Success in Chess Mediated by Cognitive-Affective Molds

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Abstract

Research has revealed the impact of cognitive-affective strategies ("molds") 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-intellective skills. To examine the influence of cognitive-affective molds, 53 beginner 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 and the MEA tests, designed to evaluate individuals' molds. The results show that the more successful players used more realistic, positive, and moderated molds, facing reality, and coping with their failures and emotions appropriately, whereas the less successful players used evasive, imaginative, defensive, and inefficient molds.

KEY WORDS: Chess success, cognitive-affective molds, cognitive-affective strategies, coping strategies, emotions, affective responses, avoidant style, defensiveness, anticipation, evaluation, attribution, reaction to frustration.

Success in Chess Mediated by Cognitive-Affective Molds

Psychology is an attempt to explain behavior and, in short, the behavioral differences in people. This becomes more crucial when the differences are relating to adaptation, achievement, effectiveness, or success. Consequently, there is much research on academic, work, and sports achievement. Regarding sports, there is a growing number of studies that take skills, personality, or social and cultural features into account. It doesn't only favor to the different studied areas, but rather it also contributes to a better knowledge of the personality and of the human behavior in general. This is observed in the case of chess, although 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.

Neurological Perspective

From a strictly neurological framework, chess studies have been concerned with topics such as hemispheric specialization (Chabris & Hamilton, 1992), physiological changes during a chess tournament (Leedy & Dubeck, 1971), or testosterone and chess in competition context (Mazur, Booth, & Dabbs, 1992).

Cognitive Perspective

The cognitive perspective of chess has considered basic cognitive processes, such as perceptive processes (e.g., Abernethy, Neal, & Koning, 1994; Chase & Simon, 1973; Milojkovic, 1982), attention, recognition, and memory (e.g., Binet, 1966; Charness, 1976; Ellis, 1973; Golding, 1978a, b; Holding, 1979, 1985; Holding & Reynolds, 1982; Lories, 1987; Saariluoma, 1985, 1989; Simon & Gilmartin, 1973), and learning and expert performance (e.g., Ericsson & Charness, 1994; Ericsson, Krampe, & Tesch-Romer, 1993; Charness, 1989, 1991; Holding, 1985; Horgan, 1992; Horgan & Moran, 1990; Reynolds, 1992; Simon & Chase, 1973). Another very

important research area has been thought processes and problem solving (e.g., Church & Church, 1983; Groot, 1965; Newell & Simon, 1972; Reynolds, 1982; Saariluoma, 1990; Scurrah & Wagner, 1970; Simon & Simon 1962).

Numerous investigations deal with differential aspects of chess, especially those related to general intelligence (Abrahams, 1960; Frydman & Lynn, 1992), age (e.g., Barry, 1969; Buttenwieser, 1935; Charness, 1981a, 1981b, 1981c; Draper, 1963; Elo, 1965; Rubin, 1960), cognitive development in general (e.g., Botvinnik, 1970; Christianen & Verhofstadt, 1981), and areas such as mathematical statistics (Batchelder & Bershad, 1979).

In other cases, the relationship between psychology and chess in general (e.g., Cleveland, 1907; Hartston & Wason, 1983; Hearst, 1967) is analyzed.

Chess has also been the topic of research on artificial intelligence, taking into consideration chess skills in man and machine or focusing on human information processing models (Baylor & Simon, 1979; Berliner, 1978; Charness, 1977; Hearst, 1977; Kopec & Bratko, 1982; Newell & Simon, 1965; Puccetti, 1974; Richman, Staszewski, & Simon, 1995; Wilkins, 1980).

The numerous works on computer chess (e.g., Bernstein & Roberts, 1958; Frey, 1983; Levy & Newborn, 1980; Newell, Shaw, & Simon, 1958) should also be considered.

Affectivity and Personality Perspectives

There have also been some studies on affective aspects and personality and chess, but they mostly are speculative, reflexive, historical, phenomenological, or psychoanalytical (Bychowski, 1954; Coriat, 1941; Fine, 1956). Other studies use a somewhat more scientific approach (Binet, 1894; Diakov, Petrovski & Rudnik, 1925; Krogius, 1972), although studies of a truly scientific nature are very scarce (Avni, Kipper, & Fox, 1987; Gobet, 1992; Kelly, 1985). Most of these studies are based on explanation of models or on chess players' abilities, features, or styles, but we know of no studies that determine the qualities of successful players compared with less successful ones.

Our interest is therefore twofold: On the one hand, to determine which features differentiate between good or poor chess players and, on the other hand, to reveal the importance of cognitive-

affective molds in that difference (Hernández, 1973; 1991; 1997, 2000a, 2000b; Hernández & Baute, 1999; Hernández & Jiménez, 1983).

Cognitive-Affective Molds

Cognitive-affective molds are "formats of self-involved thought, used by individuals to face reality cognitively and affectively, and with which individuals evaluate and interpret their relationship with the world. These molds are built by individuals as consequence of natural tendencies and experiences" (Hernández, 1991, p. 405). To all effects, molds are cognitive constructs, 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). Some examples of molds are the strategies of anticipation, evaluation, attribution, or those that are used for intensifying or reducing emotions. These latter strategies are clear components of the hypothetical emotional intelligence.

Antecedents

References of cognitive-affective molds are causal thought in the attribution theory (Heider, 1958; Weiner, 1972). Other references are logical errors (arbitrary inference, selective abstraction, overgeneralization, and personalization) in Beck's cognitive model of depression (Beck, 1963, 1974, 1976, 1984); and also self-regulation of coping strategies in Lazarus' (1968) cognitive-emotional theory. 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 that people manage the distress and cope with 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).

Therefore, secure persons seem to hold optimistic expectations about stress manageability and to acknowledge distress without being overwhelmed by it (Mikulincer & Florian, 1998).

The avoidant person's habitual way of regulating affect consists of defensive attempts to deactivate the attachment system. Because of "nondifferentiated defensiveness," avoidant persons attempt "to close themselves off in the face of, and to escape from any confrontation with close relationships and life problems" (Mikulincer, 1998, p. 421). They "escape from close relationships so as to minimize emotional involvement, to deny attachment needs, to pursue autonomy and control, to suppress bad thoughts and emotions, to inhibit any display of distress, and to rely on repressive-dissociative mechanisms" (Mikulincer, 1998 p. 421; for review, see Collins & Read, 1994; Shaver, Collins, & Clark, 1996).

Anxious-ambivalent persons seem to cope with suffering by minimizing distance from attachment figures (Bowlby, 1988; Shaver & Hazan, 1993). They intensify the attachment system and try to win others' love by means of dependence, vigilance, and control behaviors. They approach distress in a hyperactive and hypervigilant way, with negative thoughts and memories, and rely on passive, ruminative ways of coping (Mikulicen & Florian, 1998).

Empirical foundation

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 the results are appraised (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 perspectives (second-order factors), and three focal dimensions (third-order factors) were identified by principal component factor analysis and oblimin rotation of the responses to the MOLDES scale (Hernández, 1996). An example of the 30 molds obtained is "Focusing on the Deficit." This refers to focusing attention on what is lacking, on what one does not have instead of on what one does possess, when evaluating results. Another example is "Inflation-deflation" , a strategy by which the person swings between hope and disappointment. This is because the person's goals are unrealistic and their plans are magical and inefficient. These people subsequently feel cheated and disappointed.

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 fifty-three 10 to 16-year old boys (n = 37) and girls (n = 16) from the Canary Islands (Spain), mean age 13 years old. 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 Gran Canaria Island (a Great Chess Master and an International Chess Master): This group included 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).

Instruments

Two questionnaires to evaluate thought format were used for this research. The first, MOLDES (Hernández, 1996a), evaluates general cognitive molds used in real life situations. The second one, MEA (Hernández, 1998a), evaluates specific chess molds.

The MOLDES questionnaire 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 perspectives (second-order factors), and 3 focal dimensions (third-order factors).

Regarding internal consistency, the MOLDS questionnaire showed a reliability of .90 (Cronbach's alpha), taking the 87 items into account. Reliability decreases if the 30 factors (α = .76), or the 9 dimensions (α = .79) are taken into account, because of the inter-factor differences.

The data indicate that the contents of the questionnaire refer to similar behavior characteristics, confirming test consistency and validating the posited mold constructs. The functional validity of the constructs is inferred by verifying that the molds are related to General Adaptation (in the personal, school and social areas) in TAMAI Test (Hernández, 1983, 1991, 2001). By means of ANOVA, the items discriminate well-adjusted from maladjusted people, especially in the personal area. The items are also related to individual subjective well being of BIS-HERNÁN Scale (Hernández, 1996b) in differentiating between happy and unhappy people. Each of the three dimensions that make up the molds ("Framing", "Transforming Potentiality" and "Active-Vital Involvement") contributes to prediction of individual subjective well being, at a significance level of $p < 0.001$ (Hernández, P., & Baute, D., 1999).

The MEA questionnaire is made up of 36 items concerning habitual and individual strategies of ego-involved thinking in situations of the game of chess. The responses to this questionnaire are grouped into 12 factors of cognitive-affective molds (specific chess molds).

The 36 items of MEA questionnaire revealed a reliability of $\alpha = .84$. This internal consistency index is lower than that of the MOLDS questionnaire because, probably, the MEA questionnaire is shorter.

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 Matrixes Test (1958) 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 > .05. 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 > .05.

Subsequently, without knowing to which group they had been assigned, the players filled in the two questionnaires, on an individual basis. 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 and Discussion

From general to specific factors

We shall first consider the results from a more holistic viewpoint and then, the simplest factors derived from MOLDES questionnaire, starting with Focal Dimensions (third-order factors), proceeding with Focal Perspectives (second-order factors), and concluding with Simple Molds (first-order factors). The specific molds of chess players derived from the MEA questionnaire were subsequently analyzed.

1. Focal dimensions

1.1 Results. The 30 simple factors (first-order factor analysis) yielded 9 focal perspectives (second-order factor analysis), and these, in turn, yielded 3 focal dimensions (third-order factor analysis). These last factors represent the maximum synthesis of the cognitive molds, similar to large axes that summarize the different molds.

In this regard, there were no statistically significant differences between the two groups in two dimensions: the "Transforming Potentiality Dimension" (constructive and self-valued disposition

vs. inert and self-limiting disposition) and the "Active-Vital Involvement Dimension" (direct involvement vs. reflexive-distant disposition).

However, significant differences were revealed in the "Framing Dimension" (productive realism versus interfering subjectivism), $F(1, 51) = 5.491$, $p < .05$. This means that more successful players ($M = -58.282$) interact more objectively, positively and productively with reality, than do less successful players ($M = -66.934$), who subjectively shut off and distort reality.

1.2 Discussion. The three focal dimensions 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 macro-modes of focusing by means of which people, as managers of their lives, regulate their thoughts and feelings. The three dimensions correlate with the three axiological planes of the Pentatriaxios Model (Hernández, 1996c, 2000b, 2001): primary values, adaptation values, and realization values, which explain the architecture of "individual subjective well-being" (Hernández, 1996b, 2000a, 2001) and of "individual contribution to community subjective well-being" (Hernández, 1998b, 2001)

Thus, a first focal dimension (active-vital involvement), which correlates with the primary values, represents the degree of vital immersion. A second dimension (framing dimension), 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 dimension (transforming potentiality dimension), which correlates especially with realization values in the appropriate areas, represents the capacity of self-empowering, creating, and overcoming difficulties.

With regard to chess players, of these three dimensions, the framing dimension was the only one that showed a statistically significant difference between good and poor players. This dimension represents individuals' mental adjustment to reality. It indicates that higher achieving chess players try to relate to reality even when it is problematic, to focus on positive aspects of reality, and to ensure that their frameworks have real probabilities of success. All this involves

more equilibrium and adaptation to the world and to life in general, which they doubtless project onto the competitive reality of chess. On the contrary, poorer frameworks in everyday life characterize inferior players; they are "out of focus" in problematic situations, they make unrealistic plans with little probability of success, which causes negative interference.

On the other hand, the fact that there was no statistical difference in the active-vital involvement dimension indicates that being active-vital versus being hyper-reflexive does not influence success in chess, although it is observed in some aspects related to enjoyment of life, such as individual subjective well-being (Hernández, 2000a). This dimension focuses on living, in a direct and active way, as opposed to attempting to protect oneself with excessive calculations, reflections, hypotheses or precautions, all of which devitalize one. The transforming potentiality dimension had no influence on success in chess, in spite of the important influence this dimension has on some aspects of creativity, quality, and brilliance (Hernández, 2001).

The above results indicate that realistic adjustment had the most influence on success, more so than did optimization or vitalization.

2. Focal perspectives

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

— Perspective of "Tolerating versus Defending," $F(1, 51) = 12.136$, $p < .001$. This mental perspective is used by successful competing players (M = –479), 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 = –576). These players suffer and are overwhelmed by negative emotions, finding it difficult to overcome the pain of failure.

—Perspective of "Syntonizing versus Dissociating," $F(1, 51) = 9.707$, $p < .01$. This mental perspective is used by successful competition players (M = –988), 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 by less successful competition players (M = –1.175), 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.

—Perspective of "Non-Hetero-Referential Attribution," $F(1, 51) = 7.435$, $p < .01$. This mental perspective is also used by successful competitors (M = –431), and it implies avoiding attribution of success and failure to external realities, whereas poorer players (M = –517) do it, blaming other people, magic, enemies or their own temperament.

2.2 Discussion .The three perspectives that revealed differences between the groups of good and poor players are included in the aforementioned dimension of productive-realist framework. They refer to the capacity of realistic outlook, tolerance, and avoidance of external attributions, as opposed to a defensive attitude with which people tend to fool themselves, neutralizing, reducing, or distorting their awareness and emotionality in order to avoid suffering. One of these perspectives has more influence in anticipatory situations, another, in reaction situations, and the third, in attribution situations. These are as follows:

1) The "syntonizing versus dissociating" focal perspective is of a more anticipatory nature, for facing possibly problematic situations. It indicates the extent to which people try to connect with or disconnect from their troubles, cognitively or emotionally, despite effort and pain. Successful players tend to cope with reality. They also fully experience the different real-life situations, without fear of taking risks, whereas less successful players try to ignore, avoid, or forget problematic situations, although forced to face them. The latter also tend to be insensitive or to neutralize their feelings even in positive situations, so as not to become involved and thus, avoid suffering.

2) The "tolerating versus defending," focal perspective, of a reactive nature, is seen during frustrating situations. It indicates the extent to which people accept, tolerate, or minimize frustrations. Successful players acknowledge failures, defeats, and setbacks in a sporting way. However, less successful players dramatize them and increase the pain of their frustrations. They

may also tend to divert their frustrations onto other people or situations, or to get into self-justifying arguments to free them from responsibility for their actions.

3) The "non-hetero referential attribution" focal perspective, of an attributive nature, occurring after a situation, refers to accepting responsibility for success and failures, refusing to look for explanations that blame others. Successful players usually behave this way, whereas unsuccessful ones resort to external forces on which to place the "locus of control" of their actions.

In summary, focal perspectives show that people who are more successful in chess feel involved in real life and behave directly, coping with and tolerating frustrations, accepting responsibility for their actions, whereas less successful chess players behave indirectly, self-defending, self-excusing, placing responsibility onto other people, luck, or external realities for their successes, and especially for their failures.

All this seems to suggest that people who, in real life, are more liable to grasp problems, to cope with them fearlessly, to try to solve them, and to acknowledge responsibility for their results, are also apt to win in the game of chess. Their courage, self-confidence, and realism imply operative, realistic, and emotional control in chess. On the contrary, people who despite adequate intelligence are more dissociated from reality, more defensive, evasive, frustrated, and with a higher tendency to blame external forces have more difficulty winning in chess competitions because of their lack of realism and emotional control.

3. Simple molds

3.1 Results. 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, $F(1, 51) = 11.933$, $p < .001$. This mold or strategy is used by unsuccessful competition players ($M = 39$) 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 ($M = 29$) cope with problems directly.

—"Hostiligeness [hostile anticipation] and suspicion" mold, $F(1, 51) = 8.478$, $p < .005$. This mold or strategy is used by unsuccessful players ($M = 78$) and consists of imagining difficulties,

problems, or conflicts, especially interpersonal ones, and suspecting others of having evil intentions. These individuals perceive others as hypocritical and false, blaming them for their misfortunes, whereas successful players (M = 61) adopt an open and friendly mental attitude towards others.

—"Inflation-deflation" F(1, 51=7.243, p < .01. Again, this mold or strategy is used by unsuccessful competitors (M = 105) and refers to alternating between optimism and disappointment. These persons overrate their goals, projects, or results, 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. They encourage and discourage themselves alternately. On the contrary, successful players (M = 87) raise their expectations moderately and show equable reactions after their performance.

—"Emotional dissociation" mold, F(1, 51) = 5.240, p < .01. Less successful players also use this mold or strategy in competitions (M = 50). It consists of attempting to turn off their feelings. These 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 deny any interest in events and underrate the possible result, or they over-analyze and look for the absurdity of situations and people, or they simply distract their attention. In contrast, successful players (M = 41) are emotionally involved.

—"Attribution to temperament" mold, F(1, 51) = 5.289, p < .05. This mold or strategy is employed in competitions by unsuccessful players (M = 42) 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 = 36) do the opposite, not making attributions, at least not external ones.

—"Magic attribution" mold, F(1, 51) = 5.159, p < .05. Unsuccessful chess players employ this mold or strategy in competition (M = 49), attributing successes or failures to unknown forces, such as destiny, chance, or luck, whereas successful players (M = 37) do not resort to magic forces.

—"Fuzzy coping" mold, $F(1, 51) = 4.947$, $p < .05$, is used by unsuccessful players in competition ($M = 79$). They make unrealistic, diffuse plans that are inefficient to achieve their goals. They may either postpone things, or they miscalculate the available time, or they accumulate work and obligations. They may also generate many ideas, projects and doubts, resulting in still more disorder and inner disappointment. On the other hand, successful players ($M = 67$) adopt operative and realist plans.

3.2 Discussion. Among the 30 molds, 7 revealed significant differences between good and poor players. These molds can be grouped into those that occur before and after the action. All of them refer to lack of realism expressed in various ways.

Before the action or foreseen situation, the mind, like a movie camera, can outline various types of movements and focuses. For example, it can put the focus of attention whether or not on problematic reality; it can sharpen or blur that possible reality; it can choose whether or not to exaggerate whatever it imagines, it can decide whether or not to prepare adequately for action. The following molds are examples of this lack of realism when facing action or a foreseen situation:

Lack of realism is expressed as disconnection or dissociation from reality. In this sense, in real life, good players are characterized as being connected with reality, whereas poor players adopt a defensive approach, scoring higher in the "cognitive obliqueness" mold and in the "emotional dissociation" mold.

Lack of realism is also expressed as distortion of reality and defensive attitude. Good players perceive events as positive, or at least, they do not imagine threatening situations, contrary to poor players, who score higher in the "hostiligeness and suspicion" mold.

In addition, lack of realism is expressed as extravagant expectations. Thus, good players are characterized by mentally assessing future events, even positive imaginary events, whereas poor players exaggerate, as though with a magnifying glass, the advantages of the results, scoring higher in the "inflation-deflation" mold, so that they subsequently feel discouraged.

Lack of realism may also be expressed as lack of precise procedures to achieve imagined aims. Good players prepare themselves appropriately for action, whereas poor players are ambitious, diffuse, and inefficient, consequently they score higher in the "fuzzy coping" mold.

All this indicates that, when facing reality or action in real life, poor players adopt deceptive molds. Although they avoid suffering this way, they are also less effective. They adopt defensive and hostiligenic (hostile) molds: they disconnect from problematic situations, imagining others to be hostile, they make unrealistic plans with unlimited and naive goals, while their procedures are hazy and superficial, and therefore ineffective.

After the action, poor players' unrealistic nature is also emphasized:

Their lack of realism is expressed their explanation of the results, so that they score higher in external attributions, such as in the "attribution to temperament" mold. More accurately, external attribution is the "magic attribution" mold, in which poor players score high. The "hostility and suspicion" mold is also included here because hostile attribution to others is also expressed after performance.

Consequently, poor players' generally unrealistic attitude also increases after performance, offering external explanations, especially magic attributions. In fact, magic thoughts coincide with the defensive, naive, and inefficient nature of the group of less successful players. All these aspects are illustrated in Figure 1.

Insert Figure 1

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4. Specific chess molds

4.1 Results. With regard to the 12 factors from the specific chess molds questionnaire (MEA), no statistically significant differences were observed between the two groups in 9 factors, whereas 3 factors did reveal significant differences. These are:

—"Solving disposition" mold, $F(1, 51) = 10.568$, $p < .001$. When failing, successful competition players ($M = 0.45$) tend to look for alternatives and solutions. They are reflective and do not act impulsively, avoiding distorted and unrealistic thoughts. They evaluate their possible shortcomings, even when winning, as a precaution. On the other hand, less successful players ($M = –0.37$) do not search for alternative or solutions, but rather tend to be impulsive or to generate

unproductive thoughts. For example, they fantasize about unrealistic goals and are later disappointed because they cannot achieve them, or they imagine threats, problems, or failures, exaggerating future events.

—"Operative and controlled disposition" mold, $F(1, 51) = 4.735$, $p < .05$. Successful chess players ($M = 0.317$) make careful and precise plans, supervising and revising each step and element, foreseeing possible shortcomings even when winning. At the same time, they avoid daydreaming before moving, or self-criticism after moving, such as imagining moves they could have made instead of the moves they actually made. On the other hand, moves by unsuccessful competition players ($M = -0.262$) lack precision. They usually believe that their moves are sufficiently well planned, but afterwards, see the loose ends; they usually think a casual glance is sufficient, but later on, discover many disregarded details. Imagining supposedly brilliant moves enhances this naïve approach, but they are subsequently disappointed. When winning, they do not pause to consider possible negative aspects. When they lose, they usually think of the right maneuver they should have used.

—"Emotional stability and flexibility" mold, $F(1, 51) = 4.545$, $p < .05$. Successful competition players ($M = 0.311$) have a calm and easy disposition. They are not alarmed; they analyze the various possibilities, the pros and cons of each move, controlling emotional interference, avoiding unpleasant or catastrophic thoughts and impulsive decisions. On the other hand, less successful players ($M = -0.257$) tend to become upset or alarmed, and are incapable of imagining possible circumstances or solutions, either the positive or negative conditions encountered at each move. They are usually wary, imagining unpleasant or disastrous future events. They may try to get involved in the game impulsively, without analyzing the moves sufficiently.

4.2 discussion. Of the 12 specific chess factors (MEA), only 3 factors revealed significant differences between good and poor players. Two of these molds –the "operative and controlled disposition" and "solving disposition" molds– are very similar Sternberg's (1984) concept of meta-components of intelligence. Good players scored higher in these two molds. The "emotional stability and flexibility" mold, in which good players also scored higher, may be related more closely to some aspects emotional intelligence (Mayer & Salovey, 1993; Goleman, 1995).

The fact that molds such as “magic attribution,” “hostiligenic (hostility-provoking) thought,” or “rationalized and self-justifying thought” reveal significant differences when applied to life in general, but not when applied to the game situation, means that these molds directly affect lifestyle. And lifestyle is related to using operative molds, which affect the way people play chess.

General Discussion and Conclusions

In order to interpret the results, they must be arranged on the two respective planes provided by the MOLDES and MEA tests: on the one hand, players’ everyday-life molds and, on the other, their molds when in playing 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 “hostiligenic” 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' direct 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; Goleman, 1995).

There are some molds from the MOLDES Test that are similar to molds o factors from the MEA Test, such as "Magic Attribution", "Hostiligenic Thought," or "Rationalized and Self-justifying Thought". However, these only discriminate efficiency in chess for both groups when they are used in everyday life (MOLDES), but not when used in the chess situation (MEA). This implies that the lifestyle characterized by these molds has an indirect effect on chess, but no direct influence on the game situation. In this specific situation, operative thought and emotional control are the most efficient molds, expressing realism, precision, operativity, emotional regulation, and search for alternatives.

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 & Salovey, 1993; Goleman, 1995) and intrapersonal intelligence (Gardner, 1995). And specifically, cognitive-affective molds are specific strategies and operative units that are related to both intelligences (Hernández, 1997, 2000).

Feelings and emotions are implied in these molds and they account for achievement better than do calculation, reasoning, or problem solving. This conclusion justifies the opinion of a great chess master: "In chess, there is a meeting of two wills rather than two knowledges," 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; Bychowski, 1954; Gobet, 1992; Kelly, 1985; Krogius, 1972). 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.

The analyzed results go beyond the application of the cognitive-affective molds for the chess game, as well as for other possible areas of the human activity. Fundamentally, they are data that put in relief the importance of the cognitive-affective molds in the configuration of the personality and of the behavior, demonstrating to be useful constructs to understand the individual differences, or to explain the efficiency, the maladjustment or the subjective well-being.

Future perspectives

Two future consequences are derived of all this: The first consequence is general and it is related with a potential and wide research of the cognitive-affective molds applied to the different areas and facets of the human reality. The second consequence is specific and it is concerned with the chess game, but it can be useful for any matter. This way, the cognitive-affective molds are considered in order to establish a theoretical model of competition chess players' formation, which can be conceived as three superimposed layers of knowledge and skills: The first layer is external and is represented by strictly technical-intellective formation and includes knowledge of the elements, moves, specific situations, and strategies depending on each situation. The second layer is intermediate and is represented by psychological knowledge of chess-related affairs and what affects them. Learning models, parent’s and monitors’ expectations, environment, the opponent’s profile, the importance of the tournament and of the rounds, time limits, specific psychological strategies, and anticipation of events in a specific game, should all be taken into account. The third layer is internal and is made up of knowledge about, diagnosis and modification

of players' cognitive-affective molds, because they are responsible for the internal control of the situation of the chess game.

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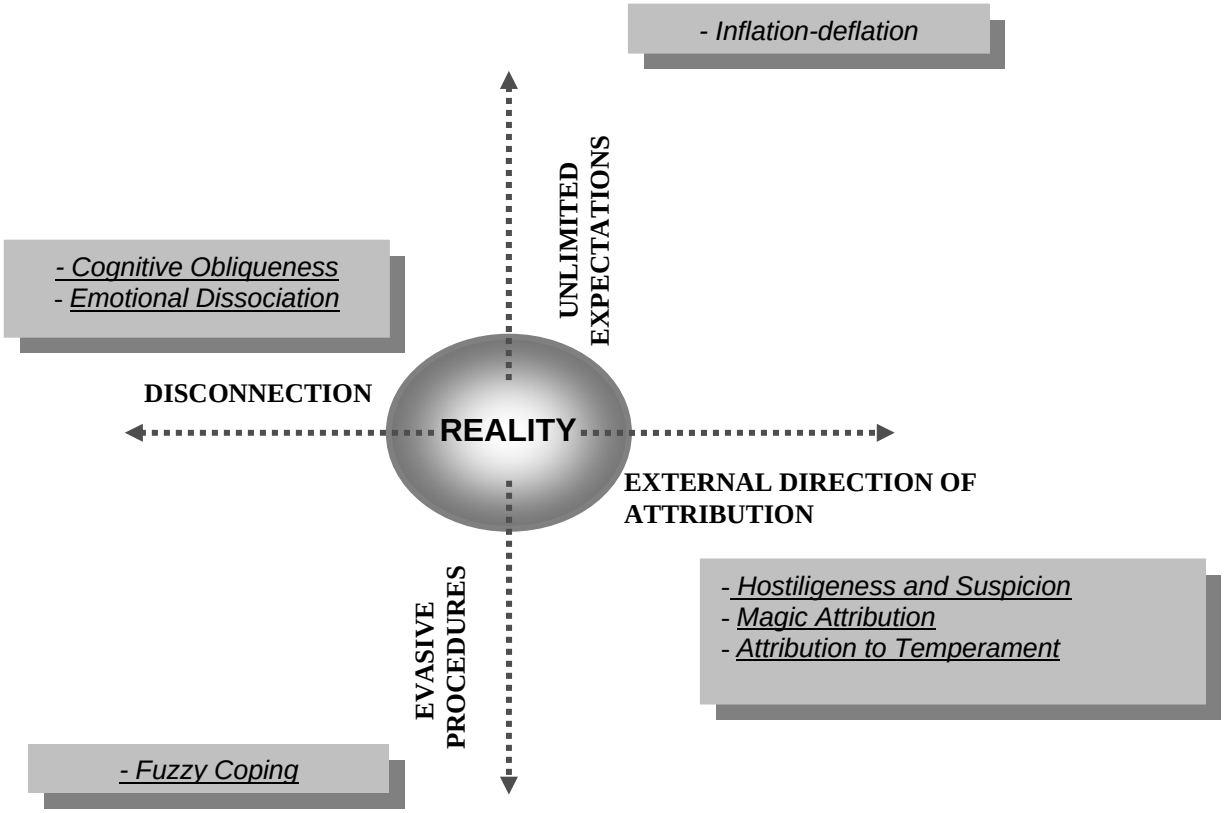
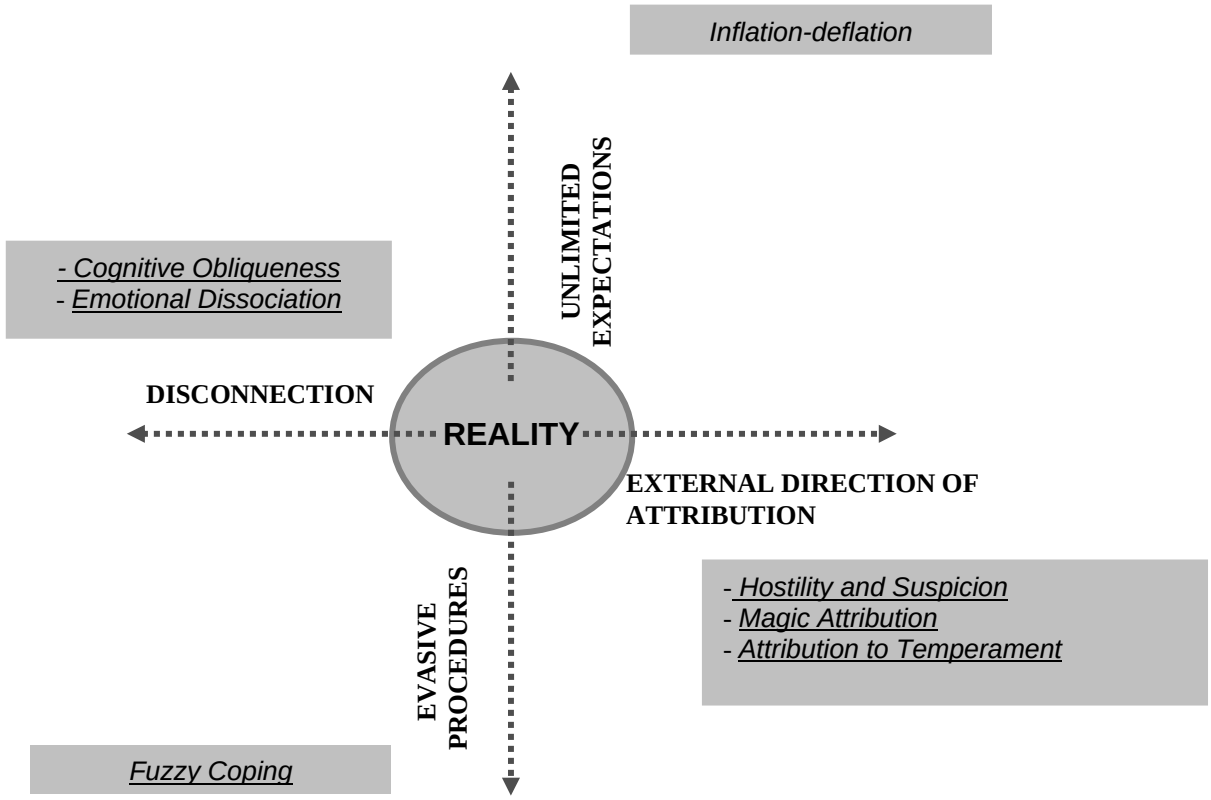


Figure 1. Defensive-dissociative perspective: All the less successful chess players' molds are characterized by their disconnection from reality: Unrealistic level of expectations; use of inefficient procedures; and external and unrealistic explanations or attributions; in contrast with the realistic and operative molds of successful players.

(Figure 1, alternative b)



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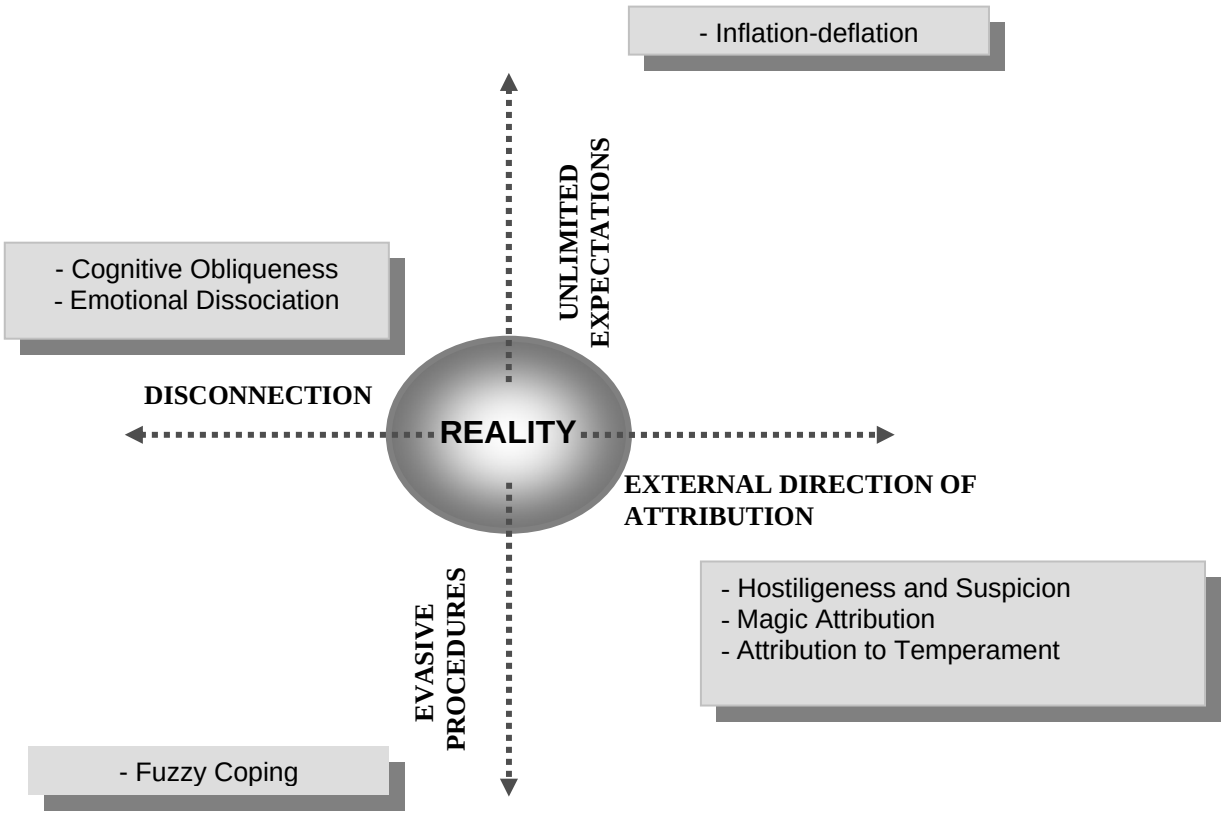

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