-dependent subjects. The results show the participants with cocaine use disorder, in comparison with the control group, have deficit in several elements that make up the EFs and ToM, while the group with alcohol use disorder does not show significant differences, although it does have lower scores than the control group. It can be concluded the existence of differences between people with cocaine addiction and general population in terms of the functioning of EFs and ToM, as well as differences in the implications of alcohol compared to those of cocaine.

Keywords: Theory of Mind, Executive Functions, Drug addiction, Alcohol, Cocaine.

Introduction

Substance abuse disorders (SAD), according to the DSM-V (American Psychiatric Association, 2014), are encompassed by different classes of drugs, their consumption causing an activation of the brain reward system, involved in the generation of reinforcement. Each drug produces disparate effects, but all induce a state of pleasure. A pathological pattern of behavior related to substance abuse is the basis for the diagnosis of SAD.

SAD presents symptoms at the executive, memory, or attentional, behavioral, aggressive and unhealthy behavioral and physiological levels. In terms of diagnostic criteria, it is defined as a problematic use of a substance that generates significant distress. It is manifested by at least two of the following events within 12 months: a) the substance is consumed in high quantities or for a prolonged period of time; b) attempts to stop consumption have failed; c) the time required to obtain the substance is high; d) consumption results in failure to perform daily life tasks and impairment of social life; e) there are physically dangerous situations due to consumption; f) tolerance to the substance appears; and g) withdrawal symptoms appear when consumption is interrupted. (Dolengevich, Rodríguez, Mora & Quintero, 2015).

One of the most serious problems is alcohol use disorder (AUD), being the criteria to establish its diagnosis those established for SAD, specifying that the substance is alcohol. (American Psychiatric Association, 2014) It is a psychoactive substance depressant of the Nervous System (NS) and its intake generates damage to health and socially. (Guitart et al., 2011) The impact it has on health encompasses different diseases. In the cognitive area, the Wernicke-Korsakoff syndrome stands out, divided into: a) Wernicke syndrome, of short duration and characterized by lack of motor coordination, confusion and deficit of control in eye movement and b) Korsakoff syndrome, conic, presents symptoms such as amnesia, difficulty in new learning and apathy. (Shield, Parry & Rehm, 2014)

Referring to cocaine, it is included within the stimulant use disorder. It is an excitatory substance of the NS, the second most consumed illegal drug and it is usually initiated after the twenties. (WHO, 2015) To establish the diagnosis, the same criteria have to be met as for the other SAD, specifying that the substance is cocaine. (American Psychiatric Association, 2014) The effects it causes are: euphoria, alertness, agitation, insomnia, hypersexuality and altered judgment of reality. (Becoña, 2012) In terms of medical conditions, the following stand out, according to the National Institute of Drug Abuse (NIDA, 2010) a) weight loss; b) respiratory failure; c) myocardial infarction and d) stroke.

The substances exert a strong effect on the functioning of the motivational, cognitive, emotional and executive systems. Their consumption causes neuropsychological disorders, especially alterations in memory, attention and EF (Verdejo, In press). It has been demonstrated that the deficit in the mechanisms of inhibition of behavioral control and decision making increases the possibility of consumption and substance dependence. The active search for consumption may be propitiated by the affection at the executive level and behavioral control, which would refer to alterations in the frontal lobe (FL). (Yucel & Lubman, 2007).

Alcohol consumption is associated with different deficits, including: a) alterations in visuo-perceptual organization; b) psychomotor alterations; c) alterations in processing speed and attention; d) alterations in memory and e) alterations in EF. (Gruber & Yurgelun-Todd, 2001) Regarding visuoperceptive and psychomotor impairment, it is complex to establish whether it is due to a motor deficit or to the impairment in EF, since these are involved in the performance of spatial tasks.

Regarding cocaine use, the most significant deficits are: a) attentional and processing speed; b) memory and c) EF. Regarding attention, research has found deficits in selective, sustained, and divided attention without specifying specific impairment. (Landa-González, Lorea & López-Goñi, 2011) In memory functioning, impairment in the visual and verbal component has been established. It has been found that users with cocain

use disorder (CUD) make more errors of omission and commission, which makes them less able to cognitively control behavior. (Frazer, Manly, Downey & Hart, 2017)

The EF concept was established by Lezak (1982) as a set of capabilities related to goal setting, planning for their attainment, and execution of that planning. (Tirapu & Luna-Lario, 2011) It includes skills of behavioral organization, goal selection, initiation and maintenance of mind during their execution, and ability to regulate action. In conclusion, EFs are related to organization, planning, anticipation, inhibition, working memory, self-regulation and control, and flexibility. They can be grouped into five components: working memory, verbal fluency, inhibition capacity, cognitive flexibility and decision making. They are located in the FL, an area capable of planning, regulating and controlling multiple psychological processes and that organizes behaviors according to motivations, achieving goals that can only be reached through procedures and rules. (Flores & Ostrosky-Solís, 2008) The affection of this region causes the person to present difficulties in the management of environmental control, to develop new behaviors and strategies, lack of cognitive flexibility and alterations in the capacity of abstraction of ideas, generating the impossibility of anticipating behavioral consequences and greater impulsivity. (Blanco-Menéndez & Vera de la Puente, 2013).

Research has focused its interest in demonstrating the alterations of alcohol consumers in EF. It highlights the disejective syndrome, characterized by: a) difficulties to focus on a task and finish it without help; b) inability to create new behavioral repertoires; c) deficit in using creative behavior and d) increased impulsivity. (Landa, Fernández-Montalvo & Tirapu, 2004) Patients with AUD present difficulties in the capacity of response inhibition and interference control and, in cognitive flexibility, there is an inability to alternate behavioral schemes. (Landa-González, Lorea & López-Goñi, 2011) Other studies have highlighted the difficulty in working memory and behavioral planning. Also, a generalized impairment in EF has been determined, which hinders planning and problem solving. It has been demonstrated the existence of difficulties in decision making, which may be given by the alteration in reward postponement (Verdejo, In press). (Verdejo, In press) However, it is complex to draw conclusions about the type of damage that has this ability. What has reached a consensus is the alteration in the FL in alcohol consumers, determining that the alteration in EF is the most characteristic in this population. (Landa-González, Lorea & López-Goñi, 2011).

Impairment in EF is one of the major problems generated by cocaine abuse. The capacity for response inhibition is one of the most affected elements, associated with greater difficulty in impulse control and failures in the management of consequences (Madoz-Gurpide & Ochoa-Mangado, 2012). (Madoz-Gurpide & Ochoa-Mangado, 2012) There is inability for delay of gratification and prior reflection of a behavior. (Landa-González, Lorea & López-Goñi, 2011) Cognitive flexibility is another aspect that shows affection, being the ability to change behavioral patterns more rigid than in population without consumption. Difficulty in decision making has been demonstrated, since this type of population prioritizes short-term results related to the reinforcement of consumption, making it impossible to learn and assess long-term consequences. (Landa-González, Lorea & López-Goñi, 2011) Impaired executive control of behavior has been determined in cocaine users, associated with impulses, with impaired working memory, response control and decision making (Vergara-Moragues et al., 2017; Bonet, Salvador, Torres, Aluco, Cano & Palma, 2015).

The term ToM finds its origin in 1978 thanks to Premack and Woodruff and refers to the ability to understand and anticipate the behavior of other people, their knowledge,

intentions and beliefs. It is the ability to infer other mental states. Its capabilities encompass the interpretation of basic emotions, the capacity for metaphorical understanding, lies or irony, the interpretation of social emotions and empathy. It is linked to working memory, verbal fluency and EF. (Sanvicente-Vieira, Kluwe-Schiavon, Corcoran & Grassi-Oliveira, 2016) It has been divided into two levels, the first being the ability to think about what another person thinks and, the second, the ability to think about what a person thinks about a third party. (Tirapu-Ustárroz & Sánchez-Cubillo, 2011) It is a process in which mechanisms work to perceive, process and evaluate stimuli and elaborate a representation of the social environment. The regions involved are located in the temporal lobe and work with structures such as the amygdala and the orbitofrontal cortex. (Calle, 2014)

In relation to consumption, several studies have shown impairment of this capacity. Patients with AUD show lower capacity for behavioral inhibition, and this suggests that such behavior is regulated by impaired cognitive processes (Maurage, De Timary, Tecco, Lechantre & Samson, 2015) Facial emotion recognition is impaired in people with AUD. Given the executive-level implications, such a condition may influence demands for ToM. This is supported by the fact that alcohol reduces attentional capacity, such that the processing of irrelevant information, is performed less efficiently. (Johnson, Skromanis, Bruno, Mond & Honan, 2018) The implications of this substance on ToM reflect mixed results, but there is evidence that it causes impairment.(Sanvicente-Vieira, Romani-Sponchiado, Kluwe-Schiavon, Brietzke, Brasil & Grassi-Oliveira, 2017).

Research on the affection generated by cocaine in ToM has not been able to establish anything conclusive, although it generates difficulties in managing personal and social problems and this is related to ToM. (Sanvicente-Vieira, Kluwe-Schiavon, Corcoran & Grassi-Oliveira, 2017) Response inhibition is impaired, probably due to the alteration presented by these areas. (Frazer, Manly, Downey & Hart, 2017) Studies have shown impairment in patients with CUD in areas related to social reward and emotional and cognitive empathy. (Preller et al., 2013) The results are mixed, given that in some cases there are no significant differences with respect to the non-using population and, in others, only in some components of the ToM. It is also unclear whether it is the substance that generates the condition or whether there is a previous alteration that induces consumption. (Sanvicente-Vieira, Kluwe-Schiavon, Corcoran & Grassi-Oliveira, 2016).

Method

The present study aims to analyze the existence of possible differences in the functioning of ToM and EF between the population with ToM, the population with CUD The hypothesis proposed from the general goal is that the impairments in EF and ToM are different depending on whether the person suffers from AUD and ToM, in addition to the fact that both groups of consumers present deterioration in both capacities with respect to the control group.

Design

The research design is empirical-analytical, using quantitative methodology to respond to the hypothesis. It is a quasi-experimental study, which aims to identify differences in EF and ToM skills between the population with alcohol abuse, the population with cocaine abuse and the population without substance abuse problems.

Participants

The study involved 10 patients with CUD and 10 with AUD, divided into two experimental groups. The inclusion criteria for participants with addiction problems were: a) being of legal age; b) meeting the diagnostic criteria according to the DSM-V (American Psychiatric Association, 2014) and c) presenting a period of abstinence of at least 2 weeks, in order not to present symptoms related to deprivation or intoxication. Regarding sociodemographic characteristics, patients with AUD are in age range between 26-50 years old, being their mean of 37.60 and standard deviation of 8.03. The participants with CUD showed an age range of 35-59 years, with a mean of 46.40 and standard deviation of 8.73. Regarding the gender of alcohol consumption, all the participants were men except for 1 woman, and the years of education ranged from 6-12 years. Regarding cocaine consumption, the group is formed mostly by men, with 2 women, and the years of studies are in the range of 6-20.

A group with 20 control participants was formed in order to test the specific objectives. The inclusion criteria were: a) not having any type of substance abuse problem, both legal and illegal; b) not presenting psychopathological disorders; c) not attending any type of psychological/psychiatric treatment; d) not being a smoker and e) not having presented SCT at any time during the life cycle. The sociodemographic characteristics show that this is a group aged between 20-55 years, with a mean of 39.30 and standard deviation of 11.79, with 17 men compared to 3 women and with education between 6-18 years. In order for the study to be as reliable as possible, both groups were balanced in terms of age, gender and years of study.

Table 1 shows a summary of the sociodemographic characteristics of the sample.

Table 1

Sociodemographic characteristics of the participants

	Group					
	Control N=20		Alcohol N=10		Cocaine N=10	
Age. Mean and standard deviation	39.30	11.79	37.60	8.03	46.40	8.73
Gender. Total male and female	17	3	9	1	8	2
Studies. Min and Max	6 - 18		6 - 12		6 - 20	

Procedure

This project was carried out in collaboration with the Psychology Department of the European University of the Atlantic and the Cantabria Human Project center. It was endorsed by the respective ethics committees of the university. Participation in the project was voluntary and was recorded in the respective informed consent form. The pertinent evaluation instruments were selected, and the evaluation was carried out individually at the facilities of the Cantabria Human Project center.

Instruments

Wisconsin Card Sorting Test (WSCT). Developed by Heaton, Chelune, Talley, Kay & Curtiss (1948) and its Spanish adaptation, Wisconsin Card Sorting Test, by De la Cruz (1997). Aimed at the evaluation of planning, organized inquiries and schema reorganization capacity, it consists of 128 response cards, which the individual must place at the bottom of the 4 control cards, according to shape, number or color. The participant discovers the form of classification at each moment. When a certain number of correct answers have been obtained, the classification criterion is modified. It is applied individually, with a variable duration. Reliability is .93 for perseverative responses, .92 for perseverative errors and .88 for non-perseverative errors.

Stroop Color and Word Test (STROOP). Developed by Golden (1935) and adapted under the name of Color and Word Test (Bernardino, 2010) Its objective is to identify neurological alterations. It measures the ability to resist verbal and non-verbal interference, evaluating the ability to select information and react to it. Three sheets are used. The first one is composed of the words red, green, and blue printed in black ink. The person being evaluated must read as many as possible in the established time. The second shows stimuli grouped in the shape of an X and printed in red, blue, and green, which the person must name. The last one contains the stimuli of the first sheet, printed in the color of the second one, and the individual must verbalize the color of the ink, omitting the reading since it presents a different color. Its application is individual, with a duration of 45 seconds per sheet. It presents a test-retest reliability value of .884 and the values of the scores between the lowest and highest age quartiles do not present significant differences, which provides information on construct validity.

Cognitive and Affective Empathy Test (TECA, *Test de Empatía Cognitiva y Afectiva*). Developed by López-Pérez, Fernández-Pinto & Abad (2008), it evaluates empathy through 33 Likert-type items (scale from 1 to 5). It provides information on the cognitive elements of empathy (Perspective Adoption and Emotional Understanding) and the affective ones (Empathic Stress and Empathic Joy). Provides a total empathy score. It can be taken individually or collectively, in about 5-10 minutes. Construct validity for the TECA ranges from .352 to .484.

Symbol Digit Modalities Test (SDMT). Created by Smith (1973) and adapted by Arribas (2002) as the Symbol Digit Modalities Test. Used to detect brain dysfunctions. It consists of transforming geometric symbols into numbers from a key. Applicable individually or collectively, in a time of 90 seconds.

Facially Expressed Emotion Labeling Test (FEEL). Desarrollado por Kessler, Bayerl, Deighton & Traue (2002), es una prueba computarizada que mide la capacidad para reconocer emociones básicas de manera facial, con un alfa de Cronbach de .77. Los estímulos a identificar se ofrecen en fotografías que muestran seis emociones: enfado, miedo, alegría, tristeza, sorpresa y asco. Evaluación individual con una duración de 10-15 minutos.

Data Analysis

Data recording and analysis were carried out using the SPSS statistical program.

To test the hypothesis, the ANOVA (one-way analysis of variance) statistical test was used to analyze whether the 3 groups differed from each other in means and variances. This statistic offers the possibility of testing whether two variables (one independent and one dependent) are related, based on whether the means of the dependent

variable are different in the groups of the independent variable. Using one-factor ANOVA results in the calculation of F and its significance. The more the means of the dependent variable differ with the groups of the independent variable, the higher the value of F. The higher the result will show that there are more differences and a stronger relationship. As for significance, it is understood as the probability that the F value is by chance. With a confidence level of 95%, if the significance is less than 0.05, it will be established that the two variables are related. Once the existence of differences between the means was established, the post hoc Tukey test was used to determine which means differed from each other.

Results

The three groups were compared in EF capacity. Table 2 shows significant differences between the control group and the CUD group. These differences appear in some of the variables of the instrument, with the mean number of attempts used to complete the test being higher in the case of cocaine users, the number of complete categories being lower in the experimental group, and the number of perseverative responses and perseverative errors being higher in the CUD group. Although there are no significant differences between the control group and the alcohol group, the score is lower in this experimental group.

Table 2

Univariate differences between groups in WSCT results

	Group						F	Sig.
	Control N=20		Alcohol N=10		Cocain N=10			
	M	St	M	St	M	St		
1. Number of attempts	94.45c	20.72	105.80	25.82	121.90a	16.37	5.65	.007
2. Complete categories	5.35c	1.42	4.70	1.83	3.30a	2.26	4.52	.018
3. Failures Maintain Attitude	.55	.83	1.10	1.20	1.30	1.25	2.05	.143
4. Preservatives	6.95c	16.53	11.90	15.26	31.00a	25.43	5.54	.008
5. Perseverative errors	5.05c	12.31	9.10	10.80	23.10a	21.79	4.96	.012
6. Non-perseverative errors	20.70	12.50	23.00	20.28	29.20	16.36	.99	.383

Note: Differences by group, being control (a), alcohol (b) and cocaine (c), according to Tukey's post hoc test.

Regarding the STROOP, there are significant differences between the means of the control group and the group formed by cocaine users, present in the score of the colored items performed and in the score of the words printed with colored ink read, both higher in the non-user population. Between the patients with AUD and the control group the differences are not significant, although in the alcohol group they are smaller. These results are reflected in Table 3.

Table 3

Univariate differences in STROOP results between groups

	Group						F	Sig.
	Control N=20		Alcohol N=10		Cocain N=10			
	M	St	M	St	M	St		
1. Word	104.70	11.49	99.50	16.11	103.80	13.98	.519	.599
2. Color	75.95c	11.24	68.50	10.59	60.50a	19.80	4.35	.020
3. Word and Color	51.00c	7.48	41.80	12.80	40.90a	10.65	4.86	.013
4. Intereference	7.0435	4.89	1.40	8.92	5.8400	8.61	1.88	.167

Note: Differences by group, being control (a), alcohol (b) and cocaine (c), according to Tukey's post hoc test.

The results of the SDMT are shown in Table 4. There are differences between the control group and the CUD group, the latter showing a lower mean number of correct scores. The group composed of patients with AUD presented lower scores in relation to the control group, with no significant differences.

Table 4

Univariate differences in SDMT scores between groups

	Group						F	Sig.
	Control N=20		Alcohol N=10		Cocain N=10			
	M	St	M	St	M	St		
1. Total successes	47.95c	7.98	40.20	11.85	37.20a	11.13	4.64	.016

Note: Differences by group, being control (a), alcohol (b) and cocaine (c), according to Tukey's post hoc test.

The three groups were also compared in terms of ToM abilities. Table 5 shows the differences found through the TECA, which appear between control participants and CUD patients. They are present in the cognitive empathy (CE) and affective empathy (AE) scales. In the first case perspective adoption (PA) and emotional compression (EC) is lower in patients with cocaine use and, secondly, empathic joy (EJ) is also lower in the experimental group. The participants with AUD have lower scores compared to the control group, although they are not significant.

Table 5

Univariate differences in TECA scores between groups

	Group						F	Sig.
	Control N=20		Alcohol N=10		Cocain N=10			
	M	St	M	St	M	St		
1. Perspectives Adoption	28.65c	3.23	26.10	1.91	25.60a	3.63	4.21	.022
2. Emotional Understanding	28.35c	2.11	29.90	3.25	30.90a	3.07	3.29	.048
3. Empathic Stress	20.85	3.25	23.50	5.74	22.50	5.56	1.22	.306
4. Empathic Joy	27.25c	3.13	27.10	3.64	35.80a	15.76	4.04	.026
5. Total Score	105.10	6.24	107.30	7.85	109.80	9.60	1.31	.282

Note: Differences by group, being control (a), alcohol (b) and cocaine (c), according to Tukey's post hoc test.

Finally, the mean number of correct scores in facial emotion recognition showed no distinction between the 3 groups. However, the clinical groups show lower results, with the group formed by alcohol consumers obtaining lower scores. These results are shown in Table 6.

Tabla 6

Univariate differences between groups in FEEL test scores

	Group						F	Sig.
	Control N=20		Alcohol N=10		Cocain N=10			
	M	St	M	St	M	St		
1. Total successes	36.30	3.67	33.60	6.08	34.40	6.02	1.13	.333

Note: Differences by group, being control (a), alcohol (b) and cocaine (c), according to Tukey's post hoc test.

Discussion and conclusions

The main objective of the research has been partially demonstrated, since the differences between the population with CUD and the population without any type of SAD, in terms of the functioning of the EF and ToM, have been detailed. However, it has not been possible to find these differences between the group with alcohol consumption and the group without addiction. As for the hypothesis, it is partially accepted, since there are differences in the implications of alcohol versus cocaine on EF and ToM, but there are no differences between patients with SAD and patients with CUD. If the results obtained with the present investigation are compared with other studies, different conclusions appear.

In the affection of the EF in patients with ED, the study by Corral, Rodríguez & Cadaveira (2002) established that there was a deficit in mental flexibility in patients with ED, evaluating it through the WSCT, an aspect that has not been found in this research.

On the other hand, Ihara, Berrios & London (2000), with the use of the STROOP and the WSCT, were able to establish that there was a deficit in the ability to solve problems, in mental flexibility and in the inhibition of automatic responses, results that are opposite to those of the present study.

The differences in the results between this research and the cited studies may be due to several factors, such as the small sample size of this project, the heterogeneity in the severity of the disorder, the period of abstinence of the participants, and the possible interference of extraneous variables or environmental limitations during the evaluation.

In patients with CUD, according to the study undertaken by Ambrosio & Fernandez (2011), it was established that this type of population possessed deficits in this ability, a result that agrees with those of this work. In addition, research conducted by Lorea, Fernández-Montalvo & Tirapu (2010), found that among the most affected components were problem solving and cognitive flexibility, in the same way as seen in this work.

The study by Maurage, et al. (2011) on ToM in patients with AUD has shown that this type of population shows difficulties in recognizing facial emotions, a result that does not correspond to that obtained in this study.

The results of the work of Gizewski, et al. (2013) on empathy also show deficits in this area in patients with alcohol abuse, which does relate to the results of the present project. Regarding CUD, the work of Preller, et al., (2013) shows alteration in empathic capacity in this type of people, as in this work.

However, according to Fernández, Moreno, Pérez, & Verdejo (2012) facial recognition in patients with CUD is altered, which differs from the results of this study. The divergence of results lies in what refers to facial recognition of emotions and the cause of this, in addition to the aspects formulated, may be the choice of instruments for this study, since those of the cited research could be more accurate.

The results obtained in this work can be beneficial for clinical psychology and the treatment of drug dependence in several aspects. Knowing the implications in the case of alcohol and cocaine, emphasis can be placed on preventing their consumption and psychoeducation programs could focus on explaining the alterations generated by their abuse. In addition, programs aimed at training and rehabilitation of EF and ToM could be developed in the drug-dependent population, specifically in patients with CUD, since this is the group in which the main differences with respect to the population without SAD lie, according to the results of this study. Such programs could be approached from a specialized and personalized approach to the harm of each patient. Finally, since several investigations have proven the relationship between EF and ToM (Doenyas, Yavuz &

Selcuk, 2018; Li et al., 2017), an improvement in rehabilitation could be carried out, enhancing the work of the best-preserved capacity, managing to increase the other, in addition to being able to combine activities that simultaneously work both constructs.

As for the limitations, referring to the evaluation of the clinical groups and the collection of data, it has been costly due to the mortality of the sample, since several individuals have dropped out. Another methodological difficulty is the heterogeneity of the population. The type of consumption and its severity vary from one patient to another, which has made it difficult to establish inclusion criteria. It is likely that, consequently, the results obtained did not fully conform to those expected, since the pattern of consumption is variable. Likewise, the sample size used is quite small, which has limited the strength of the results, implying that they cannot be extrapolated to the rest of the population, influencing the fact that the conclusions found do not fully conform to those expected. The battery of instruments used may have limitations in terms of measurement precision, especially those applied for the evaluation of ToM. Finally, the presence of extraneous variables during the evaluation, such as the evaluator's experience, the way in which the test instructions were given and/or the environmental conditions. As a consequence, the results of this project may have differed from what was expected to be established.

Considering the possibility of continuing the research, it has been considered relevant to expand the number of participants, for a more reliable extrapolation of results. New patients with addictive disorders to other types of substances could be included. It would also be of interest to include a population with drug use disorders and even a population with pathological gambling disorders. Thus, the differences in addictions in relation to the presence or absence of a substance could be verified. On the other hand, due to the complexity of EF and ToM, it would be beneficial to increase the number of psychometric tests used for their evaluation, in order to cover the greater number of components that form them and establish more accurate results. As for facial recognition of emotions, a differentiation could be made to check whether there are emotions that are more difficult to identify. The reaction time required by the participants to issue a response could be added, trying to find more accurate and reliable conclusions. Finally, the number of hypotheses could be expanded, considering, firstly, to deepen the relationship between ToM and EF to determine whether the affection in one of them generates alteration in the other. Secondly, due to the relationship that seems to exist between EF and ToM with impulse control, including the study and analysis of impulsivity and the ability to control it in the population with a diagnosis of addiction disorder would be highly attractive.

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IMPLICACIONES DE LA AUTOESTIMA Y EL AUTOCONCEPTO EN EL BIENESTAR PSICOLÓGICO DE LOS ADOLESCENTES ESPAÑOLES

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Resumen. El autoconcepto se considera un elemento favorecedor del sentido de la propia identidad, constituyendo un marco de referencia desde el que interpretar la realidad externa y las experiencias que influyen en las expectativas de la persona, su rendimiento, así como salud y equilibrio psicológico. La autoestima es la suma de juicios que la persona genera de sí misma, incluyendo las dimensiones afectiva y evaluativa de la autoimagen que se basan en datos objetivos, y que constituyen aquello que una persona piensa sobre sí misma. Diferentes investigaciones recientes han revisado cuán importante es la autoestima y/o el autoconcepto en el bienestar psicológico. Hasta donde se sabe, esta es la primera contribución que se ha llevado a cabo para una revisión sistemática, donde se incluyen bases de datos clínicas y datos sobre el nivel de autoestima y/o autoconcepto comparándolo con el bienestar psicológico de los adolescentes. Se seleccionó 33 artículos de una amplia bibliografía potencialmente relevante dentro de los criterios a seguir y seleccionados para su análisis. Los estudios examinados sugieren que un bajo rendimiento escolar, la inactividad tanto física como psíquica y los estilos parentales negligentes correlacionan positivamente con una baja autoestima. Además, se aprecian diferencias en cuanto al género. Es por ello que, como estudios futuros, sería necesario incluir en los centros de estudios aspectos curriculares para contribuir a un buen desarrollo personal y así desembocar en un bienestar psicológico.

Palabras clave: Psicología, Autoestima, Autoconcepto, Adolescentes.

IMPLICATIONS OF SELF-ESTEEM AND SELF-CONCEPT IN THE PSYCHOLOGICAL WELL-BEING OF SPANISH ADOLESCENTS

Abstract. Self-concept is defined as a favourable element of the sense of one's identity, constituting a frame of reference from which to interpret the external reality and the experiences that influence the expectations of the person, their performance, as well as health, motivation and psychological balance. And self-esteem as the sum of judgments that the person generates of himself, including the affective and evaluative dimensions of self-image that are based on objective data, and that constitute what a person thinks about himself. Different recent articles have reviewed how important is self-esteem and/or self-concept in psychological well-being. To the best of our knowledge, this is the first contribution that has

been made for a systematic review based on the evidence that includes clinical databases and data on the level of self-esteem and/or self-concept compared to the psychological well-being of adolescents. 33 articles were selected that were potentially relevant within the criteria to be followed and selected for analysis. The studies examined suggest that poor school performance, both physical and psychological inactivity and negligent parental styles correlate positively with low self-esteem. In addition, there are differences in gender. That is why as future studies, it is necessary to include curricular aspects in the study centres to contribute to good personal development and thus lead to psychological well-being.

Keywords: Psychology, Self-esteem, Self-concept, Adolescents

Introduction

Self-concept and self-esteem are two concepts strongly related to each other despite the fact that they have been considered ambiguous and widely discussed within the field of psychology (Ortega, Mínguez and Rodes, 2000; Pepe, Moreno-Jiménez and Massota 2021). The research carried out on self-concept determines that it has experienced a turning point since the mid-seventies from the works of Shavelson et al. (1976) and Marsh (1990); this term undergoes a change in the way of understanding it, replacing a one-dimensional vision by a hierarchical and multidimensional conception. It would come to be the result of a set of partial perceptions of the self that are structured in a hierarchical organization formed by a set of beliefs that the individual considers true regarding himself, which are the result of a process of analysis, valuation and integration of the information that he receives from his own experience and the relationship with others (González, Núñez, González & García, 1997). It is a multidimensional perspective because it integrates both descriptive or cognitive aspects corresponding to self-image and evaluative or affective aspects corresponding to self-esteem (Marsh & Craven, 2016; Álvarez, Herrera, Villalobos, & Araya, 2019). Within the construct, physical, academic, personal, and social components are distinguished. With respect to the physical self-concept, this is measured by two subscales, physical and sporting ability and physical appearance. Fox's model (1988) divides it into four dimensions: physical ability, physical condition, physical attractiveness, and strength. This last model serves as a reference for the construction of the Physical Self-Perception Profile (PSPP) by Fox and Corbin (1989), which is one of the most relevant instruments in recent years. With respect to the dimension of personal self-concept, this is used to refer to the emotional and moral, referring to the idea that each person has of him/herself as an individual being. It consists of at least four dimensions, the affective-emotional, the ethical-moral, the self-concept of autonomy, and the self-concept of self-fulfilment. This theoretical model has served as a reference for the design and elaboration of a Personal Self-Concept Questionnaire (PSC). As for the social structure, Parker and Smith (1983) published the Self-Description Questionnaire I (SDQI). This scale is used to work on the relationship with peers in order to measure the self-perception of acceptance among peers. Finally, the academic dimension responds to the assumption that school behaviour cannot be understood without considering the perceptions that the subject has of him/herself and, in particular, of his/her own academic competence (Goñi and Fernández, 2008). Following the model of Shavelson et al. (1976), the academic self-concept is subdivided into the perception of competence in the various school subjects. For this purpose, the Academic Self Description Questionnaire (ASDQ) was created.

On the other hand, self-esteem is one of the oldest concepts in psychology, being analyzed for the first time in 1890 by William James in his book Principles of

Psychology (Branden 2004). Years later, Morris Rosenberg and collaborators began to refer to issues concerning self-concept and self-esteem valuation (Rosenberg, 1957, 1965, 1986; Rosenberg & Tielens, 1953; Rosenberg & Simmonds, 1972). However, it was not until the 1980s when the concept was used more frequently in different fields such as advertising, education, and politics, among others, and it was understood as a variable that influences personal success (González, 1999). Despite its relevance, there are difficulties in defining it due to its strong association with variables such as self-concept, self-efficacy, or self-image (Valentine, DuBois, & Cooper, 2004; Cascales & Prieto, 2018). From a psychological perspective, it has been conceptualized as an attitude towards oneself linked to the personal belief of one's own abilities, social relationships, and future achievements (Hewit, 2002). According to a multidimensional analysis, it was determined that self-esteem also has different dimensions, this comprises four; the personal area that refers to the evaluation that the individual makes of himself, his body image, and abilities. The second area is the academic that is related to the evaluation that the person makes of his performance in the school environment, taking into consideration his productivity and capacity. The third area is the family, which is the evaluation that the person makes of his or her interactions with the members of his or her family group. Finally, the social area is the evaluation that the individual carries out with respect to his or her social interactions (Coopersmith, 1967). Cubas, Marco, Monfort, Villarrasam, Pardo, and García (2019) highlight that self-esteem is the most influential factor in social relationships on the basis of a study conducted on pre-adolescents and young people.

Different studies show how both terms have a marked evolutionary character that is propitiated with variations of the same attending to the specific needs of each individual, and this is how through intersubjective interactions and throughout the life cycle the image of oneself is constructed (Shun & Conde, 2009; Tabernero, Serrano & Mérida, 2017). It is even more important in adolescence since it is the period of time in which the individual undergoes the most changes. Throughout this period, some studies agree that there is a decline that tends to recover in later years in the case of men since, in the case of women, self-esteem levels tend to remain low throughout the cycle (Álvarez et al., 2019; Parra et al., 2004; Savin-Williams & Demo, 1984). A similar trend is also observed in self-efficacy, with a significant decrease, especially in those studies that assess self-efficacy related to school materials that can be attributed to the changes that arise after the transition from elementary school to middle school or high school (Bandura, 2006; Eccles, Wigfield, & Schiefele, 1998; Urdan & Midgley, 2003). Somewhat different is the trend shown in psychological well-being and life satisfaction, as it seems to be a very stable variable. (Huebner, 2004; Huebner et al., 2000).

Depending on the life experience and the perceived stimuli, these constructs generate in the individual a psychological well-being or discomfort referred to the development of human potential and the psychological functioning of the person. Molina and Meléndez (2006) conceive psychological well-being as a personal construct focused on the individual's ability to interact harmoniously in life circumstances. Ryff (1989) formulated a multidimensional model referring to psychological well-being that was composed of six factors that include self-acceptance, personal growth, the belief that life has a purpose, the development and maintenance of quality relationships with others, environmental mastery, and a sense of personal self-determination. Each of these dimensions points to the challenges to which the individual is exposed in his or her constant attempts to function fully (Cubas et al., 2019; Keyes, 2006). In 2004, Reid

conducted a study with American adolescents, he found that self-esteem and self-concept better predicted males' psychological well-being than females, as well as their interpersonal harmony. (Reid, 2004). On the other hand, Dumont and Provost (1999) stated that high self-esteem in adolescents is associated with a less negative perception of everyday stress since young people with high self-esteem enjoy more positive experiences and are more effective in coping with negative experiences, generating more adaptive responses after a failure (Dodgson and Wood, 1998; Sanchez et al., 2011; Tashakkori, Thompson, Wade and Valente, 1990). They also perceive themselves to have less responsibility for negative feedback than those with lower self-esteem (Campbell & Fairey, 1985; Jussim, Yen, & Aiello, 1995) since they tend to make attributions in a more controllable way (Godoy, Rodríguez Naranjo, Esteve, & Silva, 1989) and are more persistent in the face of tasks (Sommer & Baumeister, 2002); they plan their responses more in the academic environment (Gázquez, Pérez, Ruiz, Miras, & Vicente, 2006) and obtain higher levels (Lerner et al., 199; Rokka et al., 2019).

As for self-concept, its maintenance in the academic environment favours a better perception of self-efficacy and the use of better learning strategies, which facilitate a deep processing of information (García et al., 2010; Gargallo, Garfella, Sánchez, Ros, & Serra, 2009; Núñez et al., 1998). Regarding interpersonal relationships, adolescents with high self-esteem are less susceptible to peer pressure (Zimmerman, Copeland, Shope, & Dielman, 1997), getting better impressions from peers (Robins, Hendin, & Trzeniewski, 2001), and are more approachable (Filippoe et al., 2018; Neyer & Asendorpf, 2001).

When young people with lower self-esteem are exposed to a situation of failure, they perform a less effective coping. Thus, they tend to overgeneralise failures (Kernis, Brockner, & Frankel, 1989) and direct their behaviours to avoid the negative emotions they produce (Park & Maner, 2009). Crocker and Wolfe (2001) state that from an early age people learn avoidance responses to experiences that generate negative emotions, which generates that they may even have difficulties to deal effectively with these situations, causing possible failures to be repeated, thus feeding back a low self-esteem. This fact contributes to behaviours that focus on satisfying self-esteem despite the fact that other actions may be more satisfactory.

The present study aimed to examine the influence of self-concept and self-esteem on the psychological well-being of Spanish adolescents in order to pool knowledge about these variables, as it would be very useful for the promotion of personal development in this group.

Overall objective

- Identify empirical studies that relate the influence of self-esteem and self-concept on the psychological well-being of adolescents.

Specific objectives

- Find out the measurement instruments used in studies on self-esteem, self-concept, and psychological well-being.
- Bring together existing information on gender differences in self-esteem and self-concept.

- Investigate in scientific productions if self-esteem and self-concept are protective factors against risk situations such as school failure or consumption of toxic substances.

Method

A systematic review of empirical quantitative studies examining the relationship between self-esteem and self-concept and psychological well-being in Spanish adolescents was carried out. The search considered all available studies from 2010 to November 2020. For this purpose, an exhaustive analysis of the literature was carried out in the databases PubMed, Dialnet, EBSCO, and 1findr.

The article selection process that has been followed is: 1) search each database (PubMed, Dialnet, EBSCOhost, and 1findr) applying the terms (e.g. "self esteem AND Spanish adolescents"); 2) reject documents belonging to books, abstracts, reviews, notes, editorials from each database; 3) review the titles and abstracts of the databases in order to eliminate duplicates; 4) finally, examine the full text of each article to select the definitive battery.

The search terms used in PubMed were: *"self esteem AND Spanish adolescents"* with a total of 1270 results of which 4 articles were used; *"self concept AND Spanish adolescents"* with a total of 1124 results of which 3 were used; "self *esteem AND teenagers AND Spanish" with a* total of 1240 results of which 1 was used.

In the case of Dialnet the following terms were used: *"autoestima y adolescentes españoles"* with a result of 768 of which 2 were used; *"autoconcepto y adolescentes españoles"* with a total of 88 results of which 1 was used.

With respect to EBSCOhost, the terms used were: *"self esteem IN adolescence Spanish"* with 36995 results of which 3 were used; *"self esteem AND sex difference IN adolescence Spanish"* with 54301 results of which 2 were used; "self *esteem AND adolescents Spanish"* with a total of 115 of which none were used; *"self concept AND adolescents Spanish"* with a total of 94 results of which none were used.

Finally, in 1findr the keywords used were: *"self esteem AND Spanish adolescents"* with a total of 148 of which 5 were used; *"self esteem AND Spanish students"* with a result of 165 of which 3 were used; *"self esteem AND sex difference IN Spanish adolescents"* with a result of 812 of which 4 were used; "*self esteem AND Spanish teenagers" with a* result of 20 articles of which 1 was used; "self *esteem AND sex difference IN Spanish teenagers"* with a result of 103 of which 4 were chosen; "self *concept AND Spanish teenagers" with a result of* 19 of which 1 was chosen.

Therefore, the studies that were potentially relevant within the criteria to follow were 33, of which 27 were in English and 6 of them in Spanish. The duplicate articles found during the analysis of the different databases were 14 studies.

The inclusion criteria that have been followed are empirical quantitative studies, cross-sectional, prospective, longitudinal cohort and case-control designs, participants aged between 10 and 20 years of Spanish nationality and schooling, with studies in English and Spanish, with a minimum sample of 50 participants.

As for the exclusion criteria: the place where the study was carried out, discarding studies focused on international adolescents, related articles but which use a

medical perspective in their study, commentaries, books, opinion articles and congresses, empirical qualitative studies, participants who have chronic, physical or psychological illnesses, people with functional diversity.

Instruments

The most commonly used scales in the different studies are the Rosenberg Self-Esteem Scale, the Self-Concept Scale Form 5 (AF5), and the Self Description Questionnaire (SDQ-2).

The Rosenberg self-esteem scale was created in 1965 by M. Rosenberg. It is a Likert-type scale consisting of 10 items with 4 response options; from extremely agree (4) to extremely disagree (1). 5 of its items are direct and 5 inverse (3,5,8,9,10), where each one of them is a statement about personal worth and self-satisfaction. The minimum score that can be reached is 10 and the maximum is 40. The scale showed high reliability; test-retest correlations in the range of 0.82 to 0.88. This scale has been widely analyzed since it is considered one of the best measures of global self-esteem. The analysis of its internal consistency has shown that this scale is internally consistent in samples of adolescents (Francis & Wilcox, 1995; Hagborg, 1996; McCarthy & Hoge 1982) as well as in samples of university students and adults (Dobson, Guoudy, Keith & Powers, 1997).

On the other hand, the Self-Concept Scale Form 5 (AF-5) was created in 1999 by García and Musitu. It is a Likert-type scale that allows 11 response possibilities, where 0 is never and 10 is always, consists of 30 items that evaluate different aspects of self-concept in children, adolescents, and adults in different aspects, social, academic, professional, emotional, family, and physical with 6 items each (García & Musitu, 2014). Its consistency coefficient is 0.84.

The next most widely used is the *Self-Description Questionnaire* (SDQ-2) developed by Marsh in 1899. It consists of 102 items, although there is an abbreviated version consisting of 51 items. It is one of the most widely used multidimensional measures of self-concept in research and is considered among the best in terms of psychometric properties and construct validity. It presents 11 dimensions of self-concept, firstly, the academic ones that are verbal, mathematical, and general academic, and seven non-academic dimensions that include physical ability, physical appearance, relationships with the same sex, relationships with the opposite sex, relationships with parents, sincerity-truthfulness, and emotional stability. The internal consistency reliability estimates are between 0.80 and 0.90 (Bodkin-Andrews, Ha, Craven, & Yeung, 2010).

The questionnaires or scales that appear in the studies of this review that are not repeated as those previously mentioned are the Coopersmith Self-Esteem Questionnaire, the *Culture Free Self-Esteem Inventory* by Battel, the *Self-Concept Evaluation Scale for Adolescents* (ESEA2), the *Physical Self-Perception Profile* (PSPP), the Physical Self-Concept Questionnaire (CAF), the *Physical Self-Questionnaire* (PSQ), and the *Mind-Wondering Questionnaire* (MWQ).

Results

The study consisted of a total of 34,825 subjects participating in the 33 selected investigations, with 49.6% being male and 50.4% female. Of the thirty-three articles, all

indicated that the participants were adolescents. The youngest participant was 10 years old while the oldest was 21 years old. The most studied ages in the different publications comprised the age range of 14 to 16 years.

Twenty-three studies (69.7%) looked at self-esteem and another nine articles (27.3) focused on self-concept. Only one analysis focused on the two variables together.

Some authors (Fernández, Grao, Nuviala, & Pérez, 2014) show that a low self-concept leads to low physical and psychological inactivity and that this affects both personal satisfaction and eating a balanced diet. Results that coincide with the research of Monks, Ortega, and Rodriguez, (2015) who state that sedentary life negatively affects self-esteem and weakens the dedication to strengthen the self-concept. Contreras and Cuevas (2019) show how increased physical activity produces an indirect positive effect on self-esteem as do Gómez and Ortega (2016) who confirm that sport and self-esteem correlate positively. Castillo, Queralt, and Molina (2011) state that self-esteem is positively related to greater vitality and this provides greater initiative to perform physical activities. Regarding the relationship with self-concept, Revuelta, Esnaola, and Goñi (2016) conclude that physical activity and self-concept have a bidirectional influence, with men having a better self-concept than women, who also show better motor skills that help to maintain a positive self-concept.

Regarding school performance, Gómez, Ortega, and Romera (2016) state that in this area the learner should be empowered through regular interventions because they show a lower level of self-esteem compared to adolescents from other countries, an argument in which Castillo, Chinchilla, Lourenço, and Onetti (2019) who made a comparison with adolescent students from Portugal agree. These authors claim that the scores on the scales of the Spaniards provide significantly lower data. Castillo, Fernández, and Onetti (2019) in their study appreciate significant differences in the self-concept of adolescents in the school transition, showing that those who attend secondary school have lower levels of self-esteem than primary school students. Castejon, Golar, Miñano, and Veas (2016) agree on these results due to the fact that in their sample they state that there is low performance associated with low self-esteem of adolescents in late school age, just like the research conducted by García, García, Serra and Zacarés (2018) who recognize that in late adolescence lower levels of self-esteem are found, this generates that adolescents stop trusting in their abilities and become demotivated causing a sense of frustration by their experiences of failure and making success external attributions and failures internal attributions, which tends to worsen their self-concept with a high emotional cost. All empirical studies that associate self-esteem and self-concept with academic performance affirm that parents and teachers are a great source of influence for students.

Another of the aspects analyzed is the appropriate use of the Internet, different authors have shown that low self-esteem and a negative self-concept correlates positively with the inappropriate use of social networks. Amigo, Errasti, and Villadangos (2019) were the ones who based their work on the relationship of self-esteem with the use or abuse of social networks such as Facebook, Twitter, or Instagram; in this study they showed that users who have a lower self-esteem are those who perform more compulsive behaviours in social networks and those who invest more time for their own acceptance. The results also indicated that there is a significant relationship between the level of self-esteem presented by the subject and the level of internet addiction, being the subjects with higher self-esteem those who abuse the network less.

In the family environment, there is a consensus regarding the reviews made. Suthors such as García, García, Serra, and Zacarés (2018) argue that the results of adolescents from more authoritarian or negligent families have lower self-esteem, agreeing with Ferradas, Freire, and Regueir (2019) being the negative experiences at home a determinant that contributes to a negative self-definition and self-valuation of the adolescent since it is common that those who have lived in a hostile environment develop poor self-esteem and self-concept.

Regarding the victims of sexual abuse, the studies addressed as those of Acosta, Checa, Matheo, and Parron (2019) show significant differences between subjects with and without a history of sexual abuse in terms of their self-esteem, with the victims of such abuse having a low self-esteem and a negative self-esteem of themselves; this fact is associated with the vulnerability that the victim has experienced in the abuse. On the other hand, Monks, Ortega, and Sanchez (2015) argue that cultural victimization has a negative effect on self-esteem and on the emotional state of the adolescent.

Finally, regarding gender, there are discrepancies with studies claiming that there are no significant differences between genders and educational levels in adolescence (Galiana et al., 2015), although others such as Gómez, Mendoza, and Piano (2016), Oliva, Parra, and Sánchez (2017), among others, claim that women have alarmingly lower levels of self-esteem than men. It has been seen that women with low self-esteem suffer greater episodes of anxiety due to the stress involved in trying to show an ideal image of themselves with the aim of convincing others of their worth when in reality the image they have of themselves is negative. This fact generates a tendency to a fragile and unstable identity as well as being somewhat changeable and suffering a feeling of vulnerability to the opinion of others.

Discussion and conclusions

The main objective of this systematic review was based on identifying empirical studies that relate the influence of self-esteem and self-concept on the psychological well-being of adolescents. These terms have been considered ambiguous within the field of psychology and, therefore, a relevant object of study in various theoretical formulations and empirical research (Góngora & Casullo, 2009; Ortega, Mínguez & Rodes, 2000) being constructs of clinical interest due to their relationship with psychopathological conditions and, in general, with the psychological well-being of individuals (Vázquez, Vázquez-Morejón & Bellido, 2013). The selected research related variables such as physical activity, academic performance, internet use, parentality, and abuse.

Regarding physical activity, all those studies that evaluated through the AF5 conclude that practicing physical activity improves the self-concept of the general population making distinctions between genders which directly influences their psychological well-being (Hortigüela & Pérez, 2015; Reguera & Gutiérrez, 2015; Hortigüela, Pérez & Calderón, 2016; Frutos de Miguel, 2018). These results show that adopting active lifestyles are indicators of psychological well-being both in measures of multidimensional physical self-concept and general self-evaluations, allowing to improve the self-perceptions of adolescents, a fundamental aspect in such a critical age and exposed to continuous internal and external evaluations (Contreras & Cuevas, 2019).

Based on school performance, it has been shown that self-esteem and self-concept directly influence academic performance, but that this depends on other variables such as the sense of competence and the sense of self-efficacy, among others. In this line, Carrera, Fuentes, & Tomás, (2012) add that a determinant of self-esteem and self-concept can be found in the experiences of academic success, a negative expectation about the ability of the adolescent will cause a dropout instead of a search for strategies to overcome it (Gómez, Ortega & Romera, 2016).

In the research explored, there is global evidence regarding the influence of parenting since it correlates positively with both school and family self-esteem. There is a high relationship between the perception of parental disapproval and negative self-esteem. Children who feel rejected by their parents, especially by their mother, see their self-esteem affected. (Gómez, Muñoz & Haz, 2017). It can be stated that "what parents feel, think, and do for their children and the way they communicate it, impacts the way children conceive of themselves" (Badury & Dantangnan, 2009). This is what is commonly called the Pygmalion Effect from the field of Psychology. Authors such as Holloway, Park, and Stone (2017) expose in their different investigations that parents relate to the school based on their own life experiences since there is a positive association between the expectations and aspirations of parents and their results. It is important to highlight that it is affection, trust, and the promotion of autonomy that makes this effect become positive for young people (Urías, Valdéz and Wendlandt, 2016). In addition, different studies show how the level of education of the children is related to the education of the parents or to the cultural and social capital that each family possesses (Sánchez & Valdés, 2016).

Regarding internet use, there is a consensus that high self-esteem acts as a protective factor since these adolescents can socialize without the need to hide their identity or create fake profiles to make up for their shortcomings. Thus avoiding falling into the vicious circle proposed by some authors on the misuse of the Internet (Amigo, Errasti & Villadangos, 2019).

Finally, with regard to gender differences, a gap is perceived as a result of factors ranging from biological dispositions to the way in which children socialize, desired or expected patterns of behaviour by society, in addition to the role played by institutions and markets (Garaigardobil, Dará and Pérez, 2015).

The practical implications that would complement the research carried out would be based on emphasizing the establishment of spaces of trust and security in adolescents, so that the concerns that they have are dealt with from a situation of comfort, for which the promotion of communication between family members and peers would help, providing both the environment and the person with sufficient tools to deal with the situations that occur.

With regard to the limitations of the review, it is important to emphasize that this is an exploratory type of research and the generalizations made in it must refer to the same age range and context from which it was initially extracted, although without ignoring the fact that it is a reality that can be extrapolated. On the other hand, the age range chosen is very broad and adolescence is a period of constant change. A third limitation is that factors such as the transition from primary to secondary school or to higher education have not been taken into account; this can affect the change of context of the school, and the help of professionals and family members would be needed so that these changes are not decisive.

Regarding future lines, it would be important to determine the determining factors or variables that influence women to have lower levels of self-esteem and self-concept compared to men as it may be related to the level of self-demand, social pressures, or distorted canons existing in society. It would also be of vital importance the establishment of programs for the orientation of parents and teachers regarding the influence of their judgments. In the academic field, they should be included in the curricular aspects of the teachers or in the orientation department in order to contribute to the good personal development of the students. In the family environment, providing parents and possible siblings with tools for an adequate affective communication.

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EFICACIA DE UN PROGRAMA DE INTERVENCIÓN BASADO EN LA TERAPIA DIALÉCTICO-CONDUCTUAL EN PACIENTES CON TRASTORNO LÍMITE DE LA PERSONALIDAD

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Resumen. El Trastorno Límite de la Personalidad (TLP) se considera un grave problema de salud mental, siendo una de las intervenciones para su tratamiento más eficaces la Terapia Dialéctico Conductual (DBT). El objetivo de este estudio es comprobar la eficacia de un programa de gestión emocional basado en la DBT para pacientes que tienen un diagnóstico de TLP, compuesto por cuatro bloques: mindfulness, eficacia interpersonal, regulación emocional y tolerancia al estrés. Se reclutó a 4 residentes del Centro Hospitalario Padre Menni de Santander, y se aplicó una evaluación pretratamiento y postratamiento, en formato individual, para medir las variables: ansiedad, depresión, funcionamiento global, regulación emocional, ideación suicida e impulsividad. Una vez realizada la valoración, se procedió con la intervención, compuesta por 14 sesiones con una frecuencia de 2 veces por semana, y duración de 45 minutos. Tras la aplicación se llevó a cabo el análisis de los resultados a través del estadístico ANOVA de medidas repetidas, aportando cambios estadísticamente significativos en la variable "regulación emocional" en la subescala supresión expresiva. Sin embargo, en base a los resultados obtenidos en la evaluación pre y postratamiento, si se ha producido un cambio clínicamente significativo, cumpliendo así de manera parcial los objetivos específicos. No obstante, se discutieron los resultados de la investigación planteando líneas a futuro en base a las limitaciones e implicaciones prácticas, contando con una muestra más significativa y adaptando el formato de la intervención.

Palabras clave: trastorno límite de la personalidad, terapia dialéctico-conductual, programa de gestión emocional, supresión expresiva.

EFFICACY OF AN INTERVENTION PROGRAMME BASED ON DIALECTICAL-BEHAVIOURAL THERAPY IN PATIENTS WITH BORDERLINE PERSONALITY DISORDER

Abstract. Borderline Personality Disorder (BPD) is considered a serious mental health problem, and one of the most effective interventions for its treatment is Dialectical Behavior Therapy (DBT). The aim of this study is to test the efficacy of an emotional management program based on DBT for patients with a diagnosis of BPD, composed of four blocks: mindfulness, interpersonal effectiveness, emotional regulation, and stress tolerance. Four residents of the Padre Menni Hospital Center in Santander were recruited, and a pre-treatment and post-treatment assessment was applied, in individual format, to measure the variables: anxiety, depression, global functioning, emotional regulation, suicidal ideation, and impulsivity. Once the assessment was completed, we proceeded with the intervention, consisting of 14 sessions with a frequency of twice a week, and a duration of 45 minutes. After the application, the analysis of the results was carried out through repeated measures ANOVA, providing statistically significant changes in the variable "emotional regulation" in the expressive suppression subscale. However, based on the results obtained in the pre- and post-treatment evaluation, there was a clinically significant change, thus partially fulfilling the specific objectives. Nevertheless, the results of the research were discussed, proposing future lines based on the limitations and practical implications, counting on a more significant sample and adapting the format of the intervention.

Keywords: borderline personality disorder, dialectical-behavioural therapy, emotional management program, expressive suppression.

Introduction

Borderline personality disorder (BPD) is a severe mental disorder, common in clinical practice, and characterized by high suicide rates, high rates of comorbidity, functional impairment, intensive treatment use, and high costs to society (Bender et al., 2001; Leichsenring, Leibing, Kruse, New & Leweke, 2011; Lieb, Zanarini, Schmahl, Linehan & Bohus, 2004; Oldham, 2006; Skodol et al., 2002; Skodol et al., 2005). According to the DSM-5 classification, the disorder is characterized by a pattern of instability in interpersonal relationships, self-image, and affect, as well as strong impulsivity (American Psychiatric Association, 2014). BPD is a pathology that has the reputation of being untreatable, and consequently people who suffer from it have to face a serious stigma, both in their social environment and among the professionals who care for them (Black et al., 2011; Gunderson, Herpertz, Skodol, Torgersen & Zanarini, 2018).

The first manifestations of BPD occur around puberty and early adulthood, although the age of diagnosis is usually between 19 and 24 years of age (Domènech, 2019). Consequently, treatment begins to be offered when the person is already in a late stage of the disorder, observing functional impairment and important complications at the iatrogenic level, which reduce the effectiveness and efficacy of the intervention (Bateman, Gunderson & Mulder, 2015; Gunderson et al., 2011).

Approximately 2% to 6% of the general population suffers from BPD, being more common than schizophrenia, bipolar disorder, and autism (Grant et al., 2008). In outpatients, it is estimated that 15% to 20% are diagnosed with BPD (Zimmerman, Rothschild & Chelminski, 2005), whereas, in inpatients, the rate can be as high as 25%

(Zanarini et al., 2004). According to the Clinical Practice Guideline on Borderline Personality Disorder, BPD is a disorder more frequent in women, with a ratio of 3 women diagnosed for every man (Álvarez et al., 2011; Domènech, 2019). Another characteristic of BPD is its high rates of suicide attempts, finding that between 60% and 85% of patients have attempted to end their lives on at least one occasion (Levy, McMain, Bateman & Clouthier, 2018; Pompili, Girardi, Ruberto & Tatarelli, 2005; Pos & Greenberg, 2007). Unfortunately, between 5% and 10% of them end up ending their lives (Goodman, Roiff, Oakes & Paris, 2011).

BPD is a disorder with high rates of comorbidity, most notably depression (at least 96% of patients with BPD have experienced a depressive episode once in their lifetime), anxiety (88%), PTSD (25-56%), substance use (23-84%), and BDD (14-53%) (Biskin & Paris, 2013; Golier et al., 2003; Grant et al., 2008; Hurt & Brown, 1984; McGlashan et al., 2000; Mueser et al., 1998; Oldham et al., 1995; Pope, Jonas, Hudson, Cohen & Gunderson, 1983; Shah & Zanarini, 2018; Yen et al., 2002; Zanarini et al., 1998; Zanarini, Gunderson & Frankenburg, 1989; Zimmerman & Mattia, 1999). High rates of comorbidity are a factor to be taken into account, as the symptomatology of comorbid disorders may overshadow BPD and thus hinder or delay its diagnosis.

The etiology of BPD is multifactorial, responding to the interaction between genetic and environmental factors. At the psychological level, some of the risk factors that can trigger the development of this disorder are childhood trauma, sexual or emotional abuse in childhood, an invalidating family environment, unfavourable parenting, object relations, insecure attachments or feelings of abandonment, and the capacity for symbolization-reflection (Keinänen, Johnson, Richards & Courtney, 2012). In addition, some extreme personality traits that predispose to BPD would be neuroticism, impulsivity, stimulation needs, and dependence (Zanarini et al., 2020). From the biological point of view, certain studies conducted with siblings and relatives in relation to BPD have shown that there may be an important genetic component in this disease, finding that 11.5% of people with BPD have a genetic predisposition (Calati, Gressier, Balestri & Serretti, 2013). And finally, at the social level, risk factors such as the predominance of the person's gender, social class, race, language, technology, culture, political economy, and institutional and professional structures and norms stand out (Brown, 1995). However, there are also protective factors in childhood, such as the number of emotionally sustaining relationships and competence in childhood (Borkum et al., 2017).

Chanen (2015) proposes some of the therapies that have been effective in BPD intervention, highlighting Cognitive Analytic Therapy (CAT), which is based on the classic cognitive-behavioral therapy (Chanen et al., 2009); Emotion Regulation Training (ERT) or STEPPS, which is a skills acquisition program (Blum et al., 2008); Beck's Cognitive Therapy (CBT), which is the classic therapy based on the identification of cognitive beliefs and subsequent modification (DeRubeis, Keefe & Beck, 2019); Young's Schema Focused Therapy (SFT), based on the identification and modification of maladaptive schemas; Mentalization-Based Therapy (MBT), psychodynamically oriented and based on attachment theory (Rossouw & Fonagy, 2012), and Dialectical Behavior Therapy (DBT), which is an intervention that combines individual therapy with skill acquisition (Mehlum et al., 2014).

In addition to these therapies, we find systems training for emotional prediction and problem solving (Blum, Pfohl, John, Monahan & Black, 2002), emotion regulation

group therapy (Gratz & Tull, 2011; Gregory et al., 2008; Gross et al., 2002), motive-oriented therapeutic relationship (Kramer, Guillory & Hancock, 2014), transference-focused psychotherapy (Clarkin, Yeomans & Kernberg, 2006; Comtois, Elwood, Holdcraft, Smith & Simpson, 2007; Comtois et al., 2003), and dynamic deconstructive psychotherapy (Gregory & Remen, 2008).

Dialectical behaviour therapy (DBT) is based on the theory of emotional dysregulation, postulated in 1993 by the author Marsha Linehan who argues that in people with BPD there is a decrease in the ability to regulate emotions, specifically the most intense emotions that are prolonged over time. During childhood, if these emotions are not adequately validated, they will trigger borderline personality behaviours in adulthood (Gunderson, Fruzzetti, Untuh & Choi-Kain, 2018; Linehan, 1993a). DBT emerges as a response to a group that was not benefiting from traditional Cognitive Behavioural Therapy (CBT): women with elevated suicidal ideation. The author integrates the concept of dialectics, recovering it from Greek philosophy, and the strategy of validation with the aim of improving the effectiveness of the therapy (Choi-Kain, Albert & Gunderson, 2016; Linehan, 1993a). Within the first clinical trials conducted for the treatment of self-injurious actions, it was seen that also patients met criteria for borderline personality disorder (BPD) (Leichsenring, Leibing, Kruse, New & Leweke, 2011).

The goal of DBT is to address BPD symptomatology by replacing maladaptive behaviours and integrating other more effective behaviours that can be used instead (Choi-Kain, Albert & Gunderson, 2016; May, Richardi & Barth, 2016). To this end, the therapy was divided into two groups, one focused primarily on skills training (acquisition and consolidation) and the other on current problem solving and motivational issues. The skills to be trained in each module are transcribed on paper and provided in the sessions. Traditionally, DBT consists of four parts: skills training group, individual therapy, telephone consultation, and therapist consultation team. The skills training group is aimed at equipping patients with tools to become more effective at certain behaviours that are common to BPD patients, such as instability of self, chaotic relationships, fear of abandonment, emotional liability, and impulsivity. These skills are learned through four modules: mindfulness, interpersonal effectiveness, emotional regulation, and stress tolerance. In turn, these four blocks are classified into skills: change skills, which encompass the interpersonal efficacy and emotional regulation block, and acceptance skills, which are mindfulness and stress tolerance (Linehan, 1993a; Linehan, 1993b; Linehan & Wilks, 2015; May, Richardi & Barth, 2016). Mindfulness is one of the central skills to work on in the course of therapy, being conceived of as "mindfulness," and requiring a concentration on the here and now, an awareness focused on the present moment combined with attitudes of acceptance and openness (Kabat-Zinn, 2009; Linehan, 2014). The person receiving the therapy will be trained in skills focused on training patients in what they should do at the time they practice mindfulness: observe, describe, and act ("what" skills), and those understood as the attitude that should be taken to perform this practice: not judging, focusing their attention and concentration on a particular moment, and being effective ("how" skills). The goal is for the person to be more effective in managing less desirable and painful emotions without trying to change or avoid them (Elices et al., 2016; Linehan et al., 2015). As for the block of interpersonal effectiveness, it will try to provide patients with the necessary skills to relate through three sections: achieving goals of assertiveness and limit setting, creating and maintaining relationships, and respecting oneself, being fair and faithful to one's beliefs and values. With all these tools, the aim is to teach people to

take into account the complexity of relationships and to cultivate the process of acceptance, flexibility, and change while obtaining improvements in collaboration and communication with other subjects (Lenz, Del Conte, Hollenbaugh & Callendar, 2016; Rathus & Miller, 2015). On the other hand, the aim of the stress tolerance module is to provide learning to patients in tolerating less desirable and dysregulated emotions. This module is also divided into two parts, the first being focused on learning skills for those crises that are short term, helping with distraction activities or activities that provide security to the person and allow them to self-soothe. The second section is more oriented to provide patients with tools at a conceptual level that focus on ideas of will and radical acceptance for more lasting situations over time such as grief (Lenz, Del Conte, Hollenbaugh & Callendar, 2016; Linehan et al., 2015). Finally, regarding the emotional regulation block, a set of behavioural and cognitive strategies are taught that help the reduction of unwanted emotions and increase those that are in demand. Emphasis is placed on the importance of the adaptive value of emotions when it comes to understanding them, through the skills of identifying and describing emotions, changing emotional responses, reducing the vulnerability of negative emotions, and managing more complicated emotions (Ekman & Davidson, 1994; Tooby & Cosmides, 1990).

Second, individual therapy focuses primarily on six areas: parasuicidal behaviours, behaviours that interfere with therapy, behaviours that interfere with quality of life, behavioural skills acquisition, post-traumatic stress behaviours, and self-esteem behaviours. The goal of this part of therapy, is to enhance and complement what is advanced in the group sessions (May, Richardi & Barth, 2016; Shearin & Linehan, 1993). On the other hand, telephone consultation allows the patient to contact the therapist for on-the-spot guidance. The calls are geared towards enabling the patient to effectively ask for help and apply the skills learned during the sessions, especially in times of crisis. Finally, the therapist consultation team is a weekly meeting in which all therapists who are providing DBT are grouped together. Sessions with patients who are highly suicidal can be stressful for therapists, so it is essential to maintain motivation and engagement to optimize therapy sessions (Linehan, 1993a; May, Richardi & Barth, 2016).

DBT is considered one of the first-choice treatments for patients at high suicidal risk and accumulating scientific evidence about its efficacy for the treatment of BPD, according to the latest reviews (Choi-Kain, Albert & Gunderson, 2016; Linehan et al., 2015; May, Richardi & Barth, 2016; Rios, 2020; Storebø et al., 2020). Borderline personality disorder is a severe and disabling condition, which has a high prevalence especially at the hospital level. Recently, new treatment approaches for this disorder are emerging, which open up a field of study regarding the efficacy of these approaches. DBT is supported by the scientific community; in fact, some authors claim that it is the only psychological treatment that to date has proven to be effective in the management of the symptomatology of people with BPD. Based on this evidence, the main objective of this study is proposed, which is to test the efficacy of an emotional management program based on DBT in hospitalized patients with BPD. In addition, the following specific objectives are proposed:

- Provide the subjects with the appropriate tools and concrete strategies to manage the symptoms that derive from their diagnosis.
- Learning to manage one's own behaviours, emotions, and thoughts that are related to difficulties in day to day life and come to produce discomfort.

- Put into practice the learning of adaptive and functional behaviours.

We worked from the hypothesis that the emotional management program, based on DBT, is effective in relation to the evaluated variables. That is to say, that the application of the designed program has a positive effect on the subjects of the study in relation to the improvement of the evaluated variables, which compose the symptomatology of BPD. As recent literature shows, it is an intervention specifically designed to treat borderline symptoms and the effectiveness of this treatment has been corroborated; therefore, this study deals with the verification of this effectiveness.

Method

Design

The research design is a single case with aggregated data since it is characterized by a continuous recording over time (sessions) of the behaviour of each individual subject, before, during, and after the withdrawal of the intervention, trying to estimate the size of the treatment effect. For this process a pre-evaluation is made, followed by the application of the intervention program, to finally carry out the post-evaluation; with all this we try to see the usefulness of the treatment applied and the changes experienced by the patient in relation to their behaviour. On the other hand, the methodology for this project is quantitative, as well as for the data analysis, the statistic used is ANOVA of repeated measures.

Participants

In this project, the sample consisted of 4 patients, one man and three women who live in the Padre Menni Hospital Centre (Santander, Cantabria). The recruitment method was discretionary, that is, probabilistic tools were not used. The only inclusion criterion for the selection of participants was that they had a diagnosis of borderline personality disorder (BPD).

Instruments

The variables to be taken into account in this research project are divided into three groups:

- Dependent variables: Anxiety, depression, suicidal ideation, emotional regulation, global functioning, and impulsivity.
- Independent variable: intervention.
- Covariate: age.

Emotional Regulation Questionnaire (ERQ).

The instrument evaluates, through 10 items, two types of strategies for the variable of emotional regulation: cognitive reappraisal (6 items) and expressive suppression (4 items). A Likert-type scale is used to answer the items, with response options ranging from 1 (strongly disagree) to 7 (strongly agree), an example of an item being, "When I want to increase my positive emotions, I change the topic I am thinking about." The questions in this scale are related to emotional life (how emotions are controlled and regulated), taking into account two main aspects, one being emotional

experience and the other emotional expression. (Balzarotti et al., 2010; Butler et al., 2007; Gillanders, Wild, Deighan & Gillanders, 2008; Gross & John, 2003; Ioannidis & Siegling, 2015; Verzeletti, Zammuner, Galli, Agnoli & Duregger, 2016; Westerlund & Santtila, 2018; Westerlund, Santtila & Antfolk, 2020). Cronbach's alpha for the suppression subscale was 0.75, while the reappraisal obtained an index of 0.79 (Cabello, Salguero, Fernández-Berrocal & Gross, 2013; González, Fernández-Berrocal, Ruiz-Aranda & Extremera, 2006).

Beck Depression Inventory (BDI-IA).

This test has the objective of measuring the variable "depression" in subjects (Sanz, 2013; Vázquez & Sanz, 1997); therefore, it consists of 21 items ordered from less to more severe, explaining in each one a certain depressive manifestation that is evaluated by the subject himself, selecting the phrase that best fits the situation currently presented (Beck, Rush, Shaw & Emery, 1979; Conde, Esteban & Useros, 1976; Conde & Franch, 1984). Four response alternatives are presented according to severity, being the score equal in all items, from 0 to 3, for example: 0- "I don't feel like a failure", 1- "I have had more failures than most people", 2- "When I look back all I see is one failure after another", 3- "I am a total failure as a person." The cut-off scores marking the severity of depression are 0-9 for minimal depression, 10-16 for mild depression, 17-29 for moderate depression, and 30-63 for severe depression (Beck & Steer, 1993; Beck, Steer & Carbin, 1988; Sanz, 2013). Regarding the internal consistency of the instrument, it presents a Cronbach's alpha of 0.83, highlighting a high reliability index of the scale (Sanz & Vázquez, 1998; Vázquez, Avia, Alonso & Fernández, 1989; Vázquez & Sanz, 1997).

Barratt Impulsivity Scale (BIS).

Questionnaire designed with the aim of assessing the tendency to impulsivity (measuring impulsivity in subjects) (Oquendo, Beca-García, Graver, Morales & Montalvan, 2001). The instrument is composed of 30 items divided into 3 subscales: cognitive impulsivity (8 items), motor impulsivity (10 items), and unplanned impulsivity (12 items). All items have four response options on a Likert-type scale ranging from 0 (rarely or never) to 4 (always or almost always). Some examples of the items are: "I say things without thinking about them," "I do things at the moment they occur to me," or "I buy things impulsively" (Guerrero Gallarday & Olano Yalta, 2017; Salvo & Castro, 2013). However, the median distribution in psychiatric patients, from the Spanish validation study of the scale, is used. For cognitive and motor impulsivity, the median is 9.5, for unplanned impulsivity it is 14, and for the scale as a whole it is 32.5 (Oquendo et al., 2001). In relation to its interpretation, there is no proposed cut-off point. Based on the internal consistency, they obtained values of 0.87 in Cronbach's alpha, which was a clear indicator of the high reliability that the test possesses (Martínez-Loredo, Fernández-Hermida, Fernández-Artamendi, Carballo & García-Rodríguez, 2015; Salvo & Castro, 2013; Stanford et al., 2009; Von Diemen, Szobot, Kessler & Pechansky, 2007).

State-Trait Anxiety Questionnaire (STAI).

This scale assesses state anxiety (transient emotional state) and trait anxiety (stable anxious tendency over time). Each subscale has a total of 20 items in a Likert-

type response system (from 0-not at all to 3-a lot). For example: "I am relaxed," 0- Not at all, 1-Somewhat, 2-Somewhat, 3-A lot. The maximum score in each of the two subscales is 60 (Castillo, Chacón & Díaz, 2016; Marteau & Bekker, 1992). For the trait anxiety factor, according to the Spanish adaptation of the STAI, an internal consistency value of 0.90 is estimated, and for the state anxiety subscale it is 0.94, reflecting a very good reliability index (Riquelme & Casal, 2011).

Global Assessment of Functioning Scale (GAF).

This test considers psychological, social, and occupational activity across a hypothetical health-illness continuum (APA, 2002). The test score is scored by the evaluator after an interview with the subject, which ranges from 0 (expectation of death) to 100 (satisfactory activity), taking into account the last twelve months with respect to the symptoms presented by the subject, the activities performed, and the social relationships on which the subject relies (Odriozola, Isasi & Arrillaga, 2003). In relation to the psychometric properties, it presents an internal consistency of 0.62, so it has an acceptable reliability (Hall, 1995).

Beck's Scale for Suicidal Ideation (SSI).

Instrument whose functionality is to quantify suicidal intentionality through the evaluation of self-destructive thoughts or ideas. The scale is made up of 21 items in the Spanish version, which consists of 3 response alternatives on a Likert-type scale. Likewise, this inventory can be completed by a psychologist based on the answers provided by the patient in a semi-structured interview (Beck, Kovacs & Weissman, 1979; Teruel, Martínez & León, 2014). An example of an item would be, "Reasons for the contemplated attempt": 0- Manipulate the environment, get attention, take revenge; 1- Combination of 0 and 2; 2- Escape, solve problems, end absolutely. Finally, the internal consistency is 0.89 for the general population being a very high reliability index (Beck, Kovacs & Weissman, 1979; Sánchez Teruel, García León & Muela Martínez, 2013).

Procedure

Prior to the start of the program, the project was evaluated by the Ethics Committee of the European University of the Atlantic, which approved the research. The sample was selected at the Padre Menni Hospital Center, being patients diagnosed with borderline personality disorder (BPD). As for the administration of the instruments, a pre- and post-assessment was carried out in sessions independent of the program. All participants were informed that they were going to be part of a study, the characteristics and objectives of the study were explained to them; then, they were informed that their participation was completely voluntary, anonymous, and that there would be complete confidentiality about the data obtained; furthermore, they were made to understand that since it was a voluntary act they could leave, although they had to sign an informed consent. The study consisted of an emotional management program based on dialectical behaviour therapy (DBT), consisting of 14 individual sessions plus 2 evaluation sessions. The intervention will be carried out twice a week, in sessions with

an approximate duration of 45 minutes, establishing as a dynamic for the sessions, the presentation of a theory related to the theme of emotional regulation combined with one or more exercises with the consequent objective of being completed by the patient for the next session. In addition, each session is preceded by a mindfulness exercise as well as ending with an exercise that consists of summarizing the session in a single sentence. The program is composed of 4 blocks, which are described below:

- Mindfulness skills: this module consists of the first four sessions in which participants are introduced to the concept of "mindfulness" through psychoeducation and experiential exercises as well as guided meditations.
- Interpersonal effectiveness: it covers sessions 5 to 8 in which the aim is to promote assertiveness skills and self-respect, clarifying at all times the priorities and objectives of the person in their relationships.
- Stress tolerance: in this module participants are provided with concrete tools and strategies to cope with situations that are difficult to manage and that generate high levels of stress through 3 sessions (sessions 9, 10, and 11).
- Emotional regulation: finally, the intervention closes with the emotional regulation module, which comprises the last 3 sessions. This part of the intervention focuses on teaching patients about emotions and how to manage them when they appear. It also focuses on how to analyze a situation in order to identify and interpret how certain thoughts and emotions are linked and whether or not the latter are adaptive.

The aim is to provide the patient with the necessary tools and skills to improve the performance of their daily life as well as with an increase in their quality of life.

Data analysis

In order to analyse and compare the results obtained, the SPSS statistical programme was used, which firstly allowed us to determine the characteristics of the sample based on the descriptive statistics mean and standard deviation. Secondly, and in order to compare the data obtained between the pre-treatment and post-treatment evaluation, the repeated measures ANOVA statistic was used, with an intrasubject factor. This statistic was used in order to check if there were significant differences in the application of the emotional management program in the measured variables.

It should be noted that, in this project, all the variables measured show an improvement if a lower score is obtained in the post-treatment compared to the pre-treatment, except in global performance, where the higher the direct score, the better the improvement.

Results

Table 1 shows the socio-demographic characteristics of the sample.

Table 1

Sociodemographic and clinical characteristics of the participants.

Features	Sample

Age	38.25 ± 6.131
Woman	3 (75%)
Man	1 (25%)
Primary Diagnosis	
Borderline Personality Disorder	4 (100%)
Other	0 (0%)
Clinical Variables	
Global Activity	56.25 ± 8.54
Suicidal Ideation	0.50 ± 1
Depression	13.75 ± 8.73
Anxiety-State	27.50 ± 15.17
Anxiety-Trait	25.75 ± 9.29
Impulsivity	49 ± 15.81
Cognitive Reassessment	5.04 ± 0.99
Cognitive Suppression	3.50 ± 0.87

Note. This table shows the values obtained after analysing the information acquired during the intervention process through descriptive statistics.

After the analysis of the scores obtained in the scales, through the study of variance, the results that determine the veracity of the hypothesis were obtained. These results show that, of the set of variables evaluated, it is emotional regulation in its subscale of expressive suppression in which a $p<0.05$ ($p=0.016$) is obtained. The results are detailed in table 2.

Table 2

Results of repeated measures ANOVA for clinical variables.

Variables [1]	**Pre**	**Post**	**F**	**GI**	**Sig.**	**ηp2**
BDI-IA	12.25	13.75	0.586	1	0.524	0.227
STAI A.E	21.75	27.50	0.705	1	0.490	0.261
STAI A.R	27.75	25.75	5.472	1	0.144	0.732
BIS-11	49.00	49.00	0.01	1	0.929	0.005
ERQ R.C	5.4250	5.0400	1.062	1	0.411	0.347
ERQ S.E	3.5625	3.500	61.581	1	0.016 *	0.969
SSI	3.00	0.50	6.668	1	0.123	0.769
GAF	53.75	56.25	1.717	1	0.320	0.462

Note: This table shows the mean of the results obtained in the variables evaluated during the emotional management program for people with Borderline Personality Disorder (BPD). [1] Symptomatology assessed by instruments at the beginning and end of the intervention. *p<0.05

Pre: Pre-treatment, Post: Post-treatment, F: Value, Gl: Degrees of Freedom, Sig: Significance, ηp2: Partial Eta Squared, GAF: Global Activity Assessment Scale

(GAAS), SSI: Scale for Suicidal Ideation, BDI-IA: Beck Depression Inventory, STAI: State-Trait Anxiety Questionnaire (A.E: State Anxiety and A.R: Trait Anxiety), BIS-11: Barratt Impulsivity Scale, and ERQ: Emotional Regulation Questionnaire (CR: Cognitive Reappraisal and ES: Expressive Suppression).

Discussion

The main objective of the study was to test the effectiveness of an emotional management program in patients diagnosed with BPD. This objective has been fulfilled since it has been possible to develop the program in its individual format as well as the achievement of the specific objectives. The participants have benefited in terms of strategies and tools. They have learned to manage emotions, thoughts, and behaviours that interfere in their daily lives, and they have been able to put this learning into practice through more adaptive and functional behaviours.

However, the hypothesis of the study cannot be accepted since there is not enough empirical data to show that the intervention is effective in the variables evaluated. However, it could be affirmed that the intervention is effective in relation to the variable "emotional regulation" in the subscale of expressive suppression, which raises certain conclusions. Expressive suppression is an emotional regulation strategy based on suppressing or modulating the emotional response. It is a response-focused strategy because it is used to regulate emotion after it has already been generated (Dryman & Heimberg, 2018; Gross & Jazaieri, 2014). This finding reaffirms existing evidence that DBT is effective in reducing emotional suppression (Dellanoce, 2019; Linehan, 1993). It is also important to mention not only the statistically significant changes but also those at the clinical level taking into account the covariate age. In the case of subject 1, it is worth mentioning that the direct score on the depression scale decreased 8 points from the pre-treatment assessment to the post-treatment assessment, indicating that the participant went from having "moderate" depression to "mild" depression. In the meta-analysis conducted by the Cochrane Collaboration in 2020, it was concluded that DBT was effective in reducing depressive symptomatology compared to no treatment. The same study revealed that DBT is more effective than treatment as usual in reducing impulsivity, which is consistent with the data obtained in subject 2, who shows a 14-point decrease in the direct score obtained on the impulsivity scale (Storebø et al., 2020). On the other hand, in subject 3, it can be seen how the score has decreased between pre-treatment and post-treatment assessment in the measure of the variable of emotional regulation in the subscale of cognitive reappraisal. In addition, in subject 4, it can be seen that the direct score on the suicidal ideation scale goes from 7 in the pre-treatment assessment to 0 in the post-treatment assessment, which is interpreted as clinically significant. Finally, in general and taking into account the mean of the pre-treatment and post-treatment measures of the 4 subjects, we can see a clinical improvement in the variables of anxiety (trait subscale), both subscales of emotional regulation, suicidal ideation, and global functioning. See table 2. These facts indicate that although the results of the study do not show a statistically significant change and therefore the hypothesis of the study cannot be approved, it can be affirmed that each subject has obtained a clinically observable benefit.

Regarding its application, it is worth mentioning the limitations of the research since the sample is considered unrepresentative, being N less than 30 subjects as well as the profile of the participants differed greatly, taking into account that each one has benefited to a greater extent from certain parts of the intervention, which is reflected in

the post-treatment evaluation scores. On the other hand, the variables may have been a conditioning factor in terms of the results since some of them depended more on factors external to the intervention than on the therapy itself. Likewise, in relation to the instruments, it would be interesting to review the assessment tests used, with the aim of applying more updated and appropriate versions for the purpose of the study. Another limiting factor would be that the program was carried out in a short space of time (8 weeks), it can be deduced that it would probably have been more effective if it had been carried out in a larger number of sessions, being the duration longer than 2 months and with greater continuity throughout the weeks, that is to say, with a greater number of weekly hours without exceeding the limits of saturation of the individual. Another point to highlight would be the follow-up of the daily practice since most of the times the majority of individuals did not bring completed proposed activities, which could be a limiting factor when it comes to obtaining improvements in the post-tests. On the other hand, a key limitation to highlight is the lack of originality of the intervention program applied since it is very faithful to the original structure of DBT proposed by Marcha Linehan. Finally, it is necessary to refer to the level of activation received by each subject depending on the unit in which they are hospitalized as well as the personal situation they have had throughout the treatment process, which undoubtedly may have influenced the results in the same way as the situation experienced during the pandemic by the COVID-19.

As for the practical implications of the research, they are considered very rich at the clinical level, mainly in relation to the profile of the participants since it allows a greater use of the treatment. In spite of the fact that the statistical results do not reveal an improvement, the daily functioning of the patients changed and they were able to take advantage of the resources that were offered to them through the program which could be interpreted as a therapeutic success.

Consequently, as lines of future research, firstly, it is necessary to highlight the importance of carrying out this same study with a significant sample size while carrying out the program in an affordable time frame, where it would be possible to have an extensive, complete, and necessary impact on the 4 blocks that make it up as well as with a positive weekly continuity; in addition, it could be considered that the treatment format would not only be individual but also in a group so that the members of the study can learn from each other. In fact, a revision of the intervention program used could be proposed, trying to make it less theoretical and more practical, making the sessions more dynamic and giving priority to the establishment of the therapist-patient bond, where a space is created in which emotional expression is encouraged as well as feedback from the patient in relation to how he/she integrates the skills acquired in therapy and the use he/she makes of them in his/her daily life. Therefore, once the results obtained in this study have been analysed, it would be important to have a greater impact when intervening in the variables that have a score that is too far from what is considered a significant change ($p<0.05$). Finally, apply the program in other patients who do not necessarily have a diagnosis of BPD, since it has been shown that DBT can be effective with other types of pathologies.

Conclusion

DBT has demonstrated its efficacy on multiple occasions and has been assessed by the Cochrane Collaboration as the most effective therapy in the treatment of BPD. The aim of this study is to test the efficacy of a DBT-based program in patients with BPD, and although the results show statistically significant conclusions in a single

variable, there are clinical improvements in other variables in the subjects of the research. This refers to emotional regulation, more specifically in the subscale expressive suppression in which there has been a statistically and clinically significant change. In the rest of the variables no improvement has been found, although it has been observed that all patients have benefited from each of the modules of the intervention, highlighting the skills of interpersonal efficacy and mindfulness. This means that although there has not been a significant change at a statistical level, the intervention has been effective at a clinical level where the participants have improved their social functioning and have a greater range of resources through which they can better manage their emotions, self-regulate, and curb those impulsive behaviours that are harmful to themselves. However, it is noted that further research is needed, taking into account the limitations of the present study and providing new lines of study that benefit both the subjects themselves and psychology as a science.

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EFECTIVIDAD DE LA REHABILITACIÓN NEUROPSICOLÓGICA EN PACIENTES CON DAÑO CEREBRAL ADQUIRIDO

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Resumen. El objetivo de esta investigación es analizar la efectividad de la rehabilitación neuropsicológica en pacientes con daño cerebral adquirido (DCA). El DCA es una de las principales causas de discapacidad en el mundo actual, pudiendo producir tanto alteraciones cognitivas como físicas; llegando a limitar la calidad de vida de estas personas. Veinte participantes con deterioro cognitivo moderado participan en el estudio, 8 pertenecen al grupo control; mientras que los 12 restantes forman parte del grupo experimental, asistiendo dos sesiones semanales durante cuatro meses a rehabilitación cognitiva. Inicialmente se realiza una evaluación neuropsicológica para comprobar el estado de las funciones cognitivas de cada uno de los participantes; esta evaluación se repite a los 4 meses para analizar la efectividad de la rehabilitación. Los resultados muestran una mejora en aquellos participantes que han recibido la rehabilitación neuropsicológica en comparación con los pacientes del grupo control. A partir de estos datos, se establece una relación entre la rehabilitación neuropsicológica y la mejora de las funciones cognitivas que se encuentran dañadas. En conclusión, la rehabilitación cognitiva es fundamental para ayudar a los pacientes con DCA a mejorar las alteraciones de sus funciones cognitivas.

Palabras clave: Daño Cerebral Adquirido (DCA), Rehabilitación Neuropsicológica, Efectividad, Evaluación Neuropsicológica, Funciones Cognitivas.

EFFECTIVENESS OF NEUROPSYCHOLOGICAL REHABILITATION IN PATIENTS WITH ACQUIRED BRAIN INJURY

Abstract. The objective of this research is to analyze the effectiveness of neuropsychological rehabilitation in patients with acquired brain injury (ABI). ABI is one of the main causes of disability in today's world, being able to produce both cognitive and physical alterations; reaching to limit the quality of life of these people. Twenty participants with moderate cognitive impairment participate in the study, 8 belong to the control group; while the remaining 12 are part of the experimental group, attending two weekly sessions for four months to cognitive rehabilitation. Initially, a neuropsychological evaluation is carried out to check the state of the cognitive functions of each one of the participants; this evaluation is repeated at 4 months to analyze the effectiveness of the rehabilitation. The results show an improvement in those participants who

have received neuropsychological rehabilitation compared to patients in the control group. From these data, a relationship is established between neuropsychological rehabilitation and the improvement of cognitive functions that are damaged. In conclusion, cognitive rehabilitation is essential to help patients with ABI to improve the alterations in their cognitive functions.

Keywords: Acquired brain injury (ABI), Neuropsychological rehabilitation, Effectiveness, Neuropsychological Assessment, Cognitive functions.

Introduction

Acquired Brain Injury (ABI) refers, according to the World Health Organization (WHO), to a sudden brain injury that may be permanent or temporary and that takes place after birth and is not linked to degenerative or congenital diseases and may have origins in various causes such as traumatic brain injury (TBI), cerebrovascular accidents (CVA), tumors, anoxias; sometimes causing from functional disabilities to psychosocial maladjustment (WHO, Genoa, 1996).

Because ABI is characterized by its sudden onset compared to other neurological pathologies (degenerative or congenital), there is a sudden disruption in the life of both the affected person and their loved ones, as they see how their life changes abruptly without having been able to have previous strategies to help them cope with the situation. (Vara Arias & Rodríguez Palero, 2017).

Currently, ABI is one of the leading causes of death and disability in the world population. After suffering an ABI, it is very common to present cognitive deficits, among the most common and limiting ones are memory problems, executive functions, and attention. (García Molina, et al., 2015).

According to a 2015 report by the Spanish Federation of Acquired Brain Injury (FEDACE), in Spain there are 420,064 cases of people with ABI, of which 78% correspond to cases of stroke, while the remaining 22% correspond to other causes. Of those affected, 52.5% are women and 47.5% are men. On the other hand, of the total number of people with ABI, 65.03% are over 65 years of age. The annual incidence in our country stands at 104,071 new cases, of which 99,284 are due to stroke, 4,937 due to TBI, and 481 due to anoxia. Worldwide, 15 million people suffer a stroke every year; one third of them recover fully without any disability, another third have permanent disabilities that make it difficult for them to function in their daily lives, and the remaining third die. In relation to TBI, it is estimated that every year around 10 million cases occur worldwide. In industrialized countries, it mainly affects men between 16 and 35 years of age, with an incidence of between 200 and 300 cases per 100,000 inhabitants.

The sequelae can be grouped into 3 broad categories:

- Physical-motor impairments. Within this group, there are limitations in gait; balance; movement of the upper or lower extremities or both; decreased sensation, or hypersensitivity; fatigue, dizziness, tremors; loss of any of the senses.... (Moore Sohlberg & Mateer, 2017) .
- Emotional and behavioral disturbances. Aggressive behaviors may occur due to an inability to control their own impulses so that people become more uninhibited. On the other hand, the opposite case can occur, and that is that the person represses his behaviors in excess, showing apathy. Emotional alterations can manifest irritability, impatience, depression, emotional lability, greater sensitivity. In anosognosia, the person is not aware of the disability or problems that occur due to his injury. (McDonald , 2013) .

- Cognitive or intellectual alterations. As this is the type of sequelae to be evaluated in the present study, they are detailed in more detail below.

Memory is the cognitive area most often damaged after suffering an ABI. It is a complex function, encompassing general knowledge and the ability to hold it in memory and/or retrieve it (Sharp, Scott, & Leech, 2014) . The main memory disorder is amnesia, which occurs when memory is lost or altered for a short or long period of time. The rehabilitation of memory is influenced by various circumstances such as the severity of the injury; the age of the patient, as the older the person the less chance of memory recovery; and another important factor is that the intervention is carried out as soon as possible. (Cumming, Marshall, & Lazar, 2013) .

Among the language disorders, there may be a limitation in communication in written form, orally or both ways. The alteration in language comprehension is known as Wernicke's aphasia, while an alteration in expression is called Broca's aphasia. If the person has a limitation in reading, it is called alexia. On other occasions, there may be patients who manifest an alteration in being able to name or recognize objects, which is known as anomia. (Van Heugten C., 2013) .

A disturbance in attention leads to a worsening of concentration over a long period of time. (Brocalero & Pérez, 2013) . It is considered a multifactorial task as it can overlap with other neuropsychological domains, such as working memory, which belongs to executive functions. (Strauss, Sherman, & Spreen, 2006) .

In relation to orientation, it is related to the ability to determine our position in space and time at a specific moment. It is divided into 3 types: personal orientation, linked to information related to personal identity (name, age); spatial, related to information related to location (place where you are); and temporal, linked to time (day, month, year). (Ballesteros Tenrero, 2015) .

While the alteration of executive functions has an impact on the performance of complex tasks, task or activity planning, reasoning, behavioral inhibition (Chung C, 2013) .

In any patient with brain injury, cognitive functioning should be evaluated to check for possible damage that may have occurred, so a neuropsychological evaluation is performed in which it is advisable to interview the patient and close family members. (Lezak, 2013) .

Standard neuropsychological assessment includes tests of episodic memory, attention, cognitive processing speed, and executive functions, such as mental flexibility, planning, decision-making, inhibitory control, and organization. For patients with moderate to severe injuries, consciousness and judgment should be assessed to determine the patient's ability to function independently. (Rabinowitz & Levin, 2014) . The results of a neuropsychological evaluation provide information about which cognitive areas are impaired and which are preserved in the patient. (Wood & McMillan, 2013) .

In most cases, the neuropsychologist can recommend strategies to help the patient compensate for these deficits as well as advise the performance of neuropsychological rehabilitation (Vanderploeg, 2014) .

Neuropsychological Rehabilitation

Its objective is to minimize, compensate, and/or restore the possible alterations occurred as a result of the injury. (Ríos-Gallardo, Bonilla-Santos, Bonilla-Santos, González-Hernández, & Amaya-Vargas, 2016).

Cognitive alterations are one of the most frequent and disabling sequelae after suffering an ABI; therefore, taking advantage of the brain plasticity that the brain has, which is the ability to adapt to the changes produced by learning, experience, cognitive, and sensory

stimulation; cognitive rehabilitation is carried out to try to recover altered functions. (Carvajal-Castrillón & Restrepo P., 2013).

A factor that usually has an impact on the success of rehabilitation is the age at which the ABI occurs; this is considered by a study that shows that participants, who have a younger age, are those who have a greater improvement with treatment; this relationship between age and rehabilitation has an impact on an improvement in the area of attention, memory, and executive functions. (Puerta Cortés, 2017) .

Another study analyzed the effectiveness of a cognitive rehabilitation program in 10 patients with mild to moderate cognitive impairment for 4 months carrying out such rehabilitation; for this, they proceeded to divide them into two groups, the experimental and control. The results showed an improvement in immediate memory and global delayed recall in the experimental group in the cognitive measures; showing the effectiveness of rehabilitation in memory. (De los Reyes Aragón, Rodríguez Díaz, Sánchez Herrera, & Gutiérrez Ruíz, 2013).

In a study made up of 13 patients with TBI between the ages of 18-54 years, a cognitive rehabilitation program was carried out developing in 60 individual and 10 group sessions during a period of 5 months, comparing the pretest measures with the posttest and achieving significant gains in attention and executive functions as well as in memory although less noticeably. The improvement in the results is significant in the study group, while in the control group the results are similar or worse than the pretest. (Bonilla Santos, González Hernández, Amaya Vargas, Ríos Gallardo, & Bonilla Santos, 2016).

Another study analyzed the results of 10 patients with TBI, whose age ranged from 19 to 39 years, with a rehabilitation process of 6 months. The results obtained show a decrease in the alterations they initially presented. Regarding the global recovery of the patients, a reduction of 60% of the alterations has been obtained, being of 80% the reduction in the alteration of attention; while in the memory the alteration has been reduced in 45.05% of the intensity. Regarding the area of language, this same study shows a tendency to improve these results with rehabilitation. (León-Carrión, 2011) .

Regarding the results of cognitive rehabilitation on executive functions, a study was carried out with 19 participants with brain damage, 11 were part of the experimental group, and 8 of the control group. In the experimental group, 7 sessions of 2 hours were administered. The results after the intervention show positive effects on executive functioning in the experimental group, with a significant improvement in the Tower of London, generalizing the different strategies learned to activities of daily living (Levine, Schweizer, O'Connor, Turner, Gillingham, Stuss & Manly, 2011).

In a retrospective pre-post study conducted with 58 adult participants, 14 women and 44 men, participating in an intensive cognitive rehabilitation program for 4 months, shows that early onset of rehabilitation and higher cognitive functioning at the beginning are the best predictors of cognitive recovery. The results show an increase in functioning, from 33.6% to 85%, from the beginning to the end of the treatment. (Solís-Marco, Castellano Guerrero , Domínguez Morales, & León Carrión, 2014).

The analysis of the different studies allows us to infer that there are few studies focused on determining the effectiveness of neuropsychological intervention programs, especially due to the use of single case samples or with a small number of participants (Wall, Turner & Clarke, 2013).

It is also evident that most of the interventions in neuropsychological rehabilitation focus on a single cognitive component (e.g., memory or executive functions) and do not take into account the rest of the areas.

In addition, it is necessary that the intervention is adjusted to the characteristics of the individual and his or her damaged cognitive areas (Martínez-Martínez, Aguilar-Mejía, Martínez Villar, & Mariño García, 2014).

The general objective of the research is to analyze the effectiveness of neuropsychological rehabilitation in patients with acquired brain injury. And, as specific objectives, to check the differences obtained in the two records of scores of each cognitive function in each group, and the difference in effectiveness between patients who perform cognitive rehabilitation as a function of age.

Method

Participants

The sample is made up of 20 participants with ABI, aged between 20-88 years. Of these patients, 12 underwent neuropsychological rehabilitation, forming part of the experimental group, while the other 8 belonged to the control group. The assignment to these two groups has been made by convenience, selecting those people who wished to participate as volunteers, although always fulfilling the requirement of having an ABI. Of the 12 people receiving the treatment, 5 had suffered TBI, 5 strokes, 1 brain tumor, and 1 anoxia. Of these persons belonging to the experimental group, 8 are women and 4 are men; the minimum age of this group is 30 years, while the maximum is 71 years. The mean age of the group was 55 years, with a standard deviation of 13 years.

As for the 8 people belonging to the control group, they have been assigned because they present some type of ABI but do not carry out any cognitive rehabilitation. Within this group, 5 are men and 3 are women; 2 of whom have suffered a stroke, 2 TBI, 2 brain tumors, and 2 anoxias. With regard to this group, the minimum age is 20 and the maximum 88 years, with a mean age of 52 years and a standard deviation of 22 years.

In relation to the inclusion criteria that were taken into account for the selection of the sample, the following are found.

-Diagnosis of cognitive impairment.

-Users in a neurological rehabilitation center.

-Seniors.

The only exclusion criterion was the absence of cognitive impairment.

Instruments

To assess the clinical changes in the different cognitive functions, tests were administered to each of the participants at the beginning and after the neuropsychological rehabilitation program.

Rey's Complex Figure Copy Test (Rey, 1959) .

It consists of copying a drawing and later reproducing it using the memory of the previous copy as a reference. This test consists of 3 sections. The figure is divided into 18 parts. The information about its score ranges from 2 to 0 according to the combination between the criterion of accuracy and the criterion of location. The maximum score is 36 points. In the present study, only the scores obtained in immediate and delayed recall are taken into account so that the impairment of visual memory is assessed.

Trail Making Test (Partington, 1983) .

It is divided into: Part A, where you have to join 25 numbers randomly distributed on a sheet; and Part B, which consists of joining 12 numbers and 12 letters in alternate order. The score will depend on how many seconds it takes to complete it correctly and your age. The purpose of this test is to assess flexibility and visual-motor speed.

Free and Cued Selective Reminding Test (FCSRT) (Buschke, 1984) .

The patient is presented with 4 pictures and 16 words which he will have to learn and notice that each word belongs to a different category. He will be told a category, and he will have to say with which word it is related. Afterwards, he will have to repeat all the words that he evokes, giving him the category of those words that he does not remember. A total of 3 tests are carried out with free or facilitated recall; and a last one, delayed recall, which is administered 30 minutes later. This test evaluates verbal memory.

Direct and indirect digit test (Wechsler, 1987) .

It was administered from the WAIS-III Battery. The task consists of reading aloud to the participants a series of numbers, progressively increasing the series, until they commit two consecutive failures within the same span. It is applied in both direct and inverse directions. The range of scores in direct digits is from 0 to 9 and in inverse digits from 0 to 8. This test evaluates the impairment in attention and working memory.

Barcelona Test (Peña-Casanova, 1991) .

First cognitive exploration instrument to analyze the neuropsychological state developed in Spain. It consists of a total of 106 subtests in 42 sections. The duration of the full test is 3 hours, so in this case we proceed to perform a reduced version of it with the following subtests: orientation (person, place, time); visual-verbal naming (series of images where the participant says what he sees); categorical evocation in associations (name of animals in 1 minute, evaluates executive functions); verbal comprehension (imitate verbal commands, simple and complex movements), reading text, copying sentence. These 3 subtests evaluate language; verbal abstraction (similarities and differences between 2 words, evaluates verbal fluency).

Procedure

With regard to ethical aspects, before starting the research, each participant is given an information sheet explaining what this work consists of. Once they have read it, they are asked to communicate any doubts or clarifications they may need. Next, the informed consent is given in accordance with the provisions of Law 15/1999 on the Protection of Personal Data. Each person gives in writing their willingness to participate in this study, being guaranteed the confidentiality of all the information provided and having the possibility in the case that it requires it to be able to renounce their participation, without any inconvenience.

Initially, an assessment is made of the essential aspects of global cognitive functioning through the administration of the aforementioned tests described above, with the aim of finding out how the patient's cognitive functioning is after suffering an ABI.

These results provide the necessary information to carry out an intervention program for the experimental group in which rehabilitation consists of activities based on strategies and techniques of neuropsychological rehabilitation of memory, attention, language, orientation, and executive functions. These exercises are carried out in a personalized way depending on the areas that are affected after the first neuropsychological evaluation since each person is unique, and even if they have suffered the same pathology as another person, the same brain area is not always altered; so if for example there is an alteration in memory and attention, most of the exercises will be referred to these 2 areas, although the other areas are also worked on so as not to neglect them, trying to maintain them and even improve them. The exercises are both pencil and paper and computerized. The participants in the study are divided into two groups, the experimental group, which carries out the cognitive rehabilitation

with two individual weekly sessions of one hour for four months; and the control group, which does not carry it out.

Neuropsychological rehabilitation takes place in a natural context, avoiding possible distractions and providing the necessary materials for each session (sheets of paper, pencils, computer, etc.).

The activities that are carried out for rehabilitation will depend on cognitive function:

- Memory. To work on semantic memory, exercises such as matching elements with the category to which they belong are carried out. In episodic memory, the most common exercise consists of the patient reading a story and then, without looking, being able to answer questions related to the text. To enhance immediate memory, exercises consisting of repeating lists of words and numbers are performed. In relation to recent memory, immediate verbal memory exercises are performed, which consist of reading a list of words to the patient and having him/her repeat them; and immediate visual memory exercises, which consist of recognizing objects observed in a drawing. To rehabilitate working memory, the patient is asked to write the days, months of the year, etc. both directly and inversely, or to read numbers aloud and repeat them.
- Orientation. In the case of personal orientation, a series of questions are asked related to the person, such as name, age, where he/she lives, etc. In relation to spatial orientation, questions related to location, where we are, city, country, etc. are asked. And, in reference to temporal orientation, they are asked a series of questions related to temporal data, what day of the week it is, month, year, hour, etc.
- Language. In order to rehabilitate written language, dictation exercises, description of objects, and experiences lived by the patient are carried out; one of the most effective exercises is the word escape game, which consists of completing the words that are incomplete. On the other hand, for the rehabilitation of oral language, exercises of reading aloud, description of images, or experiences are carried out.
- Attention. To rehabilitate attention, cancellation task exercises are carried out where, if the child is asked to simply mark the letter E, selective attention is strengthened; if, in addition, he/she is asked to do it in a specific time, processing speed is worked on. If the child is asked to mark all the letters A until the word "change" is said to him/her, which is when he/she has to move on to crossing out the letters E, successively giving him/her other indications, alternating attention is worked on. To rehabilitate selective and sustained attention, there is the alphabet soup exercise and to look for differences between two images.
- Executive functions. They are divided into categorization, where the patient has to divide a list of words into groups, and then name the group; in seriation, where sentences have to be ordered so that they have a logical sequence; in planning, where the patient has to describe the steps that are necessary to carry out a specific action (for example, preparing a holiday); and in initiative, where the patient has to write the name of 15 countries or write animals that have 7 letters.

After 4 months of neuropsychological rehabilitation, the initial evaluation is administered to check the changes that have occurred and to analyze the effectiveness of neuropsychological rehabilitation in patients with ABI, verifying the differences that have occurred between the experimental group and the control group. In addition, it is checked if there are differences taking into account age.

Data analysis

To test whether neuropsychological rehabilitation improves the cognitive functions of memory, language, attention, orientation, and executive functions in patients with ABI compared to those who have not undergone such rehabilitation, t-tests were performed for independent samples in which there were 2 groups (experimental and control) and 2 evaluation times (pre- and post-measurement). A confidence level of 95% was established, and, therefore, a margin of error of 5% ($p<0.05$). The Student's t-test for independent samples was used in all cases since the principle of normality was fulfilled, verified with the shapiro-wilk statistic, used because it was a sample of 20 participants, and the principle of homogeneity of variances, verified with Levene's test, so it was not necessary to perform non-parametric tests. The test variables were the scores obtained in the different cognitive functions; while the grouping variable was the group to which the patients belonged (experimental and control). Likewise, repeated measures ANOVA was performed to check if age influences the improvement from pre to post in the experimental group.

Statistical analyses were performed with SPSS version 22.0 statistical software.

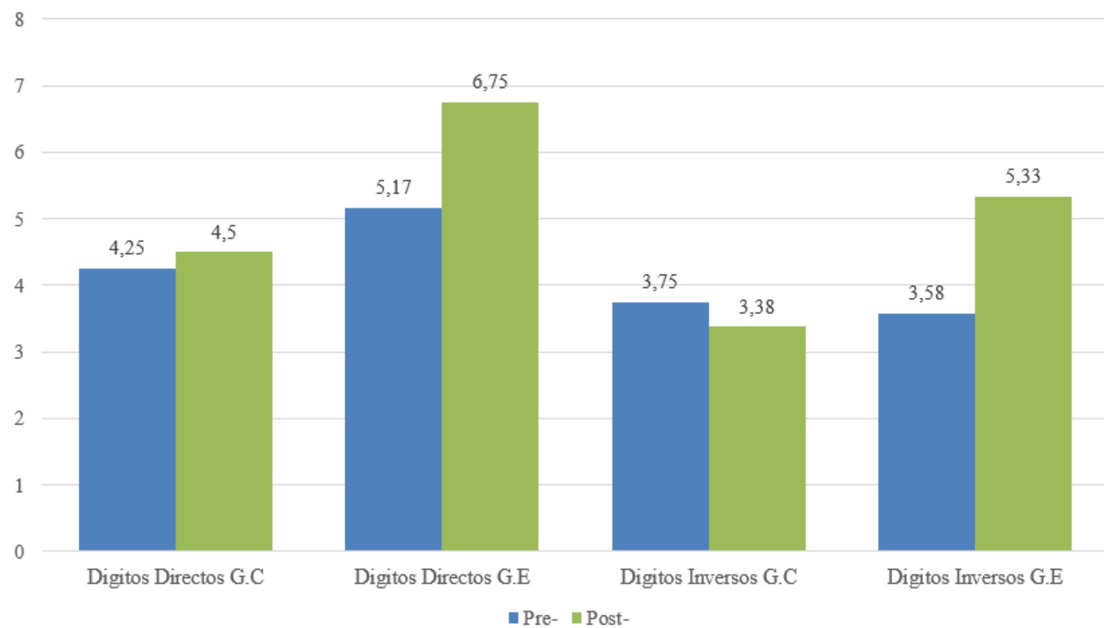
Results

The data obtained in SPSS are analyzed through a comparison of means to check if there are significant differences between the experimental and control groups with respect to the variables of attention, memory, language, orientation, and executive functions in the pre- and post-measures.

First, there are no significant mean differences in the direct digits dimension in the pre-measure between both groups (t (18)=1.19, $p=0.249$); nor in inverse digits (t (18)=-0.27, $p=0.789$). Regarding the post-measures, there are significant differences in the direct digits dimension between both groups (t (18)=4.25, $p=0.000$); and in the inverse digits dimension (t (18)=3.53, $p=0.002$). In conclusion, there is a significant improvement in attention and working memory when performing neuropsychological rehabilitation since the experimental group obtains a higher score, as shown in Figure 1.

Figure 1

Comparison of Attention and Working Memory pre and post in G.C and G.E.



Secondly, there are no significant differences in means in the pre-measure in the immediate verbal memory dimension between both groups (*t* (18)=0.34, *p=0.*736); nor in total free verbal memory (*t* (18)=0.68, *p=0.*506); nor in total verbal recall (*t* (18)=1.54, *p=0.*140); nor in deferred free verbal recall (*t* (18)=0.49, *p=0.*632); nor in deferred total verbal recall (*t* (18)=1.48, *p=0.*155). Likewise, there are no mean differences in the pre-measure in the two dimensions of visual memory neither in immediate visual memory (*t* (18)=-0.35, *p=0.*729); nor in deferred visual memory (*t* (18)=-0.44, *p=0.*665).

Regarding the post-measures, there are significant differences in the immediate verbal memory dimension between both groups (*t* (18)=3.67, *p=0.*002); in total free verbal memory (*t* (18)=4.97, *p=0.*000); in total verbal recall (*t* (18)=5.29, *p=0.*000); in delayed free verbal recall (*t* (18)=6.04, *p=0.*000); and in delayed total verbal recall (*t* (18)=6.12, *p=0.*000), as shown in Figure 2. Likewise, there are also mean differences in the post-measure in the two dimensions of visual memory, in immediate visual memory (*t* (18)=2.20, *p=0.*041); and in deferred visual memory (*t* (18)=2.18, *p=0.*042), as reflected in Figure 3. In conclusion, there is a significant improvement in all dimensions of both visual and verbal memory when performing neuropsychological rehabilitation.

Figure 2

Comparison of Verbal Memory in CG and EG measured after

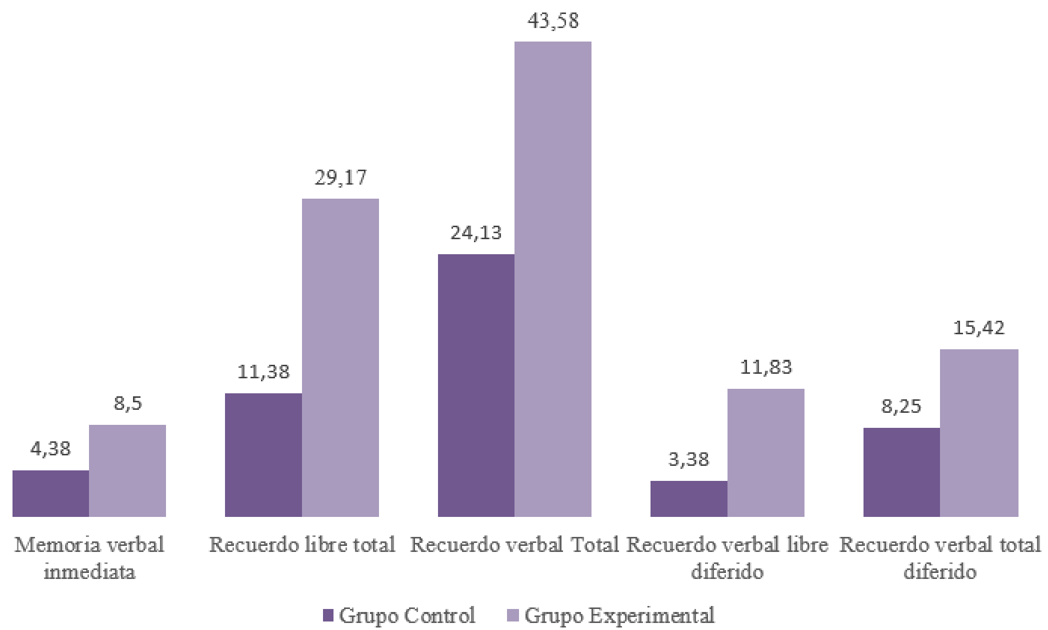
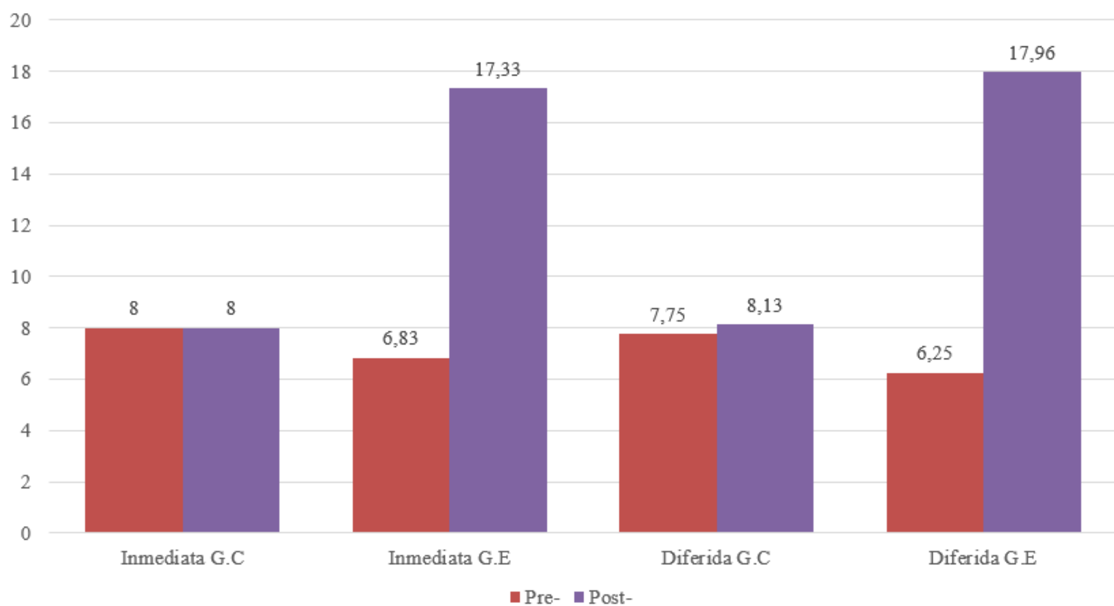


Figure 3

Comparison of pre- and post- Visual Memory in CG and EG

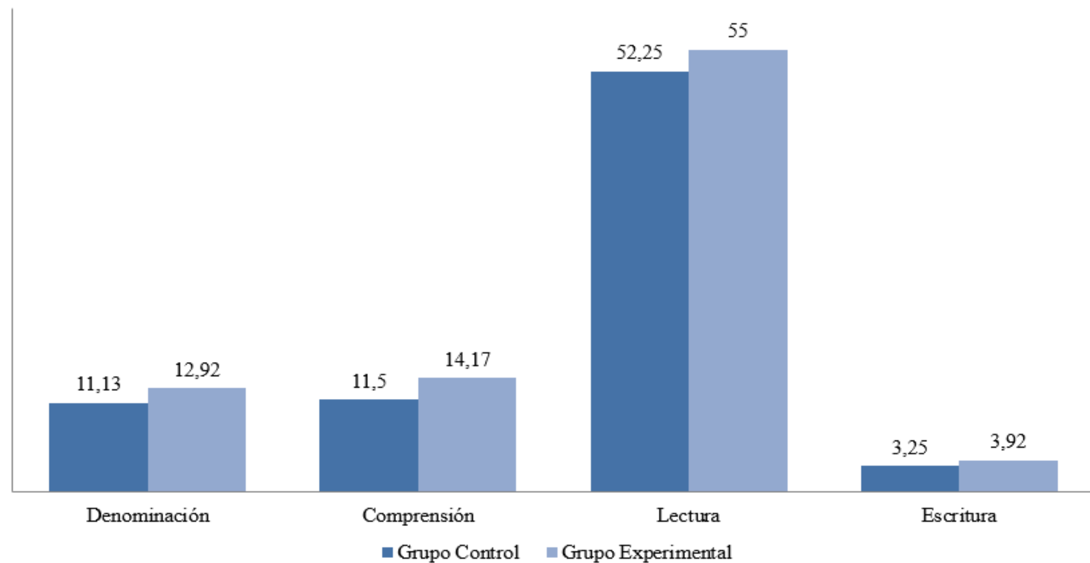


Thirdly, there are no significant mean differences in the pre-measure in the naming dimension between both groups (t (18)=1.17, p=0.256); nor in comprehension (t (18)=-0.59, p=0.560); nor in reading (t (18)=-0.31, p=0.762); nor in writing (t (18)=-0.16, p=0.871).

Regarding the post-measures, there are significant differences in the naming dimension between both groups (t (18)=2.41, p=0.027); in comprehension (t (18)=2.27, p=0.036); and, in reading (t (18)=3.63, p=0.002); on the contrary, there are no significant differences in writing (t (18)=1.16, p=0.260) with both groups scoring similar, as shown in Figure 4. In conclusion, there is a significant improvement in all language dimensions after neuropsychological rehabilitation, with the exception of the writing dimension.

Figure 4

Comparison of CG and EG language in post measurement

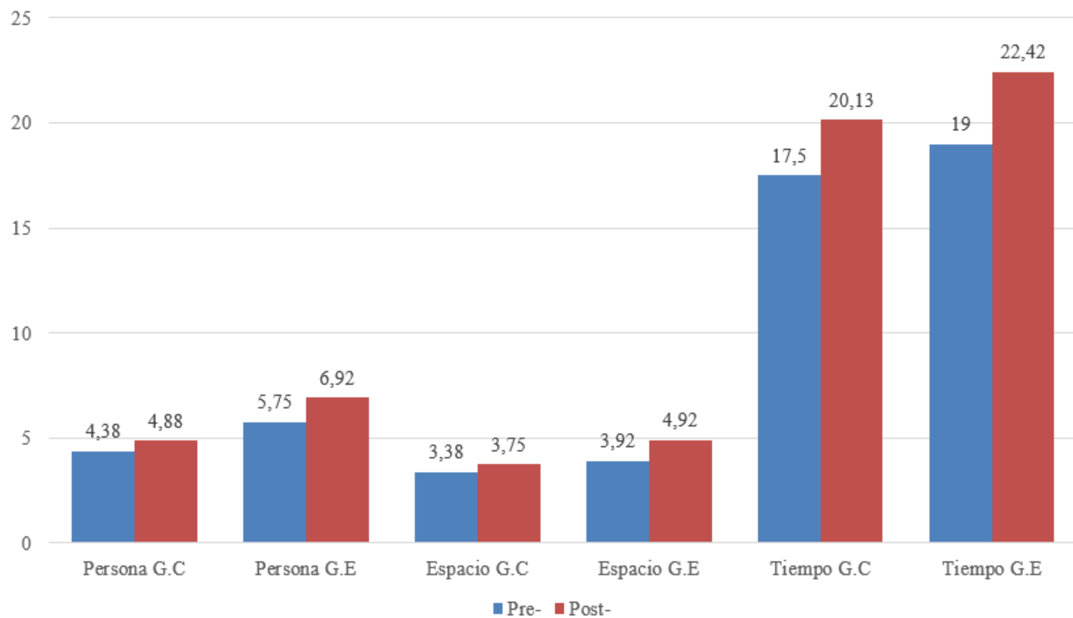


Fourthly, there are no significant mean differences in the pre-measure in the person orientation dimension between both groups (*t* (18)=1.92, *p=0*.070); nor in space (*t* (18)=0.88, *p=0*.391); nor in time (*t* (18)=0.69, *p=0*.498).

Regarding the post-measures, there are significant differences in the person orientation dimension between both groups (*t* (18)=2.38, *p=0*.003); in space (*t* (18)=2.27, *p=0*.006); and in time (*t* (18)=2.11, *p=0*.049), although in the latter case not as significantly as in the other two orientation dimensions, as shown in Figure 5. In conclusion, there is a significant improvement in the orientation dimensions when neuropsychological rehabilitation is performed.

Figure 5

Comparison of Pre and Post Orientation in CG and EG

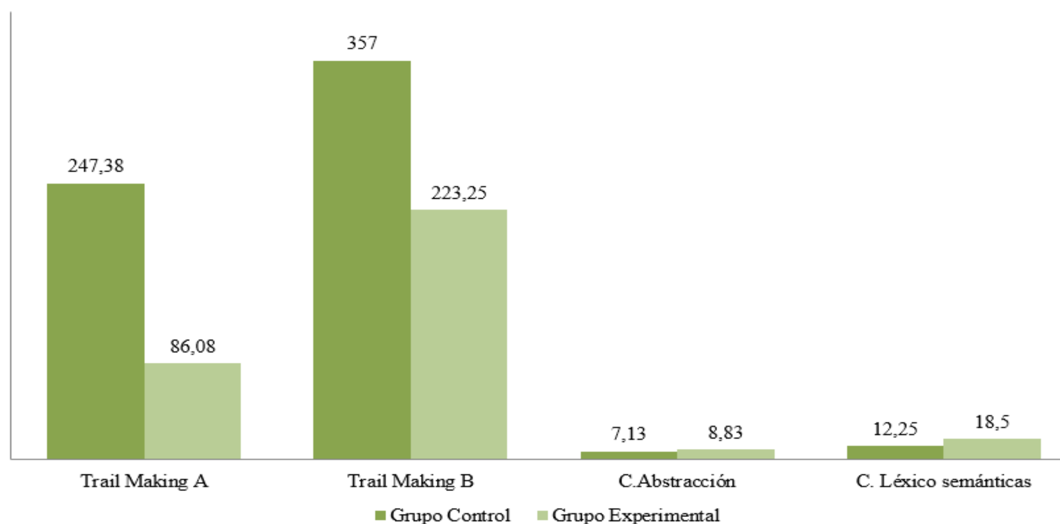


Finally, with respect to the pre-measurement in the executive functions dimension of Trail Making A, there is no significant difference between the means of both groups (*t* (18)=-1.73, *p=0.*101); nor in Trail Making B (*t* (18)=0.07, *p=0.*941); nor in abstraction abilities (*t* (18)=0.86, *p=0.*399); nor in lexical-semantic abilities (*t* (18)=0.42, *p=0.*682).

Regarding the post-measures, there are significant differences in the executive functions dimension of Trail Making A between both groups (*t* (18)=-2.46, *p=0.*024); and in Trail Making B (*t* (18)=-1.66, *p=0.*015); in this case both in Trail Making A and B, having a lower score is linked to a better performance in this section, so that carrying out the rehabilitation has led to a decrease in the time spent, thus improving the result. On the other hand, significant differences are also shown in abstraction skills (*t* (18)=3.08, *p=0.*006); and in lexical-semantic skills (*t* (18)=2.99, *p=0.*008). In conclusion, there is a significant improvement in all dimensions of executive functions after neuropsychological rehabilitation, as shown in Figure 6.

Figure 6

Comparison of post averages in Executive Functions



Also, it was analyzed by repeated measures ANOVA whether age influences the improvement from pre to post in the experimental group.

First, regarding the attention and working memory dimension, there are differences between the pre and post measures in direct digits, (F (1.00, 10.00)=16.85, $p=0.002$, η2=0.63), scoring the post measure (M=6.75, SD=1.14) higher than the pre measure (M=5.17, SD=2.08); and, in reverse digits, (F (1.00, 10.00)=8.80, $p=0.014$, η2=0.47), scoring the post measure (M=5.33, SD=1.30) higher than the pre measure (M=3.58, SD=1.56). In conclusion, the age at which cognitive rehabilitation is carried out influences the improvement of scores in the dimension of attention and working memory.

Second, regarding the verbal memory dimension when no cues are provided, there are statistically significant differences between the pre and post measures in immediate verbal memory, (F (1.00, 10.00)=9.33, $p=0.012$, η2=0.48), scoring the post measure (M=8.50, SD=2.84) higher than the pre measure (M=4.67, SD=2.77); in total free recall (F (1.00, 10.00)=8.02, $p=0.018$, η2=0.44), scoring the post measure (M=29.17, SD=8.42) higher than the pre measure (M=13.92, SD=8.60); and in delayed free recall (F (1.00, 10.00)=6.94, $p=0.025$, η2=0.41), scoring the post measure (M=11.83, SD=2.76) higher than the pre measure (M=4.42, SD=3.78). On the other hand, when cues are provided to the participants, there are no statistically significant differences between the pre and post measures in total recall (F (1.00, 10.00)=0.00, $p=0.996$, η2=0.00); and neither in total delayed recall (F (1.00, 10.00)=0.92, $p=0.361$, η2=0.08). In relation to the visual memory dimension, there are statistically significant differences between the pre and post measures in immediate visual memory (F (1.00, 10.00)=11.82, $p=0.006$, η2=0.54), scoring the post measure (M=17.33, SD=9.52) higher than the pre measure (M=6.83, SD=5.63); and in delayed visual memory (F (1.00, 10.00)=8.34, $p=0.016$, η2=0.46), scoring the post measure (M=17.96, SD=10.00) higher than the pre measure (M=6.25, SD=6.17). In conclusion, the age at which neuropsychological rehabilitation is carried out has an influence on the improvement of both visual and verbal memory, with the exception of when the latter is provided with cues in which age does not seem to have an influence.

Thirdly, with respect to the language dimension, there are no statistically significant differences between the pre and post measures in naming (F (1.00, 10.00)=0.86, $p=0.377$, η2=0.08); nor in comprehension (F (1.00, 10.00)=0.14, $p=0.718$, η2=0.01); nor in reading (F

(1.00, 10.00)=4.62, $p=0.057$, η2=0.32). On the other hand, there were statistically significant differences between the pre and post measures in writing (F (1.00, 10.00)=6.05, $p=0.034$, η2=0.38), with the post measure (M=3.92, SD=0.99) scoring higher than the pre measure (M=3.07, SD=0.89). In conclusion, the age at which cognitive rehabilitation is carried out has no influence on the improvement of 3 of the 4 dimensions of language; except for the writing dimension where age does seem to have an influence on the improvement.

Fourth, in terms of the orientation dimension, there are no statistically significant differences between the pre and post measures in orientation in person controlling for age (F (1.00, 10.00)=2.72, $p=0.130$, η2=0.21); nor in space (F (1.00, 10.00)=0.04, $p=0.852$, η2=0.01); nor in time (F (1.00, 10.00)=0.00, $p=0.984$, η2=0.00).

In conclusion, the age at which neuropsychological rehabilitation is carried out does not influence the improvement of scores in the 3 dimensions of orientation.

Finally, with respect to the dimension of executive functions, there are no statistically significant differences between the pre and post measures in Trail Making A (F (1.00, 10.00)=0.69, $p=0.425$, η2=0.06); nor in Trail Making B (F (1.00, 10.00)=1.09, $p=0.320$, η2=0.10); nor in abstraction abilities (F (1.00, 10.00)=0.22, $p=0.647$, η2=0.02). On the other hand, in lexical-semantic abilities there are statistically significant differences between the pre and post measures (F (1.00, 10.00)=5.34, $p=0.044$, η2=0.35), with the post measure (M=18.50, SD=3.85) scoring higher than the pre measure (M=12.25, SD=3.96). In conclusion, the age at which cognitive rehabilitation is carried out does not influence the improvement of scores in 3 of the 4 dimensions of executive functions; only in the dimension of lexical-semantic abilities where age does seem to have an influence.

Discussion and conclusions

The present study aimed to test the efficacy of neuropsychological rehabilitation in patients with ABI.

From the results obtained, there are two main analyses that can be obtained from this study. On the one hand, it has been evaluated whether the participants belonging to the experimental group show an improvement in the results after performing neuropsychological rehabilitation for 4 months in comparison with those patients belonging to the control group, and who, therefore, have not carried it out. And, on the other hand, it has been analyzed whether in the experimental group the improvement of scores from pre to post measures has been influenced by age.

Regarding the first of the analyses, the results found show a significant improvement in those patients who have undergone neuropsychological rehabilitation compared to those who have not in all the dimensions analyzed. This indicates that neuropsychological rehabilitation is effective in improving the performance of cognitive functions in patients with ABI, which coincides with the study conducted by Bonilla Santos, González Hernández, Amaya Vargas, Ríos Gallardo, & Bonilla Santos (2016).

The results obtained in the present research concretely show an improvement in the dimension of memory, coinciding with the findings of De los Reyes Aragón, Rodríguez Díaz, Sánchez Herrera, & Gutiérrez Ruíz (2013). In relation, there is the study by Solís-Marco, Castellano Guerrero, Domínguez Morales, & León Carrión (2014), who found a significant improvement in short-term memory; while in long-term memory and executive functions significant improvements were observed in the third and second month respectively. In the present research, we can only see that there has been an improvement in these areas but not in the month in which they occur.

Regarding the significant improvement in the attention dimension, there are studies that support this improvement through neuropsychological rehabilitation with León Carrión

(2011); and, Bonilla Santos, González Hernández, Amaya Vargas, Ríos Gallardo, & Bonilla Santos (2016).

In relation to the language dimension, in the present research the improvement has been significant in 3 of the 4 parameters that have been analyzed, since the only one in which there has been no improvement has been in writing. In reference to these data obtained, we find the study carried out by León Carrión (2011), which shows an improvement in language scores in general, not making distinctions by parameters as has been done in the present research.

The progress in the results of the executive functions dimension coincides with the study conducted by Martínez-Martínez, Aguilar-Mejía, Martínez Villar, & Mariño García, (2014).

Finally, the area of orientation shows an improvement in person, space and, to a lesser extent, time, and it is not possible to compare it with previous studies due to the lack of research in this area.

Regarding the second analysis, it was possible to demonstrate in the experimental group the influence of age on the improvement of scores from pre to post in the cognitive functions of memory without the facilitation of both verbal and visual cues; in both direct and inverse attention; in executive functions, only in the dimension of lexical-semantic abilities; and in language, although exclusively in the dimension of writing. On the other hand, no influence of age has been demonstrated in the improvement of scores in any of the dimensions of orientation; nor in 3 of the 4 dimensions of executive functions; nor in 3 of the 4 dimensions of language. In relation to these data, studies by Puerta Cortés (2017) and García Molina, Roig Rovira, Enseñat Cantallops, & Sánchez Carrión (2014), state that one of the best predictors in the improvement of cognitive functions altered after an ABI is age, demonstrating the relationship between age and neuropsychological rehabilitation with the improvement in the area of memory, attention, and executive functions. In relation to the research carried out, this coincides with the findings of the study since both memory and attention show an influence of age on the improvement; although in the case of the improvement in executive functions, this influence is only shown in one of its dimensions. In reference to the cognitive areas of language and orientation, which do not seem to be influenced by age, there are no studies that carry out such research to be able to compare them.

On the other hand, the results should be analyzed taking into account some limitations and future lines of research.

Firstly, the short duration of the intervention, which, although it shows satisfactory results in this aspect, it would be advisable to carry out an intervention for a longer period of time as well as to carry out a follow-up of its projection.

Secondly, the size of the sample since the small number of patients analyzed means that these results can only be generalized for the time being to this type of population and to the duration of the intervention. A recommendation in this sense would be to carry out experimental designs with larger samples in the future.

Thirdly, as the sample was small, it was not possible to use more statistics or to analyze other variables that would have been interesting, such as gender and the pathology of ABI suffered by the patient in comparison with the difference in effectiveness that could have been experienced.

Likewise, there is a lack of information regarding the clinical profile of the participants (functional status, time elapsed since the ABI, origin, etc.), which should be taken into account in future research due to its possible influence on the results obtained.

Another possible limitation is the heterogeneity in the rehabilitation procedure since a standard program has not been applied to all participants equally, although it has been done in

this way with the aim of improving the areas that were most affected in the participant, thus adapting the intervention to the person.

In conclusion, neuropsychological rehabilitation in patients with ABI is effective for the improvement of cognitive functions that have been altered such as attention, memory, language, orientation, and executive functions. Specifically, according to the findings, performing neuropsychological rehabilitation and the age at which it is carried out is associated with a better response to treatment. Therefore, it is inferred that after an ABI it is necessary to carry out neuropsychological rehabilitation aimed at improving the cognitive areas that have been affected, being fundamental in this way the inclusion of specialized neuropsychological treatments in the different multidisciplinary programs of rehabilitation of brain damage.

These results should serve to broaden the conception of brain plasticity and its potential for cognitive recovery after suffering an ABI, which suggests the need to highlight the important role of neuropsychological rehabilitation in order to make it more visible since such rehabilitation helps to guide the improvement of plasticity. In this sense, the use of neuroimaging techniques can provide an objective measure to evaluate the effectiveness of neuropsychological rehabilitation.

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