

Parental Psychopathology and Offspring Suicidality in Mexico

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The objective of this study was to estimate the extent to which parental psychopathology may confer increased risk of suicide ideation and attempts among their offspring in Mexico. Data from a representative sample of 5,782 respondents participating in the Mexican National Comorbidity Survey (2001–2002) to examine the unique associations between parental psychopathology and offspring suicidality were used. Parental disorders (major depression, panic disorder, generalized anxiety disorder, substance dependence, and antisocial personality disorder) were comorbid and after controlling for comorbidity and number of disorders only parental panic and antisocial personality disorder remained associated with ideation and attempts in the total sample. Those with more parental disorders were at increased risk of ideation and attempt, as well as increased risk to transition from suicide ideation to an attempt. These findings may help inform clinical and public health efforts aimed at suicide prevention in Mexico and other developing countries.

Keywords epidemiology, offspring, parental psychopathology, risk factors, suicide attempt, survey

INTRODUCTION

Suicide mortality in Mexico has increased slowly but steadily over the past 40 years and in 2007 there were 4,388 deaths from this cause, for a rate of 4.15 per 100,000 people. Suicide is one of the five leading causes of death for people under 35 years of age, and the third leading cause of death for those between 15 and 24 (Borges, Orozco, Benjet, & Medina-Mora, 2010). Although only a minority of suicide attempts end in death, each attempt has the possibility of leading to death, or to a long-term physical injury and psychological distress. A history of previous non-lethal attempts significantly predicts subsequent

attempts and death (Fawcett et al., 1990; Neeleman, de Graaf, & Vollebergh, 2004; Schmidtke et al., 1996). Understanding the epidemiology of suicide ideation and attempts may thus have an important impact on preventing suicide. In Mexico, between 2.5% and 4.3% of the national population has attempted suicide at some point in their life. Among the inhabitants of Mexico, 6,601,210 had suicidal ideation in the past 12 months, 593,600 people attempted suicide, and 99,731 used health services following a suicide attempt (Borges, Orozco et al., 2010).

Prior studies in Mexico have shown a large degree of similarities in demographic risk factors (Borges et al., 2007) and the role

of mental disorders (Borges, Nock, Medina-Mora, Hwang, & Kessler, 2010) for suicidality when compared to surveys elsewhere in the world (Bernal et al., 2007; Bromet et al., 2007; Gureje et al., 2007; Joe, Stein, Seedat, Herman, & Williams, 2008; Lee et al., 2007; Levinson, Haklai, Stein, Polakiewicz, & Levav, 2007; Nock, Borges, Bromet, Alonso et al., 2008; Nock, Borges, Bromet, Cha et al., 2008; Nock et al., 2009). Information regarding the role of family psychopathy on the risk of psychopathology and suicidality among offspring in Mexico is much more scant. Previous research in the country has suggested the family transmission of psychiatric disorders (Caraveo-Anduaga, Nicolini-Sanchez, Villa-Romero, & Wagner, 2005) such as schizophrenia (Escamilla et al., 2007; Hare et al., 2010) and bipolar disease (Glahn et al., 2010) among patients, but none have looked into the family aggregation or genetics of suicidality.

Evidence of biological (Mann, Brent, & Arango, 2001; Rujescu & Giegling, 2010; Samuelsson, Jokinen, Nordstrom, & Nordstrom, 2006) and genetic influences (Mann et al., 2001; Rujescu & Giegling, 2010; Russ, Lachman, Kashdan, Saito, & Bajmakovic-Kacila, 2000) on suicide and suicidal behavior come from multiple sources. The basic genetic and biological mechanisms that may explain the increased risk of suicide and suicidality are alterations in neurobiological systems such as abnormalities in the serotonergic system (Arango, Underwood, Gubbi, & Mann, 1995; Mann, 2003; Mann et al., 2001) and the noradrenergic system (Mann, 2003; Rujescu & Giegling, 2010). These abnormalities could be caused by the interaction of genotypes and/or early-life experiences (Caspi et al., 2003; Mann & Currier, 2010). Clusters of suicidality in families have been linked to parental psychopathology (Agerbo, Nordentoft, & Mortensen, 2002; Qin, Agerbo, & Mortensen, 2002), especially parental depression (Cheng, Chen, Chen,

& Jenkins, 2000; Lewinsohn, Olino, & Klein, 2005; McGirr et al., 2009), schizophrenia (Tsuang, 1983), and other affective disorders (Wender et al., 1986). Whether these alleged influences of parental disorders on suicidality affects those with suicide ideation or those ideators that progress to an attempted suicide has not been tested in Mexico. Finally, even when most psychiatric disorders are related to a large range of suicide behavior, disorders of substance abuse and impulsivity have been said to play a larger role in developing countries (Nock, Borges, Bromet, Alonso et al., 2008). As an example, in Mexico conduct disorder and alcohol abuse/dependence are the strongest predictors of a subsequent suicide attempt (Borges, Nock et al., 2010). Whether this difference in psychopathology applies as well to the influence of parental disorders in Mexico is unknown.

The data reported here are from the Mexican National Comorbidity Survey (M-NCS) (Medina-Mora et al., 2005), a nationally representative household survey of adults residing in urban areas in Mexico (roughly 75% of the national population). Following prior work in the context of the World Mental Health Surveys (Gureje et al., 2011) the focus here is to examine the associations between parental psychopathology (major depression, panic disorder, generalized anxiety disorder (GAD), substance dependence, and antisocial personality disorder (APD)) and offspring suicidal ideation and attempts in a developing country (i.e., Mexico).

METHODS AND MATERIALS

Sample

The M-NCS is part of the World Health Organization's (WHO) World Mental Health (WMH) Survey Initiative (Demyttenaere et al., 2004; Kessler & Ustun, 2004), a series of coordinated

community epidemiological surveys of psychiatric disorders carried out in over two dozen countries throughout the world (www.hcp.med.harvard.edu/wmh). The survey was based on a stratified, multistage area probability sample of non-institutionalized persons aged 18 to 65 years living in urban areas (population 2,500+) of Mexico. About 75% of the Mexican population is urban and meets the above definition. Data collection took place in two phases from September 2001 through May 2002. The response rate was 76.6%, for a total 5782 respondents.

All respondents were administered a Part I interview and a selected sub-sample of 2362 received a Part II interview which included questions on risk factors and supplemental psychiatric disorders. The sample receiving Part II consisted of all respondents who screened positive for any disorder on Part I plus a probability subsample of other Part I respondents. There was a random selection process embedded into a computer algorithm for the selection of those negative in the first phase of the survey. About one third of those who scored negative in the Part I interview were randomly assigned to Part II interview. All interviews were conducted at the respondents' home after a careful description of the study goals was provided and informed consent was obtained. No financial incentives were given for respondents' participation. All recruitment and consent procedures were approved by the ethics committee of the National Institute of Psychiatry. Additional details of this study and sample have been published elsewhere (Medina-Mora et al., 2005).

Measures

Suicide ideation and attempt and potential risk factors were assessed using Version 3.0 of the WHO CIDI a fully structured lay-administered interview (Kessler & Ustun, 2004; Robins et al., 1988). This struc-

tured interview was administered face-to-face using a lap-top computer version that yielded DSM-IV diagnoses. The CIDI used in Mexico was based on the translation of the instrument into Spanish according to WHO recommendations, utilizing material currently in use in Spanish (ICD-10, DSM-IV) and previous translations of the Diagnostic Interview Schedule and earlier versions of the CIDI. These earlier instruments showed good performance in validity studies in Mexico (Caraveo, González, & Ramos, 1991; Caraveo, Martínez, & Rivera, 1998) and in other Spanish-speaking countries (Wittchen, 1994).

Suicidality. The WHO CIDI contains a module that assesses suicide ideation ("Have you ever seriously thought about committing suicide?") and suicide attempts ("Have you ever attempted suicide?") according to current recommendations (Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007). Based on evidence that potentially embarrassing behaviors are higher in self-administered than interviewer-administered surveys (Turner et al., 1998), these questions were printed in a self-administered booklet and referred to by letter. Interviews assessed the lifetime presence and age-of-onset of each outcome.

DSM-IV PSYCHIATRIC DISORDERS IN THE OFFSPRING.

Respondent disorders were assessed using the WHO CIDI (Robins et al., 1988). The diagnostic assessment included measurement of DSM-IV anxiety (panic disorder, GAD, specific phobia, social phobia, post-traumatic stress disorder, childhood-adult separation anxiety disorder, agoraphobia without panic disorder), mood (major depressive disorder, dysthymia, bipolar disorder), impulse-control (oppositional-defiant disorder, conduct disorder, attention deficit/hyperactivity disorder), and substance use (alcohol abuse or dependence, drug abuse or dependence)

disorders. Organic exclusion rules were used in making all respondent diagnoses. Prior studies using clinical reappraisal interviews found CIDI diagnoses to have generally good concordance with blinded diagnoses based on the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 2002) in a probability sub-sample of respondents from the US survey (Kessler, Chiu, Demler, Merikangas, & Walters, 2005).

Parental Psychopathology. We assessed parental psychopathology with the expanded version of the Family History Research Diagnostic Criteria Interview (Andreasen, Endicott, Spitzer, & Winokur, 1977; Kendler, Davis, & Kessler, 1997). Five different forms of possible parental psychopathology during respondents' childhood are the focus of the present report: major depression, panic disorder, GAD, substance dependence and APD (for example, illegal behavior, arrest and imprisonment). Parental suicide attempt or suicide death also was assessed but the few positive answers precluded any analyses and will not be considered here. A parental psychiatric disorder was rated present if the respondent gave a positive response to questions on the core symptoms of that particular disorder occurring in the mother or the father. Thus for example, for the diagnosis of depression in the mother, the respondent was asked if their mother ever had periods lasting 2 weeks or more when she was sad or depressed for most of the time; whether, at the time her depression was at its worst, she also had other symptoms like low energy, changes in sleep or appetite and problems with concentration; whether she ever received professional treatment for her depression; and whether her depression interfered a lot with her life or activities. Prior analyses showed that the relationship between parental psychopathology was independent of whether a mother or a father or both at the same time

were affected and here we thus ignore this distinction (Gureje et al., 2011).

Analysis Methods

Discrete-time survival analysis with time-varying covariates (Efron, 1988) was used to study retrospectively assessed diagnostic correlates of suicide ideation and attempts, both in the full sample and for suicide attempt among the sub-sample of suicide ideators (Borges, Walters, & Kessler, 2000; Kessler, Borges, & Walters, 1999). Survival coefficients were converted to odd-ratios (ORs) for ease of interpretation. The 95% confidence intervals (CIs) of the OR's are also reported and have been adjusted for design effects. Standard errors (SE) and significance tests were estimated using the Taylor series method (Wolter, 1985) with SUDAAN software ("SUDAAN. Professional Software for Survey Data Analysis [program]," 2002) to adjust for the weighting and clustering of the data. Multivariate significance was evaluated using Wald χ^2 tests based on design-corrected coefficient variance-covariance matrices. Statistical significance was evaluated using two-tailed .05-level tests.

Survival models examining the relations among parental psychopathology, comorbidity in offspring, and offspring suicidal behaviors proceeded incrementally, and the logic and methods used are defined in greater detail elsewhere (Gureje et al., 2011). First, we fitted bivariate models in which only one parental disorder was considered at a time, as usual in the field. Next, we fitted multivariate models that included all parental disorders simultaneously to predict each suicidal behavior and, separately, we estimated models testing the relationship between the numbers of parental disorders with the likelihood of each suicidal behavior. We then estimated a series of multivariate models in which both the type and number of parental disorders were

included in order to examine the unique contribution of both specific forms of parental psychopathology and the total number of parental disorders. These final models also controlled for mental disorders in the offspring.

RESULTS

Table 1 shows the bivariate associations between parental psychopathology and offspring suicide ideation and attempt. All parental disorders were positively associated with each suicidal outcome. ORs for the prediction of suicide ideation were in the range of 1.4–3.3, with statistically significant odds ratios for parental depression, GAD and APD. The same was true for suicide attempt in the total sample, with odds ratios in the range of 1.7–4.2, significant for depression, GAD, APD and panic,

and almost reaching statistical significance for substance abuse. ORs were in the range of 1.1–5.0 for suicide attempts among ideators, but only GAD was significantly associated with suicide attempts among those with suicide ideation.

Table 2 presents the results for the impact of comorbidity in the results above. The top of this table is the result of a single model with all five parental disorders together, and the bottom of the table is the result of another model with number of disorders. As evident in the top of the table, when comorbid disorders are taken into account most ORs are reduced for both suicide ideation and attempts. Only APD and panic remain increased and statistically associated with suicide ideation and attempt. No parental disorders predicted the transition from ideation to an attempt. In the bottom of the table, we can see that relative to offspring of parents

TABLE 1. Bivariate Model for Associations Between Parent Psychopathology and Lifetime (LT) Suicidality^a

	Ideators among total sample ^b		LT Attempts in total sample ^c		Among ideators, LT attempts ^d	
	OR (95% CI)	Chi square	OR (95% CI)	Chi square	OR (95% CI)	Chi square
Depression	2.8* (1.5–5.2)*	10.4 (0.001)*	4.1* (1.7–9.9)*	10.4 (0.001)*	2.5 (0.8–7.4)	2.7 (0.10)
Panic	1.9* (1.3–3.0)*	9.3 (0.002)*	3.3* (2.0–5.4)*	22.2 (<.001)*	2.0 (0.8–4.7)	2.4 (0.12)
Generalized Anxiety Disorder	1.8 (0.9–3.5)	3.0 (0.09)	3.7* (1.8–7.5)*	13.5 (<.001)*	5.0* (1.5–17.1)*	6.9 (0.009)*
Substance Abuse	1.4 (0.9–2.0)	2.8 (0.10)	1.7 (1.0–2.9)	3.5 (0.06)	1.1 (0.5–2.2)	0.0 (0.83)
Anti-Social Personality Disorder	3.3* (2.1–5.2)*	27.9 (<.001)*	4.2* (2.1–8.2)*	18.0 (<.001)*	2.0 (0.9–4.8)	2.7 (0.10)

Note. *Significant at the .05 level, two-sided test.

^aEach row represents a bivariate model. Models control for person-year (1–5 intervals) and demographics, and also the significant interaction terms from the demographics.

^bModels controls for person-year (1–5 intervals), demographics (sex, age, time-varying education, time-varying marriage), interaction between person-year intervals and age, education, marriage.

^cModels controls for person-year (1–5 intervals), demographics (sex, age, time-varying education, time-varying marriage), interaction between person-year intervals and age, marriage.

^dModels controls for person-year (1–5 intervals), demographics (sex, age, time-varying education, time-varying marriage), with no interactions included since none were significant.

Parental Psychopathology and Suicidality

TABLE 2. Multivariate Model for Associations Between Parent Psychopathology and Lifetime (LT) Suicidality^a

	Ideators among total sample ^b		LT Attempts in total sample ^c		Among ideators, LT attempts ^d	
	OR (95% CI)	Chi square	OR (95% CI)	Chi square	OR (95% CI)	Chi square
Depression	1.7 (0.8–3.7)	1.8 (0.18)	1.4 (0.4–4.9)	0.2 (0.62)	0.5 (0.0–13.7)	0.2 (0.66)
Panic	1.5 (1.0–2.3)	4.0 (0.047)*	2.2* (1.2–4.1)*	7.3 (0.007)*	1.6 (0.6–4.6)	0.8 (0.37)
Generalized Anxiety Disorder	0.9 (0.4–1.8)	0.1 (0.76)	1.5 (0.4–4.9)	0.4 (0.51)	5.9 (0.2–180.1)	1.1 (0.30)
Substance Abuse	0.8 (0.5–1.4)	0.5 (0.48)	0.9 (0.4–1.8)	0.1 (0.74)	0.8 (0.3–1.9)	0.2 (0.63)
Anti-Social Personality Disorder	3.1* (1.8–5.3)*	18.0 (<.001)*	3.4* (1.4–8.2)*	7.9 (0.005)*	1.6 (0.6–4.6)	0.8 (0.36)

Number of parental disorders	Ideators among total sample ^c		LT Attempts in total sample ^b		Among Ideators, LT Attempts ^d	
	OR (95% CI)	Chi square	OR (95% CI)	Chi square	OR (95% CI)	Chi square
1	1.9* (1.3–2.7)*		2.6* (1.6–4.1)*		1.5 (0.7–2.9)	
2+	2.2* (1.4–3.5)*	19.7 (<.001)*	4.1* (2.3–7.3)*	28.1 (<.001)*	3.1* (1.5–6.7)*	9.3 (0.010)*

Note. *Significant at the .05 level, two-sided test.

^aModels control for person-year (1–5 intervals) and demographics, and also the significant interaction terms from the demographics.

^bModels controls for person-year (1–5 intervals), demographics (sex, age, time-varying education, time-varying marriage), interaction between person-year intervals and age, education, marriage.

^cModels controls for person-year (1–5 intervals), demographics (sex, age, time-varying education, time-varying marriage), interaction between person-year intervals and age, marriage.

^dModels controls for person-year (1–5 intervals), demographics (sex, age, time-varying education, time-varying marriage), with no interactions included since none were significant.

with no disorders, offspring of parents with exactly one disorder have increased odds of both ideation and attempt, and those with parents with two or more disorders have even greater odds of ideation and attempt. Those whose parents have 2 or more disorders also are more likely to transition from ideation to an attempt.

Our final model is presented in Table 3. Here, in a single model, both the type and number of parental disorders are entered simultaneously and this model controls for offspring mental disorders. Parental panic and APD remain associated with ideation (odds ratio 1.9 and 4.3, respectively) and

attempt (odds ratio 2.5 and 3.8, respectively) in the total sample, but not for attempt among ideators. A non-additive effect between number of disorders and suicide ideation is observed.

DISCUSSION

The main findings of this study were that suicide ideation and attempts were strongly associated with parental disorders, but among those with suicide ideation the associations with suicide attempt were diminished. As expected, parental disorders

TABLE 3. Final Multivariate Model for Associations between Parent Psychopathology and Lifetime (LT) Suicidality^a

	Ideators among total sample ^b		LT attempts in total sample ^c		Among ideators, LT attempts ^d	
	OR (95% CI)	Chi square	OR (95% CI)	Chi square	OR (95% CI)	Chi square
Depression	2.3 (1.0–5.3)	3.7 (0.05)	1.5 (0.4–5.4)	0.4 (0.55)	0.3 (0.0–3.1)	1.2 (0.28)
Panic	1.9* (1.2–3.0)*	8.2 (0.004)*	2.5* (1.4–4.3)*	10.6 (0.001)*	1.2 (0.4–3.4)	0.1 (0.73)
Generalized Anxiety Disorder	1.1 (0.4–2.6)	0.0 (0.91)	1.6 (0.4–6.2)	0.5 (0.48)	4.9 (0.5–50.9)	1.9 (0.17)
Substance Abuse	1.1 (0.7–1.7)	0.1 (0.72)	1.0 (0.5–2.1)	0.0 (0.97)	0.5 (0.2–1.6)	1.3 (0.26)
Anti-Social Personality Disorder	4.3* (2.4–7.8)*	23.9 (<.001)*	3.8* (1.3–11.3)*	6.2 (0.013)*	1.0 (0.3–3.6)	0.0 (0.94)
Group significance test for all types		40.0 (<.001)*		29.9 (<.001)*		3.5 (0.63)
Significance test for difference between types		19.0 (<.001)*		10.8 (0.029)*		10.6 (0.031)*
Number of parental disorders (2+)	0.4* (0.2–1.0)*	4.3 (0.037)*	0.7 (0.2–2.3)	0.3 (0.58)	4.5 (0.7–27.7)	2.8 (0.09)

*Significant at the .05 level, two-sided test.

^aModels control for person-year (1–5 intervals) and demographics, and also the significant interaction terms.

^bModels controls for person-year (1–5 intervals), demographics (sex, age, time-varying education, time-varying marriage), interaction between person-year intervals and age, education, marriage, as well as for mental disorders in the offspring.

^cModels controls for person-year (1–5 intervals), demographics (sex, age, time-varying education, time-varying marriage), interaction between person-year intervals and age, marriage, as well as for mental disorders in the offspring.

^dModels controls for person-year (1–5 intervals), demographics (sex, age, time-varying education, time-varying marriage), as well as for mental disorders in the offspring, with no interactions included since none were significant.

were highly comorbid and after controlling for comorbidity and number of disorders only panic and APD remained associated with ideation and attempts in the total sample. Those with more parental disorders were at increasing risk of ideation and attempt and at increasing risk to transition

from suicide ideation to an attempt. Contrary to our initial hypothesis, parental substance use disorders had a negligible role on suicide ideation or attempts in the Mexican population.

Our findings are in general concordance with prior results from the World

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Mental Health Surveys that showed the importance of parental panic and APD in the occurrence of suicide ideation and attempts in offspring (Gureje et al., 2011). These findings are consistent with research that shows impulsive aggression, as is characteristic of persons with APD, may mediate the familial transmission of suicidal behavior (Brent & Mann, 2005) and that anxiety disorders, especially panic (Weissman, Klerman, Markowitz, & Ouellette, 1989) are related with suicidality even after controlling for comorbidity (Sareen et al., 2005). In our study, no parental disorder, per se, had a clear effect on the transition from suicide ideation to an attempt. GAD did increase this risk, but our estimate was hampered by a large confidence interval that precluded conclusiveness in this important matter. Nevertheless, it was clear in our study that those more affected by multiple parental disorders had an increased risk of transitioning to an attempt, as also found for the World Mental Health Surveys (Gureje et al., 2011). Future research should delve more into this matter as it implies that careful and detailed information about types and number of parental psychopathology should be obtained in clinical interviews of potentially suicidal patients. The results on the limited impact of parental depression is in concordance with prior results in Mexico (Borges, Nock et al., 2010) and elsewhere (Wunderlich, Bronisch, & Wittchen, 1998) that showed the limited role of parental depression on suicidality, but we could not replicate the finding that substance use disorders had a prominent role on suicidality (Borges, Nock et al., 2010). The results from samples of adults and adolescents in Mexico have both found that substance use disorders have a prominent role in suicidality in Mexico. Our results here are that parental substance abuse did not have such role in more complex models, that take into account others parental disorders and number of parental disorders. To our knowledge, other studies have not used such complex and refined

models to assess the role of parental substance abuse disorders on offspring suicidality. Nevertheless we were not able to separate alcohol and other drug use disorders, or abuse and dependence, all of which limit our possibility to be more conclusive in this important issue. Future studies could focus more directly in this matter, especially for developing nations.

There are several possible mechanisms of transmission from parental psychopathology to offspring suicidality. One mechanism may be the genetic transmission of traits such as impulsive-aggression characteristic of APD or high arousal characteristic of both APD and anxiety disorders as suggested by these results and those of others (Brent & Mann, 2005; Gureje et al., 2011). Another explanation may be the genetic transmission of specific psychiatric disorders. Our results suggest that a possible mechanism by which suicidality is transmitted from parents to the offspring is directly, by the transmission of psychopathology per se. Future studies could focus on the possible concordance of specific mental disorders among parental-offspring dyads, a matter beyond the goals of our current effort. Given that these findings of association between parental psychopathology and offspring suicidality remain robust even after controlling for offspring psychopathology suggests that the impact of parental disorder upon suicidality is above and beyond the simple transmission of disorders. Alternatively, the mechanism of transmission may not be genetic at all, but rather through impaired parenting or by exposure to adverse life experiences such as sexual abuse (Brent et al., 2002; Roy, 2011). However, if the transmission were purely environmental we would have expected significant results for parental substance abuse as well. Most likely the transmission of phenotypes such as impulsive-aggression or high arousal interact with impaired parenting and adverse life experiences to explain offspring suicidality.

Limitations of our study are apparent. The information on suicide ideation, attempts and parental psychopathology were obtained by self-report of the offspring and may be subject to recall bias, forgetting or simply being unaware of parental psychiatric problems. The same offspring reported on a limited number of parental psychopathologies and a second partner did not corroborate this information. Our results on the role of parental psychopathology could be biased if the offspring with suicidality were more likely to recall a parental psychopathology compared to an offspring without suicidality. Even when we would need external information to properly disregard such potential bias, nevertheless it is not clear why such bias would operate only on a limited number and class of parental psychopathology (such as APD) but not on others (such as depression). Other parental disorders known to affect suicidality, such as schizophrenia (Tsuang, 1983) were not considered here. The respondents reported on the simple presence of parental psychopathology, but not on the severity or persistence of these disorders that could also affect the results presented here. Despite these limitations, this study has the strengths of a large epidemiological enquiry on a sample of the general population that are independent of possible bias when patients under treatment are used, especially in a country like Mexico in which a large proportion of suicidal persons do not come to the attention of the health services (Borges, Orozco et al., 2010).

In conclusion, these findings contribute to our understanding of the parental transmission of psychopathology and suicidality, highlight the role of parental panic disorder and APD on the suicidal behavior of their offspring. It allows researchers to focus on the transmission of certain traits and/or the exposure to certain environments as possible causes of suicide attempt and ideation. It may also help inform clinical and

public health efforts aimed at suicide prevention in Mexico and other developing countries.

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