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Adolescent Predictors of Incidence and Persistence of Suicide-Related Outcomes in Young Adulthood: A Longitudinal Study of Mexican Youth

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In recent years, Mexico has seen one of the largest increases in suicide rates worldwide, especially among adolescents and young adults. This study uses data from the 1,071 respondents who participated in a two-wave longitudinal study when they were between 12 and 17 years of age, and again when they were between 19 and 26 years of age. The World Mental Health Composite International Diagnostic Interview assessed suicidal behavior and DSM-IV mental disorders. We used Cox regressions to evaluate which sociodemographic and psychiatric factors and life events predicted the incidence and remission of suicide ideation, plan, and attempt throughout the 8-year span. The 8-year incidence of suicide ideation, plan, and attempt was 13.3%, 4.8%, and 5.9%, respectively. We found that the number of traumatic life events during childhood, no longer being in school, and tobacco use predicted which adolescents developed suicide behaviors as they transitioned into young adulthood. Psychiatric disorders, particularly anxiety disorders, played a larger role in the persistence of those who already had suicidal behaviors, while behavioral disorders played a role in the transition from ideation to attempt. This distinction may be useful for clinicians to assess the risk of suicide.

In recent years, the suicide rate in many countries has been decreasing (World Health Organization [WHO], 2014). However, Mexico is experiencing one of the

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largest increments when compared to 28 other countries (Bridge, Goldstein, & Brent, 2006). This rise has been especially high for adolescents and young adults (Borges, García, Orozco, Benjet, & Medina-Mora, 2014). Suicide-related outcomes (SROs) such as ideation, plan, and attempts are precursors to suicide death and thus are important risk factors. Previous epidemiological research found that 11.5% of adolescents in Mexico had suicide ideation, and 3.1% had made a suicide attempt (Borges, Benjet, Medina-Mora, Orozco, & Nock, 2008). Because this demographic is at especially high risk, it is imperative to identify risk factors and create predictive models that may be useful for intervention programs to target those in need.

Cross-sectional representative community surveys have shown that suicide ideation is common in the general population and often acts as a precursor of a suicide attempt (Bernal et al., 2007; Borges et al., 2007). Other risk factors identified include being female (Borges, Benjet, Medina-Mora, Orozco, & Nock, 2008); having lived through a traumatic life event (Borges, Benjet, Medina-Mora, Orozco, Molnar, et al., 2008); using, abusing, and depending on alcohol, tobacco, or drugs (Miller et al., 2011); low education (Sánchez-Cervantes, Serrano-González, & Márquez-Caraveo, 2015); and having a psychiatric disorder (Bernal et al., 2007). However, these studies are cross-sectional and thus limited when trying to make temporal or causal inferences.

Longitudinal prospective studies of SROs, all but one conducted in high-income countries, show that drug and alcohol abuse (Allebeck & Allgulander, 1990a; Flensborg-Madsen et al., 2009), stressful life events (Caspi et al., 2003), a history of major depressive disorder (Werbeloff et al., 2016), and adverse childhood experiences (Cluver, Orkin, Boyes, & Sherr, 2015) increase the risk of SROs. The only articles we found looking at suicide behaviors in the transition from adolescence to young adulthood show that the onset of depression (Fergusson & Lynskey, 1995) and increased use of multiple drugs throughout adolescence (Newcomb, Scheier, & Bentler, 1993) increases the risk of attempting suicide.

In this study we evaluated data from a two-wave longitudinal study of adolescents transitioning into young adulthood in Mexico City in order to understand how SROs change through emerging adulthood in the context of a developing country with low, but increasing, rates of suicide mortality. This study is novel in that we measured all SROs and a more complete set of psychiatric disorders (aside from anxiety and depression) during the vulnerable life transition from adolescence to early adulthood. In addition, we provide prospective data from a developing country, and more specifically from Latin America. The only other prior study from a developing country, namely South Africa (Cluver et al., 2015), only followed adolescents for 1 year, and thus, it is not informative about the transition to young adulthood. We focused on identifying which factors from adolescence predict the incidence and remission of SROs. We used the data from the first wave to predict SROs in the second wave. In addition, the longitudinal design allowed us to establish temporal relations between risk factors and SROs.

METHOD

Participants

Adolescents between the ages of 12–17 (N = 3,005) participated in wave I of the Mexican Adolescent Mental Health Survey. This survey was a stratified multistage area probability sample representative of the nearly 2 million adolescents that resided in the Mexico City metropolitan area in 2005. Eight years later, we attempted to locate all the respondents from wave I who gave contact information in order to do a follow-up interview. We were able to re-interview 1,071 of the original respondents, now young adults between the ages of 19–26. More details about the design and

procedures of the study have been published elsewhere (Benjet, Borges, Medina-Mora, Zambrano, & Aguilar-Gaxiola, 2009, for wave I, and Benjet et al., 2016, for wave II). For this study we looked at the data of those 1,071 respondents who completed both interviews.

Procedure

The interviews for both waves were conducted face-to-face in the homes of the respondents. Trained lay interviewers provided a verbal and written explanation of the study and obtained informed consent before carrying out the interviews. All study respondents were given a pamphlet of the study findings from wave I and contact information for institutions from which they could seek services should they wish to do so.

Measures

Suicide-Related Outcomes. Suicide ideation, plan, attempt, and potential risk factors were assessed using the World Mental Health Composite International Diagnostic Interview (WMH-CIDI). The WMH-CIDI contains a module that assesses suicide ideation ("Have you ever seriously thought about committing suicide?"), suicide plans ("Have you ever made a plan for committing suicide?"), and suicide attempts ("Have you ever attempted suicide?"). These questions were printed in a self-administered booklet and referred to by letter, given that reporting of potentially embarrassing behaviors is higher in self-administered questionnaires (Turner et al., 1998). Experience A referred to suicide ideation, B to suicide plan, and C to suicide attempt. Interviewers asked respondents to report whether the experiences had ever happened to them ("Three experiences are listed in your booklet on page 19 labeled A, B, and C. Did experience A ever happen to you?") and, if so, to report the age of onset (AOO). Respondents were also asked to report if the event happened in the last 12 months. If the event did not happen in the last 12 months, participants were asked for the age of recency. *Incident cases* were defined as those that met lifetime criteria for the SRO in question at wave II, but did not report that SRO at wave I. *Persistent cases* were defined as those that reported the same SROs in both waves.

Predictors. Interviews also examined three sets of risk factors: sociodemographic factors, psychiatric disorders in the 12 months leading up to the first interview, and traumatic life events. The sociodemographic factors were sex, whether the adolescent had dropped out of school, and whether at least one of the parents finished high school.

Psychiatric disorders were assessed by the WHM-CIDI according to DSM-IV criteria. We examined mood (major depressive disorder, dysthymia, and bipolar disorder), anxiety (panic disorder, agoraphobia without panic disorder, specific phobia, social phobia, generalized anxiety disorder, posttraumatic stress disorder, and separation anxiety disorder), behavioral (oppositional defiant disorder, conduct disorder, and attention deficit/hyperactivity disorder), and substance use (alcohol abuse, drug abuse, alcohol abuse with dependence, and drug abuse with dependence) disorders. Wave I used the adolescent version of the CIDI, while Wave II used the adult version modified for follow-up. Prior research showed that CIDI diagnoses have good concordance with diagnoses based on the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 1997) in respondents from the United States (Kessler et al., 2005) and elsewhere (Haro et al., 2006).

The CIDI also assessed 21 different traumatic life events, such as rape, violence, serious injuries, domestic violence, or serious illness. After the presentation of this list of events, the respondent was also able to add "other" and "private" events. Participants that answered "other" were asked to give details about the event. The private event category was reserved for those that

did not feel comfortable disclosing the nature of the trauma (for a full list of the traumatic life events assessed please see the appendix in Orozco, Borges, Benjet, Medina-Mora, & López-Carrillo, 2008).

Parental mental illness was based on participants' reports of each of their parents' symptoms of depression, generalized anxiety, or panic disorder, and whether these symptoms occurred most of the time, interfered with their parent's life, and whether their parent sought treatment for these symptoms (see Benjet, Borges, & Medina-Mora, 2010, for greater detail).

Analysis

First, we used χ^2 tests to evaluate any differences in baseline suicidality between those who did and did not participate in wave II. Second, we performed descriptive analyses to estimate the incidence and remission of SROs and Kaplan–Meier survival curves for AOO of incident cases and age of remission for persistent cases (Kaplan & Meier, 1958; Rich et al., 2010). Then, to assess risk factors for incident cases of SROs, we ran three separate survival analyses using Cox regression (Cox, 1975; Grambsch & Therneau, 1994). For all analyses, we included sex, and the following variables reported in 2005: whether the participant attended school; parental education; whether the participant had an anxiety, mood, behavioral, or substance use disorder; number of lifetime traumatic events; whether the participant had ever smoked tobacco; and reports of parental mental illness as predictors in our model. For the model of persistence, we also include whether the participant had sought any mental health services. Additionally, whether the participant reported having a suicide plan in 2005 was included as a predictor in all the analyses of suicide attempts.

We calculated the survival time for incidence by subtracting the participant's age in 2005 from their AOO plus one. We calculated the survival time for remission by subtracting the AOO from the age of recency in 2013 or the participant's age in 2013 if they had experienced the event in the last 12 months. When the AOO reported in 2013 did not match the one reported in 2005, we used the one reported in 2005 as it is less likely to have been influenced by forgetting. Some participants reported experiencing the SRO but did not provide AOO or age of recency at either time period; we gave these participants a survival time of 1 to reflect that they had experienced the event.

All results were weighted to adjust for nonresponse bias to represent the initial 2005 wave I sample. The weights were created using the variables in 2005 that differed between people who completed wave II and those who did not (for more information see Benjet et al., 2016). Additionally, given that wave I was a stratified multistage probabilistic sample based on census data, we used the sample design variables in all of our analysis to adjust the standard errors for the sampling procedure. All percentages reported are weighted as described.

RESULTS

First, we tested for the possibility of an attrition bias with regard to SROs. Respondents who participated in Wave II did not differ from those who did not in terms of lifetime ideation [$\chi^2(1, N = 3{,}005) = 1.40$, *ns*], plan [$\chi^2$ $(1, N = 3{,}005) = 1.11$, *ns*], or attempt [$\chi^2(1, N = 3{,}005) = 0.97$, *ns*] nor 12-month ideation ($\chi^2(1, N = 3{,}005) = 0.96$, *ns*], plan [$\chi^2(1, N = 3{,}005) = 0.85$, *ns*], or attempt [$\chi^2(1, N = 3{,}005) = 0.22$, *ns*] at baseline.

Incidence

Ideation. Of the 960 respondents who did not report ever having ideation in 2005, 121 (13.37%) (this and following proportions are weighted) reported having developed suicide ideation in the 8 years between 2005 and 2013. The mean AOO for the new cases of ideation was 16.69

(*SD* = 2.47). Thirty-six (30.50%) of the new cases of ideation also reported making a plan in the last 8 years and 12 (9.81%) in the last 12 months. The mean AOO for making a plan among the new cases of ideation was 16.61 (*SD* = 2.69). Of the incident cases of ideation, 53 (43.04%) also reported an attempt in the last 8 years, and 14 (8.21%) reported an attempt in the last 12 months. The mean AOO for suicide attempt among the new cases of ideation was 16.75 (*SD* = 2.46).

The wave I sociodemographic, psychiatric, and life event predictors of SROs in the transition from adolescence to early adulthood as estimated by hazard ratios (HR) in multivariate models are shown in Table 1. The hazard curves for the incidence of the SROs are displayed in Figure 1. For suicide ideation, the adjusted model showed that an increment of one traumatic life event at baseline (HR = 1.26; 95% CI = 1.14–1.41; $p < .001$) increased 26% the risk of having incident suicide ideation. Participants had between zero and nine traumatic life events, with a mean of 2.22 events. Being a student in 2005 reduced the risk of suicide ideation (HR = 0.46; 95% CI = 0.26–0.81; $p = .005$).

Plan. Of the 1,036 respondents that did not report making a suicide plan in their lifetime in 2005 (whether or not they had ideations or attempts), 47 (4.84%) reported having made a plan in the 8 years between 2005 and 2013. The mean AOO for the incident cases of making a plan was 16.57 (*SD* = 2.62). Of these 47 new cases of plan, 31 (67.34%) had attempted suicide

TABLE 1
Sociodemographic, Psychiatric, and Life Events Predictors of Incidence of Suicidal Behavior in the Transition from Adolescence to Early Adulthood

	Ideation			Plan			Attempt		
	n = 960, incidence = 121			*n* = 1,036, incidence = 47			*n* = 1,041, incidence = 61		
Wave I factors	HR	95% CI	*p*	HR	95% CI	*p*	HR	95% CI	*p*
Demographic									
Female	1.64	0.81–3.32	.154	1.73	0.83–3.61	.128	2.07	0.76–5.62	.138
In school	0.46	0.26–0.81	**.005**	0.94	0.37–2.39	.892	0.68	0.30–1.52	.326
Parental education	0.96	0.60–1.53	.851	1.09	0.60–1.97	.772	0.98	0.59–1.62	.920
Psychiatric disorders									
Any anxiety disorders	0.99	0.59–1.67	.984	0.64	0.33–1.25	.178	0.58	0.28–1.17	.114
Any mood disorders	1.06	0.50–2.24	.871	1.08	0.38–3.06	.878	1.02	0.31–3.36	.974
Any behavioral disorders	1.50	0.78–2.87	.207	1.69	0.66–4.33	.256	1.48	0.86–2.57	.144
Any substance use disorders	1.02	0.37–2.79	.974	1.19	0.22–6.45	.836	1.10	0.19–6.22	.911
Life events									
Number of traumatic life events	1.26	1.14–1.41	**<.001**	1.24	1.02–1.52	**.027**	1.36	1.15–1.61	**<.001**
Lifetime tobacco use	1.21	0.73–2.02	.444	2.23	1.20–4.14	**.008**	1.55	0.97–2.48	.058
Parent mental illness	0.71	0.40–1.24	.209	1.40	0.60–3.29	.417	0.83	0.39–1.78	.614
Suicide plan									
	Not applicable $\chi^2 = 184.77$; $p < .001$			Not applicable $\chi^2 = 57.29$; $p < .001$			0.76 $\chi^2 = 274.9$; $p < .001$	0.10–5.72	.784

*Values in bold are statistically significant at $p < 0.05$.

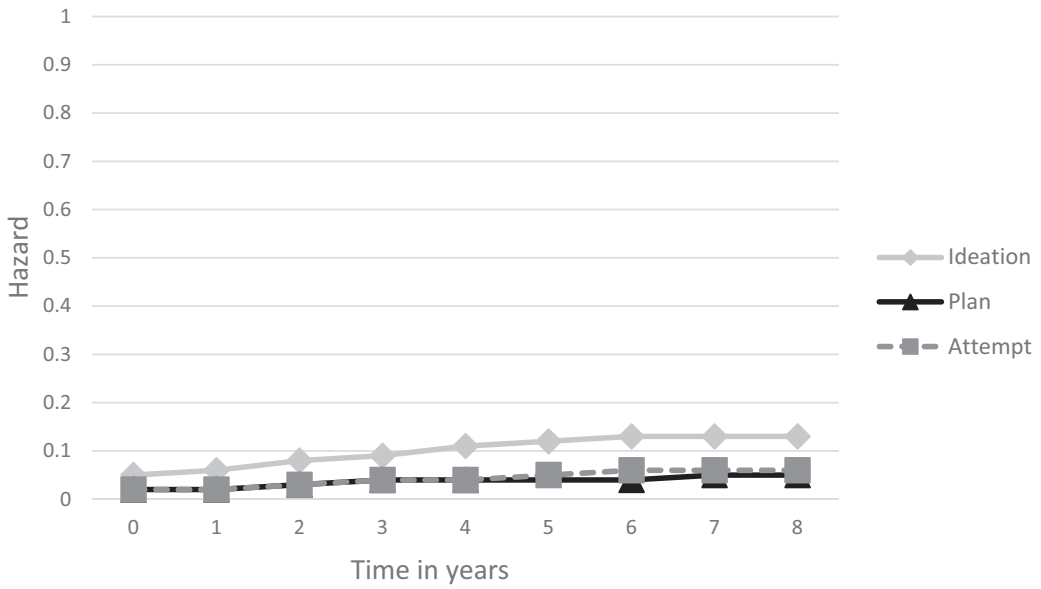

Figure 1. Hazard curves for the incidence of SROs.

since 2005, and 8 (11.38%) had attempted suicide in the last 12 months.

Also shown in Table 1, the adjusted survival model showed that having more traumatic life events at baseline (HR = 1.24; 95% CI = 1.02–1.52; $p = .027$), and smoking tobacco (HR = 2.23; 95% CI = 1.20–4.14; $p = .008$) increased the risk of making an incident suicide plan. As shown in Table 2, among those who had suicide ideation in 2005, having parents that finished high school (HR = 4.26; 95% CI = 1.30–14.01; $p = .013$) and having parents with a history of mental illness (HR = 18.09; 95% CI = 3.45–94.75; $p < .001$) increased the risk of making a suicide plan. Having more traumatic events (HR = 0.58; 95% CI = 0.35–0.97; $p = .030$) and having a behavioral disorder (HR = 0.22; 95% CI = 0.05–0.88; $p = .026$) reduced the risk of making a suicide plan.

Attempt. Of the 1,041 respondents who did not report ever attempting suicide when interviewed in 2005 (whether or not they had made a plan), 61 (5.87%) reported having a suicide attempt in the following 8 years. Of those, 30 (52.81%) reported making a plan since 2005 and 9 (13.96%) reported making a plan in the last 12 months. The mean AOO for the incidence of attempting suicide was 16.70 ($SD = 2.40$). Attempters without a plan tended to have a later AOO ($M = 17.30$, $SD = 2.22$) when compared to attempters with a plan ($M = 16.19$, $SD = 2.62$); however, this difference was only marginally significant, $t(57.85) = 1.87$, $p = .067$.

The adjusted model for incident suicide attempts presented in Table 1 shows that each traumatic life event increased the risk of attempting by 36% (HR = 1.36; 95% CI = 1.15–1.61; $p < .001$). Among those who had suicide ideation in 2005 but had not made an attempt (see Table 2), being female (HR = 13.20; 95% CI = 2.17–80.16; $p = .004$), having more traumatic life events (HR = 1.48; 95% CI = 1.09–2.00; $p = .008$), having a behavioral disorder (HR = 27.45; 95% CI = 4.64–165.9; $p < .001$), and having parents with a history of mental illness (HR = 7.68; 95% CI = 1.56–37.80; $p = .009$) increased the risk of subsequently attempting suicide.

Persistence and Remission

Ideation. Of the 111 respondents who reported ever having ideation when

TABLE 2
Sociodemographic, Psychiatric, and Life Events Predictors of the Incidence of Suicide Plans and Attempts Among People with Suicide Ideation in 2005

	Incidence of plan among ideators			Incidence of attempt among ideators		
	n = 76, incidence = 11			n = 81, incidence = 8		
Wave I factors	HR	95% CI	p	HR	95% CI	p
Demographic						
Female	1.61	0.29–8.89	.573	13.20	2.17–80.16	**.004**
In school	0.53	0.08–3.34	.481	1.63	0.01–266.86	.845
Parental education	4.26	1.30–14.01	**.013**	4.41	0.46–42.43	.182
Psychiatric disorders						
Any anxiety disorders	1.17	0.26–5.34	.832	0.81	0.03–22.46	.899
Any mood disorders	1.72	0.43–6.92	.429	0.23	0.01–7.88	.393
Any behavioral disorders	0.22	0.05–0.88	**.026**	27.45	4.65–165.9	**<.001**
Any substance use disorders	Too few to estimate			Too few to estimate		
Life events						
Number of traumatic life events	0.58	0.35–0.97	**.030**	1.48	1.09–2.00	**.008**
Lifetime tobacco use	0.40	0.11–1.44	.145	1.61	0.13–20.27	.701
Parent mental illness	18.09	3.45–94.75	**<.001**	7.68	1.56–37.80	**.009**
Suicide plan						
	Not applicable			0.51	0.09–2.93	.433
	χ^2 = 316.45; p < .001			χ^2 = 336.85; p < .001		

*Values in bold are statistically significant at $p < 0.05$.

interviewed in 2005, 13 (10.64%) reported having ideation in the last 12 months in 2013. The mean age of recency was 16.50 (*SD* = 2.53) for all ideators that remitted, and respondents reported having ideations for a mean of 4.20 years (*SD* = 3.57). Of these persistent cases, 48.28% also reported making a plan in the last 12 months. Additionally, 34.54% reported attempting suicide in the last 12 months. The Kaplan–Meier survival curves for remission of the SROs (i.e., the probability of survival as a function of time) are displayed in Figure 2. The *x*-axis goes beyond the 8-year span of our study because some participants reported having SROs before wave I. The figure shows that most people who have SROs will remit in the first 5 years, and that the number who have had them for longer becomes stable over time.

The sociodemographic, psychiatric, and life event predictors of remission are presented in Table 3. The adjusted model for the remission of suicide ideation showed that having an anxiety disorder (HR = 0.54; 95% CI = 0.32–0.91; p = .016) and having parents who completed high school (HR = 0.58; 95% CI = 0.39–0.85; p = .004) reduced the likelihood of remission.

Plan. Of the 35 respondents who reported making a plan when interviewed in 2005, three (9.23%) reported making a plan in the last 12 months when interviewed in 2013. The mean age of recency was 17.25 (*SD* = 2.54), and respondents reported having a plan for a mean of 3.56 years (*SD* = 3.29).

The adjusted model for the remission of suicide plan as presented in Table 3 showed that having a behavioral disorder (HR = 0.27; 95% CI = 0.13–0.54; p < .001) and being in school in 2005 (HR = 0.29; 95% CI = 0.10–0.82; p = .016) reduced the likelihood of remission.

Attempt. Of the 30 participants who reported a suicide attempt when interviewed in 2005, 4 (13.79%) reported attempting

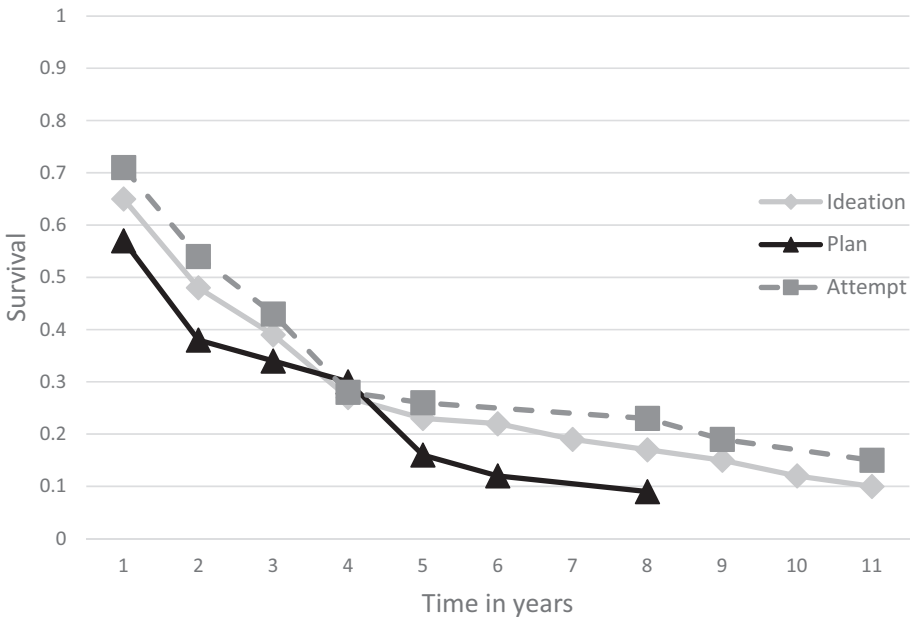

Figure 2. Survival curves for the remission of SROs.

suicide in the last 12 months when interviewed in 2013.

The adjusted model for the remission of suicide attempt presented in Table 3 showed that having an anxiety (HR = 0.24; 95% CI = 0.08–0.74; $p = .010$) or mood (HR = 0.35; 95% CI = 0.12–1.02; $p = .045$) disorder reduced the likelihood of remission. Additionally, being female (HR = 2.57; 95% CI = 1.27–5.20; $p = .006$) and having more traumatic life events (HR = 1.23; 95% CI = 1.11–1.37; $p < .001$) increased the probability of remission. See Table 3 for the results of the multivariate model for the remission of attempt.

DISCUSSION

We evaluated the incidence and persistence of suicidal behavior over an 8-year period from adolescence to young adulthood in Mexican youth from Mexico City. Our findings show that even though the incidence rate is high (13.37% for ideation), fortunately the 8-year persistence was low. This is not to say that incidence is not worrisome as a fatality may occur on the first attempt. Because traumatic life events increased the risk of incident SROs, suicide behaviors are likely to be triggered by a specific traumatic event. It is possible that once the event passes or the psychological consequences of the event subside, so does suicidal behavior. It is at this point where having a psychiatric disorder (whether it is a mood, anxiety, or behavioral disorder) increases the odds of persistent suicide behaviors. Therapy would help support the adolescent until the triggering event passes, and treatment of anxiety disorders, in particular, may help increase the chances of remission.

For incidence, all SROs had a mean AOO around 16 years of age, indicating this as a critical age in the development of suicide behaviors. In Mexico, this is the age in which adolescents either enter high school or stop studying. Given that being in school was a protective factor for the incidence of ideation, it is imperative to focus on those who drop out of school at the age of 16 as they may be more likely to develop SROs. Having more traumatic life events

TABLE 3
Sociodemographic, Psychiatric, and Life Events Predictors of Remission of Suicidal Behaviors in the Transition from Adolescence to Early Adulthood

	Ideation			Plan			Attempt		
	n = 111, remission = 98			n = 35, remission = 32			n = 30, remission = 26		
Wave I factors	HR	95% CI	p	HR	95% CI	p	HR	95% CI	p
Demographic									
Female	0.85	0.54–1.32	.444	0.89	0.51–1.55	.667	2.57	1.27–5.20	**.006**
In school	1.27	0.61–2.64	.502	0.29	0.10–0.82	**.016**	0.54	0.22–1.35	.171
Parental education	0.58	0.39–0.85	**.004**	0.77	0.41–1.46	.406	1.07	0.47–2.48	.863
Psychiatric disorders									
Any anxiety disorders	0.54	0.32–0.91	**.016**	0.71	0.34–1.51	.358	0.24	0.08–0.74	**.010**
Any mood disorders	1.28	0.76–2.15	.336	1.04	0.36–2.94	.946	0.35	0.12–1.02	**.045**
Any behavioral disorders	0.97	0.60–1.58	.900	0.27	0.13–0.54	**<.001**	2.15	0.95–4.89	.057
Any substance use disorders	1.64	0.84–3.18	.129	0.79	0.14–4.54	.786	0.89	0.26–3.04	.847
Life events									
# of traumatic life events	1.01	0.92–1.12	.796	0.92	0.75–1.13	.412	1.23	1.11–1.37	**<.001**
Lifetime tobacco use	0.78	0.49–1.25	.284	2.15	0.90–5.16	.073	1.49	0.79–2.81	.197
Any lifetime mental health service use	0.99	0.59–1.67	.983	1.35	0.69–2.64	.354	0.65	0.20–2.18	.470
Parent mental illness	0.89	0.52–1.54	.665	0.86	0.40–1.88	.703	2.16	0.67–6.91	.178
Suicide plan									
	Not applicable $\chi^2 = 40.35$; $p < .001$			Not applicable $\chi^2 = 146.48$; $p < .001$			0.71	0.26–1.94	0.486
							$\chi^2 = 283.89$; $p < .001$		

*Values in bold are statistically significant at $p < 0.05$.

by adolescence increased the likelihood of developing all suicide behaviors by young adulthood. Among people who had suicide ideation, having a parent with a history of mental illness predicted the worsening of their condition, making them more likely to develop a plan and attempt suicide.

Many studies have found that psychiatric disorders increase the risk of having suicide behaviors (Andrews & Lewinsohn, 1992; Bernal et al., 2007; Borges, Angst, Nock, Ruscio, & Kessler, 2008; Clarke et al., 2014; Reinherz et al., 1995); however, we did not find this in our study in the multivariate models although several showed associations in bivariate models (not shown here). One possibility for the lack of association is that experiencing traumatic events before adolescence causes both psychiatric disorders and suicide behaviors. Some studies have already shown that traumatic life events may lead to the development of psychiatric disorders above and beyond posttraumatic stress disorder (Ahern, Karasek, Luedtke, Bruckner & van der Laan, 2016; Benjet et al., 2010). By including the diagnostic clusters in the models, we could be masking the effects of individual disorders, but small sample sizes impeded including individual disorders and this lack of statistical power may also explain the null effects. In addition, Fergusson and Lynskey (1995) and Cluver et al. (2015) showed that early childhood adversities increase the odds of developing suicide behaviors. If both conditions have the same root cause, they might appear to be related, but this relation might not be causal.

Another possibility is that psychiatric disorders might be better predictors of

suicidality during adulthood than during the transition between adolescence and young adulthood. During this developmental stage, other factors such as one's relationship with parents (Bridge et al., 2006), abuse of substances (Allebeck & Allgulander, 1990a,b; Chávez-Hernández & Macías-García, 2016; Reinherz et al., 1995), not being in school (Benjet et al., 2016), and knowing peers who attempted suicide (Ho, Leung, Hung, Lee, & Tang, 2000) might play a bigger role in determining which adolescents will develop suicide behaviors.

While psychiatric disorders did not play a role in the overall incidence of suicidal behavior, they did play a role in the incidence of transition from ideation to plan and from ideation to attempt. Among ideators, having a behavioral disorder decreased the likelihood of making a plan, but increased the risk of attempting suicide more than 20-fold. Adolescents with behavioral disorders may lack the impulse control necessary to not attempt suicide once the ideations occur, thus their attempts may not be premeditated.

Finally, it is possible that psychiatric disorders do not play a big role in the development of suicide behaviors, but do so in the persistence of these behaviors. We found that adolescents who had an anxiety disorder as well as suicide ideation or attempts were more likely to continue experiencing those behaviors. This is consistent with previous studies that analyzed the impact of anxiety disorders, as a cluster, on suicide ideation and attempt in a community sample (Sareen et al., 2005). Additionally, adolescents who had behavioral disorders were more likely to persist in making a suicide plan, and those who had mood disorders were more likely to continue making suicide attempts. This is consistent with research that shows people who are admitted into the emergency room for attempting suicide are more likely to have mood disorders (Kawashima, Yonemoto, Inagaki, & Yamada, 2014), and longitudinal studies showing that having a mood disorder increases the risk of attempting suicide (Clarke et al., 2014).

The results should be interpreted in light of the current study's limitations. One of the limitations is that the small sample sizes of those who engaged in SROs limited statistical power, especially for remission, thus confidence intervals are large and lack of associations with psychiatric disorders may be due to this. Likewise, because of this, we were unable to include individual disorders in the models, but rather groups of disorders. Another limitation is the attrition rate. However, we did not find any difference among those who did or did not complete the second interview with regard to SROs or psychiatric disorders (Benjet et al., 2016) at baseline. Also, given that participants were not interviewed on a yearly basis, we cannot be certain about the exact beginning and end points of their suicide behaviors. Further, adolescents who were institutionalized or homeless did not participate. This at-risk population could differ from the study population in frequency or onset of SROs. Additionally, while we assessed a large array of psychiatric disorders, we did not assess for all disorders included in the DSM-IV. Schizophrenia, for example, was not included, but is likely to be related to an increase in suicide behaviors (Harkavy-Friedman, Nelson, Venarde, & Mann, 2004). Finally, this study only included adolescents living in the Mexico City metropolitan area, which limits the generalization to youth living elsewhere.

In spite of these limitations, the current research has several strengths. It is novel because we assessed suicide behaviors at a critical transition period. This is also one of the few longitudinal studies regarding SROs carried out in a developing country, and among those studies, we assessed a greater number of psychiatric disorders and for a longer period of time. These findings have implications for future research, clinical practice, and public policy. First, 16 years of age seems to be a pivotal age for adolescents developing suicide behaviors. Clinicians should place more attention

on this age to prevent deaths by suicide. Future research should investigate the changes that occur at this age that lead to this increase. Second, the number of traumatic life events and not psychiatric disorders increased the risk of developing SROs. Third, having an anxiety disorder increased the risk of continuing to engage in suicide behaviors once they have started. Clinicians should be aware of this difference in risk factors to better assess the likelihood of subsequent suicidal behaviors. Fourth, because traumatic life events rather than psychiatric disorders predicted incident suicidal behaviors, many youth who are never seen in clinical settings are at risk.

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