Assessment of Machiavellian intelligence in antisocial disorder with the MACH-IV Scale

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Valoración de la inteligencia maquiavélica en el trastorno antisocial mediante la Escala MACH-IV

Summary

Introduction. *The objetive is to evaluate the presence of Machiavellian intelligence with the MACH-IV Scale in antisocial patients versus community controls.*

Material and methods. *Categorical diagnosis and dimensional evaluation program according to IPDE were obtained from 26 controls from the community and 40 patients from a methadone program. Both groups were evaluated on cooperation with TCI and on Maquiavellian intelligence with MACH-IV.*

Results. *Higher figures in MACH-IV Global Score, Tactics subscale (to manipulate others), Visions subscale (interpretations on Maquiavellian behavior of others) were found in the 20 antisocial patients compared with the 26 community controls achieving statistical significance. No statistical differences were found for Morality subscale scores (abstract morality) between groups. Dimensional evaluation of antisocial disorder according to IPDE shows statistically significant positive correlations for Tactics subscale, Visions subscale and Global Score of MACH-IV scale, but no statistically significant correlation was found for Morality subscale. There is a statistically significant negative correlation between MACH-IV Tactics subscale and TIC altruism subscale.*

Conclusions. *Antisocial patients have the same level of abstract moral attitudes as controls but are prone to use Machiavellian intelligence to interpret the actions of others, rationalize their own conduct and manipulate the behavior of others to get a benefit. These data support the hypothesis that many of the features of the antisocial syndrome may be explained by an abnormal development of an innate predisposition to be dominant in social relationships.*

Key words: *Antisocial. Prisoner's dilemna. MACH-IV. TCI. Game theory. Evolutionary.*

Resumen

Introducción. *El objetivo es valorar la presencia de inteligencia maquiavélica mediante la escala MACH-IV en pacientes antisociales frente a controles de la comunidad.*

Material y métodos. *A 26 controles de la comunidad y 40 pacientes de un programa de metadona se les valoró la presencia dimensional y categorial de trastornos de personalidad mediante la IPDE, la cooperación según la subescala del TCI y la inteligencia maquiavélica mediante la escala MACH-IV.*

Resultados. *De forma estadísticamente significativa los 20 pacientes antisociales del programa de metadona comparados con los 26 controles tienen mayores puntuaciones en la puntuación total de la Escala MACH-IV, la subescala Tácticas (para manipular a otras personas) y la subescala Visiones (interpretaciones sobre la conducta maquiavélica de otros). No hay diferencias para la subescala Moralidad (moralidad abstracta). La valoración dimensional del trastorno antisocial según IPDE presenta correlaciones positivas de forma estadísticamente significativa para las subescalas Tácticas, Visiones y Puntuación Total (pero no para la subescala Moralidad). Existe una correlación negativa estadísticamente significativa entre la subescala Tácticas del MACH-IV y la de altruismo del TCI.*

Conclusiones. *Los pacientes antisociales no difieren en sus actitudes morales abstractas con respecto a los controles pero tienen una mayor tendencia a usar los postulados de la Teoría de la Inteligencia Maquiavélica a la hora de interpretar las acciones de los otros, justificar las propias acciones así como para manipular la conducta de otros para obtener beneficio. Estos resultados apoyan la hipótesis de que muchos rasgos del trastorno antisocial pueden deberse a un desarrollo anormal de las predisposiciones innatas a ser dominante en la relación social.*

Palabras clave: *Antisocial. Dilema del prisionero. MACH-IV. TCI. Tensión del juego. Evolucionismo.*

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INTRODUCTION

From the evolutionist point of view, the hypothesis of Machiavellian intelligence (MIH) considers that this capacity facilitates adequate interpretation of emotions and intentions of others, which is an advantage from the

evolutive point of view. The origin of this capacity would be found in the adaptive pressure and subsequent natural selection of social interactions[1-4], which are considered to be one of the main evolutive pressures for the development of intelligence in general. The concept is usually restricted to perception or interpretation of the manipulating and egoistic intentions and to the performance of this same type of behaviors, that is, the presence of a cynical and interested behavior and attitude for ones own benefit. Usually the MACH-IV Scale[5], based on the writings of Machiavelli, is used as an acceptable approach to this restricted concept of Machiavellian intelligence

The concept of Machiavellian intelligence, assessed according to the MACH-IV Scale, has been associated in social, political and psychological studies to manipulation, dominant, competitive behavior, leadership, etc. Studies have been performed in populations without apparent psychopathology such as specific professional groups[6-11] although there are self-selection biases related with personality traits in these groups.

Applications of the Machiavellian intelligence idea or application of the MACH-IV instrument in psychiatry have been essentially performed in community samples, assessing the correlation between their scores and those of scales having certain personality traits such as antisocial[12-17], narcissistic[18], paranoid[19] or other[20-22] ones and correlating them. In summary, it has been found that groups such as the schizophrenic ones have lower scores on the MACH-IV than the controls, and that antisocial, narcissistic or paranoid traits correlate positively with high scores on the MACH-IV Scale.

Antisocial personality disorder is defined by a persistent pattern of contempt and violation of the rights of others[23]. The diagnostic criteria are greatly focused on the assessment of behavior elements (in general, criminal type) and little on the reasons for the behavior, an aspect that is essential in the present psychiatric diagnoses. If we use similar criteria for anorexia, anyone who stops eating could be anorexic, whether or not they do so to avoid gaining weight. This bias in diagnostic criteria occurs because the patient manipulates and falsifies reality both in the interviews as well as questionnaires and this solution has been used to avoid losing interrater reliability. However, in our opinion, validity is lost, for example, the possible antisocial group who do not commit criminal offenses but who do, however, scorn and violate the rights of others, although not illegally, are left out. This bias in the diagnostic criteria has made it impossible to study the causes of the disorder and has prepared the field of etiological speculations in depth: for example, if there is moral development or if this is inadequate, if they feel less remorse or do not feel it, etc. Our hypothesis, explained more in detail in another previous article that complements this one[24], is that the antisocial subjects know what is adequate or not to do from a moral point of view; they know what the social rules are. However, they have a basic problem to accept the hierarchy due to their tendency to be dominant in the social relationship, and thus their distrust and rebellion in social cooperation, in the group and their rules, rejection of authority, search for individualism and personal benefit, cynical and manipulating attitude and their first impulse is always to refuse to comply with the rules, even when this can cause them harm. Most of these characteristics, together with others such as the difficulty of learning negative reinforcement, search for sensations, low reactivity to stress, etc. are also observed in the evolutive precursors of the disorder: dissocial disorder, previously defiant negativist disorder[25] and even in the preverbal child with difficult temperament according to the Chess and Thomas classification[26].

With the evaluation using the MACH-IV scale, we want to reliably assess some of these attitudes towards social rules that allow the antisocial disorder to distort or manipulate them more easily, so that this and other studies make it possible to reassess the need to incorporate these elements into the diagnostic decision.

MATERIAL AND METHODS

Two study populations were selected. The first sample was obtained from 104 patients in a methadone program as a group in which the presence of cluster B personality disorders and especially antisocial ones or antisocial behavior secondary to socioeconomic condition could be very prevalent. The second sample was obtained from 100 normal persons in the same community as the methadone program patients and was used as a control group.

A total of 46 patients was obtained from the 104 methadone maintenance program patients. As inclusion criteria in the study, it was necessary to have passed 3 months with negative urine controls and to not have presented comorbidity with an acute psychiatric picture at the time of the interview. Six patients were excluded for non-collaboration in the methadone maintenance program sample, the study sample finally being 40 patients.

For inclusion criteria of the control group, and considering the strong impact that gender and age may have in the variables to be studied, it was proposed to use the escorts of 100 patients of imaging diagnosis in the age range of the methadone program sample (18-38 years) and, in such a way that at the end of the inclusion, 80 % were men as in the methadone program sample. With these inclusion criteria, 26 patients were obtained as controls.

Both the methadone program patients as well as the controls were dimensionally and categorially interviewed with the IPDE DSM-IV interview version[27]. In the case of the methadone program and in order to increase its reliability, the interview was performed by the clinician in charge of the methadone maintenance program. The patients filled out the Temperament and Character Inventory (TCI)[28,29], in which we were especially interested in the cooperation subscales (table 2) and the Machiavellian intelligence Scale MACH-IV[5] that provides us with three subscales: Tactics (tactics to deceive or ma-

nipulate), Visions (clinical visions of the human nature) and Morality (abstract or ideal morality). The MACH-IV Scale in the Visions subscale assesses the capacity of interpreting the affects and intentions of others as potential generators of deception. The same occurs with the Tactics subscale since those manipulation tactics that generate benefit at the cost of the other are essentially taken into account. Both the Tactics subscale as well as the Visions one are also tinged with a cynism that self-justifies and rationalizes the manipulative behavior of others. All this is obvious in the direct score questions of the MACH-IV Scale, the inverse score questions being the most neutral and ambiguous.

RESULTS

None of the 26 controls of the community fulfilled the antisocial personality disorder criteria. Out of the 40 methadone program patients, the IPDE interview (DSM-IV version) categorially classified 20 of them as positive antisocial diagnosis, 10 as probable and 10 as absent.

From the methadone program sample, according to the IPDE DSM-IV version, there was a positive diagnosis of borderline disorder in six patients, of narcissistic disorder in two, of histrionic disorder in one, of paranoid disorder in two and of schizoid in two. All the positive diagnoses of cluster B and half of those of cluster A were comorbid with the presence of antisocial disorder of positive or probable personality (two cases). There were no diagnoses of cluster C in the methadone program patients or in the community controls.

No statistically significant differences were obtained between the four study groups for either gender or age (a mean 27.3 years for the controls, 25.2 for the non-antisocial from the methadone program; 26.4 for the probable antisocial group of the methadone program and 27.6 for the positive antisocial group of the methadone program). All the methadone program patients had a significantly worse educational, socioeconomical and work level than those of the community controls, since they did not have studies beyond the obligatory ones and thus they had the professions and economic levels associated to them. All the methadone patients had been arrested at some time for at least robbery or theft, none due to consumed homicide and seven due to aggressions or attempted murder, although all had committed aggressions at some time.

The categorial classification according to degree of antisocial diagnosis certainty of the IPDE fragmented the methadone program sample into three groups, of which only the positive antisocial group (n = 20), had an acceptable size for comparison. Therefore, the tables only show the comparison of the community controls versus the antisocial patients with positive degree for the IPDE. In these tables, the associations of the study variables with the dimensional score of the antisocial disorder according to the IPDE are also shown. The 10 antisocial patients with the degree of only probability and to a lesser degree for the 10 non-antisocial patients of the methadone group present greater scores in the MACH-IV Scale than the controls without statistically significant differences.

As is seen in table 1, the antisocial patients have statistically significant greater scores than the community controls in most of the different direct type questions related with the Tactics or Visions subscale as well as the total scores of the Tactics and Visions subscales and the total score of the MACH-IV Scale. The differences are attenuated and are no longer significant on occasions for the inverse score items. There are no differences between the antisocials and controls for the questions related with the Morality subscale.

The antisocial personality dimensional assessment of the IPDE presents statistically significative positive correlations with the specific items (especially the direct items), the Tactics and Visions subscales, and the total score of the MACH-IV. There is no correlation with the Morality scale and the dimensional score of antisocial behavior.

Regarding the correlations between the TCI cooperation subescales and MACH-IV (table 2), the high scores of the Tactics and Visions subscales and the total score of the MACH-IV generally have negative correlations with the high scores of the cooperation subscales and its total score. These negative correlations reach a statistically significant level between the Tactics subscale of MACH-IV and that of altruism on the TCI. The global scale of cooperation of the TCI and MACH-IV Tactics subscale and between the total score of the MACH-IV and the altruism subscale of the TCI.

Finally, table 3 shows that due to the small sample size, we only have statistically significant correlations with the antisocial diagnosis, which favors the presence of statistically significant correlations for global variables such as being in Cluster B or having any diagnosis of personality.

All the patients of the methadone group share the belief that the world really functions as is suggested by the high scores on the MACH-IV Scale. In addition, 12 of the 14 patients who began with antisocial disorder before 10 years defended the fact that it was necessary to follow the recommendations of the scale when relating not only with strangers but also with family and close friends. On the contrary, the six antisocial patients who began close to adolescence, eigth of the 10 probable antisocial ones and nine of the 10 non-antisocial ones believed that the suggestions of the scale only had to be followed with strangers.

DISCUSSION

The statistical significance reached by the high scores on the MACH-IV Scale in regards to the controls for the Tactics and Visions subscales show that the antisocial patients in regards to the non-antisocial ones use many tactics of manipulating the behavior of others excessively (in order to dominate them and obtain benefit from

TABLE 1. Values for antisocial patients and controls of the MACH-IV Scale, and correlations of the MACH-IV Scale with the antisocial personality dimension

		Controls n = 26	*Antisocials n = 20*	*Value x^2*	*Antisocial dimension*
1.	The best way to deal with people is to tell them what they want to hear (T+)	3.28	4.80	4.2*	0.3496
2.	When you ask someone to do something for you, it is better to give the real reason than other more important ones (T–)	2.00	2.55	2.1	0.2458
3.	Anyone who completely trusts anyone is looking for problems (T+)	4.24	5.45	4.13*	0.3388
4.	It is hard to be successful without using any type of short cut or maneuver (V+)	3.64	5.50	10.61**	0.4173
5.	Sincerity is the best policy in all cases (T–)	3.60	2.95	1.89	–0.1323
6.	It is safer to assume that everyone has a malicious point that will come out when they are given the opportunity (V+)	3.40	5.15	5.64*	0.4055
7.	You should never tell the other the real reason why you did something unless it is useful for you to do so (T+)	2.60	5.55	15.73**	0.5594
8.	You should only begin something when you are sure that it is morally correct (T–)	3.92	3.15	1.8	–0.1440
9.	It is intelligent to speak to important people in aflattering way (T+)	4.04	3.80	0.03	–0.170
10.	Above all, it is best to be simple and honest than important and dishonest (M–)	1.84	2.10	0.51	0.0204
11.	The saying «an idiot is born every minute» is wrong (V–)	3.56	3.75	0.05	0.0638
12.	Those who suffer incurable diseases should be able to have the opportunity of choosing a death without pain (M+)	5.88	6.40	1.18	0.1304
13.	It is possible to be good in all senses (T–)	3.12	5.25	9.62*	0.3517
14.	Most people are basically good and kind (V–)	2.88	5.25	16.61**	0.6271
15.	There is no excuse for lying to another person (T–)	4.48	4.35	0.001	–0.0444
16.	Most people forget the death of their father or mother more easily than the loss of property (V+)	1.72	3.40	5.82*	0.4320
17.	Most people who are successful in the world live morally irreproachable lives (V–)	5.60	5.40	0.17	–0.0706
18.	Generally speaking people do not work hard unless they are obligated to do so (V+)	3.36	5.05	6.21*	0.3518
19.	The main difference between most delinquents and the rest of the people is that delinquents are sufficiently stupid to be caught (V+)	1.96	4.05	11.3*	0.4799
20.	Most people are daring (V–)	5.32	5.35	0.008	0.0074
	MACH Moral	7.72	8.50	1.23	0.0873
	MACH Visions	28.04	37.75	18.02**	0.6205
	MACH Tactics	34.68	43.00	6.26*	0.4475
	MACH Total	90.44	109.25	14.56**	0.6063

T is a question from the Tactics subscale. V is a question from the Visions subscale. M is a question from the Moral subscale. The sign + or – indicates if idrect score (+) or inverse score (–) is used in the corrrection.

them) and they tend to interpret the intentions of others as manipulation attempts.

The fact that there are no differences between the antisocial and control groups for the Morality scale in abstract may be interpreted as the fact that the antisocial patients know what is good or bad, and if they do not respect the moral rules, it is not due to lack of knowledge. It is up to the interpretation of each one if they do not want to apply this knowledge or cannot do so correctly (projection mechanism, catathymic deformation, etc.). However, it must be taken into consideration that the two items of the scale are few, in our opinion, to evaluate it with reliability.

The positive correlations between paranoid, narcissistic or borderline personality disorder and the negative correlations for cluster C and the rest of cluster A with

TABLE 2. Correlations between TCI cooperation subscales and the MACH-IV Scale

TCI Subscales	*MACH Tactics*	*MACH Visions*	*MACH Moral*	*MACH Total*
C1 social acceptance (vs intolerance)	–0.3367	–0.2819	0.1954	–0.3420
C2 empathy (vs social disinterest)	–0.2163	–0.1024	–0.0427	–0.2157
C3 availability to help others (vs non-availability)	–0.0872	0.1871	0.0233	0.0175
C4 compassive (vs vengeful)	–0.3157	0.0020	0.0623	–0.2284
C5 altruism (vs egoism)	–0.4297*	–0.1093	–0.0744	–0.3866*
C total	–0.4207*	–0.0660	0.0507	–0.3393

TABLE 3. Correlations between dimensional score for the different personality diagnoses according to the IPDE and the MACH-IV subscales for the controls and antisocial patients

	Number of patients diagnosed categorially by IPDE	*Mean and range of dimensional assessment of the IPDE*	*Standard deviation*	*MACH Tactics*	*MACH Visions*	*MACH Moral*	*MACH Total*
Paranoid	1	1.12 (0-14)	2.10	0.3235	0.1998	0.0083	0.3328
Schizoid	2	1.50 (0-14)	3.00	-0.0311	-0.0668	0.1155	-0.0318
Schizotypal	0	0.87 (0-18)	1.75	0.0818	-0.1405	0.0770	0.0159
Antisocial	30	13.59 (0-44)	13.30	0.4475	0.6205	0.0873	0.6063
Borderline	6	5.37 (0-18)	2.76	0.3445	0.2394	-0.0440	0.3565
Histrionic	2	3.25 (0-16)	4.08	0.2698	0.2796	-0.1170	0.3040
Narcissistic	1	1.65 (0-18)	3.35	0.3042	0.1126	-0.1671	0.2500
Avoidant	0	0.68 (0-14)	2.02	-0.1482	-0.2738	0.2886	-0.1787
Dependent	0	1.34 (0-16)	2.32	0.1391	-0.1055	-0.0503	0.0520
Obsessive	0	0.31 (0-16)	1.02	0.1124	0.0787	-0.0212	0.1154
All the disorders	38	40.34 (0-188)	13.9	0.3914	0.1710	-0.1901	0.3372
Cluster A	3	3.50 (0-46)	5.34	0.1155	-0.0186	0.0954	0.0967
Cluster B	35	34.50 (0-96)	11.94	0.3966	0.2682	-0.3009	0.3632
Cluster C	0	2.34 (0-46)	3.37	0.0411	-0.2137	0.1328	-0.0365

the high scores on the MACH scale have no statistical value due to the small number of cases, but they support performing studies with the MACH-IV in other personality disorders other than the antisocial ones.

There are negative correlations between total score of the MACH-IV and most of the TCI cooperation subscales, although they only reach statistically significant levels for the TCI altruism subscale. These negative correlations show that MACH-IV and TCI cooperation subscales assess opposite constructs. Obviously, the use of Machiavellian intelligence to achieve self-advantage decreases the altruistic behavior. Cooperative behavior may occur in situations of reciprocal exchange due to egoistic interest (giving something that one has in exchange for something that one does not have). This explains that the correlations may be neutral for the Total score of the MACH-IV in the C3 subscale «availability to help others», although they are negative for the Tactics subscale.

The way in which early onset antisocial patients differ from the late onset ones in their belief regarding how the concepts of the MACH-IV Scale should be used or not according to relationships with family or close friends or with strangers suggests the usefulness of the scale to differentiate early onset antisocial patients and show us how this group is more anchored in the persistent pattern of behavior that defines antisocial behavior.

As we have already commented on, the antisocial disorder is defined in the psychiatric classifications almost exclusively by means of observable behavioral items that show a persistent pattern of contempt and violation of the rights of the others. In a previous study[24] with this patient sample, it was shown that antisocial patients present an incapacity for altruist behavior, difficulties for cooperation even in reciprocal exchange with mutual benefit, conversion of social relationships with mutual benefit in competitive relationships, etc. This study with the MACH-IV Scale complements this study and helps assess the motivations of the behavior of these patients showing that they see others as objects to be used and dominated, and thus the constant use of manipulation tactics, attempt to avoid being manipulated and the justification of their behavior by a cynical vision of human relationships.

This study strengthens the hypothesis that the development of the antisocial disorder arises from abnormal development of innate biological predisposition to being dominant in the social relationship.

The usual development from childhood of antisocial disorder, with some very resistant precursors, on the other hand, to corrective education, supports the idea that this tendency to be dominant in the social relationship is the result of the development of an innate predisposition that is made up of biological and psychological traits, supporting the studies of genetic transmission of the antisocial disorder.

We have data on the existence of this innate predisposition in primates and ourselves from primatological studies and human etiology[30] that show the biological predisposition and not only cultural one of our evolution companions and of ourselves to organize ourselves in hierarchies based on alliances, with the presence of dominant males and females (alpha) and other components of the group (beta) subjected to alpha male or female with desires of being dominant by displacing them. The alpha members manage to remain in power not only by using force as in other species, but, in the way of our political life, maintaining each one of the individuals content, either giving protection, favors or affection or providing justice. In the case of the bonobos and chimpanzees (our closest relatives) and in most the human societies, there is a bias that the alpha male dominates the alpha female. Human societies offer more variety of or-

ganizations as culture can change them, but it is still intriguing that most are organized with this bias to male predominance that could help to explain, within our hypothesis, why most of the traits associated to the disorder and why the disorder itself, appears more in men.

Finally, this study supports the hypothesis that the innate predispositions to be dominant in social relationship may explain many characteristics of the antisocial disorder and its precursors in childhood. We think that this trait, that is not clearly expressed in the classifications, should still be examined with instruments such as the MACH-IV Scale that allow us to include reliably the assessment of the behavior motivations in patients and risk groups.

ACKNOWLEDGEMENT

This study was carried out thanks to a grant from the Council of the Communities Board of Castilla La Mancha and help from the University of Castilla La Mancha.

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