



Research report

Hyperthymic temperament may protect against suicidal ideation

G.H. Vázquez^{a,*}, X. Gonda^{b,c}, R. Zaratiegui^d, L.S. Lorenzo^d, K. Akiskal^e, H.S. Akiskal^e^a Department of Neuroscience, University of Palermo, Buenos Aires, Argentina^b Department of Clinical and Theoretical Mental Health, Kutvolgyi Clinical Center, Semmelweis University, Budapest, Hungary^c Department of Pharmacology and Pharmacotherapy, Semmelweis University, Budapest, Hungary^d Psinapsys Psychiatric Private Center, La Plata, Argentina^e University of California at San Diego, Mood University of San Diego La Jolla and Veterans Administration Medical Center, San Diego, CA, USA

ARTICLE INFO

Article history:

Received 25 January 2010

Received in revised form 29 March 2010

Accepted 19 April 2010

Available online 13 May 2010

Keywords:

Suicidal ideation

Bipolar disorders

Affective temperaments

Hyperthymia

ABSTRACT

Background: The aim of this study was to investigate the role of hyperthymic temperament in suicidal ideation between a sample of patients with affective disorders (unipolar and bipolar). **Method:** We investigated affective disorders outpatients (unipolar, bipolar I, II and NOS) treated in eleven participating centres during at least a six-month period. DSM-IV diagnosis was made by psychiatrists experienced in mood disorders, using the corresponding modules of the Mini International Neuropsychiatric Interview (MINI). In addition, bipolar NOS diagnoses were extended by guidelines for bipolar spectrum symptoms as proposed by Akiskal and Pinto in 1999. Thereby we also identified NOS III (switch by antidepressants) and NOS IV (hyperthymic temperament) bipolar subtypes. All patients completed the Beck Depression Inventory (BDI). We screened a total sample of 411 patients (69% bipolar), 352 completed all the clinical scales without missing any item.

Results: No statistical significant difference in suicidal ideation (measure by BDI item 9 responses) was found between bipolar and unipolar patients (4.5% vs. 9.1%, respectively). On the group of bipolar patients, suicidal ideation was slightly more frequent among bipolar NOS compared with bipolar I and II (p value 0.094 and 0.086, respectively), interestingly we found a statistical significant less common suicidal ideation among bipolar subtype IV (with hyperthymic temperament) compared with bipolar NOS patients (p value 0.048).

Conclusions: Our results indicate that those subjects with hyperthymic temperament displayed less suicidal ideation. This finding supports the hypothesis that this particular affective temperament could be a protective factor against suicide among affective patients.

Limitation: The original objective of the national study was the cross validation between MDQ and BDS in patients with affective disorders in our country. This report arises from a secondary analysis of the original data.

© 2010 Elsevier B.V. All rights reserved.

1. Introduction

Despite of our increasing knowledge concerning the psychological, social, biochemical and even genetic factors associated with suicidal behaviour, we still know little about

the manifestations of approaching suicide and its personality and temperamental precursors, which makes effective suicide prevention still a faraway target. Since the majority of suicides are committed by affective disorders patients, it would be extremely important to understand the emergence of suicidal behaviour in this population.

Suicidal tendencies can be manifested in different forms along a continuum from suicidal thoughts through suicide attempts to completed suicide depending on the severity of the phenomenon (Oquendo et al., 2007; Gil, 2005; Sokero

* Corresponding author. Department of Neuroscience, University of Palermo, Mario Bravo 1259, C.P. 1425. Buenos Aires, Argentina. Tel./fax: + 5411 4826 0770.

E-mail address: gvazquez@palermo.edu (G.H. Vázquez).

et al., 2003). While most studies investigating the determinants and predictors of suicide deal with such more overt and more discretely measurable forms of suicidal behaviour as attempted or completed suicide, there are only very few studies which target such more dormant and less easily recognisable forms and possible precursor of later more overt suicidal acts as suicidal ideation. Furthermore, the majority of studies focus on risk factors, with only a small portion of studies trying to delineate protective factors, which may play an especially important role in case of an already high-risk population such as affective disorder patients.

It would be crucial to identify personality and temperamental correlates and substrates of suicidality, because the description of such long-term and relatively stable risk factors would provide means for earlier screening. Several studies attempted to link the emergence of suicide to different personality traits as well as psychological factors, and a well known relationship has been described between suicide and impulsive aggression (Mann et al., 2001; Zouk et al., 2006) and it has also been reported that hopelessness is able to predict suicidal behaviour (Sokero et al., 2006; Beck et al., 1989). Less consistent results have been obtained, however, by investigating the association between different manifestations of suicidal behaviour and temperaments, which are considered to possess a strong biological and genetic determination (Cloninger et al., 1993; Strelau, 1998). Affective temperaments are conceived as the subaffective manifestations and often the precursors of major unipolar and bipolar disorders (Akiskal and Akiskal, 2005) and although the association of affective temperaments with suicide has been long hypothesised (Maser et al., 2002), only recently have studies started to empirically target this relationship (Kochman et al., 2005; Pompili et al., 2008). While the results point to an association between suicidal behaviour and affective temperament which possesses a depressive component (Pompili et al., 2008; Rihmer et al., 2009; Rihmer et al., 2010), we know less about the role of hyperthymic temperament in this respect. Two recent studies have shown that while depressive, cyclothymic, anxious and irritable temperaments were overrepresented, hyperthymic temperament was underrepresented among suicide attempters, most of them have had current major depressive episode (Pompili et al., 2008; Rihmer et al., 2009).

The aim of our present study was to investigate the role of hyperthymic temperament in suicidal ideation between a sample of patients with affective disorders.

2. Subjects and method

411 outpatients with mood disorder were selected. These patients had sought treatment in 11 specialized centres around the country between December 2007 and March 2008 (Table 1). Of them, 352 completed the self-administered MDQ and BSDS scales in their local versions, carried out through the double translation method (Zaratiegui, 2009; Hirschfeld et al., 2000; Vázquez et al., 2010) as well as the Beck Depression Inventory (BDI) (Bonicatto et al., 1998). Diagnosis was made according to DSM-IV criteria (American Psychiatric Association, 1994), using for this study the mood disorder modules of the Mini-International Neuropsychiatric Interview (Sheehan et al., 1998; Ferrando et al., 2005). For the bipolar NOS diagnosis the DSM-IV criteria were extended according criteria proposed by Akiskal and Pinto (Akiskal and Pinto, 1999) to include bipolar spectrum patients. The “bipolar spectrum” was divided in NOS with sub-threshold hypomania (less than 4 day duration), NOS III (drug induced mania or hypomania) and NOS IV (with hyperthymic temperament) (Table 1). Suicidal ideation was evaluated by measuring BDI item 9 responses. For this analysis, answers to this item were grouped into two categories: with no or mild suicide ideation (0–1) and with moderate or severe suicide ideation (2–3). Data were analyzed with the SPSS program version 12.0.

3. Results

Fig. 1 shows suicidal ideation measured by BDI item 9 categories across diagnoses (0–1 versus 2–3; $p=0.069$, chi square). Suicidal ideation was relatively more frequent in unipolar than bipolar patients (9.1% vs. 4.5%, respectively, $p=0.11$). Among bipolar patients, suicidal ideation was slightly more frequent in bipolar NOS compared with bipolar I and II (p value 0.094 and 0.086, respectively). On the other hand, bipolar NOS subtype IV was the subgroup with the least proportion of suicidal ideation. The difference versus NOS bipolar patients reached statistical significance ($p=0.048$).

Table 1

Diagnosis distribution of the total sample, mean age and Beck Depression Inventory (BDI) mean scores (with standard deviation), years of evolution and median number of episodes.

Diagnosis	N	%	Age (SD)	BDI (SD)	Evolution (y).	Number of episodes (mean)
Unipolar	97	23.6	48.2 (11.7) ^a	18.1 (11.0) ^b	12.5 (11.9) ^c	4.5 ^d
Bipolar total	286	69.6	46.5 (13.3)	16.1 (11.4)	17.6 (11.8)	7.6
I	115	28.0	45.4 (13.7)	14.9 (10.6)	19.4 (12.1)	8.1
II	94	22.9	47.0 (12.2)	17.4 (12.4)	17.8 (12.1)	9.4
NOS	22	5.4	40.9 (13.3)	17.3 (12.3)	16.5 (12.5)	4.8
NOS III	20	4.9	46.6 (13.9)	16.6 (13.4)	15.9 (8.9)	8.5
NOS IV	35	8.5	52.1 (12.6)	15.4 (9.9)	12.7 (10.1)	6.2
Excluded/incomplete	28	6.8	46.9 (14.4)	16.8 (8.8)	–	–
Total	411	100	46.9 (12.9)	16.6 (11.4)	–	–

^a $t=1.21$, $p=0.227$ versus bipolar total.

^b $t=1.54$, $p<0.126$ versus bipolar total.

^c $t=-163.22$, $p<0.001$ versus bipolar total.

^d $p<0.001$ versus bipolar total (Mann–Whitney).

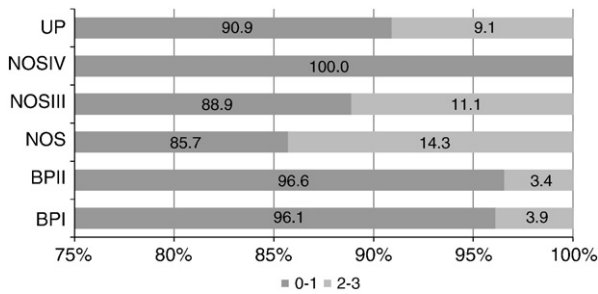


Fig. 1. Distribution (%) of items from question number 9 of Beck Depression Inventory (BDI) by diagnosis (with no-mild ideation: items 0 and 1; with moderate-severe ideation: items 2 and 3).

There were no significant differences in the proportion of patients currently depressed across the different diagnoses (chi square 2.69, $df = 5$, $p = 0.748$).

We extended the analysis to BDI item 9 mean values. NOS IV group showed the lowest mean score, 0.28. For the other diagnosis, mean values were 0.43 among BP-I and BP-II, 0.57 in BP-NOS, 0.44 in BP-III and 0.51 among unipolar patients (NOS IV vs. UP: $p = 0.16$).

In order to see if there were differences in clinicians' detection of suicidal ideation, we determined the percentage of the MINI item A3g positive annotations ("Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead? Did you attempt suicide or plan a suicide?"). It should be noted that the questions were referred to present or past episodes of depression, so the percentages reflected suicidal ideation in *any* episode of lifetime depression. Bipolar IV was again the subtype with the least proportion: 38.2% of the patients have had suicidal ideation, versus 51% of the remaining patients ($p = 0.107$).

In this sample, bipolar IV patients showed less suicidal ideation than the other mood-disordered patients. Both auto and hetero administered questionnaires displayed results in the same line.

4. Discussion

The results of our study indicate that bipolar subjects with a hyperthymic temperament, as encompassed by the bipolar prototype IV, show less suicidal ideation compared to bipolar NOS subjects with no hyperthymic traits, while there was no other significant difference concerning suicidal ideation between different types of affective disorders. This finding emphasises the role of hyperthymia and supports the hypothesis that this particular affective temperament could be a protective factor against suicide among bipolar affective patients, who are already at a higher risk of suicide. Our results are also in line with previous reports (Pompili et al., 2008; Rihmer et al., 2009) on the protective role of hyperthymic temperament in suicide attempters.

The central role of the hyperthymic temperament in the background of affective disorders is supported by strong the familial aggregation found in case of hyperthymic (and also cyclothymic and anxious) temperament in healthy first degree relatives of bipolar I disorder patients, and the highest hyperthymic scores observed in recovered bipolar I patients (Kesebir et al., 2005; Mendlowicz et al., 2005; Vázquez et al.,

2008). Hyperthymic temperament has consistently been associated with bipolar disorder (Mendlowicz et al., 2005). Several studies have so far investigated the association of affective temperaments with suicidal behaviour. In one study involving nonviolent suicide attempters the authors described that four of the five affective temperaments, those carrying a depressive component (depressive, cyclothymic, anxious, irritable) show an association with suicidal behaviour while no significant association with suicide emerged in case of the hyperthymic temperament (Rihmer et al., 2009). However, in this study the authors investigated suicide attempters regardless of psychiatric diagnoses while in our research we investigated a sample of affective disorder patients, and differentiated between several subtypes of bipolarity. In another study, investigating unipolar and bipolar affective disorder patients, an indirect association between the hyperthymic temperament and decreased suicidality was found (Pompili et al., 2008). The authors reported that the absence of hyperthymia predisposed subjects to increased Hopelessness, which in turn was a potent predictor of suicide. The authors have therefore concluded that the hyperthymic temperament may be a protective factor against suicidality. The authors also hypothesised that while patients characterised by depressive, cyclothymic, irritable and anxious temperaments are more exposed to their own mood changes and find adaptation to external factors more difficult, those possessing a hyperthymic trait may be less vulnerable to these factors (Pompili et al., 2008).

Bipolarity has many different faces, and the continuum conceptualised by Kraepelin (1921) between manic and depressive states suggests several possible types of affective disorders, which our current classification systems are not yet able to tackle. These different subtypes of bipolar disorder are different not only phenomenologically and phenotypically, but may also differ in such very important aspects as frequency of suicide and risk factors playing a role in the emergence of suicide. Bipolar prototype IV, also referred to as hyperthymic depression, contains patients who exhibit lifelong hyperthymic temperament and develop depression in later life (Akiskal and Pinto, 1999). These patients possess high energy and ambition, confidence, lifelong drive and interpersonal skills stemming from their hyperthymic temperament which enables them to cope with life more efficiently. Based on theoretical concepts and clinical observations, hyperthymic temperament can be characterised by exuberant, upbeat, overenergetic and overconfident lifelong traits, which are manifested in a cheerful and optimistic attitude towards life, a warm and extroverted attitude towards others, and overconfident and self-assured attitude about the self, and in general a high level of activity, many plans, and an uninhibited, stimulus seeking behaviour (Akiskal and Akiskal, 2005; Akiskal, 1992). Such a trait may provide for more effective defences against impulses towards suicide and a more effective way of coping with factors associated with suicidal behaviour.

The evaluation of suicide risk and recognition of approaching suicide is a great challenge in psychiatric clinical work. Suicidal ideation is very prevalent in bipolar disorders, with about 75% of bipolar patients reporting lifetime suicidal ideation (Valtonen et al., 2005). Suicidal ideation also appears to be a strong predictor of later suicide in psychiatric patients in general (Mann et al., 1999; Brown et al., 2000). Suicidal ideation is usually manifested preceding suicide in major

depressive disorder (Sokero et al., 2006). Although in some studies it was unclear if it is a predictor of suicide in bipolar disorder (Oquendo et al., 2006), other studies found a correlation between suicidal ideation and subsequent attempted or completed suicide in bipolar patients (Galfalvy et al., 2006; de Abreu et al., 2009; Valtonen et al., 2006; Marangell et al., 2006) indicating that it may be an important suicide risk factor. Suicidal ideation in one study was found to be related to the degree of Hopelessness, reporting that decreasing Hopelessness precedes a decrease in suicidal ideation (Sokero et al., 2006). This is in accordance with the study by Pompili et al. where the absence of hyperthymic temperament was found to significantly contribute to the prediction of Hopelessness, which in turn is associated with an increased risk of suicidal ideation and behavior (Pompili et al., 2008).

It seems that the presence of hyperthymic traits yields protection against suicidal impulses even in bipolar patients who are at the highest risk for suicide (Rihmer, 2007; Rihmer and Kiss, 2002), probably through giving rise to such cognitive and social skills which allow for better coping with negative inner and environmental events and also by making the individual less exposed and vulnerable to mood changes which in case of the cyclothymic temperament were found to be a major contributor to increasing suicide risk. However, although hyperthymic people tend to be self-assured and overoptimistic, they are not prone to self-examination. They are also characterized by extreme denial, and as a result of this they are not good responders to psychotherapy. Furthermore they are more action oriented (Akiskal and Akiskal, 2005). Because of these characteristic features, hyperthymia, although generally protective, due to denial may lead to not seeking help for depression, which in fact increases the risk for suicide. This should be kept in consideration, and clinicians should not think that the lack of suicidal ideation in hyperthymic or bipolar four patients means no suicide risk.

We must mention as a limitation that the original objective of this national study was the cross validation between MDQ and BSDS in patients with affective disorders in our country. This report arises from a secondary analysis of the original data.

Bipolar disorders carry the highest lifetime risk for attempted and completed suicide (Rihmer and Kiss, 2002; Rihmer, 2007). By understanding such stable and long lasting determinants and predictors of suicidal behaviour as temperaments we may gain a deeper insight into the evolution of suicidal behaviours and develop more effective early screening methods. Our results concerning an important association between hyperthymia and suicidal ideation is especially important, because suicidal ideation precedes suicidal acts, so it gives a possibility to interfere before concrete suicidal attempts are manifested.

Role of funding source

Nothing declared.

Conflict of interest

No conflict declared.

References

Akiskal, H.S., 1992. Delineating irritable–choleric and hyperthymic temperaments as variants of cyclothymia. *J. Pers. Disord.* 6, 326–342.

- Akiskal, H.S., Pinto, O., 1999. The evolving bipolar spectrum. Prototypes I, II, III, and IV. *Psychiatr. Clin. N. Am.* 22, 517–534 vii.
- Akiskal, K.K., Akiskal, H.S., 2005. The theoretical underpinnings of affective temperaments: implications for evolutionary foundations of bipolar disorder and human nature. *J. Affect. Disord.* 85, 231–239.
- American Psychiatric Association, 1994. Diagnostic and statistical manual of mental disorders: DSM-IV, 4th ed. American Psychiatric Association, Washington DC.
- Beck, A.T., Brown, G., Steer, R.A., 1989. Prediction of eventual suicide in psychiatric inpatients by clinical ratings of hopelessness. *J. Consult. Clin. Psychol.* 57, 309–310.
- Bonicatto, S., Dew, A.M., Soria, J.J., 1998. Analysis of the psychometric properties of the Spanish version of the Beck Depression Inventory in Argentina. *Psychiatry Res.* 79, 277–285.
- Brown, G.K., Beck, A.T., Steer, R.A., Grisham, J.R., 2000. Risk factors for suicide in psychiatric outpatients: a 20-year prospective study. *J. Consult. Clin. Psychol.* 68, 371–377.
- Cloninger, C.R., Svrakic, D.M., Przybeck, T.R., 1993. A psychobiological model of temperament and character. *Arch. Gen. Psychiatry* 50, 975–990.
- de Abreu, L.N., Lafer, B., Baca-Garcia, E., Oquendo, M.A., 2009. Suicidal ideation and suicide attempts in bipolar disorder type I: An update for the clinician. *Rev. Bras. Psiquiatr.* 31, 271–280.
- Ferrando, L., Bobes, J., Gibert, J., 2005. M.I.N.I. Mini International Neuropsychiatric Interview Plus. Spanish Version 5.0.0.
- Galfalvy, H., Oquendo, M.A., Carballo, J.J., Sher, L., Grunebaum, M.F., Burke, A., Mann, J.J., 2006. Clinical predictors of suicidal acts after major depression in bipolar disorder: A prospective study. *Bipolar Disord.* 8, 586–595.
- Gil, S., 2005. Suicide attempters vs. ideators: Are there differences in personality profiles? *Arch. Suicide Res.* 9, 153–161.
- Hirschfeld, R.M., Williams, J.B., Spitzer, R.L., Calabrese, J.R., Flynn, L., Keck Jr., P.E., Lewis, L., McElroy, S.L., Post, R.M., Rappport, D.J., Russell, J.M., Sachs, G.S., Zajecka, J., 2000. Development and validation of a screening instrument for bipolar spectrum disorder: the Mood Disorder Questionnaire. *Am. J. Psychiatry* 157, 1873–1875.
- Kesebir, S., Vahip, S., Akdeniz, F., Yuncu, Z., Alkan, M., Akiskal, H., 2005. Affective temperaments as measured by TEMPS-A in patients with bipolar I disorder and their first-degree relatives: a controlled study. *J. Affect. Disord.* 85, 127–133.
- Kochman, F.J., Hantouche, E.G., Ferrari, P., Lancrenon, S., Bayart, D., Akiskal, H.S., 2005. Cyclothymic temperament as a prospective predictor of bipolarity and suicidality in children and adolescents with major depressive disorder. *J. Affect. Disord.* 85, 181–189.
- Kraepelin, E., 1921. manic-Depressive Insanity and Paranoia. ES Livingstone, Edinburgh.
- Mann, J.J., Brent, D.A., Arango, V., 2001. The neurobiology and genetics of suicide and attempted suicide: a focus on the serotonergic system. *Neuropsychopharmacology* 24, 467–477.
- Mann, J.J., Waternaux, C., Haas, G.L., Malone, K.M., 1999. Toward a clinical model of suicidal behavior in psychiatric patients. *Am. J. Psychiatry* 156, 181–189.
- Marangell, L.B., Bauer, M.S., Dennehy, E.B., Wisniewski, S.R., Allen, M.H., Miklowitz, D.J., Oquendo, M.A., Frank, E., Perlis, R.H., Martinez, J.M., Fagioli, A., Otto, M.W., Chessick, C.A., Zboyan, H.A., Miyahara, S., Sachs, G., Thase, M.E., 2006. Prospective predictors of suicide and suicide attempts in 1,556 patients with bipolar disorders followed for up to 2 years. *Bipolar Disord.* 8, 566–575.
- Maser, J.D., Akiskal, H.S., Schettler, P., Scheftner, W., Mueller, T., Endicott, J., Solomon, D., Clayton, P., 2002. Can temperament identify affectively ill patients who engage in lethal or near-lethal suicidal behavior? A 14-year prospective study. *Suicide Life Threat. Behav.* 32, 10–32.
- Mendlowicz, M.V., Jean-Louis, G., Kelson, J.R., Akiskal, H.S., 2005. A comparison of recovered bipolar patients, healthy relatives of bipolar probands, and normal controls using the short TEMPS-A. *J. Affect. Disord.* 85, 147–151.
- Oquendo, M.A., Bongiovi-Garcia, M.E., Galfalvy, H., Goldberg, P.H., Grunebaum, M.F., Burke, A.K., Mann, J.J., 2007. Sex differences in clinical predictors of suicidal acts after major depression: a prospective study. *Am. J. Psychiatry* 164, 134–141.
- Oquendo, M.A., Currier, D., Mann, J.J., 2006. Prospective studies of suicidal behavior in major depressive and bipolar disorders: what is the evidence for predictive risk factors? *Acta Psychiatr. Scand.* 114, 151–158.
- Pompili, M., Rihmer, Z., Akiskal, H.S., Innamorati, M., Iliceto, P., Akiskal, K.K., Lester, D., Narciso, V., Ferracuti, S., Tatarelli, R., De Pisa, E., Girardi, P., 2008. Temperament and personality dimensions in suicidal and nonsuicidal psychiatric inpatients. *Psychopathology* 41, 313–321.
- Rihmer, Z., Akiskal, K.K., Rihmer, A., Akiskal, H.S., 2010. Current research on affective temperaments. *Curr. Opin. Psychiatry* 23, 12–18.
- Rihmer, A., Rozsa, S., Rihmer, Z., Gonda, X., Akiskal, K.K., Akiskal, H.S., 2009. Affective temperaments, as measured by TEMPS-A, among nonviolent suicide attempters. *J. Affect. Disord.* 116, 18–22.

- Rihmer, Z., 2007. Suicide risk in mood disorders. *Curr. Opin. Psychiatry* 20, 17–22.
- Rihmer, Z., Kiss, K., 2002. Bipolar disorders and suicidal behaviour. *Bipolar Disord.* 4 (Suppl 1), 21–25.
- Sheehan, D.V., Lecrubier, Y., Sheehan, K.H., Amorim, P., Janavs, J., Weiller, E., Hergueta, T., Baker, R., Dunbar, G.C., 1998. The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J. Clin. Psychiatry* 59 (Suppl 20), 22–33 quiz 34–57.
- Sokero, P., Eerola, M., Rytysala, H., Melartin, T., Leskela, U., Lestela-Mielonen, P., Isometsa, E., 2006. Decline in suicidal ideation among patients with MDD is preceded by decline in depression and hopelessness. *J. Affect. Disord.* 95, 95–102.
- Sokero, T.P., Melartin, T.K., Rytysala, H.J., Leskela, U.S., Lestela-Mielonen, P.S., Isometsa, E.T., 2003. Suicidal ideation and attempts among psychiatric patients with major depressive disorder. *J. Clin. Psychiatry* 64, 1094–1100.
- Strelau, J., 1998. *Temperament: a psychological perspective*. Plenum, New York.
- Valtonen, H., Suominen, K., Mantere, O., Leppamaki, S., Arvilommi, P., Isometsa, E.T., 2005. Suicidal ideation and attempts in bipolar I and II disorders. *J. Clin. Psychiatry* 66, 1456–1462.
- Valtonen, H.M., Suominen, K., Mantere, O., Leppamaki, S., Arvilommi, P., Isometsa, E.T., 2006. Prospective study of risk factors for attempted suicide among patients with bipolar disorder. *Bipolar Disord.* 8, 576–585.
- Vázquez, G.H., Khan, C., Schiavo, C., Goldchuk, A., Herbst, L., Piccione, M., Saidman, N., Ruggeri, H., Silva, A., Leal, J., García, Bonetto G., Zaratiegui, R., Padilla, E., Vilapriño, J.J., Calvó, M., Guerrero, G., Strojilevich, S., Cetkovich-Bakmas, M., Akiskal, K.K., Akiskal, H.S., 2008. Bipolar disorders and affective temperaments: A national family study testing the “endophenotype” and “subaffective” theses using the TEMPS-A Buenos Aires. *J. Affect. Disord.* 108, 25–32.
- Vázquez, G.H., Romero, E., Fabregues, F., Pies, R., Ghaemi, S.N., Mota-Castillo, M., 2010. Screening for bipolar disorders in Spanish-speaking populations: Sensitivity and Specificity of the Bipolar Spectrum Diagnostic Scale -Spanish Version- (BSDS-S). *Compr. Psychiatry* 51, 552–556.
- Zaratiegui, R., 2009. *Proceedings of the XXV International Congress of Psychiatry*. APSA, Mar del Plata—Argentina. April 2009.
- Zouk, H., Tousignant, M., Seguin, M., Lesage, A., Turecki, G., 2006. Characterization of impulsivity in suicide completers: clinical, behavioral and psychosocial dimensions. *J. Affect. Disord.* 92, 195–204.