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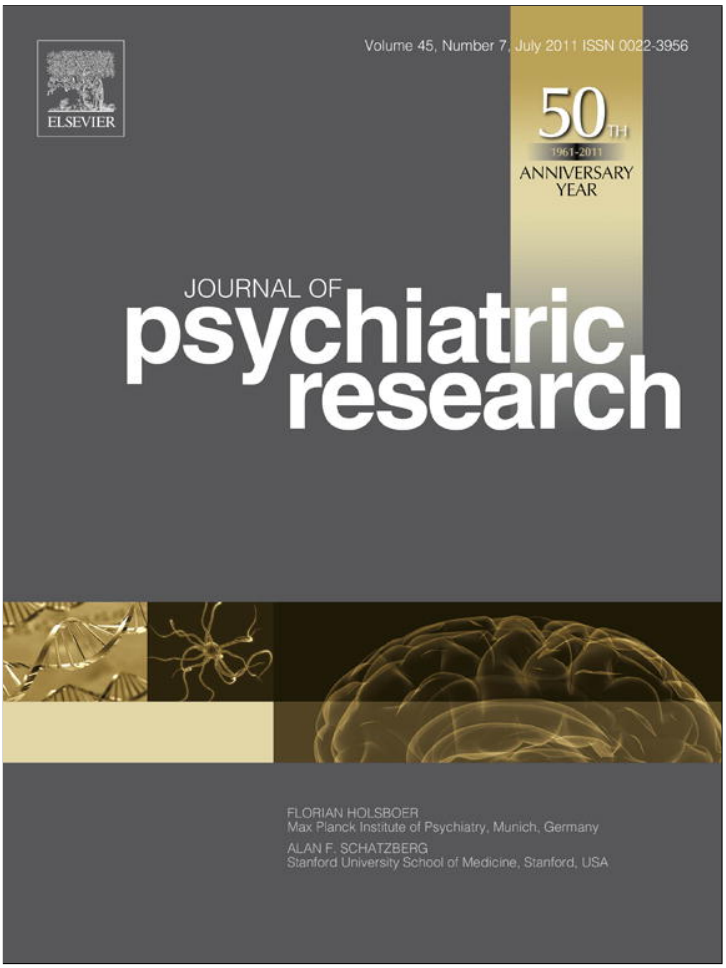

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Youth and young adult suicide: A study of life trajectory

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ABSTRACT

Objectives: Explore the unique developmental challenges and early adversity faced by youth and young adult who died of suicide.
Method: Sixty-seven suicide victims (SG) were compared with 56 living control with no suicidal ideations in the last year, matched for age, gender, and geographical region. Mixed methods were used: consensus DSM-IV diagnoses were formulated based on Structured Clinical Interview for DSM-IV (SCID)-I and -II interviews complemented by medical charts. Life calendar method was conducted with closest third party informant. Life-history calendar served to measure life events and adversity throughout the life course and were analyzed by attributing burden of adversity score per five-year segment, which was then cluster-analyzed to define suicide victim profiles.
Results: During the last year, mood disorders, abuse and dependence disorders, and anxiety disorder were between 8 and 63 times more likely to be present in the suicide group. Between 0 and 4 years old, 50% of children in the SG were exposed to abuse, physical and/or sexual violence; 60% between 5 and 9 years old; and by the time they were 10–14 years old, 77% were exposed to these forms of violence. In the control group, the respective figures were 14%, 18% and 34%. In the suicide group, the trajectories leading to suicide are different as we observe two different subgroups, one with early-onset and one with later-onset of adversity. To a large extent, people in the suicide group were exposed to major adversity and they were more likely to present cumulative comorbid disorders.
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Suicide is a major public health concern and ranks among the top ten causes of death for individuals of all ages in most Western countries (WHO, 2005). Over the past 30 years, numerous studies have examined the relationship between suicide and mental disorders (Barraclough et al., 1974; Zhang et al., 2003). These studies have identified numerous clinical risk factors for suicide completion, including previous suicide attempts, male sex, family history of suicide, presence of psychiatric problems, and inadequate treatment of mental disorders and addictive behaviors (Kim et al., 2003; Lesage et al., 2008; Renaud et al., 2008).

More recently, some variables have been re-capturing the attention of researchers and clinicians in the wake of the interest in epigenetic and in resilience (McGowan et al., 2009). Early adversity, violence and sexual abuse are among the most common risk factor associated with mental health problems and suicide attempts (Beautrais et al., 2010; Kessler et al., 1997; McGirr et al., 2009) which have a long lasting and profound effect over the life course. The proportion of mental health outcomes attributable to physical abuse, sexual abuse to witnessing domestic violence or being a victim of domestic violence varies between studies. In a large primary care adult sample where the lifetime risk of suicide attempt was 3.8%, Dube et al. (2001) found that the population-attributable risk fractions for one or more experiences were 67%, 64%, and 80% for lifetime, adult, and childhood/adolescent suicide attempts, respectively. Afifi et al. (2008) found that having experienced any adverse event accounted for a substantial proportion of suicide ideation and attempts among women (16% and 50% respectively) and men (21% and 33% respectively). Molar et al. (2001) also found in a nationally representative US sample that a strong association exists between child sexual abuse and suicidal behavior, mediated by psychopathology and there is a substantial proportion of suicide risk attributable to child sexual abuse beyond the presence of psychopathology and other adversities.

The relationship between childhood or past adverse events and poor adult mental health, and suicide attempt is therefore widely

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acknowledged in general population and primary care population (Bebbington et al., 2009), but there is less information on the cumulative effects over the life trajectories of young adult who completed suicide. Previous reports by our group on life trajectory did not include a control group (Séguin et al., 2007). The objective of this study compares the developmental challenges and adversities between two groups of young adult: suicide victims and a matched for age, gender and area general population volunteers as control group. We hypothesized 1) a positive link between the presence of violence (psychological, physical and sexual abuse) and suicide deaths, and 2) early adversity would impact differently on suicide victims with regard to the cumulative difficulties during the life course.

1. Methods

1.1. Recruitment of informants

Through an ongoing partnership with the Quebec's Coroner's Office and the Montreal Central Morgue, our research group recruited consecutive suicides representative of suicides occurring in the region. Once referred by the coroner's office, 75% of close relatives agreed to participate in the study. Suicides are assessed by psychological autopsy, a validated method (Conner et al., 2001; Kelly and Mann, 1996; Schneider et al., 2004) involving closest relatives best acquainted with the deceased serving as an informant.

For this study, we identified 67 consecutives suicides. The Coroner's Office sent a letter to the families of the suicide victims explaining the study and then followed up with a telephone call. The names and telephone numbers of families interested in taking part in the study were forwarded to the research team, on a signed consent form. The research project coordinators then called the families to explain the objectives of the study and to request their cooperation. If a family agreed to participate, we asked whether we could interview the family members or the person who had known the suicide victim the best. Usually the interviews were completed with parents, siblings and/or spouse. A mental health clinician, trained as an interviewer then contacted this person to make an appointment. The interview program did not start until three months after the death to give the bereaved time to begin the grieving process. At least two and as many as four interviews were conducted with each informant individually. For the clinical interview, we used a conversational approach to data gathering; time seldom posed a problem. After each interview, the clinician systematically followed up with the families by telephone and arranged for another appointment to complete the data collection process, and, if needed, to offer support and care.

Controls with no suicidal ideations in the last year, were matched on age, gender and geographical region with individual from the suicide group. Living controls were recruited from the general population. The recruitment process was undertaken in school context, in medical clinics, in community centers, in unemployment centers, etc. The research coordinator sent to our research partners in the field the age and sex of targeted controls. These research partners (nurses or educator) then talked about the study to potential participants. As well, advertisement in the form of posters was placed on the wall of the offices of our research partners. To avoid methodological artifacts, controls named an informant for the interview process. All these participants had then to ask a parent, a sibling or a close relative to participate in the study. We recruited 56 living controls for which we interviewed the best informants, using the same methodology as for the clinical group. This study was approved by our local IRB; suicide families and controls signed written informed consents.

1.2. Measurements

1.2.1. Interview to determine post-mortem diagnosis

For the purposes of this interview, we administered the SCID I and II questionnaires (First et al., 1995; Spitzer et al., 1992) to an informant who had known the deceased or the living control well. This procedure previously described by our group (Dumais et al., 2005; Kim et al., 2003). In addition, hospital files were examined to corroborate the information and to determine the mental health services that the deceased had used. A case vignette was then drafted and discussed by a panel, who determined the post-mortem diagnosis by consensus.

A series of studies in the past decade has established the concordance of DSM diagnoses generated by informant report compared with the chart diagnosis (Brent et al., 1993; Kelly and Mann, 1996; Schneider et al., 2004; Zhang et al., 2003). Each proved to be good to excellent reliability. Consensus DSM-IV diagnoses were formulated by clinical panels based on Structured Clinical Interview for DSM-IV (SCID)-I and -II interviews complemented by medical charts. Under this proxy-based interview process, best informants provide data that serves to investigate dimensions of interest regarding the deceased. Meta-analysis of psychological autopsy studies have demonstrated that approximately 90% of suicide cases presented a psychiatric disorder detectable by means of structured diagnostic procedures (Cavanagh et al., 2003) and a population-attributable risk of 57% (Arsenault-Lapierre et al., 2004).

1.2.2. Interview to map the burden of adversity over the life course

The interview method using the life trajectory calendar was borrowed from life-history calendar research (Caspi et al., 1976; Ensel et al., 1996). The life-history calendar procedure, also referred to as a narrative rating, is designed to elicit sufficiently detailed accounts of events across the life cycle to allow a panel of trained raters to evaluate the burden of adversity carried by each individual in a development perspective (The detail methodology and coding procedure have been presented in Séguin et al., 2007). The life calendar is used to map the events that mark an individual's trajectory in ten spheres of life: place of residence, parent–child relationship, emotional–romantic relationships, family life, episodes of personal difficulty, academic and professional life, losses/separations/departures, other social adversity, protective factors, and help seeking/services use.

For example, place of residence includes all changes in living arrangements during the course of their lives: moving to another location, placement in foster homes, combining living arrangements one week with mother and one week with father, moving in with a roommate, etc.

The parent–child relationship covered all possible events occurring from birth to adulthood, including child maltreatments such as neglect (lack of basic care such as food, bath, clean clothes and medical attention), physical violence (receiving a spanking or being hit harder than a spanking) sexual violence (fondling, incomplete or complete forced sexual relations), presence of household violence, presence of tensions and discord with parents (being threatened, humiliated or ridiculed), separation for parents, health and mental health problems, etc.. Each sphere has a number of variables clearly described, and the severity and duration of each variable is indicated on the calendar.

With the aid of a visual calendar, the approach serves contemporaneously to record sequences and to investigate contextual event characteristics. Lists of questions addressing different themes and the presence of different events in all domains of life are used systematically to probe informants for narrative details. For each sphere, the interviewers identify whether events were situational

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or permanent, and identify their duration, intensity, frequency and context. The interview usually took place at the participant's home and a conversational approach was used. Informants included parents, siblings, and on occasion, romantic partners, who were helpful in describing different experiences that occurred at different periods of time. In one third of cases (22cases out of 57 for the control group), we met two or more people from the same family, sometimes individually other times together. This double presence often helped to recall narrative details. The life trajectory was reconstructed on the basis of events recalled by family and close relatives, and we had access to medical and psychosocial reports, obtained with the written consent of families. Written documents belonging to the deceased and the informants, including agendas and diaries, also were used if available in order to elicit memories. However, despite the tremendous efforts deployed to gather data, the quality and quantity of information for the suicide victims was uneven, between participants and between periods of life.

2. Coding procedures

After all the data were collected, the coding procedure is done quantitatively and qualitatively. The quantitative data consist of identifying every event, the severity and duration of each event occurring over every five-year period. As for the qualitative coding procedure, each individual life trajectory was written up by the interviewers as a case vignette summarizing all life events, their context, adversity and protective factors, psychopathology and use of services. Then, each vignette was submitted to the panel of raters, independent of the interviewers.

The raters (members of the research team) were trained to evaluate the likely "contextual threat" of events by assessing their relative weight, within the respondent's developmental circumstances. Interviewers sought to accumulate sufficient narrative detail about the life events to allow trained raters to pass judgment on the key characteristics of the events, following narrative methodology developed by other groups (Brown and Harris, 1978; Dohrenwend, 2006). Our raters had prior experience with this type of narrative rating with the LEDS and CECA (Séguin et al., 2006; Tousignant et al., 2003).

The panel rated each five-year period in terms of burden of adversity. This conceptualization of contextual threat was borrowed from the *morbidity burden or low disease burden* approach (Powers and Peckham, 1990; McGinnis and Foege, 1993; Forrest and Riley, 2004) used to identify overall morbidity that appears to affect health. It is associated with the allostatic load concept that links psychosocial stress with the neurobiological and genetic dimensions of mental disorders and suicide (McEwen, 1998; Forrest and Riley, 2004). The overall burden assessments ranged from severe (rating of 1 or 2) to moderate (3 or 4) to low (5 or 6). Dictionaries of cases were written and used in order to maintain the same evaluation across all cases. In all cases, the raters independently coded each trajectory before consensus discussion. In studies from our group, the intra-pair agreement for each five-year segment ranged from 76% to 97%; the lower agreement was found in the age group between 0 and 5 years old (Séguin et al., 2007).

3. Data analysis

Data analysis for the clinical results was carried out using SPSS. For the life trajectories the analysis were carried out with SAS group-based modeling of longitudinal data (Jones et al., 2001). Regressions analysis were used with SPSS, and the SAS-based Traj procedure (Nagin and Tremblay, 2001) provided the capacity to a) identify subgroups of people who followed distinct trajectories based on the severity of their difficulties, b) examine the pattern of variation and stability over time for the subgroups in question, and c) estimate the proportion of individuals in each group. For each subject, the statistical procedure yielded the probability of being classified in other groups and assigned group membership based on the highest probability of classification. Together, these indices provided estimates of model fit.

4. Results

4.1. Sociodemographic profile

Among participants, 80.6% ($n = 54$) in the suicide group (SG) and 76.8% ($n = 43$) in the control group (CG) were men. There was no difference in the distribution of age when comparing SG with CG: 6% and 5.4% younger than 15 years old; 30% and 35.7% between 15 and 19 years old; 58% and 50% between 20 and 24 years old; and finally 6% and 9% between 25 and 29 years old. Almost all were Caucasian: 94% for the SG and 96% for the CG.

4.2. Comparison between suicide and control

4.2.1. Psychopathological profile

There is an important difference between the suicide and the control groups regarding the presence of psychopathology during the last year and prior to the last year (Table 1). During the last year, the most important differences were the presence of mood disorders (OR = 63,450; $CI_{95\%}$ = 14,084–285,850), abuse and dependence disorders (OR = 14,324; $CI_{95\%}$ = 4068–50,444) and anxiety disorder (OR = 8534; $CI_{95\%}$ = 1047–69,601) for participants of the SG, between 8 and 63 times more likely to be in the suicide group.

Prior to the last 12 months, 40.30% (OR = 8775; $CI_{95\%}$ = 2840–27,112) of participants of the SG had an affective disorder, 44.8% (OR = 14,324; $CI_{95\%}$ = 4068–50,444) had a substance abuse or dependence disorder, 14.9% (OR = 9649; $CI_{95\%}$ = 1195–77,914) an anxiety disorder, and 22.4% a hyperactivity with attention deficit disorder (OR = 15,865; $CI_{95\%}$ = 2023–124,409), ranging between 8 and 15 times more likely to be in the SG (Table 1).

4.2.2. Presence of adverse events

We observe that serious adversity occurs very early on, in the lives of people in the SG: neglect and sexual abuse occurs more frequently compared to the control group (Table 2). As time passes, we observe an increase in the number of people having been exposed to adversity, as well as the number of cumulative events occurring in the lives of people in the SG.

4.2.3. Life trajectory: comparison between suicide and general population

Fig. 1 demonstrates the difference between the two life trajectories of these two groups and the difference in the cumulative burden of adversity. As shown in Fig. 1, the X-axis is the trajectory showing the person's age; the Y-axis plots the burden of risk, with a rating 1 or 2 meaning a high burden of risk, and ratings of 5 and 6 indicating a low burden of risk. This analysis gives rise to two profiles. The risk ratings form the curve of these trajectories is significant ($p = 0.001$).

4.3. Impact of early adversity on the life course of suicide victims

4.3.1. Comparison of life trajectories

As for the suicide group, the trajectories leading to suicide death are different as we observe two different subgroups. Fig. 2 demonstrates the difference between the two life trajectories of

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Table 1
Number of people with an axis I or II disorder—last year and prior to last year.

$N = 123$	Suicide group ($n = 67$)		Control group ($n = 56$)		OR	$CI_{95\%}$	p
	n	%	n	%			
Last 12 months							
Mood disorder	47	70.15	2	3.57	63.450	14.084–285.850	0.000
Abuse & dependence disorders	30	44.78	3	5.36	14.324	4.068–50.444	0.000
Anxiety disorder	9	13.43	1	1.79	8.534	1.047–69.601	0.019
Psychosis/Schizophrenia	3	4.48			–	–	0.109
Total with only one DX	21	31.34	7	12.50	3.196	1.242–8.224	0.013
Two and more	36	53.73			–	–	0.000
Prior to last 12 months							
Mood disorder	27	40.30	4	7.14	8.775	2.840–27.112	0.000
Abuse & dependence disorders	30	44.78	3	5.36	14.324	4.068–50.444	0.000
Anxiety disorder	10	14.93	1	1.79	9.649	1.195–77.914	0.011
Psychosis/Schizophrenia	5	7.46			–	–	0.037
Hyperactivity Attention Deficit Disorder	15	22.39	1	1.79	15.865	2.023–124.409	0.001
Total with only one DX	15	22.39	4	7.14	3.750	1.166–12.058	0.020
Two and more	39	58.21	4	7.14	18.107	5.867–55.881	0.000
Axis II disorders							
Cluster A	1	1.49			–	–	0.359
Cluster B	16	23.88			–	–	0.000
Cluster C	15	22.39	3	5.36	5.096	1.393–18.649	0.008
Total personality disorder							
Suicide attempts (during lifetime)							
None	44	65.67	56	100.0	–	–	0.000
One	12	17.91			–	–	0.000
Two	6	8.96			–	–	0.022
Three and more	5	7.46			–	–	0.037

these two groups and the difference in the cumulative burden of adversity. The data analysis shows the statistical significance of two trajectories with regard to the passage of time ($p = 0.001$) and with regard to the time/group effect ($p = 0.001$). The risk ratings forming the curve of these trajectories are significant.

The first sub-group, representing 45% of the participants, had a more complex trajectory starting with early developmental challenges characterized by the presence of early adversity and a difference in age of suicide, compared with the sub-group of people identified by the second trajectory, representing 55% of the sample, characterized by a slower decline over time (Table 3).

5. Discussion

The results of this study with 67 suicide victims and 56 control participants indicate a difference in the trajectories of the SG compared with the CG. Good control group allows a measure of the populational distribution of risk factors and outcomes. Participants in the control group were not as exposed to hardship, and did not develop as much mental health problems over time as the suicide group, but they were not «super healthy». Indeed, 12% of the participants had major mental health difficulties in the last 12 months prior to the study and 7% over the course of their lives (ranging from 14 to 29 years old), which is consistent with data form epidemiologic studies indicating that 14% of children under 20 years of age have mental health problems (Canadian Community Health Survey, 2003). Some of the children in the control group were exposed to hardship: exposure to abuse or physical/sexual violence ranged for 14%, between 0 and 4 years old, 18% between 5 and 9 years old and to 34% between 10 and 14 years. The change in the developmental trajectory between 15 and 20 years old is consistent with results found by other researchers. Caspi observed that during the period of "emerging adulthood" (i.e., ages 15 to 30), where most men and women become more socially dominant, warm, responsible, agreeable, and emotionally stable, also but not all, in some cases negative life events persist over time. These normative developmental changes in personality functioning have been observed in multiple birth cohorts, in different western nations, using both longitudinal and cross-sectional research designs (Roberts et al., 2003).

People in the suicide group had much more difficulty over the course of their lives, starting at an early age. The presence of difficulties in the relationship with parents, characterized by the presence of neglect, discord and physical/sexual violence are among the most important adverse events. These early adversities, coupled with the lack of a protective adult relationship, identified by the number of separations from one or both parents before the age of 15, seem to place young children on a path, whereas possible familial biological predisposition pooled with the accumulation of adverse events will subsequently develop into mental health difficulties, such as ADHD, the presence of mood disorders, substance abuse, dependence disorders, and anxiety disorders, which will create even more difficulties in the professional domain, with financial and legal difficulties by the time they are teens and young adults.

Interestingly, not all suicide victims followed the same developmental trajectory. The result identifies two categories of suicides by clustering subjects on the basis of longitudinal patterns of adversity, in the manner suggested by the allostatic load theory (McEwen, 1998). Suicide victims characterized by Trajectory 1 seem to have been exposed to more severe adversity at an earlier age: 70% to 90% were exposed to a difficult relationship with parents (defined by the presence of negligence, harsh discipline and much tension), and one fourth of the sub-group was placed in foster homes or in residential institutions. These children were 27 times more likely to have been exposed to the presence of physical and/or sexual abuse. The present study has included both physical and sexual abuse as a one item in the analysis because of limitations due to the small number of participants. However, ulterior research should investigate the effect of various abuse experiences separately given its importance to mental health across the life span.

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Table 2
Life events—comparison between suicide group and control group.

$N = 123$	Suicide group ($n = 67$)		Control group ($n = 56$)		OR	$CI_{95\%}$	p
Life events	n	%	n	%			
Age 0–4	($n = 67$)		($n = 56$)				
Discipline/neglect/tensions in parent–child relationship	33	49.25	8	14.29	5.824	2.395–14.161	0.000
Sexual abuse/physical-psychological violence of S	11	16.42	1	1.79	10.804	1.349–86.533	0.006
Age 5–9	($n = 67$)		($n = 56$)				
Discipline/neglect/tensions in parent–child relationship	40	59.70	10	17.86	6.815	2.941–15.789	0.000
Sexual abuse/physical-psychological violence of S	13	19.40	1	1.79	13.241	1.674–104.754	0.002
Academic difficulties	27	40.30	7	12.50	4.725	1.864–11.979	0.001
Relational difficulties	18	26.87	5	8.93	3.747	1.291–10.875	0.011
Negative experiences	11	16.42	2	3.57	5.304	1.123–25.046	0.021
Age 10–14	($n = 67$)[a]		($n = 56$)				
Discipline/neglect/tensions in parent–child relationship	52	77.61	19	33.93	6.751	3.041–14.987	0.000
Sexual abuse/physical-psychological violence of S	12	17.91	1	1.79	12.000	1.508–95.474	0.004
Mental health problems	25	37.31	5	8.93	6.071	2.139–17.236	0.000
Academic difficulties	41	61.19	10	17.86	7.254	3.125–16.838	0.000
Relational difficulties	20	29.85	8	14.29	2.553	1.024–6.364	0.040
Legal difficulties	9	13.43	1	1.79	8.534	1.047–69.601	0.019
Age 15–19	($n = 63$)[b]		($n = 53$)				
Discipline/neglect/tensions in parent–child relationship	48	76.19	19	35.85	4.920	2.285–10.593	0.000
Sexual abuse/physical-psychological violence of S	10	15.87	1	1.89	9.649	1.195–77.914	0.011
Mental health problems	45	71.43	12	22.64	7.500	3.313–16.977	0.000
Academic difficulties	42	66.67	6	11.32	14.000	5.250–37.337	0.000
Professional difficulties	25	39.68	2	3.77	16.071	3.602–71.715	0.000
Relational difficulties	24	38.10	3	5.66	9.860	2.781–34.966	0.000
Financial losses	16	25.40	2	3.77	8.471	1.855–38.690	0.002
Legal difficulties	15	23.81	1	1.89	15.865	2.023–124.409	0.001
Age 20–24	($n = 43$)[c]		($n = 33$)				
Discipline/neglect/tensions in parent–child relationship	26	60.47	9	27.27	3.312	1.393–7.873	0.005
Relationship-difficulties with spouse	31	72.09	10	30.30	3.961	1.718–9.135	0.001
Mental health problems	38	88.37	7	21.21	9.172	3.627–23.195	0.000
Professional difficulties	28	65.12	3	9.09	12.684	3.596–44.734	0.000
Relational difficulties	24	55.81	3	9.09	9.860	2.781–34.966	0.000
Financial losses	22	51.16		12.12	6.356	2.037–19.825	0.001
Legal difficulties	14	32.56	3	9.09	4.667	1.267–17.188	0.013
Age 25–29*	($n = 4$)[d]		($n = 5$)				

[a] In this age group four people committed suicide at 13 and 14 years old.
[b] In this age group twenty people committed suicide between 15 and 19 years old.
[c] In this age group thirty nine people committed suicide.
[d] Non-significant information for this age group.

People identified by the Trajectory 2 were characterized by the presence of family tension, discord and academic difficulties. They had early learning difficulties (48.6% in trajectory 2 compared with 80% in trajectory 1), but less behavioral difficulties in school in comparison to the other sub-group. It is possible that the absence of behavioral difficulties could have elicited less social stigmatization and therefore have created more social connections. An early pattern of behavioral adjustment (indicated by an absence of aggressive behavior problems) may acts as a protective factor

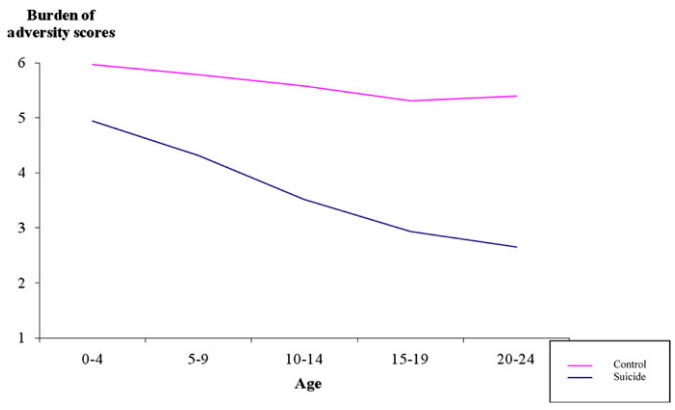

Fig. 1. Comparison between the life trajectory of two groups: suicide and general population.

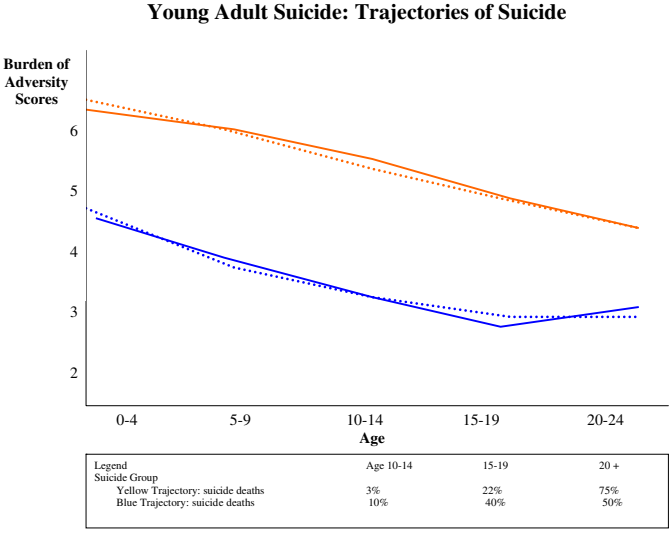

Fig. 2. Comparison of the life trajectory between two subgroups of suicide victims.

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Table 3
Life events of suicide group—comparison between trajectory 1 and trajectory 2.

$N = 67$	Trajectory 1 ($n = 30$)		Trajectory 2 ($n = 37$)		OR	$CI_{95\%}$	p
Life events	n	%	n	%			
Place of residence							
Lived in two homes-sometimes with one parent. Sometimes with the other	21	70.00	14	37.84	3.833	1.375–10.687	0.009
Lived in foster homes	8	26.67	3	8.11	4.121	0.985–17.242	0.041
Parent–child relationship							
Physical or sexual abuse of S	13	43.33	1	2.70	27.529	3.324–228.014	0.000
Lack of discipline/supervision-or too much discipline/supervision	18	60.00	13	35.14	2.769	1.024–7.487	0.042
Presence of psychological violence-antipathy	9	30.00	4	10.81	3.536	0.965–12.956	0.048
Secrets	13	43.33	4	10.81	6.309	1.782–22.335	0.002
Family tensions/discord	24	80.00	20	54.05	3.400	1.127–10.253	0.026
Physical/mental health problems of parents/siblings	24	80.00	21	56.76	3.048	1.008–9.211	0.044
Separation	24	80.00	21	56.76	3.048	1.008–9.211	0.044
Affective life							
Extramarital relationship involving partner	7	23.33	1	2.70	10.957	1.264–94.970	0.010
Episodes of personal difficulties							
Suicide attempt by S	19	63.33	7	18.92	7.403	2.444–22.423	0.000
Academic life							
Learning difficulties-problems at school	24	80.00	18	48.65	4.222	1.402–12.718	0.008
Difficulties associated with social life at school	17	56.67	6	16.22	6.756	2.174–20.996	0.001
Behavior difficulties in school setting. directed at others	12	40.00	2	5.41	11.667	2.353–57.858	0.001
Social life							
Difficulties in entering into relationship-difficulties in making friends	10	33.33	4	10.81	4.125	1.140–14.921	0.024
Loss of or separation from a friend	18	60.00	6	16.22	7.750	2.481–24.212	0.000
Social isolation	16	53.33	11	29.73	2.701	0.988–7.385	0.050
Legal difficulties							
Prosecution	11	36.67	5	13.51	3.705	1.116–12.301	0.027
Negative experiences							
Suicide attempt by someone close	16	53.33	10	27.03	3.086	1.112–8.560	0.028
Witnessing a traumatizing event	13	43.33	7	18.92	3.277	1.097–9.793	0.030

to buffer a child from the future effects of social rejection by peers (Dodge & Pettit, 2003) at least in certain areas of life and for some time.

These two trajectories may have different etiological explanations. Trajectory 1 is clearly characterized by severe developmental difficulties and a lack of adult protection, starting at a very early age, creating a spiral of events and mental health problems throughout the life cycle. This profile is well understood and documented in the developmental literature. Trajectory 2, however, may be characterized by a slower decline over time possibly due to a lesser harmful environment coupled with adaptive efforts, which will wear out over time. These etiological differences should be better understood. For example, it is not clear if the difficulties observed in Trajectory 2 are explained by the different nature of childhood adversity or if the differences may be explained by other mechanisms such as a lack of ability in decision-making, or the lack of ability to choose adapted coping strategies or because of the personality structure, such as greater emotional reactivity among certain participants. These difficulties may render people in this sub-group more sensitive to stressful environments, generate greater feelings of distress, or they may be attracted by a peer-environment known to increase the risk of, for example, substance abuse. These variables were not measured in our studies, which may be a limitation of our methodology, but should be considered in future studies of this type.

Results from this study confirmed our hypothesis with regard to a positive link between the presences of early violence as a predictor of cumulative difficulties over time, in almost all areas of the life cycle and, consequently, to suicide death. The result suggests that too many children who are exposed to harmful environments may never manage to overcome harsh early experiences and that the burden they bear grows over time.

5.1. Limitations

There are numbers of limitations in using the psychological autopsy and life calendar method. The factors related to the method of assessment by third parties, the recall biases or imprecise information (Beskow et al., 1990; Burgess et al., 2000) are among the limitations of assessing psychopathology and life course events through informants. Moreover, with the life calendar method, caution is recommended in interpreting these results. This type of methodology requires a large number of information and it is not easy to find informant who had access to all the information needed. Though close family members are usually good informants, parents may be good informants for data regarding early childhood, and siblings may be better informant for other issues such as abuse and neglect problems. Having this in mind, researchers needs to base the data on other types of information sources: friends, writings, medical and psychosocial reports, diaries, and so on. Even then, the life description will mostly be based on events of public knowledge. As well, the events are usually marked or moderate in intensity for families and friends to be able to remember, and therefore there will always be a part of the life trajectory that will be incomplete. Informants might not have been privy to all of the subject's personal and private events, setbacks, frustrations and letdowns. Nevertheless, numerous authors suggest that narrative-rating instruments provide large gains in reliability and validity in the measurement of major stressful events (Brown and Harris, 1978; Dohrenwend, 2006).

Studies show (Lin et al., 1997) that the recall error usually reflected under-reporting rather than over-reporting, and the extent of recall errors tends to be greater for chronic and routine changes and less for personal and family experience. These results do not state if the recall error may be more important in clinical rather

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than in control group it is always possible that respondent may downplay or overlook certain difficulties.

These methods have been successfully used for a decade (Caspi et al., 1976). As for the use of the psychological autopsy method, it has been established for psychopathology diagnosis and has been used in gathering different types of information (i.e., recent and distant life events). The method has been used in a series of studies and the concordance between DSM diagnoses based on informant report and those based on data garnered from medical charts (Kelly and Mann, 1996) or formulated through other comparative methods (Schneider et al., 2004; Zhang et al., 2003) has been established with good to excellent reliability. It might be fair to conclude that the use of the combined method, psychological autopsy and life calendar method to gather the information will most likely underestimate rather than inflate the potential effects of life experience over time.

The choice of a control group is always complex. In this study the control group with no suicidal ideations in the last year is constituted of mostly «healthier» participants. The recruitment process was complex and may have introduced a bias by which people who didn't have negative life experiences in childhood and no suicidal behaviors may have been more willing to participate in this study while those who experienced difficulties or had suicidal behaviors may have been less likely to volunteer. This control group was free of suicide behavior, even if 12% of the participants had major mental health difficulties in the last 12 months prior to the study and 7% over the course of their lives which is consistent with epidemiological data. Keeping in mind that half of 1% of the population reports a suicide attempt in the last year and 4% in the course of their lives, in a sample of 56 participants, from which we didn't find suicidal behavior beyond the last year, could be an effect of the bias but it seems fair to conclude that we didn't exclude a large sample.

Nevertheless, there are marked differences between the two groups indicating that the *healthier group*, those who have few problems at a very young age are clearly distinguishable from others who have a numbers of adversities and difficult life experiences. This does not mean that people with a number of early adversities will inevitably die after suicide, but these children should be targeted and interventions should be planned for them and their families, at a younger age, before they become too vulnerable.

We recognize that our findings are based on a small sample and the models of the trajectories should be interpreted with caution. But, most importantly, this research suggests some leads on the different trajectories of people who committed suicide.

6. Conclusion

Suicide among young adult rarely occurs "out of the blue" (Bebbington et al., 2009), but rather in a context of major difficulty and adversity, present from a very young age. The importance of conflictual interactions—first in the parent—child relationship, later at school, with friends—the presence of the social isolation speaks to the lack of protective ability between family members and constitutes a major risk factor for suffering, distress, mental problems and suicide. Numerous authors (Enns et al., 2006; Rutter, 2002; Kendler et al., 2002; Kessler et al., 1997) have already suggested that clinicians should be trained to detect the presence of early adversity, especially abuse, neglect and physical and sexual violence among vulnerable families. Based on the Ecological System Theory (Bronfenbrenner, 2005), which emphasizes that the individual, family, school and community plays a role in psychological development, environmental framework intervention may be used to alter risk factors and booster resiliency factors.

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Conflict of interest

We have no conflict of interest, personal nor financial. The findings did not limit the ability of the authors and the authors were in control of all primary data.

Contributors

Monique Séguin with Johanne Renaud designed the study, wrote the protocol and were responsible for the data analysis; Alain Lesage was responsible for data analysis and reviewed the first draft of the article; Marie Robert searched the literature review and helped in the writing of the first draft and Gustavo Turecki read and reviewed the manuscript. Each of the authors has reviewed the manuscript, agreed to be cited as co-author and has accepted the order of authorship.

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