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An exploratory study of the relationship between diverse life events and personality disorders in a sample of suicide attempters

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Abstract

Personality disorder (PD) increases risk for suicidal behavior. Certain life events (LE) can precipitate suicidal behaviors in patients with PD. A fundamental question is whether specific combinations of LE and PD increase suicidal risk. 446 suicide attempters (SA) were recruited from emergency rooms. *We used a healthy control group (n= 515) to identify the best cut-off point for the instrument used to diagnose PD.* We used the DSM-IV version of the International Personality Disorder Questionnaire–Screening Questionnaire, the Mini International Neuropsychiatric Interview, and the Social Adjustment Scale to assess PD, Axis I disorders and LE respectively. After controlling for Axis I disorders, we found that “Death of spouse” preceded suicidal acts in those with antisocial PD (FET $p=0.024$) and patients with narcissistic PD attempted suicide after being “Fired at work” (FET $p=0.002$), among others. Our data suggest the presence of particular LE-PD associations in suicide attempters. Some LE-PD relationships appear independent of Axis I disorders in suicide attempters. This may offer a basis for specific targeted therapies or prevention programs aimed at decreasing suicidal risk.

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DISCLOSURE/DECLARATION OF INTEREST

None

Keywords

Personality disorder; life events; suicide attempter; International Personality Disorder Questionnaire-Screening Questionnaire (IPDE-SQ)

INTRODUCTION

Suicidal behavior frequently occurs in the context of precipitating life events (LE) that an individual finds unbearable, and the presence of a psychiatric disorder. The effects of LE and psychiatric disorders are reciprocal and interactive (Kendler *et al.*, 2003). According to the stress-diathesis-model of suicidal behavior, LE are state-dependent triggers that act on a diathesis for suicidal behavior (Mann *et al.*, 1999). Moreover, it is possible that the impact of LE is more closely related to psychopathological conditions than to suicidal behavior itself (Malone *et al.*, 2000).

Although the literature suggests that LE increase suicide risk in patients diagnosed with different Axis I and Axis II disorders (Duberstein *et al.*, 2004, Pompili *et al.*, 2004, Welch and Linehan, 2002), studies addressing the role of LE as precipitants of suicidal behavior in subjects diagnosed with a personality disorder (PD) are sparse (Heikkinen *et al.*, 1997, Kelly *et al.*, 2000, Yen *et al.*, 2005). In a previous study, we suggested that psychosocial stressors and personality traits might be more closely associated with suicide attempter status than genetic, neurophysiologic and neuroendocrine variables (Baca-Garcia, 2007). Individuals diagnosed with a PD have a higher than expected rate of LE than non-PD subjects (Fergusson and Horwood, 1987, Poulton and Andrews, 1992, Seivewright *et al.*, 2000). Not only does environment influence the individual (environment to person), subjects also change their environments (person to environment) (Kendler *et al.*, 2003). Subjects diagnosed with a PD may lack resources required to cope with stressful or demanding interpersonal situations, which in turn may precipitate suicidal behavior. However, whether specific combinations of LE and PD are associated with suicidal acts has not been studied, to our knowledge.

Aims of the study

The main objective of this study is to test whether specific associations between different LE and distinct PD in a sample of suicide attempters exist. Consistent with the stress-diathesis model, we hypothesize that individuals with a particular PD may be differentially vulnerable to specific LE.

METHODS

Samples and Procedure

Suicide attempters (SA) were 446 patients admitted to emergency rooms (ER) of two general hospitals after attempting suicide. Data were collected in Spain between 1999 and 2003 in a catchment area of around 900,000 people who are eligible for free medical care. After a complete description of the study, subjects provided written informed consent. The study was reviewed by the appropriate ethics committee and was performed in accordance with the Declaration of Helsinki. As reported previously, 84% of approached SA consented to participate (Diaz *et al.*, 2003). Those who declined did not significantly differ in demographics from study subjects. As some of the SA had more than one suicide attempt, only the suicide attempt immediately prior to admission to the ER was analyzed. A suicide attempt was defined as a self-destructive behavior with the intention of ending one's life, independent of the resulting damage (O'Carroll *et al.*, 1996, Silverman *et al.*, 2007). We

used a *healthy control* group (n= 515) to identify the best cut-off point for the instrument used to diagnose PD. Controls were blood donors with no previous axis I or II diagnoses, no previous suicidal behaviour, and no first degree self-reported familial history of mental illness. We have demonstrated that using the cut points generated based on our healthy volunteer sample, the distribution of PD amongst an independent patient population is in line with what is reported in the literature (data available upon request).

We developed a semi-structured interview designed to collect information such as socio-demographic variables or clinical history from SA. In order to identify specific PD, trained investigators at each ER interviewed study participants with the International Personality Disorder Examination-Screening questionnaire (IPDE-SQ). The Mini International Neuropsychiatric Interview (MINI) was used to assess the potential confounding effect of Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV) Axis I disorders. LE in the two years preceding suicide attempts were ascertained using open-ended questions (contextual method, Brown & Harris, 1978). Information collected in the interview covered both the LE and the context and circumstances surrounding the LE. This contextual type of assessment is different from the checklist approach (Kessler, 1997). Contextual assessment involves purposely ignoring a respondent's personal impressions (Coyne *et al.*, 2004). The ratings of contextual threat are based on how an "average" individual having a similar life history and living in analogous circumstances would be expected to feel. Later on, LE were coded according to the standardized and adapted Spanish version (Gonzalez de Rivera, 1983) of the *Social Adjustment Scale* (Holmes and Rahe, 1967). Further details regarding these measures are provided below.

Measures

IPDE-SQ—The diagnoses of PD were made by using the DSM-IV version of the IPDE-SQ. The IPDE-SQ was selected over other screening instruments because of its ease of administration, its brevity, and the relatively brief training needed for its use (Egan, 2003). We adjusted cut-off points in the healthy control population in order to obtain similar prevalence for each specified PD to those reported in the general population (Cooke, 2004). This approach generated criteria for diagnosis at a more stringent level 6 than the DSM specifies. For example, we required one or two more criteria for each PD: to diagnose borderline PD, 7 out of 9 items were required instead of the 5 items screening suggested by the authors of the IPDE-SQ (Loranger, 1995). After finding the best, adjusted cut-off point for each PD among the healthy controls, the prevalence of the different PD was calculated in the SA sample. Further information on methods is available in Blasco-Fontecilla *et al.* (2009). (See table 1).

MINI—The MINI was administered to evaluate axis I DSM-IV diagnoses. The MINI is a short and efficient diagnostic interview to diagnose mental disorders (Sheehan *et al.*, 1998). Different time frames are employed for various disorders: current, past or lifetime. The MINI takes between 15 to 30 minutes to complete and has been validated in the U.S. and Europe.

HOLMES-RAHE SOCIAL ADJUSTMENT SCALE (SAS)—This scale is derived from clinical studies and includes 43 LE, each scored from 0 to 100 units of life change (ULC), and provides two global scores: the Life Events Index or total number of LE for each patient, and the Social Readjustment Index obtained by adding the scores of all ULC. Death of spouse is the most severe event and minor violations of the law the mildest coded event (Holmes and Rahe, 1967).

Statistical Analyses

SPSS statistical software, edition 14.0 for Windows (2005) was used. Chi-square tests were performed to compare the presence of specific LE in the sample of suicide attempters compared to healthy controls (data available upon request). Fisher's Exact Test (FET) were subsequently performed to test whether those SA diagnosed with a specific PD were more or less likely than those SA without that specific PD to have reported a particular LE (we conducted 430 comparisons=43 LE \times 10 PD). In post hoc analyses, chi-square was used to control for the confounding effect of all MINI diagnosed Axis I disorders in the statistically significant relationships between the 43 life events of the SAS scale and each PD –e.g. if suicidal behavior was associated with a PD, then we compared rates of the specific LE among those with the PD plus a particular Axis I disorder to those with the PD and without that disorder-.

RESULTS

Sample description

The mean age of SA (n=446) was 36.6 (SD=14.24). 66.4% were women. 83.9% lived in an urban area –defined as a built up area with a population of 5000 or more inhabitants. Approximately three-quarters were living with a partner (41.5%) or family of origin (35.4%). 74% of SA had a diagnosis of PD. Rates of specific PD diagnoses are shown in table 1.

Among suicide attempters, the most frequent Axis I diagnoses were Major Depression (MD) (current) 57.30%, Major Depression (lifetime) 31.34%, Generalized Anxiety Disorder (GAD) (current) 16.93%, Alcohol Dependence 12.55%, Alcohol Abuse (current) 10.73%, and Dysthymia 10.06%.

Life events (LE) and specific PD

SA diagnosed with any PD were more likely to report “marital separation” (FET $p=0.009$) than non-PD SA. We found 15 statistically significant relationships between LE and PD, but some of them were explained by the presence of Axis I diagnoses, most frequently Major Depression (current) (see table 2). Because some statistically significant associations could be clinically non-meaningful, we evaluated the percentage of each LE-PD relationship. For instance, “sexual difficulties” were more likely to occur among people who attempted suicide and had dependent PD than they were among people who attempted suicide and did not have dependent PD. However, only 8 6.7% of people with dependent PD who presented to services following attempted suicide reported “sexual difficulties” compared with the 1.7% of those without dependent PD [OR=2.1 (1.1–4.4, 95% CI)]. On the other hand, several differences emerged regarding LE that precipitated suicide attempts. A handful was clinically as well as statistically significant: Schizotypal PD and “change in social activities” (31%) [OR=3.5 (1.3–9.5, 95% CI)]; narcissistic PD and “change in the number of arguments with spouse” (64.7%) [OR=2.8 (1.0–7.8, 95% CI)], and “being fired at work” (29.4%) [OR=4.2 (1.4–12.6, 95% CI)]; and dependent PD and “change in social activities” (21.5%) [OR=2.7 (1.4–5.2, 95% CI)], “change to a different kind of work” (19.6%) [OR=3.1 (1.5–6.3, 95% CI)], and “being fired at work” (16.5%) [OR=2.1 (1.1–4.4, 95% CI)].

One step further was to control for the potential confounding effect of all Axis I diagnoses in each of the reported associations. Some, but not all, of the 15 statistically significant LE-PD relationships were explained by the presence of several Axis I diagnoses, particularly Major Depression (current). “Change in social activities” was more frequent among subjects with schizotypal PD (STPD) (FET $p=0.019$) and paranoid PD (PPD) (FET $p=0.029$), but these associations were rendered non-significant after controlling for MD (current) and psychotic

disorders (lifetime), respectively. Serving a “jail term”, reporting “minor violation of the law” and, “death of spouse” were more frequent among subjects with antisocial PD (APD) (FET $p=0.020$, $p=0.039$, and $p=0.047$, respectively). The last association was explained by the presence of MD (current). After controlling for Axis I disorders, subjects with Narcissistic PD (NPD) were more likely to report “foreclosure on a mortgage or loan” (FET $p=0.034$), “change in number of arguments with spouse or life partner” (FET $p=0.048$), and “serious personal injury or illness” (FET $p=0.050$). The association with being “fired at work” (FET $p=0.018$) was explained by the presence of MD (current) and the same was true for the significant associations found between Borderline PD (BPD) or Dependent PD (DPD), and different LE (see table 2). The remaining relationships between the different LE and PD were non significant (data available upon request). Table 2 reports all statistically significant associations (crude and adjusted for concurrent mental illness) between different LE and specific PD in SA.

DISCUSSION

Stable characteristics, such as personality, can place subjects at higher risk in the context of certain types of adverse LE (Keller *et al.*, 2007). The particular LE that precede suicidal behavior are not randomly distributed across diagnostic categories. It has been well-established that interpersonal stressors precede death by suicide more often in individuals who had drinking problems than those who did not (Duberstein *et al.*, 1993, Marttunen *et al.*, 1994, Murphy and Robins, 1967, Rich *et al.*, 1988). The Quebec group has recently used life calendars to delineate particular trajectories to death by suicide (Seguin *et al.*, 2007). They identified two trajectories —one characterized by early adversity that afforded little protection against later threats; the other characterized by extreme reactivity to later stressors. Our data suggest the presence of associations between diverse LE and specific PD in a sample of suicide attempters: changes in social activities precede attempted suicide in patients with schizotypal or paranoid PD; legal problems and spousal loss preceded attempted suicide in antisocial PD; employment, domestic, financial, and health problems preceded attempted suicide in narcissistic PD; work and sex problems preceded attempted suicide in dependent PD. However, we should bear in mind that some of the reported LE-PD associations such as those between “sexual difficulties” and dependent PD or “change in eating habits” and borderline PD may have only modest clinical significance.

We found that the diagnosis of both schizotypal PD and paranoid PD (PPD) was significantly associated with “change in social activities” in SA. However, these associations were rendered non-significant after controlling for MD (current) and psychotic disorders (lifetime), respectively and the presence of psychosis lifetime calls the PPD diagnosis into question. Psychosocial stress has long been associated with exacerbations or onset of psychotic symptoms and might be mediated by dopamine increase (Cantor-Graae *et al.*, 2005). Distress in response to psychotic symptoms is associated with suicidal ideation in subjects with psychotic relapse (Fialko *et al.*, 2006). Regarding cluster B PD, “jail term”, “minor violation of the law”, and “death of spouse” were associated with a diagnosis of APD in SA. The rate of *suicide attempts* among antisocial subjects ranges between 11% and 72% (Garvey and Spoden, 1980, Robins, 1966, Woodruff *et al.*, 1971). “Jail term” and “minor violation of the law” may precipitate suicidal behaviours aimed at achieving secondary gains, as suggested in literature (Frances *et al.*, 1986, Garvey and Spoden, 1980, Pompili *et al.*, 2004, Robins, 1966). However, antisocial subjects remain at elevated risk for suicide mortality (Duberstein, 2009). SA was more likely to be associated with being “fired at work”, “change in number of arguments with spouse”, “personal injury or illness”, and “foreclosure of mortgage or loan” among those with NPD. The association of NPD and “change in the number of arguments with spouse” or “being fired at work” is particularly meaningful from a clinical point of view and may reflect the fragile personality structure

characteristic of narcissistic subjects. After controlling for Axis I disorders, all associations remained statistically significant except being “fired at work,” which was mediated by the presence of MD (current). Narcissistic subjects have an increased risk for suicide, whether or not depressed (Ronningstam and Maltzberger, 1998). Indeed, ego-syntonic suicidal tendencies can emerge in emotional crises in non-depressed narcissistic subjects (Blasco-Fontecilla *et al.*, 2009, Kernberg, 1992). Suicidal behavior can be the result of rage in response to narcissistic injuries (Kernberg, 1984), and may provide relief while expressing revenge (Rothstein, 1980). Finally, we found no associations between LE and BPD in SA independent of mood disorder, possibly because of the exclusion of subjects with repetitive minor self-injuries (O’Carroll *et al.*, 1996, Silverman *et al.*, 2007). Furthermore, the links between BPD and depression are complex.

Regarding cluster C PD, we found that all reported associations between the different LE (“change in social activities”, “change to a different kind of work”, “being fired at work”, and “sexual difficulties”) and DPD were confounded by the presence of MD (current). The reported LE might mean losing interpersonal ties that fulfil the emotional needs of dependent individuals (Bornstein, 1992), which in turn may precipitate suicide attempts. Suicide attempts may be a way for those with DPD to receive nurturance following occupational, social or sexual difficulties. However, these LE can also induce a depressive disorder and DPD is indeed frequently comorbid with depression (Overholser, 1996). In one study, the association of DPD with attempter status no longer remained significant after controlling for *lifetime depressive* disorder (Chioqueta and Stiles, 2004).

Bringing personality research to bear on suicide prevention research is key. Personality traits and disorders may contribute to the diathesis for suicide, and may be targeted in long-term public health interventions. Early interventions could have long-lasting effects (Brezo *et al.*, 2006, Duberstein, 2009). Risk conferred by PD should be addressed both using secondary intervention approaches (e.g. strategies designed to mitigate risk prior to the development of a crisis such as attempted suicide) as well as tertiary level approaches (e.g. treatments designed to guarantee that risk is limited after the crisis has emerged) (Duberstein, 2009). We found some statistically significant associations between diverse LE and specific PD in our sample of SA. Our findings point to the need to explore whether suicide risk arises from interactions between specific personality profiles and LE to which people with the predisposing personality profiles are particularly vulnerable. At the same time, some of the associations we found no longer remained significant after controlling for Axis I disorders. Thus, assessment for presence of both Axis I and II diagnosis when assessing SA is indicated.

Strengths and limitations

Our exploratory study has several strengths. First, all PD among SA evaluated at a general hospital ER were analyzed together. Second, LE in the two years preceding suicide attempts were ascertained thus covering both acute and chronic stressors. Finally, a large population of patients was recruited, thus providing sufficient statistical power for some analyses. However, because we tested statistical significance of several LE-PD associations, there exists the possibility of false positive findings (Type I error). Thus, even larger samples are necessary for a comprehensive evaluation of the interaction between LE and PD. In addition, some of the statistically significant associations are not strong and therefore may not be clinically significant.

Moreover, we used a screening questionnaire to diagnose PD. The IPDE-SQ is a brief and efficient screen, which makes it suitable for an ER setting (Egan, 2003). To increase specificity, we used an adjusted cut-off point. This strategy has previously been used (Ekselius *et al.*, 1994, Perez Urduñiz *et al.*, 2005) and the percentages of each PD in our

sample of SA are similar to those reported by others (Dirks, 1998). Furthermore, Tyrer recommends, as all types of personality assessment yields comparable results, the use of fairly simple instruments of personality assessment in emergency medical settings (Tyrer, 2009). As well, there exists the potential confound between some of the LE considered in the Holmes & Rahe Scale and symptoms of depression, e.g. “change in eating habits” or “sexual difficulties”. In addition, the relationships between life events and PD in suicide attempters reported here may not apply to different populations. Finally, we did not address the problems of intra-axis II comorbidity and the timing of live events.

CONCLUSIONS

Considered alongside evidence that, after controlling for Axis I diagnoses, the majority of associations between the different LE and specific PD remained no longer statistically significant in our sample of SA, our results suggest that some Axis I disorders and, particularly major depression may mediate the *effect* of different LE on suicide risk. However, some of these relationships appear independently associated with suicidal behavior, and deserve attention. Consequently, in addition to adequate management of depression or other Axis I disorder, assessment of LE and management of their impact in the light of distinct PD may be useful in planning treatment of SA with PD. However, our results are preliminary and should be interpreted with caution. Prospective longitudinal studies are needed.

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Table 1

Prevalence of personality disorders (PD) using an adjusted cut-off of the IPDE-SQ

	N ¹	Adjusted cut-off ²	General population (Cooke & Hart, 2004)	Healthy blood donors (n= 515)	Suicide attempters ³ (n=446)
Paranoid PD	4 (out of 7)	5	0.5–2.5%	0.6%	21.5%
Schizoid PD	4 (out of 7)	5	0.4–1.7%	0.8%	14.1%
Schizotypal PD	5 (out of 9)	7	0.1–5.6%	0%	5.8%
Histrionic PD	5 (out of 8)	6	2–3%	2.7%	14.8%
Antisocial PD	3 (out of 7)	5	0.6–2%	0.4%	6.1%
Narcissistic PD	5 (out of 9)	7	> 1%	1.6%	3.8%
Borderline PD	5 (out of 9)	7	0.7–2%	0.6%	34.1%
Obsessive-Compulsive PD (OCPD)	4 (out of 8)	6	1.7–2.2%	4.5%	13.5%
Dependent PD	5 (out of 8)	6	1.0–1.7%	0.2%	17.9%
Avoidant PD	4 (out of 7)	5	0.5–5%	8.2%	34.1%

¹ Number of criteria needed to meet for a screening diagnosis of PD as per DSM IV² Minimum number of criteria after adjusting the cut-off point³ Percentages do not add up to 100% because SA had more than one PD

Table 2

Statistically significant associations between life events and personality disorders.

PD	Crude * associations	Adjusted for concurrent Axis I diagnoses associations
PARANOID PD	Change in social activities (FET p= 0.019)	Change in social activities (FET p= 0.028) ²
SCHIZOTYPAL PD	Change in social activities (FET p= 0.029)	Change in social activities (FET p= 0.049) ³
ANTISOCIAL PD	<ul style="list-style-type: none"> Jail term (FET p= 0.020) Minor violation of the law (FET p= 0.039) Death of spouse (FET p= 0.047) 	Death of spouse (FET p= 0.024) ²
NARCISSISTIC PD	<ul style="list-style-type: none"> Fired at work (FET p= 0.018) Foreclosure of mortgage or loan (FET p= 0.034) Change in the number of arguments with spouse (FET p= 0.048) Serious personal injury or illness (FET p= 0.050) 	Fired at work (FET p= 0.002) ² and (FET p=0.015) ⁴
BPD	Change in eating habits (FET p= 0.006)	Change in eating habits (FET p= 0.027) ²
DEPENDENT PD	<ul style="list-style-type: none"> Change to a different kind of work (FET p= 0.002) Change in social activities (FET p= 0.03) Sexual difficulties (FET p= 0.032) Fired at work (FET p= 0.036) 	<ul style="list-style-type: none"> Change to a different kind of work (FET p= 0.007) ² Change in social activities (FET p= 0.015) ²/(FET p=0.037)⁵ Sexual difficulties (FET p= 0.025) ² Fired at work (FET p= 0.054) ²/(FET p=0.011) ⁶/(FET p=0.031) ⁷
AVOIDANT PD	Change in eating habits (FET p= 0.051)	

There were no significant associations between LE and Schizoid PD, Histrionic PD, and Obsessive Compulsive PD

* Not confounded by any Axis I diagnosis (MINI)

² Explained by the presence of psychotic disorders (lifetime)³ Explained by the presence of MD (current)⁴ Explained by the presence of mania (past)⁵ Explained by the presence of social phobia⁶ Explained by the presence of MD (lifetime)⁷ Explained by the presence of dysthymia