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Success in chess mediated by mental molds

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Research has revealed the impact of cognitive-affective strategies *(Molds of the Mind*) on subjective well-being, interpersonal relationships, or school achievement. However, it seems odd that such strategies could influence the success of chess players, because this game is usually considered to be influenced mainly by technical and cognitive skills. To examine the influence of cognitive-affective molds, 53 chess players, ages from 9 to 16 years old, enrolled in sport competitions, were assigned to two groups, high and low success. They responded to the MOLDES, designed to evaluate individuals' molds. The results show that the «Mental Molds» of the most successful players are more realistic, positive and regulators of the emotions, while the molds of the less successful players are more evasive, magic, defensive and inoperative.

El éxito en ajedrez explicado por los moldes mentales. La investigación pasada ha demostrado que las estrategias cognitivo-afectivas (Moldes de la Mente) explican, en gran medida, el bienestar subjetivo, las relaciones interpersonales y el rendimiento académico. Por esta razón, parece razonable esperar que tales estrategias deban influir significativamente sobre el éxito de los jugadores de ajedrez, a pesar de la creencia de que este juego está determinado por el uso de habilidades cognitivas y técnicas. Con el fin de examinar esta hipótesis, 53 jugadores de ajedrez, de entre 9 y 16 años, fueron asignados a dos grupos de rendimiento ajedrecístico (alto y bajo), aplicándoseles el cuestionario MOLDES. Los resultados muestran que los Moldes Mentales de los jugadores exitosos son más realistas, positivos y reguladores de las emociones, mientras que los de los jugadores menos exitosos son más evasivos, mágicos, defensivos e inoperantes.

Psychology is an attempt to explain behavior and, in short, the behavioral differences in people. This becomes more crucial when the differences have to do with satisfaction, adaptation, achievement, effectiveness, or success. There is a lot of research especially in academic, work, and sports achievement, and, as an important conclusion, is admitted that the aptitudes only offer a partial explanation of people's different achievements (González-Pienda et al., 2004; Sternberg, 1999). Regarding sports, there are a growing number of studies that take personality, or social and cultural features into account. This is also observed in the case of chess. The scientific studies focus on neurological variables (such as hemispheric differentiation, dominance, and cerebral and hormonal activation) or on strictly cognitive variables, such as information processing, intelligence, or reasoning. However, studies on affective aspects or personality variables are scarce. Even fewer are studies that have taken ego-involvement cognitive features and the emotional perspective into account.

Mental Molds

Cognitive-affective molds are patterns or «formats of self-involved thought, the way a person usually faces reality cognitively and affectively, and with which individuals evaluate and interpret their relationship with reality. These molds are built by individuals as consequence of natural tendencies and experiences» (Hernández, 1991, p. 405). To all effects, molds are cognitive constructs. Cognitive constructs are understood not only from the perspective of thought content (*what*: beliefs or implicit theories), but also from the perspective of thought format *(how*). Both theories and molds emerge in self-involvement situations, where people face reality that affects their interests and emotions (contrary to cognitive styles). Molds are format units, habitual and special strategies, generalizable and applicable to different situations, revealed in an individual's way of focusing on, reacting to, or interpreting reality (Hernández, 2000a, 2002). Some examples of molds are the strategies of anticipation, evaluation, attribution, or those that are used for *injecting or subtracting* emotions. These latter strategies are clear components of the hypothetical emotional intelligence.

References of cognitive-affective molds are the theories that are based on emphasising the way of interpreting reality in situations of self-implication. For example, c*ausal thought* in the attribution theory (Heider, 1958; Weiner, 1972); but this differs from the mental molds theory in that it is limited to the attribution strategies, while the mental molds include more position or cognitive focuses: anticipation, confrontation, operativity, reaction to the frustration, evaluation or emotional profitability. Another approach is *logical errors* (arbitrary inference, selective abstraction, overgeneralization, and personalization) in Beck's cognitive model of depression (Beck & Greenberg, 1984). Logical

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errors emphasise the exaggerated or partial way of processing the facts, generating theories that favor the depression, but mental molds are wider, not only for the variety of maladjustment molds but also for other ones related to the vital implication or the optimization. Another approach is *self-regulation of coping strategies* in Lazarus' (1968) cognitive-emotional theory. One difference in the mental molds is that it is limited to the way of combating the stress situations, and another difference is that it considers cognitive and behavioral strategies. The working models based on the processes of affect regulation are also an important reference (Bowlby, 1988; Kobak & Sceery, 1988; Mikulincer, 1998). These models consist of rules that guide responses to stress and they shape the ways in which people cope with frustration and stressful events (Mikulincer, 1998, p. 420). Affect regulation has received some empirical support in connection with the theory of attachment styles, for instance coping strategies and affective responses to stress, using the tripartite classification of infant attachment style (Ainsworth, Blear, Walters, & Wall, 1978).

We started with a working model to obtain empirical support for the assumed molds. The model considers what goes on in a person's mind before a self-involvement action or situation (*anticipatory molds*) occurs, during the action (*performance and reaction molds*), after the action, when appraising the results (*evaluation and attribution molds*), and as a function of future actions (*prospective molds*). There is evidence of people's stable and prototypical rules about how to think, feel, and evaluate in different situations. This has been observed using the HERNANROS test (Hernández & Rosales, 1994), in which participants are exposed to imaginary situations such as a television competition, the foundation of a city, or a trip to the Far East. Participants are required to write a spontaneous response to the situations of anticipation, evaluation, attribution, reaction to frustration, or prediction, in relation to different domains (self, others, or reality). The results showed high statistical consistency in the modus operandi across situations, generating a response typology (positive, negative, ambivalent, overvalued), which is representative of cognitive-affective molds. On the other hand, these molds have been shown to be highly related to participants' adaptation or maladjustment. They are similarly related to parents' educational influence and to academic success, based on teachers' grades (Rosales, 1997). Thirty molds (first-order factors), nine focal dimensions (second-order factors), and three focal framings (third-order factors) were identified by principal component factor analysis and oblimin rotation of the responses to the MOLDES scale (Hernández, 1996).

Cognitive-affective molds are mental adaptation schemata. Such formats are products of a person's genetic tendency and learning in interaction with the environment. Thus, people build molds that facilitate functional performance in different situations. However, they are not necessarily adaptive; at least, they may not be in the individual's best interest. In fact, many of these molds may be pseudo-adaptive or inappropriate, becoming source of conflict, inefficiency, or dissatisfaction. We therefore wished to evaluate how such molds influence a chess player's efficiency.

Chess players are not only affected by their cognitive skills, but also by their cognitive-affective molds. How much influence do cognitive-affective molds have on effectiveness or performance in chess? When a player carries out a move, this is not only a motor act based on reasoned calculations and problem solving, but rather each step is influenced by feelings and emotions. Thus, the player's evaluation of the world and reality, as a personality component, is projected onto the game of chess. We wished therefore to discover which molds or strategies facilitate and which ones interfere in chess. We expected that successful competition players would use facilitating strategies, and that these strategies would be consistent and different from those of less successful players, whose strategies would be more interfering.

Method

Participants

The participants of this research were 10 to 16-year old boys and girls from the Canary Islands (N= 53), who were chess players. They were classified in two groups: (a) the more successful competition players made up the *first group.* They were classified by their results as high efficiency players, chosen by qualified experts from the Chess Federation of Great Canary Island (a Great Chess Master, GM Miodrag Todorcevic, who was first French chessboard, Olympic captain, candidate to the world chess Championship, trainer around de world (Yugoslavia, France, Portugal and Spain, among others) and an International Chess Master, M.I Alfredo Brito, he was champion on the Canary Island): The majority are winners in official competitions in the 10-16 years category (n= 24); (b) The less successful competition players made up the *second group*. They were classified by the experts as low efficiency players, in spite of their good school achievement (n= 29). They have never succeeded in chess achievement, in spite of their effort to do so.

Materials

To evaluate the cognitive molds were used the questionnaire MOLDES (Hernández, 1996a). The MOLDES test is made up of 87 items concerning habitual and individual strategies of ego-involved thinking. Participants rated their degree of agreement with each statement on a 5-point Likert-type formatted scale. The responses to the items of MOLDES are grouped into 30 molds (first-order factors), 9 focal dimensions (second-order factors), and 3 focal framing (third-order factors). Cronbach's alpha for the MOLDES was .90. Data show that the MOLDES contents are referred to similar behavioral characteristics. The consistency of the test is confirmed and the concepts proposed are validated.

The three focal framing (third-order factor analysis) represents the maximum synthesis of the cognitive molds, similar to large axes that summarize the different molds: 1) *Active-Vital Involvement Framing* (direct involvement vs. reflexive-distant disposition) which envelops one dimension: *Direct-vital Implication vs. Hypercontrol.* 2) *Adjustment Focal Framing* (productive realism versus interfering subjectivism) which envelops five dimensions: *Positiving vs. Distorting, Syntonizing versus Dissociating, Tolerating versus Defending, Operative vs. Inoperative Focus, and Non Hetero-referential Attribution.* And 3) *Optimizing Focal Framing* (constructive disposition vs. inert and self-limiting disposition) which consists of three dimensions: *Self-critical Optimizing, Preparatory Optimizing and Constructive Optimizing.*

The three focal framing are like three important film camera movements in the mind. They represent the three more extensive

cognitive-affective sets of different ways of focusing employed by people in real life. They are the syntheses of perspectives from which individuals approach, analyze, react to, explain, interpret, or value the various elements, aspects, and processes of their behavior scenarios. They are, therefore, three sets of focusing reality through of which people, as managers of their lives, regulate their thoughts and feelings. The three focal framing correlate, respectively, with the three axiological planes of the *Pentatriaxios* model (Hernández, 1996c, 2000b): Primary Values, Adaptation Values, and Realization Values, which explain the architecture of individual subjective well-being (Hernández, 1996b, 2000a, 2002) and of individual contribution to community subjective well-being (Hernández, 1998, 2002).

Thus, a first focal framing (*Active-Vital Involvement Framing*), which correlates with the Primary Values, represents the degree of vital immersion. A second focal framing (*Adjustment Focal Framing*), which correlates closely with Adaptation Values (in the areas of soma, self, others, work, and the world-system), represents the degree of realism and productivity employed when approaching and focusing on reality. A third focal framing (*Optimizing Focal Framing*), which correlates especially with Realization Values in the appropriate areas, represents the capacity of self-empowering, creating, and overcoming difficulties.

Functional validity is also inferred from the TAMAI test (Hernández, 1983, 1990, 2001), since the molds are related to general adaptation. By ANOVA the factors differentiate between well-adjusted people and non-adjusted people, and also are related to subjective individual well-being, differentiating between happy and unhappy people, through the BIS-HERNAN scale (Hernández, 1996b). Each of the three framing dimensions contributes to the prediction of the subjective individual well-being ($p>.001$). Likewise, MOLDS are related with achievement in math (Hernandez, Capote, & García, 2002), independently of the general intelligence measured by the Raven Test.

Procedure

The members of the first group were chosen on the basis of two criteria: On the one hand, the effective demonstration of having obtained good results in official competitions and, on the other, their skills as successful players, according to expert criteria. The players of the second group were also chosen on the basis of two criteria: on the one hand, those with a history of failure in chess, and on the other hand, those classified as having a high probability of failure in competition, according to expert criteria.

Participants' intelligence and school achievement were taken into account as control variables. We administered Raven's (1988) Matrixes Test to evaluate intelligence and used the average grades of the previous course to assess school achievement. Results in intelligence indicated that both groups scored high, (M= 34 and 29, in the first and second group, respectively). A one-way ANOVA revealed no statistically significant difference, F (1, 51)= 1.361, p= .30. In school achievement, the grades were also high in both groups (M= 8.13 and 7.85, in the first and second group, respectively, on a scale of 0 to 10). This difference did not reach statistical significance, F (1, 51)= 0.663, p= .419.

Subsequently, without knowing to which group they had been assigned, the players responded individually to the two questionnaires. They were encouraged to ask about any doubts they had concerning the items of the questionnaires.

One-way ANOVA was performed on the data obtained, to determine whether the cognitive-affective molds habitually used by people differ significantly as a function of whether as the individual belonged to a high- or low-competitive-achievement group in chess.

Results

We shall first consider the results from a more holistic viewpoint and then, the simplest factors derived from MOLDES questionnaire, starting with *Focal Framing* (third-order factors), proceeding with *Focal Dimensions* (second-order factors), and concluding with *Simple Molds* (first-order factors). In tables 1, 2, and 3 are displayed the means and standard deviations corresponding to the groups (experts and non experts players) and the three levels of Mental Molds.

In this regard, there were no statistically significant differences between the two groups in two focal framing: the Active-Vital Involvement Framing (direct involvement vs. reflexive-distant

Table 1
Descriptive statistics of focal framing (third-order factors) Mental molds

		M	SD	Min.	Max.
Active-Vital Involvement Framing	Experts	51.29	9.00	36.18	72.58
	Non Experts	50.95	8.71	31.85	64.18
Adjustment Focal Framing	Experts	55.03	8.55	41.69	72.48
	Non Experts	47.97	7.68	28.89	59.92
Optimizing Focal Framing	Experts	66.93	8.40	51.53	80.95
	Non Experts	67.79	8.85	47.30	82.09

Table 2
Descriptive statistics of focal dimensions (second-order factors) Mental molds

		M	SD	Min.	Max.
Direct-vital Implication vs. Hypercontrol	Experts	50.63	9.32	35.24	72.91
	Non Experts	50.48	9.24	30.63	65.03
Positiving vs. Distorting	Experts	53.75	11.04	33.62	71.69
	Non Experts	48.39	8.78	29.50	64.55
Syntonizing vs. Dissociating	Experts	55.37	9.91	36.18	73.03
	Non Experts	47.46	8.24	28.09	62.04
Tolerating vs. Defending	Experts	58.54	9.30	38.77	76.83
	Non Experts	50.35	9.32	29.00	70.97
Operative vs. Inoperative Focus	Experts	54.63	11.44	33.90	72.29
	Non Experts	48.83	9.97	27.33	65.82
Non Hetero-referential Attribution	Experts	52.13	13.49	21.36	76.68
	Non Experts	43.77	14.44	9.69	71.06
Self-critical Optimizing	Experts	59.32	14.62	33.36	89.04
	Non Experts	63.60	13.02	35.28	83.24
Preparatory Optimizing	Experts	71.45	8.12	56.06	89.91
	Non Experts	71.18	11.37	46.37	94.86
Self-worth and Reality Optimizing	Experts	68.62	10.29	44.87	90.96
	Non Experts	69.12	9.92	42.61	85.34

Table 3
Descriptive statistics of simple molds (first-order factors)

		M	SD	Min.	Max.
Volitional Self-conviction	Experts	67.42	14.34	34.55	98.18
	Non Experts	69.09	19.01	30.91	98.18
Inhibitory Self-conviction	Experts	50.17	16.05	20.00	76.00
	Non Experts	52.14	18.62	20.00	88.00
Proactive Self-motivation	Experts	75.53	12.11	50.53	97.89
	Non Experts	76.01	13.07	49.47	93.68
Anticipation of Effort and Cost	Experts	50.05	16.98	20.00	85.00
	Non Experts	53.66	13.85	27.50	83.75
Emotional Dissociation	Experts	43.16	16.45	21.05	75.79
	Non Experts	52.96	14.70	20.00	77.89
Self-Confidence	Experts	74.30	15.52	29.60	96.00
	Non Experts	71.06	13.59	32.00	92.00
Provident Constructive Anticipation	Experts	72.84	8.18	54.07	90.37
	Non Experts	70.86	14.00	33.33	97.78
Constructive Transformation	Experts	63.43	13.73	42.22	94.44
	Non Experts	67.13	13.79	43.33	97.78
Previous Emotional Control	Experts	76.74	12.60	50.00	98.33
	Non Experts	71.78	14.23	31.67	98.33
Over-evaluative Anticipation of Success	Experts	69.26	17.32	32.94	97.65
	Non Experts	72.05	14.81	29.41	95.29
Inflation-Disappointment	Experts	47.05	14.06	22.16	73.51
	Non Experts	57.22	13.39	30.27	88.11
Devaluative Anticipation	Experts	50.00	15.75	20.00	81.82
	Non Experts	54.67	15.23	27.27	85.45
Aversive and Hypercritical Anticipation	Experts	51.59	16.13	23.64	83.64
	Non Experts	54.11	13.86	34.55	76.36
Hostile Anticipation and Suspicion	Experts	42.97	13.01	23.53	74.71
	Non Experts	53.10	12.28	32.94	82.35
Accuracy and Supervision	Experts	67.24	13.40	42.11	96.84
	Non Experts	65.44	12.56	38.95	86.32
Fuzzy Coping	Experts	56.56	16.27	30.00	89.17
	Non Experts	66.41	15.85	35.00	92.50
Previous Hypercontrol	Experts	59.43	15.39	27.50	86,25
	Non Experts	64.27	11.02	46.25	82,50
Direct Implication	Experts	50.77	14.06	23.08	76.92
	Non Experts	53.53	16.76	21.54	95.38
Emotional Channeling	Experts	75.75	15.31	40.00	100.00
	Non Experts	73.52	13.09	50.00	100.00
Cognitive Obliqueness	Experts	45.64	17.37	20.00	78.46
	Non Experts	60.48	13.90	35.38	90.77
Magnetization for the Impossible Reality	Experts	51.61	17.88	25.71	91.43
	Non Experts	57.93	16.75	21.43	91.43
Selective Negative Evaluation	Experts	47.33	16.73	25.00	90.45
	Non Experts	50.41	13.29	32.73	75.91
Selective Negative Evaluation	Experts	55.25	13.15	33.33	85.56
	Non Experts	58.85	12.41	38.33	83.89
Internal Attribution of Success	Experts	68.21	16.14	40.00	98.46
	Non Experts	68.12	14.77	41.54	100.00
Attribution to the Strategies	Experts	59.82	19.36	27.14	98.57
	Non Experts	65.27	18.60	28.57	97.14
Attribution to Temperament	Experts	48.28	11.50	25.33	70.67
	Non Experts	56.37	13.69	33.33	81.33
Attribution to Lack of Effort	Experts	50.00	26.54	20.00	97.50
	Non Experts	60.09	23.15	20.00	100.00
Self-justifying of Failures	Experts	51.25	17.40	28.00	86.00
	Non Experts	61.38	20.57	26.00	100.00
Social Attribution of Success	Experts	53.08	20.60	24.00	92.00
	Non Experts	59.10	20.30	26.00	96.00
Magic Attribution	Experts	41.39	16.93	20.00	75.56
	Non Experts	54.79	24.43	21.11	93.33

disposition) and the Transforming Potentiality Framing (constructive and self-valued disposition vs. inert and self-limiting disposition). However, significant differences were revealed in the Adjustment Focal Framing (productive realism versus interfering subjectivism), $F(1,51)= 10.00$; $p= .003$. This focal framing of adjustment avoids generating negative and distorting thoughts and promotes the ability of adaptation. In this framing, mental molds regulate our way of seeing reality in a positive, conciliator, profitable and adequate way. This means that more successful players ($M= 55$) interact more selectively and productively with reality, than do less successful players ($M= 48$), who subjectively shut off and distort reality.

The above three focal framing yielded nine focal dimensions, and among them, three focal dimensions revealed statistically significant differences between the two groups. They are listed below from highest to lowest significance level.

Focal Dimension of Tolerating versus Defending, [t (1,51)= 10.15; $p= .002$]. This mental perspective is used more by successful competing players (M= 58) than unsuccessful ones, and it refers to the attempt to accept and tolerate failures, as well as to overcome frustrations. On the other hand, successful players do not try to shift their dissatisfaction toward other aspects of reality; rather they try to find alternative solutions. This is contrary to the mental perspective used by unsuccessful competing players (M= 50). These players suffer and are overwhelmed more times by negative emotions, finding it difficult to overcome the pain of failure.

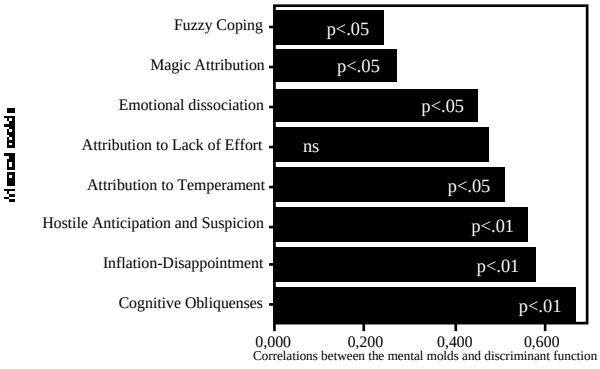
Focal Dimension of Syntonizing versus Dissociating [t (51)= 3.18; $p= .003$]. This mental perspective is used more by successful competing players (M= 55) than unsuccessful ones, and it involves the attempt to face a situation cognitively and affectively and to cope with problems and difficulties, and the emotions that emerge with reality. The opposite perspective is used more by less successful competition players than successful ones (M= 47), and consists of shifting attention, forgetting or having conflicting fantasies when faced with problems, as well as disconnecting their feelings, or observing things coldly and distantly so as to avoid suffering.

Focal Dimension of Non Hetero-referential Attribution, [t (51)= 4.66; $p= .036$]. This mental perspective is also used more by successful competitors (M= 52) than unsuccessful ones, and it implies avoiding attribution of success and failure to external realities to one's own responsibility, whereas poorer players (M= 43) blame other people, magic, enemies or their own temperament more than successful ones.

The data with regard to the 30 simple molds (first-order factor analysis) revealed statistically significant differences between the two groups in the following molds: *Cognitive Obliqueness* mold [F (1, 51)= 11.93; $p= .001$], used with more frequency by unsuccessful competition players ($M= 60$) and implies shifting attention from events that affect the player negatively, suppressing from awareness, forgetting, and substituting the events with fantasies and contrary reactions (more successful players ($M = 46$) tend to cope with problems directly); H*ostile Anticipation and Suspicion* mold [F (1, 51)= 8.47; $p= .005$], used more by unsuccessful players ($M= 53$) and consists of imagining difficulties, problems, or conflicts in relation with persons, and suspecting others of having evil intentions (these individuals perceive others as hypocritical and false, blaming them for their misfortunes, whereas successful players ($M= 43$) adopt with more frequency an open and friendly mental attitude towards others);

Inflation-Disappointment mold, [*F* (1, 51)= 7.24; *p*= .010], used by more unsuccessful competitors (*M*= 57) and refers to alternating between optimism and disappointment (these persons overrate their goals, projects, or results in a naive and egocentric way, highlighting results more than the process to achieve them; they imagine these results to be boundless and magically or unrealistically achievable, so that they subsequently feel cheated and sad, thus living on a roller-coaster of emotional ups and downs); E*motional Dissociation* mold [*F* (1, 51)= 5.24; *p*= .026], less successful players also use more this mold or strategy in competitions (*M*= 53). According to this mold, the players do not want to be involved, preferring to observe situations coldly, from a distance, without passion or pleasure and, therefore, without distress (therefore, they either show little interest and underrate the possible result, or they over-analyze and jeer, looking for ulterior motives or reasons, or they simply distract their attention. In contrast, successful players (*M*= 43) are more emotionally involved); *Attribution to Temperament* mold [*F* (1, 51)= 5.28, *p*= .026], is employed in competitions more by unsuccessful players (*M*= 56) and refers to attribution of successes and failures, not to oneself, as an internal controller, but rather to something beyond personal control, such as mood, temperament, or character, which are taken for granted (successful players (*M* = 48) do the opposite, not making attributions, at least not external ones); *Magic Attribution* mold [*F* (1, 51)= 5.16; *p*= .027], unsuccessful chess players employ more this mold or strategy in competition (*M*= 60), whereas successful players (*M*= 41) resort in smaller measure to magic forces; *Fuzzy Coping* mold [*F* (1, 51)= 4.95; *p*= .031], this mold is used more by unsuccessful players in competition (*M*= 66). On the other hand, successful players (*M*= 56) tend to adopt operative and realist plans.

All this appears clearer through discriminant analysis whose structure matrix is shown in Figure 1, when general mental molds are correlated whith discriminant function.



N: 53
Canonical correlation: .58
Wilk's Lambda: .77; Sig.: .000
Original grouped cases correctly classified: 77%
Significance level of the ANOVA for each variable is indicated in respective bar

Figure 1. *Structure matrix of general mental molds: mental molds through discriminant analysis classifies correctly 77% of cases as good on defi - cient players of chess. The more important mental molds are characterized by their disconnection from reality (cognitive obliqueness and emotional dissociation); unrealistic level of expectations (inflation-disappointment); use of inefficient procedures (fuzzy coping); and external and unrealistic explanations or attributions (hostile anticipation and suspicion, attribu - tion to temperament, magic attribution); in contrast with the realistic and operative molds of successful players*

This function classifies correctly 77% of cases as good and deficient players of chess. This has as reference a canonical correlation of .58, corresponding therefore to a Wilks' Lambda of .66, explaining this way 44% of the variance in the difference among the two groups, showing a significance level of .00. The more important mental molds are characterized by their disconnection from reality (*Cognitive Obliqueness and Emotional Dissociation*); unrealistic level of expectations (*inflation-Disappointment*); use of inefficient procedures (*Fuzzy Coping*); and external and unrealistic explanations or attributions (*Hostile Anticipation and Suspicion, Attribution to Temperament, Magic Attribution*); in contrast to the realistic and operative molds of successful players.

Discussion and Conclusions

This research shows how the affective and personality processes are related to the skill to play chess. According to the MOLDES test, chess players who despite difficulties accept reality, their feelings, and responsibility in everyday life, are potential winners at the chessboard. However, potential losers in chess are those players who turn their backs on reality in their everyday lives, do not connect with their feelings, intensify their complaints, and blame their results on external circumstances so as to avoid distress.

This shows that poor players, in attempting to avoid trouble, adopt deceptive molds in the face of reality, which makes them less effective at chess. Their defensive molds disengage them from problematic situations. They adopt hostile molds, suspecting others of being hostile. They also use external-explanation molds, especially magic attribution. Poor players' lack of realism coincides with their unrealistic planning style, full of boundless and naive goals. These unrealistic plans are like their everyday-life blurry and diffuse coping molds, producing the same inefficient results.

In this regard, poor chess players' everyday molds are similar to the defensive-avoidant behaviors of models based on affect-regulation processes (Bowlby, 1988; Kobak & Sceery, 1988; Mikulincer, 1998). These persons try to deactivate the attachment system, making compulsive efforts to become self-reliant because they hate depending on others. Avoidant persons try to isolate themselves and to escape from any encounter with close relationships and life problems (Mikulincer, 1998).

Poor players' defensive, naive, and dissociative nature in real life is related, in the game situation, to molds that express maladjusted and diffuse procedures. On the contrary, successful players' self-regulated and realistic way of coping with reality is related, in the game situation, to molds that express operative procedures, such as the operative and controlled disposition, the solving disposition, and emotional stability and flexibility molds. As mentioned above, these molds coincide with the meta-components of intelligence (Sternberg, 1984) and with emotional intelligence (Mayer & Salovey, 1993; Mayer, Salovey, & Caruso, 2000).

All these results confirm the hypothesis that cognitive-affective molds –key aspects of personality– play a crucial role in chess players' achievements. We assume that the role of cognitive-emotional features in every aspect of life accounts for why such molds are relevant in discriminating between successful and not very successful players.

Of course, players possess different levels of intelligence. However, assuming similar intellectual levels, as in our investigation, the players' ability to self-regulate their knowledge and emotions most efficiently accounted for the difference in chess. This is related to outstanding capacities such as emotional intelligence (Mayer, 2004; Mayer & Salovey, 1993; Mayer, Salovey, & Caruso, 2000) and intrapersonal intelligence (Gardner, 1995), and cognitive-affective molds are specific strategies and operative units for studying both intelligences (Hernández, 1997, 2000, 2002).

Feelings and emotions are implied in these molds and they account for achievement better than do calculation, reasoning, or problem solving. This socio-affective perspective of the achievement (Hernández, 1991, 1997, 2002) is emphasized through the approach of self-regulated learning (Núñez et al., 1998; Núñez et al., en prensa; Pintrich, 2004; Rosário et al., 2005; Valle et al., 2006; Zimmerman, 2002).

This conclusion justifies the opinion of Miodrag Todorcevic, a great chess master: In chess, not two knowledges are confronted, but two wills, indicating that it is not sufficient for successful players to have some knowledge strictly about chess; they should also have an appropriate or adjusted personality profile.

The cognitive molds theory seems to answer appropriately many queries about which personality aspects affect success in chess, posed by various psychological models (e.g., Avni, Kipper, & Fox, 1987; Gobet, 1992; Kelly, 1985). Indeed, cognitive molds are strategies for assessing reality and the world that affect each move in chess, because each move on the board implies a personal stance, a way of perceiving, interpreting, feeling, and coping with reality.

References

Ainsworth, M.D.S., Blear, M.C., Walters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation.* Hillsdale, NJ: Erlbaum.

Avni, A., Kipper, D.A., & Fox, S. (1987). Personality and leisure activities: An illustration with chess players. *Personality Individual and Differences, 8*, 715-719.

Beck, A.T., & Greenberg, R.L. (1984): Cognitive therapy in the treatment of depression. In N. Hoffmann: *Foundations of Cognitive Therapy* (pp. 155-178). New York: Plenum Press.

Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. London: Routledge.

Gardner, H. (1995). Multiple Intelligences. New York: Basic Books.

Gobet, F.R. (1992). Learned helplessness in chess players: The importance of task similarity and the role of skill. *Psychological research-Psychologische Forschung, 54*, 38-43.

González-Pienda, J.A., Núñez, J.C., González-Pumariega, S., Álvarez, L., Roces, C., González, P., Bernardo, A., Valle, A., González-Cabanach, R., Rodríguez, S., & Rosário, P. (2004). Estilos de pensamiento: análisis de su validez estructural a través de las respuestas de adolescentes al Thinking Styles Inventory. *Psicothema, 16*(1), 139-148.

Heider, F. (1958): *The psychology of interpersonal relations*. New York: Wiley.

Hernández, P. (1983, 1990, 2001): *TAMAI: Test Evaluativo Multifactorial de Adaptación Infantil.* Madrid: TEA Ediciones, S.A.

Hernández, P. (1996a). *MOLDES: Cognitive-affective molds test.* Tenerife, Spain: University of La Laguna, Department of Educational, Developmental Psychology and Psychobiology.

Hernández, P. (1996b). *BIS-HERNÁN: Individual subjective well-being test.* Tenerife, Spain: University of La Laguna, Department of Educational, Developmental Psychology and Psychobiology.

Hernández, P. (1996c). *PENTATRIAXIOS: Test to diagnose the dominant values, from the perspective of primary dispositions, adaptation, realization (3 levels), as a function of the five main areas of life*. Tenerife, Spain: University of La Laguna, Department of Educational, Developmental Psychology and Psychobiology.

Hernández, P. (1997). Evaluación de valores y moldes cognitivos afectivos en la educación socioafectiva [Evaluation of values and cognitive-affective molds in socio-affective education]. In A. Cordero**:** *La evaluación psicológica en el año 2000* (pp. 149-172). Madrid: TEA.

Hernández, P. (1998). ABC: Questionnaire to evaluate personal contribution to the community subjective well being. Tenerife, Spain: University of La Laguna, Department of Educational, Developmental Psychology and Psychobiology.

Hernández, P. (2000a). El bienestar subjetivo, un marco para la psicología y la educación [Subjective well-being, a framework for psychology and education]. *Revista de Orientación Educacional,* Universidad de Playa Ancha, Facultad de Ciencias de la Educación, Chile, *23 & 24*, 49-60**.**

Hernández, P. (2000b). Enseñando valores socioafectivos en un escenario constructivista: bienestar subjetivo e inteligencia intrapersonal [Teaching socio-affective values in a constructivist setting: Subjective well-being and intrapersonal intelligence]. In J. Beltrán, V. Bermejo, L.F. Pérez, M.D. Prieto, D. Vence, & R. González: *Intervención psicopedagógica y currículum escolar* [Psychopedagogic intervention and school curriculum] (pp. 217-254). Madrid: Pirámide.

Hernández, P. (2002). *Los moldes de la mente* [Molds of the mind]. Tenerife: Tafor.

Hernández, P., & Rosales, M. (1994). HERNANROS: Test based on open answers to verify the consistency of the molds expressed in different imaginary situations. In M. Rosales (1997): *Los moldes cognitivos-afectivos y la adaptación psicológica: definición y evaluación* [Cognitive-affective molds and psychological adaptation: Definition and assessment]. Doctoral dissertation, University of La Laguna, Tenerife, Spain.

Hernández P., Capote M.C., & García V. (2002). Matemáticas y moldes cognitivos. *Evaluación e Intervención Psicoeducativa, vol. 1*, 8 y 9, 175-204.

Kelly, E.J. (1985). The personality of chess players. *Journal of Personality Assessment, 49*, 282-284.

Kobak, R.R, & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation and representations of self and others. *Child development, 59*, 135-146.

Lazarus, R.S. (1968): Emotions and adaptation: Conceptual and empirical relations. In W.J. Arnold (eds.): *Nebraska symposium on motivation.* Lincoln, NE: University of Nebraska Press.

Mayer, J.D. (2004). Foreword. In G. Geher (ed.): *Measuring emotional intelligence.* New York: Nova Science.

Mayer, J.D., & Salovey, P. (1993). The intelligence of emotional intelligence. *Intelligence, 17*(4), 433-442.

Mayer, J.D., Salovey, P., & Caruso, D.R. (2000). Models of Emotional Intelligence. En R.J. Sternberg (ed.): Handbook of Human Intelligence. New York: Cambridge, 396-420.

Mikulincer, M. (1998). Personality processes and individual differences. *Journal of Personality and Social Psychology, 75*(2), 420-435.

Núñez, J.C., González-Pienda, J.A., García, M., González-Pumariega, S., Roces, C., Álvarez, L., & González, M.C. (1998). Estrategias de aprendizaje, autoconcepto y rendimiento académico [Learning strategies, Self-concept and Academic achievement] *Psicothema, 10*(1), 97-109.

Núñez, J.C., Solano, P., González-Pienda, J.A., & Rosário, P. (en prensa). Evaluación de los procesos de autorregulación mediante autoinforme. *Psicothema*, ???-???

Pintrich, P.R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review, 16*(4), 385-407.

Rosales, M. (1997), *Los moldes cognitivos-afectivos y la adaptación psicológica: definición y evaluación* [Cognitive-affective molds and psychological adaptation: Definition and assessment]. Doctoral dissertation, University of La Laguna, Tenerife, Spain.

Rosário, P., Núñez, J.C., González-Pienda, J.A., Almeida, L., Soares, S., & Rubio, M. (2005). El aprendizaje escolar examinado desde la perspectiva del «Modelo 3P» de J. Biggs. *Psicothema, 17*(1), 20-30.

Sternberg, R.J.(1984). Toward a triarchic theory of human intelligence. *Be - havioral and Brian Sciences*, *7*(2), 269-315.

Sternberg, R.J. (1999). *Thinking Styles.* Cambridge University Press, Cambridge .

Valle, A., González-Cabanach, R., Rodríguez, S., Núñez, J.C., & González-Pienda, J.A. (2006). Metas académicas, estrategias cognitivas y estrategias de autorregulación del estudio. *Psicothema, 18*(2), 165-170.

Weiner, B. (1972). Attribution theory: Achievement motivation and the educational process. *Review of Educational Research*, *42*(2), 203-215.

Zimmerman, B.J. (2002). Becoming self-regulated learned: An overview. *Theory into Practice, 41,* 64-72.