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Personality patterns predict the risk of antisocial behavior in Spanish-speaking adolescents

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Introduction. There is a renewed interest in incorporating personality variables in criminology theories in order to build models able to integrate personality variables and biological factors with psychosocial and sociocultural factors. The aim of this article is the assessment of personality dimensions that contribute to the prediction of antisocial behavior in adolescents.

Methods. For this purpose, a sample of adolescents from El Salvador, Mexico, and Spain was obtained. The sample consisted of 1035 participants with a mean age of 16.2. There were 450 adolescents from a forensic population (those who committed a crime) and 585 adolescents from the normal population (no crime committed). All of participants answered personality tests about neuroticism, extraversion, psychoticism, sensation seeking, impulsivity, and violence risk.

Results. Principal component analysis of the data identified two independent factors: (i) the disinhibited behavior pattern (PDC), formed by the dimensions of neuroticism, psychoticism, impulsivity and risk of violence; and (ii) the extrovert behavior pattern (PEC), formed by the dimensions of sensation risk and extraversion. Both patterns significantly contributed to the prediction of adolescent antisocial behavior in a logistic regression model which properly classifies a global percentage of 81.9%, 86.8% for non-offense and 72.5% for offense behavior.

Conclusions. The classification power of regression equations allows making very satisfactory predictions about

adolescent offense commission. Educational level has been classified as a protective factor, while age and gender (male) have been classified as risk factors.

Keywords: Personality, Antisocial behavior, Disinhibited, Extrovert

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Los patrones de personalidad predicen el riesgo de la conducta antisocial en adolescentes hispanohablantes

Introducción. En los últimos años existe un renovado interés por incorporar las variables de personalidad en las teorías criminológicas para construir modelos que integren variables de personalidad y factores biológicos con factores psicosociales y socioculturales. Recientes estudios revelan que las relaciones entre dimensiones de personalidad y delincuencia podrían representar un continuo dentro de las conductas antisociales. El objetivo del presente estudio ha sido la evaluación de las dimensiones de personalidad que contribuyan a la predicción de la conducta antisocial de los adolescentes.

Metodología. Para ello se obtuvo una muestra de adolescentes de El Salvador, México y España formada por 1035 participantes con una edad media de 16,2 años. Los adolescentes que han cometido delito han sido 450 y los que no lo han cometido han sido 585. Todos los participantes contestaron cuestionarios de personalidad que miden las dimensiones de neuroticismo, extraversión, psicoticismo, búsqueda de sensaciones, impulsividad y riesgo de violencia.

Resultados. El patrón desinhibido de conducta (PDC) se forma con las dimensiones de neuroticismo, psicoticismo, impulsividad y riesgo de violencia. El patrón extravertido de conducta (PEC) se forma con las dimensiones de búsqueda de sensaciones y extraversión. Ambos patrones permiten predecir la conducta antisocial de los adolescentes mediante

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un modelo de regresión logística que clasifica correctamente un porcentaje global del 81.9%, siendo para el caso del no delito 86.8% y en el caso de delito 72.5%.

Conclusiones. Se establecieron relaciones entre el nivel educativo, la edad, el género y la conducta antisocial. De forma que el nivel educativo resulta como un factor de protección y la edad y el género masculino como factores de riesgo para la conducta antisocial.

Palabras clave: Personalidad, Conducta antisocial, Desinhibición, Extroversión

INTRODUCTION

Personality variables are incorporated in criminological theories to construct models that integrate personality variables and biological factors with psychosocial and cultural factors. In this sense, it is considered that the relations between personality dimensions and delinquency represent a continuum of the antisocial behaviors¹⁻¹⁴.

On the other hand, there has been a great development of the criminological theories of self-control arising from a sociological perspective¹⁵⁻¹⁸. Briefly, the Gottfredson and Hirschi model¹⁶ proposes that low self-control would be the key factor that would underlie the different types of antisocial behavior, in association with situational opportunity. In this way, Gottfredson and Hirschi¹⁶ and Farrington¹⁹⁻²¹ have proposed similar lists of components of individual differences that would hypothetically relate to antisocial propensity: low intelligence, high levels of daring, impulsivity, activity level, physical strength. Empirical studies have attempted to relate the study of self-control to antisocial behavior, but derived the antisocial propensity of social opportunities and deviant behavior, incurring tautological definitions^{22,23}. Consequently, it is necessary to find some alternative definition and independent measure that breaks such circularity, for which it is proposed to focus attention on the individual components of antisocial propensity that are stable dispositions throughout life and that constitute the socio-emotional nucleus of the "personality dimensions"^{24,25}.

In this integrative line, the fact that impulsiveness is related to other dimensions of personality considered in Plutchik's theoretical model of emotions, called psycho-evolutionary theory²⁶⁻²⁸. The theory assumes the existence of eight dimensions of basic emotions that are systematically related to eight conglomerates of personality dimensions. The eight basic dimensions of personality would be: controlled, uncontrolled, confident, distrustful, depressive, gregarious, shy, and aggressive. At the base of which would be the emotions of temperance, confidence, sadness and anger, which would be expressed in a continuum with two poles each²⁷⁻³⁰. An important aspect of the theory is that personality dimensions can be conceptualized as derived

from the emotions assuming that the extremes of personality dimensions will involve personality disorders. In this way, extreme forms of impulsivity can be part of antisocial behavior or borderline personality disorder.

Eysenck^{31,32} and later Eysenck and Gudjonsson³³ elaborated a model of delinquent's personality with clear biological basis. In accordance with Eysenck's model (PEN model) the personality has three traits: extraversion (E), neuroticism (N) and psychopathy (P) (Psychoticism of the EPQ, the personality questionnaire derived from this model). In agreement with this approach, personality traits of the offender would be high extraversion, high neuroticism and high psychopathy (P). However, subsequent studies seem to indicate that predictions are fulfilled only for the psychopathy dimension, termed "psychoticism" in the original Eysenck theory^{11,34-39}.

Disinhibition (lack of inhibition) is a key concept in recent research on personality and psychopathology. Some personality dimensions such as impulsivity and extraversion on the one hand and psychopathy, hyperactivity disorder and drug abuse, on the other hand, have been associated with inhibition deficits^{7,40-49}. Disinhibition (or lack of inhibition) identify people with self-regulation problems and difficulties in canceling inappropriate responses and adjusting to the expectations of the situation. The lack of inhibition of the response has been related to the literature with a large number of terms: perseveration, impulsiveness, delayed gratification, sensation seeking, risk taking and exaggerated reaction to frustration. The ability to inhibit inappropriate responses is considered one of the most important executive functions and is directly related to self-control and goal-oriented behavior^{8,50-52}. Applying these findings to the field of forensic psychology, what has been called weak resistance to crime has become the central construct of contemporary criminology, calling it weak self-control^{15,53-56}.

From the point of view of physiological psychology, it has been suggested that the systems of inhibition and behavioral facilitation interact to determine observable behavior. Thus, it has been considered that antisocial behavior would have to do more with the imbalance between two systems than with too high or diminished functioning of any of them⁵⁶⁻⁶⁶.

Along the same lines, in the field of juvenile offending behavior, what has been called the "uninhibited pattern of behavior" characterized by impulsive subjects and sensation seekers who have not learned from experience being insensitive to punishment and, consequently, relapse into antisocial behavior^{46,48,51,67-73}.

Consequently, the research's aims were to assess personality dimensions that relate to the uninhibited pattern of behavior (PDC), the subsequent examination of how those

dimensions are grouped into factors and the possibility that such factors allow predicting the antisocial behavior of adolescents. The hypothesis that is put to the test will be whether the PDC is related to the commission of antisocial behavior.

METHODOLOGY

Participants

The total number of participants were 1059, which 24 were discarded for mere material errors: lack of a page of questionnaires or identification data (country, gender), which is approximately 2% of the total sample.

The final sample has been composed of a total of 1035 subjects, of which correspond: 285 to Mexico, 309 to El Salvador and 441 to Spain. The adolescents who belong to the forensic population (have committed some crime) have been 450 and those of normalized population (they have committed no crime) have been 585. The crimes have been all types, from theft to murders. At the time of answering the questionnaires minors filled in the form the crime, they had committed.

Control groups were from standardized educational centers in Guadalajara (Mexico), San Salvador (El Salvador) and Toledo (Spain) were compared with respect to age and sex. The ages are between 12 and 22 years, with a mean of 16.21 (mode and median have turned out to be 16) and the standard deviation of 1,521 (Table 1).

All the questionnaires were applied by the same researcher, the first signer of this article who in some cases had the help of auxiliary staff by the application was grouped in the classrooms of the various centers. These groups were formed by the first signer of this article with the requirement that minors could read and write correctly. The groups were conformed between 10 and 30 participants. Respecting to design of the sample was different in each country. In El Salvador, administrative permits were obtained to visit all internment centers in the country. In Mexico, this was for all centers of the state of Jalisco and in Spain, they were recruited by the first signer in his work as a psychologist of the prosecutor of minors of Toledo located in the city of Toledo. In Mexico, this was for all centers of the state of Jalisco and in Spain, they were recruited by the first signer in his work as a psychologist of the prosecutor of minors of Toledo located in the city of Toledo. Regard to the control group the participants was recruited from two schools in the country's capital San Salvador (El Salvador). In the Mexican case, the participants of the control group were recruited from two schools in the municipality of Zapotlán el Grande (Jalisco) in the Spain case in a school in the city of Toledo.

Table 1	Sample description					
	Educational level					
	Primary ¹		High School		Bachelor ²	
	Normal	Crime	N	C	N	C
Mexico	0	49	49	46	124	1
El Salvador	0	37	128	41	80	3
Spain	0	18	141	184	26	14
Total	0	104	318	271	230	18

1: No studies and Primary. 2: Bachelor and University students.

For a more detailed description of the sample, the reader is referred to a recent article published in this same journal that analyzes the psychometric properties of Plutchik's scale of impulsivity⁴ and risk of violence⁵.

Materials

- EPQ⁷⁴, Spanish version⁷⁵. Personality questionnaire that measures the dimensions of Neuroticism (N), Extraversion (E) and Psychoticism (P), named PEN model. It also incorporates two additional scales of antisocial behavior and sincerity.
- Sensation Seeking Scale, ZKPO-II^{76,77}. Sensation Search Scale (EBS). Own translation made for this research¹. The EBS consists of 34 items of two forced-choice phrases, which are scored as 0 or 1. The final score is the sum of the scores of all items, so it will range from 0 to 34. The EBS is a scale Self-applied.
- Plutchik's Impulsivity Scale (EI)²⁹, Spanish adaptation^{4,78}. Questionnaire of 15 items Likert-type with 4 possible answers (never, sometimes, often, almost always), scored respectively 0 to 3. The final value of the (EI) is obtained by adding the score for each item, therefore, it will be between 0 and 45. It is a self-applied scale.
- Plutchik's Violence Risk Scale of (EV)²⁹, Spanish adaptation^{5,79}. Questionnaire of 12 items, which 11 are Likert-type with 4 possible answers (never, sometimes, often, almost always), scored respectively 0 to 3, and one is of true or false type, which is scored as 1 0, respectively. Therefore, the EV adopts values between 0 and 34. This is a self-applied scale.

Statistical analysis

Data were analyzed by factor analysis to find the structures underlying to measure personality dimensions. A logistic regression was performed to study the relationship of the dichotomous variable like crime with age, gender, behavior patterns, and country.

Participants who have not committed a crime (standardized population) all of them have at least secondary education, meanwhile many of the participants who have committed a crime have a primary level of education evidencing that this population, adolescents that commit crime are delayed school what would correspond to them by age. For this reason, it is decided to recode the variable of educational level in order that no null cases are found in these categories (Table 1). This way, the educational level variable shown in the logistic regression equation (Table 3) has two categories: On the one hand, without education, primary and secondary; And on the other, High school and university students.

The country variable has three values (1=Mexico, 2=El Salvador, 3=Spain), two dummy variables have been created to be used as a reference in the comparison to Spain. In this way, the variable Mexico takes the value of 1 when the country variable is Mexico and the value 0 in another case. The variable El-Salvador takes the value of 1 when the country variable corresponds to El Salvador and 0 in another case. Therefore, the variables Mexico and El Salvador take the value 0 to Spaniards.

RESULTS

Factorial analysis

The sample adequacy measure of Kaiser-Meyer-Olkin (0.679) and the Bartlett sphericity test with Chi-square value =684.889; (g.l.=15, $p < 0.000$) suggest the adequacy of the factorial analysis, which could isolate a factorial structure underlying to personality scales. The unconstrained principal component analysis extracts two factors with an eigenvalue greater than one, which together accounts for a total of 58.917% of the total variance of the response of the personality scales (N, E, P, EI, EV, and EBS). The Table 2 shows the saturations resulting from the varimax rotation.

Prediction of criminal behavior by regression analysis

The logistic regression equation is shown below with the input method, taking as the dependent variable the crime variable (0=no crime, 1=crime) (Table 3).

Table 2	Main component factor solution and varimax rotation		
	Scales	Factors	
		I	II
Neuroticism (N)	0.552	-0.451	
Extraversion (E)	-0.124	0.811	
Psychopathy (P)	0.743	0.020	
Impulsivity (EI)	0.746	0.100	
Risk of violence (EV)	0.777	-0.018	
Sensation Seeking (EBS)	0.425	0.670	
Own value	2.214	1.321	
% Of total variance explained	36.902	22.015	

The higher factor weights are highlighted in bold.

The logistic regression equation shown in Table 3 has been used to predict whether or not each subject has committed a crime from the set of independent variables. The result is that an overall percentage of 81.9% of the subjects is correctly classified. The equation correctly classifies 86.8% of subjects who have not committed a crime, and in the case of crime, the percentage of correct classification reaches 72.5%.

The benefit ratio (OR) is considered a good estimator of the effect size^{84,85}. With regard to interpretation as protection or risk factors, gender (greater probability of offense for the male gender) and age (a greater crime at an older age) would be risk factors; while the educational level (less crime at high educational level) would be protective factors consistent with the specialized literature⁸⁶⁻⁹⁴.

Considering the reason for advantages, the level of higher education that adolescents have decreased the advantage of committing a crime by 98%. And respect to age, each year old that is the subject implies that the chances of committing a crime increase by 17.26%.

Discussion

Respect reduction of the dimensionality of the measured personality scales, taking into account the saturations of the scales in the factors^{55,80-83}, the first factor can be denominated as Disinhibit Conduct Pattern (PDC) and the second as Extravert Pattern of Conduct (PEC). Thus, subjects who score high on PDC tend to score high on psychopathy, impulsivity, and risk of violence, and to a lesser extent on neuroticism. This way, subjects who score high on PDC tend to be

Table 3		Logistic regression (introduce method) for the crime variable (n = 646)				
Behavior Patterns (PDC, PEC)						
Variables	B	Wald	R ² Cox	R ² Nagelkerke	p	Reason Advantages
			0,397	0,548		
Educational level ¹	-3.868	96.067***			0.000	0.021
Age	0.546	39.186***			0.000	1.726
Gender	2.178	53.531***			0.000	8.831
PDC	-0.193	3.018			0.082	0.825
PEC	-0.459	14.239***			0.000	0.632
Mexico	-0.183	0.415			0.519	0.832
El Salvador	-0.904	10.822**			0.001	0.405
Constant	-6.042	22.401***			0.000	0.002

* p<0,05 ** p<0,01 *** p<0,001; 1: Without education, primary and secondary; Bachelor and university. The estimated parameters for Mexico and El Salvador indicate the change in the probability of crime in these countries compared to Spain.

impulsive, emotionally tough, at risk of violent behaviors and prone to worry and anxiety. Those who rate low on PDC will tend to be carefree, without anxiety, little impulsive and without risk of violent behaviors.

On the other hand, subjects who score high in PEC will tend to score high extraversion and search of feelings and to show a lack of concern and lack of anxiety. However, subjects scoring low on PEC tend to be concerned and anxious, introverted, and lacking interest in emotions or activities that provide intense sensations.

From a criminological perspective, it has been considered that crime or antisocial behavior would have to do more with the imbalance between the two patterns of behavior than with too high or diminished functioning of any of them^{56,62-65}.

In the case of adolescent antisocial behavior, the poor modulation of the response to the award that underlies the uninhibited behavior common to various externality disorders (psychopathy, hyperactivity in childhood and addictive disorders) could be shaped as an uninhibited behavior pattern for the study of the relation of the personality with the criminality^{2,11,41,45,46,51,62,68,71,99-105}.

From the perspective of linking the evidence with criminological theory, we consider that behavior patterns are indicators of behavioral self-regulation and that can be a contribution from psychology to criminology to break the tautology of the model of self-control where the Antisocial

propensity of antisocial behaviors that would indicate a low self-control of the individual^{16,18,107}. This concept of individual self-control arises in literature as a continuum and a central construct in modern criminology^{53,65}.

Respect to the prediction of the antisocial behavior of adolescents, it is found in the regression equation shown (Table 3) that the PDC has a regression coefficient that is not significant, so we cannot consider that there is a relation between this variable and the probability of committing an offense. In contrast, PEC has a negative and statistically significant coefficient that is associated with a ratio of advantages less than one, indicating that a greater extroversion is associated with a lower probability of committing a crime. Following the logistic regression (Table 3), the estimated coefficient B for the El-Salvador variable can be interpreted as a risk factor for committing offenses by Salvadorans in comparison with the Spaniards; being negative B we can conclude that the probability of crime in El Salvador is lower than in Spain. Similarly, the B of the variable Mexico indicates the change in the probability of crime by the Mexicans in comparison with the Spaniards; As this B is not significant, it can not be concluded that the probability of crime varies between Mexico and Spain^{84,85}.

However, some limitations affect this study and new research will be exploring the consistency of the data obtained in this research. Especially the one of a risk of violence by the tendency to not communicate violent behaviors that could have skewed the results reason why the conclusions of the present study must be taken with caution.

Also the design of the sample has been to a great extent opportunistic to take advantage, of the first signer to get scholarships for its displacement to American countries of this study. Therefore, future studies will research generalization of the results to other countries by designing the samples to that effect^{1,4,5}.

CONCLUSIONS

The results of this research show the relationship between personality and delinquency of adolescents, which can be interpreted according to the approach formulated by Eysenck the existence of a continuum, from normal behavior to criminal till psychopathic^{32,33, 74,95,96}. Following these authors, there would be a continuum in personality dimensions and a continuum of antisocial behavior ranging from small crimes at one end to serious criminal offenses, and relationships can be established between them. It suggests the existence of a general pattern of antisocial and criminal behavior, opposed at one end of the continuum to a pattern of prosocial and altruistic behavior^{11,33,96}. In other words, results would support young offenders not differing substantially from non-offenders in dimensions of their personality, but in concrete profiles of scores in those dimensions^{73,97,98}.

Our results support the uninhibited behavior pattern (PDC) approach as a useful way of articulating personality dimensions to investigate their association with antisocial behavior. The analysis of our data, not only has the uninhibited behavior pattern (PDC) been formed, but a new one emerged that had not previously been established in the scientific literature, which we have called the extroverted behavior pattern (PEC). PDC conforms to EI, EV, P and N, while the PEC with E and EBS. Therefore, PDC is formed around impulsivity and PEC around the search for sensations, which would be compatible with the proposal of Barrat et al.¹⁰⁶, from the psychology of the personality they defend that impulsiveness and search of sensations are different dimensions of personality.

Empirical evidence has provided evidence about the effect of uninhibited and extroverted patterns on the likelihood of criminal behavior. In both cases the relationship is negative at the descriptive level, so high values in PDC and PEC are associated with a lower probability of offense. However, the clearer result is obtained with the variable PEC, whose coefficient of regression is highly significant. These findings show the importance of using personality variables as predictors of antisocial behaviors, as well as studying the differences between levels of other variables such as age, gender, country of residence and educational level. In synthesis, the results of our study suggest that patterns of behavior, structure personality traits and facilitate the empirical verification of hypotheses derived

from the relationship between personality and antisocial behavior.

On the other hand, this sample has confirmed that the educational level is a factor of protection to commit crimes and that the greater age and the masculine gender are the most important risk factors in a coherent way to the established in this field of Study^{1,2,4-6,10,11,14,15,19-21,23,37,56,63,86,88,89,91-94,105}.

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REFERENCES

1. Alcázar MA. Patrones de conducta y personalidad antisocial en adolescentes. Estudio transcultural: El Salvador, México y España. [tesis doctoral]. Madrid: Universidad Autónoma de Madrid; 2008. URL: www.uam.es [29-03-2014].
2. Alcázar MA, Bouso JC, Gómez-Jarabo G. Estudio exploratorio sobre la caracterización del patrón desinhibido de conducta en una muestra de menores infractores en España, México, y El Salvador. *Anuario de Psicología Jurídica*. 2007;115-37.
3. Copeland WE, Millar-Johnson S, Keeler G, Angold A, Costello EJ. Childhood psychiatric disorders and young adult crime: a prospective, population-based study. *Am J Psychiatry*. 2006;164:1668-75.
4. Alcázar-Córcoles MA, Verdejo-García A, Bouso-Sáiz JC. Propiedades psicométricas de la escala de impulsividad de Plutchik en una muestra de jóvenes hispanohablantes. *Actas Esp Psiquiatr*. 2015;43(5):161-9.
5. Alcázar-Córcoles MA, Verdejo-García A, Bouso-Sáiz JC. Propiedades psicométricas de la Escala de Riesgo de Violencia de Plutchik en una muestra de jóvenes hispanohablantes. *Actas Esp Psiquiatr*. 2016;44(1):13-9.
6. Flannery DJ, Vazsonyi AT, Waldman ID, eds. *The Cambridge Handbook of Violent Behavior and Aggression*. New York: Cambridge University Press; 2007.
7. Langehn DR, Cadoret RJ, Yates WR, Troughton EP, Stewart MA. Distinct contributions of conduct and oppositional defiant symptoms to adult antisocial behavior. *Arch Gen Psychiatry*. 1998;55:821-9.
8. Nelson EE, Leibenluft E, McClure EB, Pine DS. The social re-orientation of adolescence: A neuroscience perspective on the process and its relation to psychopathology. *Psychol Med*. 2005;35:163-74.
9. Raine A. *The psychopathology of crime: criminal behavior as a clinical disorder*. San Diego: Academic Press; 1993.
10. Redondo S. *Manual para el tratamiento psicológico de los delincuentes*. Madrid: Pirámide; 2008.
11. Romero E, Luengo MA, Sobral J. Personality and antisocial behaviour: study of temperamental dimensions. *Pers Individ Dif*. 2001;31:329-48.
12. Romero E, Sobral J, Luengo MA, Marzoa JA. Values and antisocial behavior among Spanish adolescents. *J Genet Psychol*. 2001;162(1):20-40.

13. Sanmartín J. Las claves de la violencia. Barcelona: Ariel; 2004.
14. Teplin LA, Abram KM, McClelland GM, Dulcan MK, Mericle AA. Psychiatric disorders in youth in juvenile detention. *Arch Gen Psychiatry*. 2002;59:1133-43.
15. Gottfredson MR. Self-Control Theory and Criminal Violence. In: Flannery DJ, Vazsonyi AT, Waldman ID, eds. *The Cambridge Handbook of Violent Behavior and Aggression*. New York: Cambridge University Press; 2007. p. 533-44.
16. Gottfredson RR, Hirschi T. A general theory of crime. Stanford, EE.UU.: Stanford University Press; 1990.
17. Hirschi T. *Causes of Delinquency*. Berkeley: University of California Press; 1969.
18. Hirschi T, Gottfredson, MR. *The generality of deviance*. New Brunswick, NJ: Transaction Publishers; 1994.
19. Farrington DP. Antisocial personality from childhood to adulthood. *Psychologist*. 1991;4:389-94.
20. Farrington DP. The development of offending and antisocial behaviour from childhood: key findings from the Cambridge Study in Delinquent Development. *J Child Psychol Psychiatry*. 1995;6:929-64.
21. Farrington D. Developmental and lifecourse criminology: Key theoretical and empirical issues. The 2002 Sutherland Award address. *Criminology*. 2003;41:221-55.
22. LaGrange TC, Silverman RA. Low Self-Control and opportunity: Testing the general theory of crime as an explanation for gender differences in delinquency. *Criminology*. 1999;37:41-72.
23. Nakhaie M, Silverman RA, LaGrange TC. Self-Control and Social Control: An examination of gender, ethnicity, class and delinquency. *Can J Sociol*. 2000;25:35-59.
24. Lahey BB, Waldman ID. A Developmental Propensity model of the Origins of Conduct Problems during Childhood and Adolescence. In Lahey BB, Moffitt TE, Caspi A, eds. *Causes of conduct disorder and juvenile delinquency*. New York: The Guilford Press; 2003: 76-117.
25. Lahey BB, Waldman ID. Personality dispositions and the development of violence and conduct problems. In: Flannery DJ, Vazsonyi AT, Waldman ID, eds. *The Cambridge Handbook of Violent Behavior and Aggression*. New York: Cambridge University Press; 2007. p. 260-87.
26. Plutchik R. *Emotion: A Psychoevolutionary Synthesis*. New York: Harper & Row; 1980.
27. Plutchik R. Measuring emotions and their derivatives. In: Plutchik R, Kellerman H, eds. *The Measurement of Emotions*. San Diego: Academic Press; 1989. p. 1-36.
28. Plutchik R. Emotions and psychotherapy: A psychoevolutionary perspective. In: Plutchik R, Kellerman H, eds. *Emotion, Psychopathology and Psychotherapy*. San Diego: Academic Press; 1990. p. 3-42.
29. Plutchik R, Van Praag H. The measurement of suicidality, aggression and impulsivity. *Progress in Neuropsychopharmacology Biology and Psychiatry*. 1989; 13:523-34.
30. Plutchik R, Van Praag HM. The nature of impulsivity: definitions, ontology, genetics, and relations to aggression. In: Hollander E & Stein DJ, eds. *Impulsivity and Aggression*. New York: John Wiley & Sons; 1995. p. 7-24.
31. Eysenck HJ. *The biological basis of personality*. Springfield, Illinois: C. Thomas Publisher; 1967.
32. Eysenck HJ, Eysenck SBG. *Psychoticism as a dimension of personality*. London: Hodder y Stoughton; 1976.
33. Eysenck HJ, Gudjonsson GH. *The causes and cures of criminality*. New York: Plenum Press; 1989.
34. Bartol CR. *Criminal behavior: a psychosocial approach*. Englewood Cliffs, EE.UU.: Prentice-Hall; 1991.
35. Feldman MP. *Criminal behaviour: A psychological analysis*. Chichester: Wiley; 1977.
36. Furnham A, Thompson J. Personality and self-reported delinquency. *Pers Individ Dif*. 1991;12:585-93.
37. Gomá-i-Freixanet M, Grande I, Valero S, Punti J. Personalidad y conducta delictiva autoinformada en adultos jóvenes. *Psicothema*. 2001;13:253-7.
38. Pérez J. Teoría de Eysenck sobre la criminalidad. El resultado de la investigación. *Psiquis*. 1986;6:35-52.
39. Alcázar-Córcoles MA, Verdejo-García A, Bouso-Saiz JC. La neuropsicología forense ante el reto de la relación entre cognición y emoción en la psicopatía. *Rev Neurol*. 2008;47(11):607-12.
40. Essex MJ, Kraemer HC, Armstrong JM, Boyce TM, Goldsmith HH, Klein MH, et al. Exploring risk factors for the emergence of children's mental health problems. *Arch Gen Psychiatry*. 2006;63:1246-56.
41. Gorenstein EE, Newman, JA. Disinhibitory psychopathology: a new perspective and a model for research. *Psychol Rev*. 1980;87:301-15.
42. Hier D. Sex differences in hemispheric specialization: Hypothesis for the excess of dyslexia in boys. *Ann Dyslexia*. 1979;29:74-83.
43. Finger EC, Marsh AA, Mitchell DG, Reid ME, Sims C, Budhani S, et al. Abnormal ventromedial prefrontal cortex function in children with psychopathic traits during reversal learning. *Arch Gen Psychiatry*. 2008;65(5):586-94.
44. Luengo A, Carrillo MT, Otero JM, Romero E. A short-term longitudinal study of impulsivity and antisocial behavior. *J Pers Soc Psychol*. 1994;66:542-8.
45. Newman JP. Reaction to punishment in extraverts and psychopaths: implications for the impulsive behavior of disinhibited individuals. *J Res Pers*. 1987;21:464-80.
46. Newman JP, Widom CS, Nathan S. Passive avoidance in syndromes of disinhibition: Psychopathy and extraversion. *J Pers Soc Psychol*. 1985;48:1316-27.
47. Rilling JK, Glenn AL, Jairam MR, Pagnoni G, Goldsmith DR, Elfenbein HA, et al. Neural correlates of social cooperation and non-cooperation as a function of psychopathy. *Biol Psychiatry*. 2007;1260-71.
48. Wallace JF, Newman JP, Bachorowski J. Failures of response modulation: impulsive behavior in anxious and impulsive individuals. *J Res Pers*. 1991;25:23-44.
49. Verdejo-García A, Bechara A. Neuropsicología y drogodependencias: evaluación, impacto clínico y aplicaciones para la rehabilitación. In: Pérez, M. (Coord.). *Manual Neuropsicología Clínica*. Madrid: Pirámide; 2009.
50. Barkley RA. Behavioral inhibition, sustained attention, and executive functions: constructing and unified theory of ADHD. *Psychol Bull*. 1997;121:65-94.
51. Patterson CM, Newman JP. Reflectivity and learning from aversive events: toward a psychological mechanism for the syndromes of disinhibition. *Psychol Rev*. 1993;100:716-36.
52. Pennington BF, Ozonoff S. Executive functions and developmental psychopathology. *J Child Psychol Psychiatry*. 1996;37:51-87.
53. Krueger R, Caspi A, Moffitt T. Epidemiological personology: the unifying role of personality in population-based research on problem behaviors. *J Pers*. 2000;68:967-98.
54. Ellis L, Walsh A. *Criminology: a global perspective*. Needham Heights, MA: Allyn & Bacon; 2000.
55. Fishbein D. *Biobehavioral perspectives in criminology*. Belmont, CA: Wadsworth; 2001.
56. Moffitt TE. Life-course-persistent and adolescence-limited

- antisocial behavior. A developmental taxonomy. *Psychol Rev.* 1993;100:674-701.
57. Corr PJ. Testing problems in J.A. Gray's personality theory: a commentary on Matthews and Gilliland (1999). *Pers Individ Dif.* 2001;30:333-52.
 58. Corr PJ. J.A. Gray's reinforcement sensitivity theory: tests of the joint subsystems hypothesis of anxiety and impulsivity. *Pers Individ Dif.* 2002;33:511-32.
 59. Corr PJ. Reinforcement sensitivity theory and personality. *Neurosci Biobehav Rev.* 2004;28:317-32.
 60. Davidson RJ, Jackson DC, Kalin NH. Emotion, plasticity, context, and regulation: Perspectives from affective neuroscience. *Psychol Bull.* 2000;126:890-909.
 61. Depue RA, Spoont MA. Conceptualizing a serotonin trait: a behavioral dimension of constraint. In: Nemm J, Stanley N, eds. *Psychobiology of suicidal behavior.* New York: Annals of the New York Academy of Sciences; 1986. p. 47-62.
 62. Fowles DC. Application of a behavioural theory of motivation to the concepts of anxiety and impulsivity. *J Res Pers.* 1987;21:417-35.
 63. Moffitt TE. Adolescence-limited and life-course persistent male delinquency. *Criminology.* 1993;32:277-300.
 64. Spear LP. The adolescent brain and age-related behavioral manifestations. *Neurosci Biobehav Rev.* 2000;24:417-63.
 65. White JE, Moffitt TE, Caspi A, Bartusch DJ, Needles DJ, Stouthamer-Loeber M. Measuring impulsivity and examining its relationship to delinquency. *J Abnorm Psychol.* 1994;103:192-205.
 66. Whittle S, Yap MBH, Yücel M, Fornito A, Simmons JG, Barrett A, et al. Prefrontal and amygdala volumes are related to adolescents' affective behaviours during parent-adolescent interactions. *Pnas.* 2008; 3652-57.
 67. New AS, Hazlett EA, Buchsbaum MS, Goodman M, Reynolds D, Mitropoulo V, et al. Blunted prefrontal cortical 18-fluorodeoxyglucose positron emission tomography response to meta-chlorophenylpiperazine in impulsive aggression. *Arch Gen Psychiatry.* 2002;59:621-9.
 68. Newman JP, Patterson CM, Kosson DS. Response perseveration in psychopaths. *J Abnorm Psychol.* 1987;96:145-8.
 69. Nilsson KW, Sjöberg RL, Damberg M, Leppert J, Öhrvik J, Alm PO, et al. Role of monoamine oxidase and psychosocial factors in male adolescent criminal activity. *Biol Psychiatry.* 2006;59:121-7.
 70. Patkar AA, Mannelli P, Peindl K, Hill KP, Gopalakrishnan R, Berrettini WH. Relationship of disinhibition and aggression to blunted prolactin response to meta-chlorophenylpiperazine in cocaine-dependent patients. *Psychopharmacology.* 2006; 185:123-32.
 71. Sobral J, Gómez-Fraguela JA, Romero E, Luengo A. Impulsividad, género y contextos: su interacción en la conducta antisocial. *Anuario de Psicología Jurídica.* 2000;79-91.
 72. Sobral J, Romero E, Luengo A, Marzoa J. Personalidad y conducta antisocial: amplificadores individuales de los efectos contextuales. *Psicothema.* 2000;12:661-70.
 73. Vitale JE, Newman JP, Bates JE, Goodnight J, Dodge KA, Pettit GS. Deficient behavioral inhibition and anomalous selective attention in a community sample of adolescents with psychopathic traits and low-anxiety traits. *J Abnorm Child Psychol.* 2005;33:461-70.
 74. Eysenck HJ, Eysenck SBG. *Manual of the Eysenck Personality Questionnaire (Junior & Adult).* London: Hodder and Stoughton; 1975.
 75. Seisdedos N. EPQ. Cuestionario de Personalidad EPQ-A/J. (Adaptación española Eysenck, y Eysenck, 1975). Madrid: TEA; 1989.
 76. Zuckerman M. *Sensation seeking: Beyond the optimal level of arousal.* Hillsdale, NJ: Erlbaum; 1979.
 77. Zuckerman M. *Psychobiology of personality.* Cambridge: Cambridge University Press; 1991.
 78. Rubio G, Montero I, Jáuregui J, Martínez ML, Álvarez S, Marín JJ, et al. Validación de la Escala de Impulsividad de Plutchik en población española. *Arch Neurobiol.* 1998;61(3):223-32.
 79. Rubio G, Montero I, Jáuregui J, Salvador M, Marín JJ, Santo-Domingo J. Validación de la escala de riesgo de violencia de Plutchik en población española. *Arch Neurobiol.* 1998;61(4):1-9.
 80. Bautista J, Quiroga E. La relevancia de un planteamiento cultural de los trastornos de personalidad. *Psicothema.* 2005; 17:422-9.
 81. Cea MA. *Análisis Multivariable. Teoría y práctica en la investigación social.* Madrid: Síntesis; 2002.
 82. Comrey AL. *A first course in factor analysis.* New York: Academic Press; 1973.
 83. Tabachnick BG, Fidell LS. *Using multivariate statistics,* 2ª ed. Northridge, California: Harper Collins Publishers; 1989.
 84. Fleis JL. Measures of effect size for categorical data. In: Cooper H & Hedges LV, eds. *The Handbook of research synthesis.* New York: Rusesell Sage Foundation; 1994. p. 245-60.
 85. Lipsey MW, Wilson DB. *Practical meta-analysis.* Thousand Oaks: Sage; 2001.
 86. Alcázar MA, Bouso JC, Verdejo A, Gómez-Jarabo G, Sánchez J, Mora A. Análisis cuantitativo de la actividad de los equipos técnicos de las fiscalías de menores de España. Años 2001, 2002 y 2003. *Anuario de Psicología Jurídica.* 2005;67-80.
 87. Connor DF. *Aggression and antisocial behavior in children and adolescents: research and treatment.* New York: The Guilford Press; 2002.
 88. Garrido V, Stangeland P, Redondo S. *Principios de Criminología.* Valencia: Tirant le Blanc; 2001.
 89. Garrido V, Stangeland P, Redondo S. *Principios de Criminología.* Valencia: Tirant lo Blanc; 2006.
 90. Heitmeyer W, Hagan J. *International Handbook of Violence Research.* Dordrecht: The Netherlands: Kluwer Academic Publishers; 2003.
 91. Lahey BB, Moffitt TE, Caspi A, eds. *Causes of conduct disorder and juvenile delinquency.* New York: The Guilford Press; 2003.
 92. Rutter M, Giller H. *Delincuencia juvenil.* Barcelona: Martínez Roca; 1998.
 93. Rutter M, Giller H, Hagell A. *La conducta antisocial de los jóvenes.* Madrid: Cambridge University Press; 2000.
 94. Tremblay RE, Hartup WW, Archer J. *Developmental origins of aggression.* New York: The Guilford Press; 2005.
 95. Eysenck HJ. *The scientific study of personality.* London: Routledge & Kegan Paul; 1952.
 96. Eysenck HJ, Eysenck MW. *Personalidad y diferencias individuales.* Madrid: Pirámide; 1987.
 97. Kosson DS, Steuerwald BL, Newman JP, Widom CS. The relation between socialization and antisocial behavior, substance use, and family conflict in college students. *J Pers Assess.* 1994;63:473-88.
 98. Nigg JT. On inhibition/dishinhibition in developmental psychopathology: Views from cognitive and personality psychology and a working inhibition taxonomy. *Psychol Bull.* 2000;126:220-46.
 99. Hare RD. La naturaleza del psicópata: algunas observaciones para entender la violencia depredadora humana. In: Raine A, Sanmartín J, eds. *Violencia y psicopatía.* Barcelona: Ariel; 2002. p. 13-57.
 100. Hochhausen NM, Lorenz AR, Newman JP. Specifying the Impulsivity of female inmates with borderline personality

- disorder. *J Abnorm Psychol.* 2002;111:495-501.
101. Liddle PF, Smith AM, Kiehl KA, Mendrek A, Hare RD. Response inhibition in schizophrenia and psychopathy: similarities and differences. In: *International Congress of Schizophrenia Research*. Santa Fe, California, april 1999.
 102. Newman JP, Kosson DS, Patterson CM. Delay of gratification in psychopathic and nonpsychopathic offenders. *J Abnorm Psychol.* 1992;101:630-6.
 103. Newman JP, Patterson CM, Howland EW, Nichols SL. Passive avoidance in psychopaths: The effects of reward. *Pers Individ Dif.* 1990;11:1101-14.
 104. Sobral J, Romero E, Luengo MA. Personalidad y delincuencia, la relevancia de lo "temperamental". *Bol Psicol.* 1998;58:19-30.
 105. Alcázar MA, Verdejo A, Bouso JC. Búsqueda de sensaciones y conducta antisocial. *Anuario de Psicología Jurídica.* 2015;25:75-80.
 106. Barratt E, Orozco-Cabal LF, Moeller FG. Impulsivity and sensation seeking: a historical perspective on current challenges. In: Stelmack RM, ed. *Personality: essays in honour of Marvin Zuckerman*. New York: Elsevier; 2004. p. 2-15.
 107. Hirschi T, Gottfredson, MR. Towards a general theory of crime. In: W. Buikhuisen W, Mednick SA, eds. *Explaining criminal behaviour. Interdisciplinary approaches*. Nueva York: Brill; 1988. p. 88-97.