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Research report

Temperament and suicide: A national study

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ABSTRACT

Background: Several studies have shown temperament variants in suicidality. Yet, to our knowledge, the association between temperaments and suicide attempts has not been studied on a nationally representative level nor systematically in subjects with no mental disorders. Also, although hyperthymic temperament is recognized as protective of most mental disorders, its role in the protection from self-harm remains inconclusive. *Methods*: The study is based on nationally representative data of all Lebanese adults. Mental disorders were assessed using the Composite International Diagnostic Interview, whereas the five affective temperaments were assessed using the TEMPS-A. *Results*: Anxious temperament is a solid and strong risk factor for suicide attempts in subjects *with* (OR: 10.1) and *without* (OR: 9.0) mental disorders. Depressive (OR: 4.3) and irritable (OR: 5.1) temperaments are risk factors for suicide attempt among subjects *with* mental disorders. Hyperthymic temperament plays a dual role in females with mental disorders: while the hyperthymic trait "having self-confidence" is strongly protective of suicide attempts, "liking to be the boss", "getting into heated arguments", and "the right and privilege to do as I please" are hyperthymic risk traits for suicide attempts reflecting the "dark side" of the hyperthymic temperament. Interestingly, these three hyperthymic risk traits—*in the absence of "having self-confidence"*—are a universal risk for suicide attempt in females with mental disorder. *Limitations*: Social desirability could have led to the under-reporting of suicide attempts and mental disorders. *Conclusions*: The anxious temperament plays a strong role in predicting suicide attempts in the community, in the presence and absence of diagnosable mental disorders. The irritable and the depressive temperaments are additional risks in subjects with mental disorders. The dual role of the hyperthymic temperament is quite interesting: while it is protective of suicidal behavior, it also has a dark side in subjects with mental disorders.

1. Introduction

Suicide constitutes with homicide a major tragedy for Homo Sapiens and stands as a big blow to the huge efforts deployed by society to improve quality and length of life. Global suicide rates are reported to have increased by 60% in the last 40 years (WHO, 2015), although reports from some areas of the world (Europe) indicate a decrease in the last 30 years (Gusmao et al., 2013). It is estimated that around 1.5% of humans die by suicide (WHO, 2015). Suicide attempts remain the most powerful predictors of completed suicide (De Moore and Robertson, 1996; Jenkins et al., 2002; Owens et al., 2002; Runeson et al., 2010; Suokas et al., 2001; Suominen et al., 2004) and thus constitute an important marker to study closely with the huge potential of avoiding the final fatal catastrophe. A cross-national study covering 17 countries from the World Mental Health (WMH) Surveys estimated the lifetime prevalence of suicide attempts to be 2.7% (Nock et al., 2008).

Suicide attempts have been found to be related to a variety of risk factors, the most universal being: female gender, childhood adversities, traumatic events, personality disorder, "neurotic" or "anxiety" traits (Calati et al., 2008; Conrad et al., 2009; Mehrabian and Weinstein,1985; Nock et al., 2008; WHO, 2015), mental disorders (including substance misuse), family history of suicide and genetic factors (McGuffin et al., 2001, Nock et al., 2008; Roy et al.,

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1999; Stein et al., 2009). Other additional predictors of suicidal behavior and completed suicide have been reported in the literature ranging from social factors such as shame to the lithium content of water (Oghami et al., 2009; Vita et al., 2014). It is not clear at this time how universal these latter factors will turn out to be.

Affective temperaments have been thought of recently as additional potential predictors of suicidality. Several studies have pointed out to temperament variants and suicidality. In the first study, Maser et al. (2002), from the US Collaborative Depression Study ($n=955$), showed that temperamental factors can be predictors of long-term suicide events and add to the predictivity of suicide that can be derived from clinical variables, mostly impulsivity and sanguinity. In a large study on patients with obsessive compulsive disorder ($n=574$), those with a cyclothymic temperament were more likely to have a history of suicide attempt (no other temperament was assessed) (Hantouche et al., 2003). Cyclothymic-hypersensitive temperament was also a predictor of suicidal ideation and attempt in a prospective study on 80 adolescent inpatients diagnosed with major depression (Kochman et al., 2005). In a clinical sample, suicide attempters ($n=150$) reported significantly higher scores on the anxious, cyclothymic, depressive and irritable subscales but were not different from matched controls ($n=302$) on the hyperthymic scale of the Temperament Evaluation for the Memphis Pisa Paris and San Diego Auto-questionnaire (TEMPS-A) (Rihmer et al., 2009). Among patients with depression ($n=345$), those with a history of suicide attempt were found to have a higher score on cyclothymic, irritable, and depressive temperament but again no difference was found on the hyperthymic scale between attempters and non-attempters (anxious temperament was not assessed) (Azorin et al., 2010). In another study, by the same author, on bipolar I patients (attempters=382 and non-attempters=708), cyclothymic temperament was found to be the only temperament associated with suicide attempt, after adjusting for other risk factors (Azorin et al., 2009). In a study on hospitalized patients ($n=346$) evaluating directly the role of temperament on potential suicidality through the measurement of "suicide risk" (using the MINI), there was a clear hint that anxious, depressive, and cyclothymic temperaments were related to suicide risk and hyperthymic temperament was protective albeit without controlling for the interplay between individual temperaments (Pompili et al., 2012).

Two studies have looked at suicidality in non-patients. The first one, in Austria, studied 3000 college students using a brief temperament scale (TEMPS-M): among 1981 respondents, lifetime suicidal ideation was associated with depressive, cyclothymic and anxious temperaments whereas hyperthymic temperament was protective of suicidal ideation (Skala et al., 2012). A second study on 2100 public school students aged 12–20 in Portugal, the responders ($n=1713$) with a history of prior self-harm were more likely to have a significant deviation on the depressive temperament (using the TEMPS-A) (Guerreiro et al., 2013).

Studying the relation of temperaments to suicide attempts is of unique importance since temperaments represent our regular affective life and our response to life events and appear to be stable at least from age 18 years (Karam et al., 2007). Temperaments are easily measured through the TEMPS-A (Akiskal et al., 2005) which is now available in 25 languages and has shown to be appropriate for use in clinical settings as well as in large epidemiologic studies (Karam et al., 2007; Lin et al., 2013).

To our knowledge, two important questions about the association of temperament with suicide attempts have not been previously investigated: (1) although mental disorders are important risk factors in predicting suicidality, yet they are not present in all individuals who attempt suicide. In fact, the WMH surveys have shown that 34.3% and 45.4% of suicide attempters in developed and developing countries respectively did not qualify for a DSM IV mental disorder prior to their attempts (Nock et al., 2009). Could temperament play a role in those otherwise "normal" people? (2) Could the relative absence of any conclusive role for the hyperthymic temperament in protection against self-harm (seen in most studies so far) be an artifact especially that the hyperthymic temperament is universally recognized to be protective against most mental disorders?

The Lebanese Evaluation of the Burden of Ailments and Needs Of the Nation (L.E.B.A.N.O.N) of the WMH surveys offered the opportunity to answer the above two questions since it is the only national study, to our knowledge, that has data on a national level on mental disorders and on temperaments, as well as suicide behavior. This nationally representative study in Lebanon showed that the lifetime prevalence of suicide attempts is 2.0% (Karam et al., 2012). Moreover, after adjusting for socio-demographics and co-morbidities, major depressive disorder, any impulse-control disorder, substance use/dependence, and social phobia were the mental disorders that predicted suicide attempts. We had also shown previously that temperaments were solidly associated with mental disorders: briefly, anxious temperament was the most prominent risk factor to mood, anxiety and any mental disorders; irritable temperament was a risk to mood disorders and hyperthymic temperament was protective of mood and any mental disorder (Karam et al., 2010).

2. Methods

2.1. Instruments

The L.E.B.A.N.O.N. study has two components: the L.E.B.A.N.O.N. WMH component which was carried out in association with Harvard University (USA) and the World Health Organization (WHO, Geneva), its instrument being the Composite International Diagnostic Interview (CIDI) 3.0 (Karam et al., 2006, 2008), and the L.E.B.A.N.O.N.-TEMP component using the Lebanese-Arabic TEMPS-A (Karam et al., 2006, 2008). The TEMPS-A questionnaire was adapted from its original English after a thorough process, including: forward and backward translation, in-depth interviews, focus group discussion and revision by Akiskal HS, the primary author (Karam et al., 2006, 2008). The TEMPS-A is self-filled, and comprises 110 items which cover the hyperthymic, the depressive, the cyclothymic, the anxious and the irritable temperaments and is now available in 25 languages. For more information, please refer to Akiskal and Akiskal (2005) and Akiskal et al. (2005).

Three suicide-related outcomes (ideation, plan and attempt) were assessed using the Suicidality section of the CIDI 3.0. Respondents were asked questions about lifetime suicide ideation "Have you ever seriously thought about committing suicide?" Those who responded affirmatively were asked about lifetime suicide plan "Have you ever made a plan for committing suicide?" and lifetime suicide attempt "Have you ever attempted suicide?" This was followed by requesting details about number, method and intent. Mental disorders were assessed by the CIDI according to the Diagnostic Statistical Manual IV (DSMIV) criteria.

2.2. Sample

A nationally representative stratified multi-stage clustered area probability sample of non-institutionalized adults (aged ≥ 18 years) was selected for this study. Consent procedures were approved by the Institutional Review Board (IRB) committee of the Saint George University Medical Center/Faculty of Medicine, Balamand University, Lebanon, which is registered with the U.S. Office of Human Research Protections (OHRP) in the Department of Health and Human Services. A total of 2857 respondents (70.0%