

The influences of parental divorce and maternal-versus-paternal alcohol abuse on offspring lifetime suicide attempt

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Abstract

Introduction and aims. Research indicates that parental divorce and parental alcohol abuse independently increase likelihood of offspring lifetime suicide attempt. However, when experienced together, only parental alcohol abuse significantly increased odds of suicide attempt. It is unclear to what extent differences in the effect of maternal versus paternal alcohol use exist on adult offspring lifetime suicide attempt risk. This study examined the influences of parental divorce and maternal–paternal histories of alcohol problems on adult offspring lifetime suicide attempt. **Design and Methods.** The sample consisted of participants from the 2001–2002 National Epidemiological Survey on Alcohol and Related Conditions. The simultaneous effect of childhood or adolescent parental divorce and maternal and paternal history of alcohol problems on offspring lifetime suicide attempt was estimated using a logistic regression model with an interaction term for demographics and parental history of other emotional and behavioural problems. **Results.** Parental divorce and maternal–paternal alcohol problems interacted to differentially influence the likelihood of offspring lifetime suicide attempt. Experiencing parental divorce and either maternal or paternal alcohol problems nearly doubled the likelihood of suicide attempt. Divorce and history of alcohol problems for both parents tripled the likelihood. **Discussion and Conclusion.** Individuals who experienced parental divorce as children or adolescents and who have a parent who abuses alcohol are at elevated risk for lifetime suicide attempt. These problem areas should become a routine part of assessment to better identify those at risk for lifetime suicide attempt and to implement early and targeted intervention to decrease such risk. [Thompson RG Jr, Alonzo D, Hu M-C, Hasin DS. The influences of parental divorce and maternal-versus-paternal alcohol abuse on offspring lifetime suicide attempt. Drug Alcohol Rev 2016;00:000–000.]

Key words: suicide attempt, alcohol use disorder, maternal alcohol use, paternal alcohol use, parental divorce.

Introduction

Research conducted by our group has demonstrated that parental alcohol abuse independently increases the odds of offspring lifetime suicide attempt among adults who experienced parental divorce [1]. Our research also indicates that experiencing parental divorce during childhood is a significant risk factor for lifetime suicide attempt [2,3]. Even while controlling for parental and offspring depression, offspring who experience childhood parental divorce have an elevated risk of lifetime suicide attempt [2,4].

Prior research examining parental divorce and parental alcohol use further indicates that parental divorce and parental alcohol abuse independently increase the likelihood of offspring lifetime suicide attempt [1]. However, when experienced together, only parental alcohol abuse

significantly increased odds of suicide attempt. It remains unclear, however, to what extent differences in the effect of maternal versus paternal alcohol use exist on adult offspring lifetime suicide attempt risk.

Alcohol use disorders (alcohol abuse and dependence) constitute one of the most prevalent public health problems in the USA [5,6]. Divorce is also very common in the USA [7–10], with more than 1.5 million children and adolescents experiencing parental divorce each year [11]. Thus, gaining a better understanding of the relationship between parental alcohol use and parental divorce on the risk for suicide attempt is important to inform the development of prevention and treatment of both suicide risk and alcohol use disorders. Additionally, given that 80–90% of children live with their mothers after parental divorce or separation [8], a better

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Received 29 October 2015; accepted for publication 7 May 2016.

understanding of the relationship between maternal versus paternal alcohol problems and offspring alcohol problems when such offspring experience parental divorce during childhood is an important clinical and research issue. No study to date has utilised a nationally representative adult sample to evaluate the influences of maternal versus paternal histories of alcohol problems (neither parent, maternal only, paternal only, both parents) and parental divorce on the likelihood of adult offspring lifetime suicide attempt.

To address this gap, the present study builds upon prior research by utilising a nationally representative adult sample to evaluate the influences of maternal versus paternal histories of alcohol problems (neither parent, maternal only, paternal only, both parents) and parental divorce on the likelihood of adult offspring lifetime suicide attempt. We addressed the following questions: (i) after controlling for parental divorce, do maternal-only versus paternal-only alcohol problems differentially affect the risk for offspring lifetime suicide attempt?; and (ii) is there an interaction effect of maternal versus paternal alcohol problems and parental divorce on the risk for offspring lifetime suicide attempt?

Methods

Sample

The sample was comprised participants in the 2001–2002 National Epidemiological Survey on Alcohol and Related Conditions (NESARC), a nationally representative US survey of 43 093 civilian, non-institutionalised participants aged 18 years and over, interviewed in person. The National Institute on Alcohol Abuse and Alcoholism sponsored the study, and the US Bureau of the Census conducted fieldwork. Further details of the interviewers, training and field quality control are described elsewhere [12,13]. Young adults, Hispanics and African-Americans were oversampled, and rates are weighted to the 2000 decennial census in terms of age, race, sex and ethnicity and are further weighted to adjust for sampling probabilities. The overall response rate for the study was 81%. The research protocol, including informed consent procedures, received Institutional Review Board approval from the US Census Bureau and US Office of Management and Budget.

Of the overall sample, 47.9% were men. In terms of ethnicity, 70.9% were White, 11.1% were Black, 2.1% were Native Americans, 4.4% were Asians, and 11.6% were Hispanic. In terms of age, 21.8% were 18–29 years, 30.9% were 30–44 years, 31.1% were 45–64 years, and 16.3% were 65 years or older. In terms of marital status, 61.6% were married or cohabiting, 17.5% were widowed/separated/divorced, and 20.9% were never

married. In terms of education, 15.7% had less than high school education, 29.3% had a high school education, and 55.0% had at least some college. In terms of personal income, 47.3% had \$0–19 999, 22.7% had \$20 000–34 999, 22.0% had \$35 000–69 999, and 8.1% had \$70 000 or more.

Measures

The Alcohol Use Disorder and Associated Disabilities Interview Schedule [14], a state-of-the-art structured diagnostic interview, was administered to the NESARC participants. This instrument was specifically designed for experienced lay interviewers and was developed to advance measurement of substance use and mental disorders in large-scale surveys.

Offspring lifetime suicide attempt. Lifetime suicide attempt was assessed among those respondents who were screened into the major depression section of the survey (described in the preceding texts). Individuals screened into the major depression section of the interview if they reported feeling low mood or loss of interest for at least 2 weeks ever in their lifetime ($n = 13\,753$), regardless of whether or not they met full criteria for major depression. All respondents reporting at least 2 weeks of low mood or anhedonia were then asked ‘During that time when your mood was at its lowest and you enjoyed or cared the least about things, did you attempt suicide?’. A total of 1073 respondents who screened into the major depression section of the interview reported a lifetime suicide attempt.

The effects of limiting inquiries on suicide attempts to only those respondents reporting at least 2 weeks of low mood or anhedonia have been examined in a previous study comparing NESARC data with data from the National Longitudinal Alcohol Epidemiologic Survey, conducted in 1991–1992 using a similar sample size, design and interview [15] [refer to [3] for full details]. This previous analysis indicated that NESARC coverage of suicide attempts at most missed only a very small number of respondents.

Childhood or adolescent parental divorce. Childhood or adolescent parental divorce/separation was assessed with the following question: ‘Did your [biological/adoptive] parents get divorced or permanently stop living together before you were 18?’.

Maternal and paternal history of alcohol problems. Parental histories of alcohol problems were ascertained in a separate module of the Alcohol Use Disorder and Associated Disabilities Interview Schedule (AUDADIS), following the module evaluating the respondent’s own alcohol

history. In assessing family history, the interviewers read definitions to the respondents that included examples of the diagnostic criteria. Rather than reading the full diagnostic criteria, the definitions included readily observable manifestations of the disorder because these are the mostly likely to be known to family informants, and thus, increase the sensitivity of the measure [16–18]. The interviewers then asked separately whether the respondents' biological mother or father experienced the condition as defined. From this information, a variable was created representing parental alcohol problems, with the following categories: neither parent, maternal only, paternal only, both parents. The test–retest reliability of AUDADIS family history variables is very good to excellent [5,12,19].

Control variables. The following variables were included as controls, as they have associations with lifetime alcohol dependence and have been used as controls in related studies [2,3,5,20,21]: parental history of depression. Parental histories of depression were ascertained in separate modules of the AUDADIS following the module evaluating the participant's own history of this type of problem with questions in the same format as parental alcohol problems. From this information, a variable was created representing parental history of depression (or not).

Demographics. Five demographic variables were used as controls in multivariate regressions: gender; age (18–29, 30–45, 46–64, 65+); race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, other); education (less than high school, high school, some college or higher); and past-year personal income (\$0–19 999, \$20 000–34 999, \$35 000–69 999, \$70 000+).

Procedures

All potential NESARC respondents were informed in writing about the nature of the survey, the statistical uses of the survey data, the voluntary aspect of their participation and the federal laws that provide for the confidentiality of identifiable survey information. The respondents who gave consent were then interviewed. Data were collected through computer-assisted face-to-face interviews that took 45–60 min to complete. The respondents who completed the survey were compensated US\$80.00. The research protocol, including informed consent procedures, received full ethical review and approval from the US Census Bureau and US Office of Management and Budget. Field methods included extensive home study and structured in person training, supervision and quality control, including random call-backs to respondents to verify data, described in detail elsewhere [12,13].

Statistical analysis. The prevalence of respondent lifetime suicide attempt by childhood or adolescent parental divorce status and maternal and paternal history of alcohol problems was calculated with cross-tabulations. The simultaneous effect of childhood or adolescent parental divorce and maternal and paternal history of alcohol problems on offspring lifetime suicide attempt was calculated using a logistic regression model with an interaction term, first unadjusted for any covariates, and then adjusted for demographics and parental history of depressive symptoms. *F*-tests were used to estimate the statistical significance of the inclusion of the interaction term in the model. Odds ratios and 95% confidence intervals were derived from the beta estimates in the logistic regression model. To adjust for the complex sample characteristics of the NESARC, all analyses were conducted using SUDAAN [22]. This software adopts Taylor series linearization to take into account the design effects of the NESARC.

Results

Of the overall sample, 2.4% reported lifetime suicide attempts, 16.0% experienced parental divorce, 21.3% reported a parental history of alcohol abuse, and 6.0% experienced both parental divorce and parental alcohol abuse. Of those reporting lifetime suicide attempt ($n=1073$), 25.4% experienced parental divorce and 46.0% reported parental history of alcohol abuse. Sociodemographic and clinical characteristics of those reporting a lifetime suicide attempt are reported in Table 1.

Among those reporting a lifetime suicide attempt, 6% ($n=62$) reported maternal-only alcohol problems, 28.9% ($n=312$) reported paternal-only alcohol problems, and 12.5% ($n=120$) reported both maternal and paternal alcohol problems (Table 1). After adjusting for demographics, offspring depression and lifetime alcohol use disorders and parental history of depressions, maternal-only alcohol problems (adjusted odds ratio = 1.76), paternal-only alcohol problems (adjusted odds ratio = 1.65) and both maternal and paternal alcohol problems (adjusted odds ratio = 2.76) significantly increased the odds for offspring lifetime suicide attempt (Table 2).

The combined effect of parental divorce and maternal–paternal alcohol problems on offspring lifetime suicide attempt was assessed via a two-way interaction term in a logistic regression model, first unadjusted and then adjusted for demographics, offspring depression and lifetime alcohol use disorders and parental history of depression (Table 3). The final interaction term was not significant ($P=0.65$).

Table 1. Characteristics of sample who reported lifetime suicide attempt (*n* = 1073)

	<i>n</i>	%
<i>Parental divorce</i>		
Yes	273	25.4
No	800	74.6
<i>Parental alcohol abuse</i>		
Neither parent	579	54.0
Maternal only	62	5.8
Paternal only	312	29.1
Both parents	120	11.1
<i>Age</i>		
18–29	297	28.6
30–39	259	24.2
40–49	233	21.7
50+	284	26.5
<i>Gender</i>		
Male	319	29.7
Female	754	70.3
<i>Race</i>		
White	623	58.0
Black	172	16.0
Native American	36	3.4
Asian	34	3.2
Hispanic	208	19.4
<i>Marriage</i>		
Married or living as married	398	37.1
Not currently married	675	62.9
<i>Education</i>		
Less than high school grad	229	21.4
High school graduate	305	28.4
Some college or higher	539	50.2
<i>Family income</i>		
\$1–19 999	472	44.0
\$20 000–35 999	230	21.4
\$35 000–69 999	258	24.0
\$70 000 or more	113	10.6
<i>Lifetime alcohol use disorder</i>		
Yes	558	52.0
No	515	48.0
<i>Lifetime depression</i>		
Yes	523	48.7
No	550	51.3
<i>Parental depression</i>		
Yes	589	54.9
No	484	45.1

Discussion

This study indicates that maternal and paternal alcohol problems increase the likelihood of offspring lifetime suicide attempt even after controlling for the effects of parental divorce and parental histories of drug, depression and antisocial behaviour problems. Therefore, the relationship between maternal and paternal alcohol problems and offspring suicide attempt was confirmed in the general population, regardless of parental divorce status. Furthermore, although maternal and paternal alcohol problems varied considerably in their prevalence in this

sample, they predicted equal levels of risk for offspring suicide attempt (as indicated by overlapping confidence intervals). However, having both parents with alcohol problems substantially increased the level of risk for suicide attempt over maternal or paternal alcohol problems alone.

However, an interaction effect of childhood parental divorce, maternal history of alcohol problems and paternal history of alcohol problems on the likelihood of offspring lifetime suicide attempt was not identified in this study. Experiencing childhood parental divorce in addition to having a mother, father or both parents with a history of alcohol problems did not increase the likelihood of offspring lifetime suicide attempt. It may be, therefore, that the impact of having at least one parent, if not both, with alcohol use problems has a greater negative impact than experiencing parental divorce.

There may be a number of factors related to parental alcohol use that serve as mediating factors that may explain why parental alcohol use disorders have such a great negative impact and may explain the relationship between parental alcohol use and offspring lifetime suicide attempt. These factors may include, for example, quality of parent–child relationship, parental communication style and impaired coping skills. Poor quality parent–child relationships, such as those often reported by offspring of parents with alcohol problems, have been shown to be related to offspring suicide risk [23,24]. Furthermore, offspring who perceive their parents as more critical, less caring [25] and less supportive [26], characteristics often associated with parents with alcohol problems, have been shown to be at greater risk for suicide. Parents with alcohol problems also may be more likely to exhibit maladaptive behaviours in the household which, in turn, are associated with offspring having negative expectancies and beliefs [27], which lead to increased risk for suicide attempt, such as low expectations for success and high levels of hopelessness [28]. Moreover, maladaptive coping and impaired problem-solving skills and decision-making abilities may also be modelled by such parents and, in turn, internalised by offspring. For example, problem-solving deficits, poor coping skills and impaired decision-making abilities have been noted in individuals at risk for suicide attempt [29–33]. In sum, impairments in the parent–child relationship and modelling of maladaptive coping mechanisms may be an important pathway through which parental alcohol use influences negative child outcomes [34].

There are methodological limitations in this study that should be noted. First, Diagnostic and Statistical Manual of Mental Disorders-IV diagnoses and specific historical criteria for maternal and paternal alcohol disorders and other parental emotional and behavioural disorders were not obtained. However, the AUDADIS-IV structured interview has been demonstrated to have good to excellent

Table 2. Prevalence and odds ratios (with 95% confidence intervals) of offspring lifetime suicide attempt by parental divorce and maternal–paternal alcohol abuse

	% (SE)	OR	95% CI	AOR ^a	95% CI
Lifetime suicide attempt					
<i>Parental divorce</i>					
Yes (<i>n</i> = 273)	3.83 (0.28)	1.88	1.57–2.25	1.01	0.81–1.25
No (<i>n</i> = 800)	2.07 (0.10)	1.00		1.00	
<i>Maternal–paternal alcohol abuse</i>					
Neither parent (<i>n</i> = 579)	1.57 (0.09)	1.00		1.00	
Maternal only (<i>n</i> = 62)	5.58 (0.77)	3.70	2.67–5.13	1.76	1.23–2.52
Paternal only (<i>n</i> = 312)	4.33 (0.31)	2.83	2.35–3.41	1.65	1.34–2.04
Both parents (<i>n</i> = 120)	9.32(0.97)	6.43	4.99–8.28	2.76	2.09–3.64
<i>Age</i>					
18–29 (<i>n</i> = 297)	3.37 (0.30)	2.42	1.89–3.09	1.83	1.39–2.42
30–39 (<i>n</i> = 259)	2.80 (0.22)	2.00	1.61–2.48	1.75	1.39–2.21
40–49 (<i>n</i> = 233)	2.53 (0.22)	1.80	1.44–2.25	1.51	1.17–1.94
50+ (<i>n</i> = 284)	1.42 (0.10)	1.00		1.00	
<i>Gender</i>					
Male (<i>n</i> = 319)	1.62 (0.12)	1.00		1.00	
Female (<i>n</i> = 754)	3.03 (0.14)	1.90	1.61–2.23	1.67	1.39–2.00
<i>Race</i>					
White (<i>n</i> = 623)	2.41 (0.11)	1.14	0.90–1.45	1.01	0.78–1.32
Black (<i>n</i> = 172)	2.05 (0.20)	0.97	0.74–1.28	0.99	0.74–1.33
Native American (<i>n</i> = 36)	4.04 (0.81)	1.95	1.20–3.23	1.05	0.59–1.85
Asian (<i>n</i> = 34)	2.03 (0.38)	0.96	0.61–1.51	1.64	1.03–2.60
Hispanic (<i>n</i> = 208)	2.11 (0.25)	1.00		1.00	
<i>Marriage</i>					
Married or living as married (<i>n</i> = 398)	1.77 (0.12)	0.53	0.44–0.64	0.75	0.61–0.92
Not currently married (<i>n</i> = 675)	3.28 (0.19)	1.00		1.00	
<i>Education</i>					
<High school grad (<i>n</i> = 229)	2.91 (0.30)	1.31	1.04–1.66	1.44	1.08–1.92
High school graduate (<i>n</i> = 305)	2.29 (0.16)	1.03	0.85–1.24	1.08	0.88–1.33
Some college/higher (<i>n</i> = 539)	2.23 (0.13)	1.00		1.00	
<i>Family income</i>					
\$1–19 999 (<i>n</i> = 472)	3.67 (0.25)	2.64	2.03–3.44	2.54	1.87–3.45
\$20 000–35 999 (<i>n</i> = 230)	2.52 (0.21)	1.79	1.35–2.38	1.61	1.19–2.19
\$35 000–69 999 (<i>n</i> = 258)	1.98 (0.15)	1.41	1.06–1.86	1.38	1.04–1.84
\$70 000 or more	1.42 (0.16)	1.00		1.00	
<i>Lifetime alcohol use disorder (<i>n</i> = 558)</i>					
No (<i>n</i> = 515)	4.23 (0.22)	2.83	2.44–3.29	2.29	1.92–2.74
Yes (<i>n</i> = 515)	1.54 (0.08)	1.00		1.00	
<i>Lifetime depression (<i>n</i> = 523)</i>					
No (<i>n</i> = 550)	8.83 (0.42)	7.00	5.95–8.24	4.27	3.51–5.18
Yes (<i>n</i> = 550)	1.36 (0.08)	1.00		1.00	
<i>Parental depression (<i>n</i> = 589)</i>					
No (<i>n</i> = 484)	6.25 (0.32)	5.20	4.42–6.12	2.76	2.25–3.38
Yes (<i>n</i> = 484)	1.27 (0.08)	1.00		1.00	

^aAdjusted for all variables. AOR, adjusted odds ratio; OR, odds ratio.

reliability and validity for parental family history measures [5,12,19]. Second, parental divorce and permanent separation were covered in a combined question. Therefore, any difference in effects of legal divorce compared with permanent separation cannot be determined. However, given that the event occurred during early childhood when the respondents would likely not understand the legal difference, such differences are likely to be small. Third, only the subjects who were screened into the major depression section of the interview were asked about lifetime suicidal behaviour. However, as explained earlier, this limitation was likely to result in less than 1% of individuals with a history of suicide attempt being

excluded from the study. Thus, this is only a minor limitation. Fourth, parental divorce (predictor) and maternal–paternal alcohol abuse (moderator) were significantly associated. Initial focus on this model without accounting for the association, as we have carried out, is statistically acceptable [35, pg. 400]. However, more complex analytic models that account for the association should be developed in the future. Fifth, the present study examined maternal and paternal history of alcohol abuse, indicators of potential genetic risk for suicide attempt. Future studies should include examination of molecular genetic variants in addition to parental history of alcohol abuse, which could provide further information

Table 3. Prevalence and odds ratios (with 95% CIs) for interaction effects of parental divorce and maternal–paternal alcohol abuse on offspring lifetime suicide attempt

Parental divorce	Parental alcohol abuse	<i>n</i>	% (SE)	OR (95% CI)	AOR (95% CI) ^a
No	Neither parent	480	1.49 (0.09)	1.00	1.00
Yes	Neither parent	99	2.16 (0.29)	1.45 (1.09–1.95)	1.00 (0.74–1.37)
No	Maternal only	37	4.78 (0.96)	3.31 (2.15–5.10)	1.64 (1.06–2.54)
Yes	Maternal only	25	7.22 (1.81)	5.14 (2.89–9.14)	1.95 (1.01–3.78)
No	Paternal only	212	4.13 (0.36)	2.84 (2.29–3.53)	1.71 (1.35–2.17)
Yes	Paternal only	100	4.88 (0.56)	3.39 (2.59–4.43)	1.54 (1.15–2.06)
No	Both parents	71	7.78 (1.04)	5.57 (4.07–7.64)	2.55 (1.80–3.59)
Yes	Both parents	49	12.34 (1.90)	9.30 (6.42–13.46)	3.11 (2.04–4.73)

^aAdjusted for age, gender, race/ethnicity, marital status, education, past-year family income, lifetime alcohol use disorders, lifetime depression and parental depressive symptoms. The interaction term (divorce, parental alcohol abuse) was not significant ($P=0.65$). AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio.

on the interactions examined. Lastly, the NESARC is based on respondent self-report, which can be subject to recall bias and social desirability. However, measures were of the type commonly used in large epidemiological studies, and the NESARC employed a carefully structured interview to assess aspects of clinical history that agreed well with psychiatrist evaluations [36].

This study also includes a number of important strengths. It is the first study to examine the main and interactive effects of parental divorce and maternal versus paternal alcohol problems on offspring lifetime suicide attempt using a large, nationally representative sample. The study also utilised Diagnostic and Statistical Manual of Mental Disorders-IV diagnostic criteria for assessing respondent and familial psychopathology. Additionally, the research builds on prior findings related to the effects of parental divorce and parental alcohol problems on offspring lifetime suicide risk by examining the effects of maternal and/or paternal alcohol problems on offspring lifetime suicide attempt, after controlling for parental divorce and parental emotional and behavioural problems.

Implications for practice and research

It is important for mental health professionals to recognise the relevance and importance of assessing for the impact of parental divorce in conjunction with maternal and paternal alcohol problems in order to effectively assess for suicide attempt risk in clients. This study demonstrates that individuals who experienced parental divorce as children or adolescents and who have a parent, particularly a mother, who abuses alcohol are at elevated risk for lifetime suicide attempt. This risk is increased further when both parents have alcohol problems. These problem areas should become a routine part of all client and family assessments to better identify those at risk for lifetime suicide attempt. The early identification of at-risk clients can

facilitate the implementation of targeted intervention to decrease suicide risk.

Future research should further explore relevant environmental and familial characteristics that may serve as moderators of the relationship between maternal and/or paternal alcohol use problems and offspring lifetime suicide attempt among those who experience parental divorce, such as parental remarriage, offspring psychopathology, quality of parental communication, nature of parental involvement, quality of parent–child relationship and parenting skills. Factors to investigate should consider timing of event, specifically pre-parental divorce (e.g. parent conflict, parenting skills, child maltreatment history, parent psychiatric disorders), during the dissolution period (e.g. age of child at divorce, meaning of divorce to child) and post-parental divorce (e.g. change in income, school, residence, parent–child relationship; parent reside with post-divorce; gender match of parent–child; parental remarriage) for the differential impact on offspring lifetime suicide attempt risk.

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