

Evaluation of Emotional Abilities in Alexithymia

Fernández-Rivas, S.*

Cabaco, A.S.**

Crespo, A.***

Cabestrero, R.***

Abstract: The aim of this research was to assess two emotional abilities in the alexithymia dysfunction: capacity to recognize and to express emotions and empathy. Emotional abilities of 306 participants were assessed by means of TAS-20, the Interpersonal Reactivity Index (IRI) and a computerized test designed to evaluate the identification and the memory of the emotional expression. Results support partially the hypotheses of cognitive and relational deficit, since differences neither in recognition tests nor in emotional expressions memory were found. Only some dimensions of empathy were proved to be different. Results are discussed taking into account different theoretical approaches. To clarify the controversy, some lines for future work are pointed out.

Key words: alexithymia, emotion, memory, TAS-20, IRI

Introduction

Alexithymia is an emotional disorder that presents a series of deficiencies in empathy, and in the recognition and identification of the emotional expression. It is described as a specific dysfunction in the emotional processing. Several difficulties are pointed out: (a) inability to explain or to describe feelings; (b) difficulties to differentiate feelings of corporal sensations; (c) lack of introspective capacity; (d) tendency to social conformism and, (e) an impoverishment of fantasize capacity (Fernández-Rivas and Cabaco, 2002a; Martínez-Sánchez, 1998; Nemiah, Freyberger and Sifneos, 1976; Salminen, Saarijärvi and Ärela, 1995; Sandín, Chorot, Santed and Jiménez, 1996; Taylor, 1984; Taylor and Bagby, 1988).

These difficulties have been pooled in three realms: cognitive, affective and interpersonal relationships (Krystal, Guiller and Cichetti, 1986). Firstly, alexithymic subjects presents a cognitive dysfunction characterized by a reduction on fantasizing capacity and managing emotions as well as a verbatim thought guided by details of external events (García-Esteve, Núñez and Valdés, 1988; Martínez-Sánchez, 1995). Moreover, they also exhibit difficulties to verbalize emotions and to discriminate corporal sensations from emotional states. Finally, the dysfunction in the interpersonal relationships implies an empathy alteration, since this subjects show a tendency to social isolation, avoiding contact with other people (Fernández-Rivas and Cabaco, 2002b). Difficulty to express and to recognize emotional expressions is one of the clinical manifestations, related with alteration in the affective realm. Thus, alexithymics and subjects with vulnerability to this dysfunction will present a bigger difficulty in recognition and identification of the

* Universidad SEK (España)

** Universidad Pontificia de Salamanca (España)

*** Universidad Nacional de Educación a Distancia (España)

emotional expressions. Although there is a large body of data supporting this hypothesis, some works have refused it. Parker, Taylor and Bagby (1993) pointed out that those subjects with high alexithymia levels present bigger difficulty in the recognition of the emotional expression. Mann, Wise, Trinidad and Kohanski (1994) found smaller accuracy in recognition of emotional expression in alexithymics. Lane, Sechrest, Riedel, Weldon, Kaszniak and Schwartz (1996) verified a smaller ability in recognition of emotional stimulation in alexithymic subjects. Also, these authors affirm that the lack of emotional recognition it is not only due to a verbal deficit, but rather by deterioration in the symbolic representation of the emotion. Jessimer and Markham (1997) explained how this difficulty in the recognition of the emotions is due to a smaller activity on the right hemisphere. Lane, Schrest, Riedel, Shapiro and Kaszniak (2000) also indicated that alexithymics present a deficit in the recognition of emotions, larger in magnitude than in accuracy. Nevertheless, results from Berenbaum and Prince (1994), Mayer, DiPaolo and Salovey (1990) and McDonald and Prkachin (1990) are opposite to the above indicated, and no differences between alexithymic and non-alexithymic subjects in capacity of emotional recognition is exhibited. Due these controversies, we understand that more empirical evidence is necessary to clarify this issue.

But not only affective realm is implied in alexithymia. Social and interpersonal relationships difficulties is another clinical manifestation of this construct. This one implies an empathic capacity alteration, also related with the recognition and identification of emotions. Both variables are related, since empathize with other's emotions requires a good perception, identification and understanding of the own ones (Fernández-Rivas, 2001). Subjects

with high alexithymia levels present a low empathic capacity as shown in several studies (Mayer et al., 1990; Parker, Taylor and Bagby, 1993). It has been proved that difficulties in the mental representation of the emotions are present in alexithymia. These manifestations are related with a difficulty on symbolization (Bucci, 1997a, 1997b; Lane and Schwartz, 1987) and emotional intelligence. Emotional intelligence is proposed as an emotional ability including expression, evaluation and regulation of the emotions. This ability is assumed to be altered in alexithymia (Mayer et al., 1990; Parker, Taylor and Bagby, 2001; Taylor, Parker and Bagby, 1999). According to that it should be expected that high alexithymia levels is related to a lack of empathic ability.

Taking into account above controversy, none approaches have been interested in the analysis of the results by means of SDT (Signal Detection Theory). Therefore, present work main aim was to determine the existence of differential patterns between alexithymic and non-alexithymic in sensibility and response criteria when using STD methodology in a face recognition task. Our purpose was to find new evidence about the influence of the alexithymia level in two dimensions of the emotional ability: the recognition of the emotional expression and the empathic ability. Three levels of alexithymic subjects (high, medium and low) were required to perform several tasks concerning with interpersonal abilities as well as identification and remembering of emotional expressions.

Method

Participants

Participants were 306 students from "Universidad Pontificia de Salamanca (57

male and 249 female). Mean age of the sample was 20.82 years old ($SD = 2.89$). With the purpose of classifying participants based on their alexithymia level TAS-20 (Alexithymia Toronto Scale developed by Bagby, Taylor and Parker, 1994) in the Spanish adaptation was applied (Martínez-Sánchez, 1996). Taylor, Bagby, Ryan and Parker (1990) classification procedure was carried out. Percentile 25 yields "low alexithymia level or non-alexithymics" (scoring equal or less than 36). Percentile 75 yields "high alexithymia level or alexithymics" (scoring equal or more than 52). According to this, a sub-sample was obtained constituted by 161 subjects (29 male and 132 female), of those 81 belonging to "high alexithymia" group and 80 to "low alexithymia" group. The remaining 145 subjects were considered as "medium alexithymia".

Instruments

Toronto Alexithymia Scale (TAS-20)

The Martínez-Sánchez (1996) Spanish adaptation of TAS-20 (Bagby, Parker and Taylor, 1994) was used. It is a 20 items self-report measure with a five-point Likert rating format. A bigger score represents bigger presence of the construct, except for the items: 4, 5, 10, 18 and 19 that are valued in a reversed order. These are distributed in three factors that explain different dimensions of the alexithymia construct: difficulty to identify feelings (FI), difficulty to describe feelings (FII) and externally-oriented thinking (FIII).

Interpersonal Reactivity Index (IRI)

Davis (1983) Interpersonal Reactivity Index was used in the Spanish version (Frias, Mestre and Pérez-Delgado, 1997). This scale measures individual differences in the empathic tendencies, from a multidimensional perspective. It consists on

28 items that are distributed in four subscales that evaluate four dimensions from empathy global concept: perspective taking (PT), empathic concern (EC), personal distress (PD) and Fantasy (FS). These sub-scales are composed by seven items each. A five-point Likert rating format is used. Possible responses go from 0 through 4. Bigger scores indicate larger presence of the evaluated construct.

This instrument allows to measure cognitive aspect as well as emotional reaction from subjects when adopting an empathic attitude. Perspective taking (PT), Empathic Concern (EC), and Fantasy (FS) sub-scales are related to more cognitive aspects. The PT sub-scale measures the subjects spontaneous intents to adopt the other's perspective in daily life situations, and to see these way things from the point of view of the other without necessarily experiencing an affective response. The F sub-scale has the aim to measure the subjects tendencies to be identified with literature or cinema characters, revealing the imaginative capacity to get into the fiction character's of place. On the other hand, empathic concern (EC) and personal distress (PD) sub-scales evaluate the emotional reactions of the subjects in presence of negative experiences of other. The EC sub-scale measures the subjects responses of compassion and tenderness to others, while the PD evaluates the anxiety and uneasiness feelings that the subjects manifests when observing negative experiences of others.

Computerized test of emotional expression identification and memory

This test was comprised of two parts (identification and memory of emotional expression). A slides sequence was implemented in a computer in which pictures with different facial expressions

were displayed to the subjects. Their task consisted on indicating what emotion is expressed in each picture. The selected stimuli consisted on 6 pictures in white and black of masculine and feminine models that expressed the basic Ekman and Fries (1975) emotions. The presentation order was: happiness, anger, sadness, surprise, fear and disgust.

Afterward, the same computer procedure was carried with different pictures, but some of the expressions were already presented in the previous test. Subjects task consisted on indicating if the presented emotion was new or belongs to the former set. Sixteen items were presented: eight pictures of presented emotions (Signal, S) and eight new (Noise, N). The order was as follows: Sadness (S), Surprise (S), Happiness (N), Anger (S), Fear (S), Shame (N), Interest (N), Happiness (S), Reject (N), Neuter (N), Disgust (S), Neuter (N), Reject (N), Sadness (N), Neuter (N), and Anger (S).

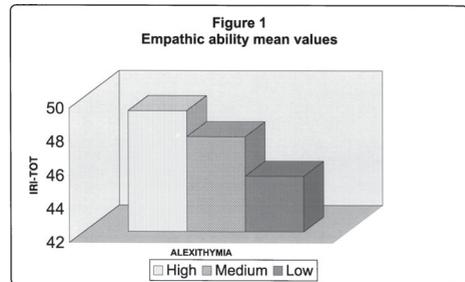
Procedure

In a first collective phase, TAS-20 and IRI were administered to all subjects. In a later individual phase the rest of the identification and memory of the emotional expression tests were carried out. Before the application it was checked that participants understood the instructions and the task to be executed. Also all the tests were carried out in the same laboratory under controlled conditions.

Results and Discussion

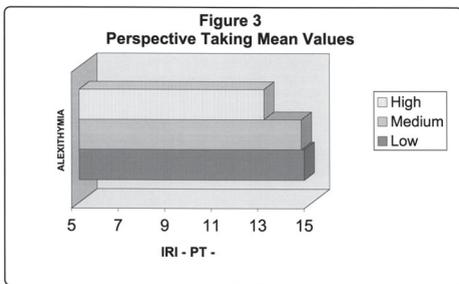
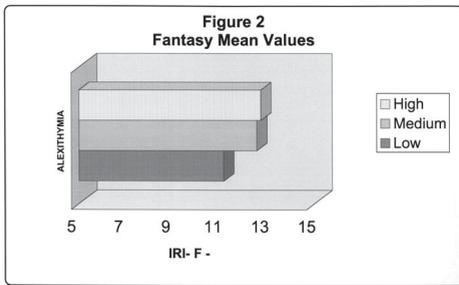
In order to analyse the influence of the alexithymia level in two dimensions of the emotional ability (the recognition of the emotional expression and the empathic ability), a variance analysis (ANOVA) was carried out to check possible differences between groups.

The results did not show significant differences in the recognition of emotional expression variable (EER-I) between alexithymia levels [$F(2,302)=1.754$; $p=.175$]. Therefore, EER-I did not discriminate the number of successes among subjects with high, medium and low alexithymia levels (High=3.8; Medium=4.01; Low=3.96). Moreover, neither differences among the groups were appreciated in sensibility $-d'$ [$F(2, 302)=1.563$; $p=.211$] nor in response criteria $-c-$ [$F(2, 303)= 1.546$; $p=.215$]. It is interesting to point out that concerning d' differences showed opposed directions (High= -.061; Medium= -.190; Low=.060). On the other hand, differences were observed in empathic ability among alexithymia levels in the final score of IRI [$F(2, 303)= 3.370$; $p=.36$], indicating that high alexithymia levels are related with high empathic ability levels (High=49.19; Medium=47.64; Low=45.30).

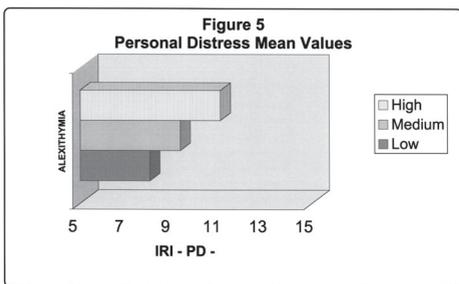
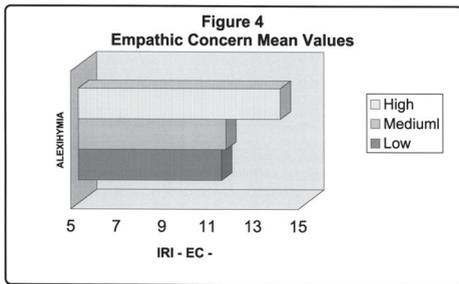


These significant differences were appreciated in all sub-scales: Fantasy $-F-$ [$F(2, 303)= 3.733$; $p=.025$], perspective taking $-PT-$ [$F(2, 303)= 6.618$; $p=.002$], empathic concern $-EC-$ ($F(2;303)= 3.289$; $p = .039$) and in personal distress $-PD-$ [$F(2, 303)= 15.255$; $p=,000$] Nevertheless, in all the sub-scales the high alexithymia levels present high empathy levels, except in the perspective taking $-PT-$ (High=12.95; Medium=14.56; Low=14.68) where lowest empathy scores were related with highest alexithymia levels.

COGNITIVE DIMENSION OF EMPATHY

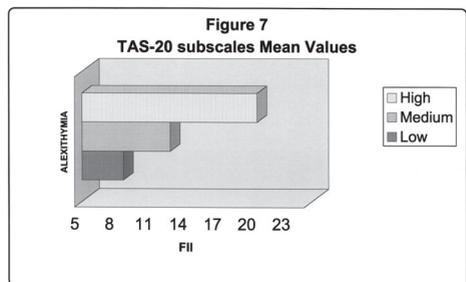
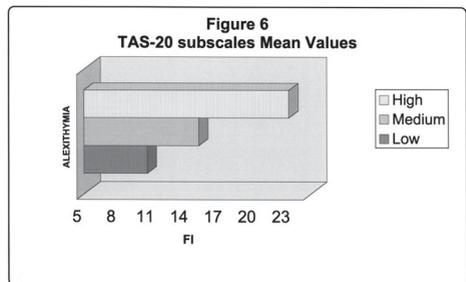


EMOTIONAL DIMENSION OF EMPATHY



Finally, possible differences among the groups were examined in the following TAS-20 sub-scales: difficulty to identify feelings (FI), difficulty to describe feelings (FII) and externally-oriented thinking (FIII). According to the ANOVAS significant differences appeared in FI [F(2, 303)= 197.473; $p=.000$]; FII [F(2, 303)= 65.223; $p=.000$] and FIII [F(2, 303)=39.726; $p=.000$]. This way, those subjects with high alexithymia levels present bigger scores in all sub-scales (FI=23.10; FII=20.26 and FIII=17.94).

Also, as appreciated in graphics 6, 7 and 8, the biggest score differences were found in FI (High=23.10; Medium=15.13; Low=10.58), followed by the FII (High=20,26; Medium=12.68; Low=8.60) and finally FIII where lowest scores were obtained and also the closest values among three groups (High=17.94; Medium=15.90; Low=13.24).



TAS-20 correlations array showed how the biggest correlations ($r=.795$; $p=.000$) were present in FI, followed by FII ($r=.569$;

$p=.000$) and, finally, by FIII ($r=.510$; $p=.000$). These data are consistent with all sub-scales scores previously analysed. These data are new support to the factorial structure found in Martínez-Sánchez (1997)

study, where three factors were obtained explaining the 39.48 percent of the variance. Therefore, FI represents the 16.57 percent of the variance, FII 12.96 percent and, finally the FIII 9.91 percent.

Table 1. TAS-20 Correlation Matrix

		TAS-20 – F I	TAS-20 – F II	TAS-20 – F III	TAS-20 – Total
Correlations	TAS-20 – F I	1.000	.398	.105	.795
	TAS-20 – F II	.398	1.000	.155	.569
	TAS-20 – F III	.105	.155	1.000	.510
	TAS-20 – Total	.795	.569	.510	1.000
Significance (Unilateral)	TAS-20 – F I		.000	.033	.000
	TAS-20 – F II	.000		.003	.000
	TAS-20 – F III	.033	.003		.000
	TAS-20 – Total	.000	.000	.000	

Conclusions

As pointed out in the introduction, several works have considered that subjects with high alexithymia levels have a worst performance in the recognition of the emotional expression (Jessimer and Markham, 1997; Lane et al., 2000; Lane et al., 1996; Mann et al., 1994; Parker et al., 1993). This observation was not confirmed in present work, where all the groups exhibited similar level of performance on emotional recognition. Our results are more in the line of Berembaum et al. (1994), Mayer et al. (1990) and McDonald et al. (1990) in which no differences in capacity or accuracy of emotional recognition were found between alexithymics and non-alexithymics. McDonald et al. (1990) contemplated the existence of dissociation between the evaluation and the expression of emotion in the alexithymic subjects. Thus, independence of cognitive and affective processes in the emotion would be supported (Zajonc, 1980, 1984). It is important to consider that, despite the lack of differences among the groups in the number of hits, it could be appreciated a

lower performance in all the groups. This does not implies that deterioration in the recognition is not present in alexithymic group, but rather that the emotions presented as stimuli do not discriminate with the enough precision between alexithymics and non-alexithymics. Based on studies that indicate that alexithymics are less precise in the happiness and sadness identification (Mann et al., 1994) and that they present difficulties in emotions like anguish, reject, surprise, interest, anger, fear and enjoyment (Parker et al., 1993), our secondary analysis was carried out. The aim was to determine if there was a differential pattern by the type of emotions, where alexithymics failed more than non-alexithymics. No differences between both groups were observed.

Another explanation of the results would be that cited studies were not comparable due to methodological differences. Thus, not only the type of stimulation was different (Ekman and Fries, 1975 faces vs. Izard, 1971), but also the presentation of stimuli (pictures, slides, scenes or computer).

We did not find a differential pattern between subjects with high and low alexithymia levels on response sensibility or criteria, using SDT methodology. Nevertheless, a tendency can be appreciate that could be enlarged in a clinic sample. Non alexithymics seems to show better sensibility –a good capacity to discriminate stimuli–, while alexithymics present it worse. In relation to criteria, tendency indicates that non-alexithymics seems to have a more independent response criteria compared with alexithymics ones, which could be translated in a more conservative criteria in clinical population.

A second aspect outlined in this hypothesis was that the high alexithymia levels would be associated with low empathy levels. In our work this postulate is verified partially. Although some of the sub-scales have a positive relation, the total correlation seems to indicate that, high alexithymia levels would be related with high empathy levels. These data do not support the results of Parker et al. (1993) and Mayer et al., (1990), where a smaller empathic ability in alexithymic subjects were verified. In a same way, they do not support the researches that consider the empathy as emotional intelligence ability, postulating deterioration also on the emotional intelligence of alexithymics (Mayer et al. 1990; Parker et al. 2001; Taylor et al. 1999). This controversy can be explained as a function of empathy evaluation method employed on each study. Parker et al. (1993) did not use any empathy measure. They simply deduce that alexithymic subjects will have a low empathic ability, since they do not have a good capacity of emotions recognition. For this reason, alexithymic presents difficulties to understand the facial expressions of other. Mayer et al. (1990) used the Mehrabian and Epstein Emotional Empathy Scale

(1970) composed by 33 items and 7 sub-scales (Susceptibility to Emotional Contagion, Appreciation of the Feelings of Unfamiliar and Distant, Extreme Emotional Responsiveness, Tendency to Be Moved by Others' Positive Emotional Experiences, Tendency to Be Moved by Others' Negative Emotional Experiences, Sympathetic Tendency, Willingness To Be in Contact with Others Who Have Problems.). These sub-scales would be only comparable with two of the IRI inventory (perspective taking, empathic concern). Therefore, obtained results are confirmed partially since in the perspective taking sub-scale those subjects with high alexithymia levels present a smaller empathic ability. In fact the differences are centred in this scale because this evaluates the subjects tendency to adopt other's point of view and also the capacity to spontaneously put on others place. Both dimensions are picked up broadly in Mehrabian and Epstein (1970) scale, precisely in the: "Susceptibility to Emotional Contagion", "Tendency to Be Moved by Others' Negative Emotional Experiences" and "Willingness To Be in Contact with Others Who Have Problems" sub-scales.

These would be, probably, the main aspects of empathy and, also, according to Davis (1983) those that imply superior cognitive development levels. However, in the three remaining scales of the IRI (fantasy, empathic concern and personal distress) the results are inverted: low levels of alexithymia present inferior empathic abilities. This result is paradoxical because some researches have pointed out that empathy construct presents two dimensions (Davis, 1983): the emotional (empathic concern, personal distress) and the cognitive one (fantasy and perspective taking), therefore results should go in a

congruent line. But, as we have commented in cognitive dimension, in the Perspective Taking scale results as expected but in the Fantasy scale are inverted. Therefore, it seems necessary further research that clarifies the instrument adequacy when used in the alexithymic dysfunctions.

Finally, analyses carried out to verify the possible difference between the (TAS-20) alexithymia sub-scales are similar to those proposed by Martínez-Sánchez (1997) where the most explanatory dimension in the alexithymia construct is the difficulty to identify feelings.

The main conclusion of our research, in relation to the emotional ability in the empathic dimension, alexithymics present a smaller capacity to get into other's point of view, and do not differ from normal ones in the emotional expression recognition. Following this research line, future works could complete this study in two directions. Firstly, complementary studies should be carried out to analyse the emotional expression recognition capacity of these subjects, taking into consideration other aspects as the presentation of a bigger quantity of stimuli (to check if levels of alexithymia are discriminated), the evaluation of the reaction time variable in order to determine its influence in the different alexithymia levels, (it would be expected longer reaction time for alexithymic subjects) and, finally, it would be convenient to carry out works with other methodologies, such as classification tasks. Therefore, comparisons among different studies will be possible and then differences between methodologies could be checked. Secondly, this type of researches could also be carried with clinical samples. It could be analysed the eating disorders alexithymic features, therefore being able to verify that tendency in response sensibility and criteria in SDT pointed out in previous section.

References

- Bagby, R. M., Parker, J. D. & Taylor, G. J. (1994). The twenty-item Toronto Alexithymia Scale-I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research, 38* (1), 23-32.
- Berenbaum, H. & Prince, J. D. (1994). Alexithymia and the interpretation of emotion-relevant information. *Cognition and Emotion, 8*, 231-244.
- Bucci, W. (1997a). Symptoms and symbols: a multiple code theory of somatization. *Psychoanalytic Inquiry, 17*, 151-172.
- Bucci, W. (1997b). *Psychoanalysis and cognitive science: a multiple code theory*. New York: Guilford.
- Davis, M. H. (1983). Measuring Individual Differences in Empathy. Evidence for a Multidimensional Approach. *Journal of Personality and Social Psychology, 44*(1), 113-126.
- Ekman, P. & Friesen, W. V. (1975). *Unmasking the face- A guide to recognizing emotions from facial cues*. Englewood Cliffs, N. J.: Prentice-Hall.
- Fernández- Rivas, S. (2001) . *Atención selectiva y emoción: influencia del nivel de alexitimia en el procesamiento de la información*. Tesis Doctoral no publicada, Universidad Pontificia de Salamanca.
- Fernández- Rivas & Cabaco, A.S. (2002a). Hipervigilancia emocional en la alexitimia: una revisión. *Temas de Psicología, 8*, 127-148.
- Fernández- Rivas & Cabaco, A.S. (2002b). Deterioro de las habilidades emocionales en la alexitimia: implicaciones educativas. *Papeles Salmantinos de Educación, 1*, 149-179.
- Frías, D., Mestre, V. & Pérez-Delgado, E. (1997). Descripción y propiedades psicométricas de los instrumentos. En V. Mestre & E. Pérez-Delgado (eds.),

- Cognición y afecto en el desarrollo moral* (pp. 89-107). Valencia: Promolibro.
- García-Esteve, L., Núñez, P. & Valdés, M. (1988). Alexitimia: análisis clínico y psicométrico de un concepto inicialmente psicoanalítico. *Psicopatología*, 8(1), 55-60.
- Izard, C. E. (1971). *The face of emotion*. New York: Appleton- Century-Crofts.
- Jessimer, M. & Markham, J. (1997). Alexithymia: A right hemisphere dysfunction specific to recognition of certain facial expressions. *Brain and Cognition*, 34, 246-258.
- Krystal, J., Giller, C. & Cichetti, D. (1986). Assessment of alexithymia in posttraumatic stress disorder and somatic illness. Introduction of a reliable measure. *Psychosomatic Medicine*, 48 (1-2).
- Lane, R. D. & Schwartz, G. E. (1987). Levels of emotional awareness: A cognitive developmental theory and its application of psychopathology. *American Journal of Psychiatry*, 144, 133-143.
- Lane, R. D., Sechrest, L., Riedel, R., Shapiro, D. & Kaszniak, A. (2000). Pervasive emotion recognition deficit common to alexithymia and the repressive coping style. *Psychosomatic Medicine*, 62(4), 492-501.
- Lane, R. D., Sechrest, L., Riedel, R., Weldon, V., Kaszniak, A. & Schwartz, G. E. (1996). Impaired verbal and nonverbal emotion recognition in alexithymia. *Psychosomatic Medicine*, 58, 203-210.
- Mann, L. S., Wise, T. N., Trinidad, A. & Kohanski, J. (1994). Alexithymia, affect recognition, and the five-factor model of personality in normal subjects. *Psychology Reports*, 74, 563-567.
- Martínez-Sánchez, F. (1995). La alexitimia: un constructo potencialmente útil para la investigación de las relaciones entre emoción, cognición y salud. *Cuadernos de Medicina Psicosomática*, 34-35, 46-54.
- Martínez-Sánchez, F. (1996). La alexitimia en la etiopatogenia de los trastornos psicosomáticos. En M. Chóliz (ed.). *Emoción y Salud*. Valencia: Promolibro.
- Martínez-Sánchez, F. (1997). La alexitimia: un factor de riesgo para el padecimiento de los efectos patógenos del estrés. En E. G. Fernández- Abascal & F. Palmero (eds), *Emoción y salud*. Barcelona: Ariel.
- Martínez-Sánchez, F. (1998). Alexitimia y estilo represivo de afrontamiento: ¿dos constructos emocionales diferentes o similares? *Psicología COM [Online]*, 2(1), 23 párrafos. Disponible en : http://www.psiquiatria.com/psicologia/vol2num1/art_7.htm [21 Febrero 1999].
- Mayer, J. D., DiPaolo, M. & Salovey, P. (1990). Perceiving affective content in ambiguous visual stimuli: A component of emotional intelligence. *Journal of Personality Assessment*, 54, 772-781.
- McDonald, P. W. & Prkachin, K. M. (1990). The expression and perception of facial emotion in alexithymia: A pilot study. *Psychosomatic Medicine*, 52, 199-210.
- Mehrabian, A. & Epstein, N. (1970). A measure of emotional empathy. *Journal of Personality*, 40, 525-543.
- Nemiah, J. C., Freyberger, M. & Sifneos, P. E. (1976). Alexithymia: A view of the psychosomatic process. In Hill OW (ed.) *Modern Trends in Psychosomatic Medicine*, London, Butterwoths, 3, 430-439.
- Parker, J. D., Taylor, G. J. & Bagby, R. M. (1993). Alexithymia and the recognition of facial expressions of emotion. *Psychotherapy and Psychosomatics*, 59(3-4), 197-202.

- Parker, J. D., Taylor, G. J. & Bagby, R. M. (2001). The relationship between emotional intelligence and alexithymia. *Personality and Individual Differences*, 30(1), 107-115.
- Salminen, J. K., Saarijärvi, S. & Äärelä, E. (1995). Two decades of alexithymia. *Journal of Psychosomatic Research*, 39(7), 803-807.
- Sandín, B., Chorot, P., Santed, M. A. & Jiménez, P. (1996). Dimensiones de alexitimia y estados emocionales de ansiedad, depresión e ira. *Psiquis*, 17(1), 37-45.
- Taylor, G. J. (1984). Alexithymia. Concept, measurement and implications for treatment. *American Journal of Psychiatry*, 141, 725-732.
- Taylor, G. J. & Bagby, M. R. (1988). Measurement of alexithymia: Recommendations for clinical practice and future research. *Psychiatric Clinics of North American*, 3, 351-365.
- Taylor, G. J., Bagby, R. M., Ryan, D. P. & Parker, J. D. (1990). Validation of the alexithymia construct: a measurement-based approach. *Canadian Journal of Psychiatric*, 35(4), 290-297.
- Taylor, G. J., Parker, J. D. & Bagby, R. M. (1999). Emotional intelligence and the emotional brain: points of convergence and implication for psychoanalysis. *Journal of the American Academy of Psychoanalysis*, 27(3), 339-354.
- Zajonc, R. B. (1980). Feeling and thinking: preferences need no inferences. *American Psychology*, 35, 151-175.
- Zajonc, R. B. (1984). On the primacy of affect. *American Psychologist*, 39, 117-123.