

Data supplement for Pham et al., The Burden of Bereavement: Early-Onset Depression and Impairment in Youths Bereaved by Sudden Parental Death in a 7-Year Prospective Study. Am J Psychiatry (doi: 10.1176/appi.ajp.2018.17070792)

Table S1: Assessment Instruments for Youth and Adults

Domain	Child	Adult
PTSD	Child PTSD Symptom Scale	PTSD Symptom Scale
	Interview ¹	Interview ²
Anxiety	Screen for Anxiety Related Emotional Disorders ³	Beck Anxiety Inventory ⁴
Depression	Mood and Feelings Questionnaire ⁵	Beck Depression Inventory ⁶
Impulsive Aggression	Aggression Questionnaire ⁷	Aggression Questionnaire ⁷
Suicidal Ideation	Suicidal Ideation Questionnaire- Jr. ⁸	Suicidal Ideation Questionnaire-Jr. ⁸
Intercurrent Life Events	Life Events Checklist ⁹	Shortened Holmes-Rahe Social Readjustment Rating Scale ¹⁰
Physical or sexual abuse history	Abuse Dimensions Inventory. ¹¹	Abuse Dimensions Inventory. ¹¹
Coping	Kidcope ¹²	Ways of Coping ¹³
Social Support	Survey of Children's Social Support ¹⁴	Multi-dimensional Scale of Perceived Social Support ¹⁵

Family climate

Family Adaptability and

Family Adaptability and

Cohesion Evaluation-II¹⁶

Cohesion Evaluation-II¹⁶

Table S2: Demographic, Clinical and Psychological Characteristics at 7-Year Assessment by Bereavement Status - Participants who completed the year-7 assessment only.

	Non			Test	df	P
	Total	Bereaved	Bereaved			
Offspring						
No.	262	132	130			
Age, M(SD)	18.9 (3.2)	18.7 (2.9)	19.1 (3.5)	t=-0.97	250.31	0.33
Offspring Psychiatric Disorders						
Depression, N (%Yes)	55 (21.0)	24 (18.2)	31 (23.9)	$\chi^2=1.27$	1	0.26
Bipolar Disorder, N (%Yes)	13 (5.0)	3 (2.3)	10 (7.7)	$\chi^2=4.08$	1	0.04
Anxiety, N (%Yes)	43 (16.4)	19 (14.4)	24 (18.5)	$\chi^2=0.79$	1	0.37
PTSD, N (%Yes)	13 (5.0)	3 (2.3)	10 (7.7)	$\chi^2=4.08$	1	0.04
ADHD, N (%Yes)	29 (11.1)	15 (11.4)	14 (10.8)	$\chi^2=0.02$	1	0.88
Behavior Disorder, N (%Yes)	8 (3.1)	4 (3.0)	4 (3.1)	FET	-	>0.99
Alcohol/Substance Abuse, N (%Yes)	49 (18.7)	25 (18.9)	24 (18.5)	$\chi^2=0.01$	1	0.92
Any Psychiatric Disorder, N (%Yes)	127 (48.5)	56 (42.4)	71 (54.6)	$\chi^2=3.90$	1	0.05
Offspring Functioning, M(SD)	76.1 (12.5)	78.8 (11.5)	73.3 (12.8)	t=3.70	260	<0.001
Offspring Self-Reported Clinical Measures						
Depression, M(SD)	-0.11 (0.94)	-0.18 (0.90)	-0.03 (0.98)	t=-1.25	232	0.21
Anxiety, M(SD)	-0.18 (0.94)	-0.24 (0.90)	-0.11 (0.98)	t=-1.10	233	0.27
Suicidal Ideation, M(SD)	20.9 (9.3)	18.5 (5.0)	23.5 (11.9)	t=-4.17	147.82	<0.001
Impulsive Aggression, M(SD)	64.4 (20.0)	62.8 (20.5)	66.2 (19.4)	t=-1.30	238	0.19

	Non			Test	df	P
	Total	Bereaved	Bereaved			
PTSD, M(SD)	2.7 (5.7)	1.6 (5.1)	3.8 (6.1)	t=-3.08	251.39	0.002
Negative coping Strategies, M(SD)	-0.10 (0.99)	-0.06 (1.03)	-0.15 (0.95)	t=0.73	233	0.46
Family Climate, M(SD)	52.4 (9.7)	54.3 (9.4)	50.2 (9.5)	t=3.36	235	0.001
Intercurrent Life Events, M(SD)	0.15 (0.96)	0.15 (0.97)	0.16 (0.96)	t=-0.06	260	0.95
Social Support, M(SD)	0.06 (0.87)	0.16 (0.92)	-0.06 (0.80)	t=1.93	237	0.06
Surviving Caretaking Adult						
No.	163	86	77			
Depression, N (%Yes)	41 (26.0)	18 (26.9)	23 (25.3)	$\chi^2=0.05$	1	0.82
Bipolar Disorder, N (%Yes)	5 (3.2)	2 (3.0)	3 (3.3)	FET	-	>0.99
Anxiety, N (%Yes)	22 (13.9)	6 (9.0)	16 (17.6)	$\chi^2=2.40$	1	0.12
PTSD, N (%Yes)	10 (6.3)	1 (1.5)	9 (9.9)	FET	-	0.05
Alcohol/Substance Abuse, N (%Yes)	12 (7.6)	3 (4.5)	9 (9.9)	$\chi^2=1.61$	1	0.20
Any Psychiatric Disorder, N (%Yes)	64 (40.5)	24 (35.8)	40 (44.0)	$\chi^2=1.06$	1	0.30
Functioning, M(SD)	77.1 (11.2)	80.6 (9.8)	74.3 (11.4)	t=3.53	137.6	0.001

Abbreviations: M, mean. SD, standard deviation. FET, Fisher's exact test. PTSD, Post-Traumatic Stress Disorder. ADHD, Attention Deficit Disorder, Hyperactivity. Behavior Disorder: conduct disorder, oppositional defiant disorder.

Table S3. Incident Depression by Bereavement Status after Controlling for Covariates

	(a) Without Interaction			(b) With Interaction		
	HR (95% CI)	t	P	HR (95% CI)	t	P
Bereavement	2.67 (1.58, 4.51)	3.68	<0.001	19.77 (3.71, 105.39)	3.49	<0.001
Age at Parent's Death	1.04 (0.98, 1.10)	1.36	0.17	1.17 (1.04, 1.31)	2.76	0.01
Female Sex	1.47 (1.04, 2.07)	2.20	0.03	1.45 (1.03, 2.03)	2.15	0.03
White Race	1.20 (0.75, 1.93)	0.76	0.45	1.12 (0.69, 1.82)	0.48	0.63
Socio-economic Status	0.98 (0.97, 0.99)	-2.18	0.03	0.98 (0.97, 0.99)	-2.43	0.02
Bereavement by Age at Parent's Death	--	--	--	0.85 (0.75, 0.97)	-2.44	0.02
History of Psychiatric Disorder (offspring)	1.43 (0.97, 2.13)	1.79	0.07	1.47 (0.99, 2.18)	1.95	0.05
History of Psychiatric Disorder (parent)	0.74 (0.43, 1.27)	-1.10	0.27	0.70 (0.42, 1.17)	-1.37	0.17
Physical/Sexual Abuse	1.31 (0.63, 2.71)	0.73	0.47	1.25 (0.60, 2.59)	0.59	0.56
Correction for Proportional Hazard Violation (Bereavement)	0.98 (0.97, 0.99)	-2.50	0.01	0.98 (0.97, 0.99)	-2.48	0.01

Abbreviations: HR, Hazard Ratio. CI, Confidence Interval.

Table S3 (cont'd)

	(c) Age at Parent's Death 12 and Younger			(d) Age at Parent's Death 13 and Older		
	HR (95% CI)	t	P	HR (95% CI)	t	P
Bereavement	4.92 (2.04, 11.87)	3.55	<0.001	1.15 (0.69, 1.90)	0.54	0.59
Age at Parent's Death	0.98 (0.85, 1.12)	-0.34	0.74	0.93 (0.79, 1.08)	-0.97	0.33
Female Sex	1.18 (0.72, 1.94)	0.66	0.51	1.92 (1.19, 3.09)	2.67	0.01
White Race	0.89 (0.42, 1.90)	-0.30	0.76	1.24 (0.66, 2.34)	0.67	0.50
Socio-economic Status	0.98 (0.96, 1.01)	-1.50	0.13	0.98 (0.97, 1.003)	-1.70	0.09
History of Psychiatric Disorder (offspring)	0.95 (0.47, 1.93)	-0.15	0.88	2.00 (1.19, 3.35)	2.63	0.01
History of Psychiatric Disorder (parent)	0.54 (0.27, 1.07)	-1.77	0.08	0.87 (0.40, 1.87)	-0.36	0.72
Physical/Sexual Abuse	1.99 (0.76, 5.24)	1.39	0.16	1.01 (0.38, 2.73)	0.03	0.98
Correction for Proportional Hazard Violation (Bereavement)	0.98 (0.96, 1.001)	-1.84	0.07	--	--	--

Abbreviations: HR, Hazard Ratio. CI, Confidence Interval.

Table S4. Incident PTSD by Bereavement Status after Controlling for Covariates

	HR (95% CI)	t	P
Bereavement	5.66 (1.95, 16.40)	3.19	0.001
Age at Parent's Death	0.89 (0.79, 0.99)	-2.11	0.04
Female Sex	1.43 (0.71, 2.89)	1.01	0.31
White Race	1.11 (0.39, 3.19)	0.20	0.84
Socio-economic Status	0.99 (0.97, 1.03)	-0.29	0.77
History of Psychiatric Disorder (offspring)	2.83 (1.28, 6.27)	2.57	0.01
History of Psychiatric Disorder (parent)	2.03 (0.42, 9.75)	0.88	0.38
Physical/Sexual Abuse	1.38 (0.45, 4.22)	0.57	0.57

Abbreviations: HR, Hazard Ratio. CI, Confidence Interval.

Table S5. Incident Clinically Significant Suicidal Ideation by Bereavement Status after Controlling for Covariates

	HR (95% CI)	t	P
Bereavement	1.50 (0.91, 2.46)	1.59	0.11
Age at Parent's Death	0.99 (0.92, 1.07)	-0.21	0.83
Female Sex	1.77 (1.14, 2.76)	2.53	0.01
White Race	1.12 (0.66, 1.89)	0.42	0.68
Socio-economic Status	0.99 (0.97, 1.01)	-1.10	0.27
History of Psychiatric Disorder (offspring)	2.42 (1.55, 3.78)	3.87	<0.001
History of Psychiatric Disorder (parent)	0.62 (0.33, 1.18)	-1.46	0.14
Physical/Sexual Abuse	1.67 (0.84, 3.32)	1.47	0.14

Abbreviations: HR, Hazard Ratio. CI, Confidence Interval.

Table S6. Course of Disorders by Bereavement Status after Controlling for Covariates

	Depression			Alcohol/Substance			Suicidal ideation		
	OR (95% CI)	t	P	OR (95% CI)	t	P	OR (95% CI)	t	P
Bereavement	9.87 (4.26, 22.85)	5.34	<0.001	17.31 (1.05, 284.70)	2.00	0.05	2.02 (0.82, 4.97)	1.54	0.13
Time	1.61 (1.30, 2.01)	4.29	<0.001	8.83 (4.20, 18.56)	5.75	<0.001	0.89 (0.69, 1.15)	-0.88	0.38
Bereavement by									
Time	0.62 (0.48, 0.81)	-3.54	<0.001	0.52 (0.25, 1.11)	-1.68	0.09	1.33 (0.97, 1.82)	1.75	0.08
Age at Parent's									
Death	1.09 (0.99, 1.19)	1.95	0.05	1.76 (1.38, 2.23)	4.58	<0.001	1.01 (0.90, 1.13)	0.13	0.90
Female Sex	2.33 (1.41, 3.82)	3.33	0.001	0.21 (0.07, 0.66)	-2.70	0.01	3.06 (1.54, 6.10)	3.18	0.001
White Race	1.44 (0.68, 3.04)	0.95	0.34	0.45 (0.09, 2.18)	-0.99	0.32	1.18 (0.47, 2.96)	0.36	0.72
Socio-economic									
Status	0.98 (0.95, 1.003)	-1.73	0.09	1.01 (0.96, 1.07)	0.38	0.70	0.98 (0.95, 1.01)	-1.52	0.13
History of									
Psychiatric									
Disorder									
(offspring)	3.84 (2.18, 6.76)	4.67	<0.001	4.02 (1.18, 13.65)	2.33	0.03	4.52 (2.08, 9.81)	3.82	<0.001

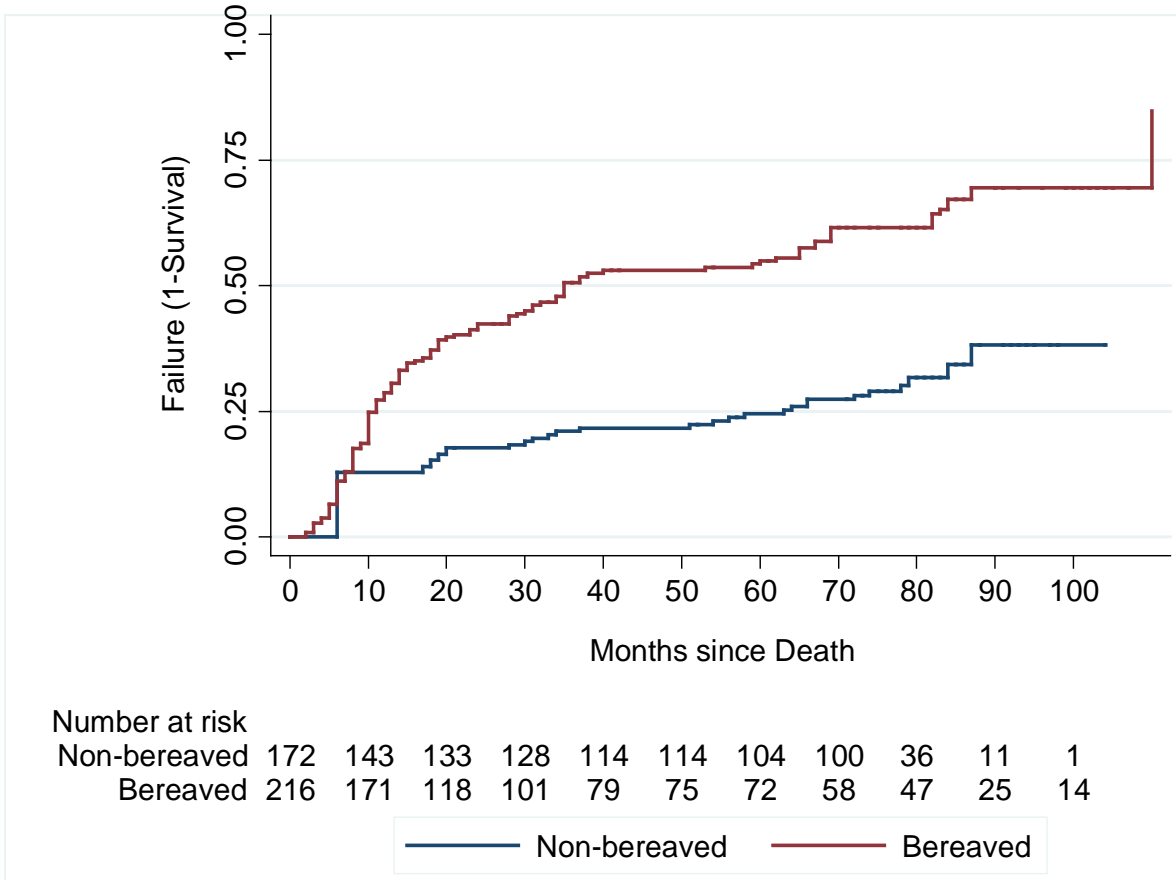
History of Psychiatric Disorder (parent)	0.68 (0.29, 1.59)	-0.90	0.37	4.80 (0.53, 43.27)	1.40	0.16	0.26 (0.10, 0.70)	-2.67	0.01
Physical/Sexual Abuse	1.93 (0.88, 4.25)	1.64	0.10	3.23 (0.76, 13.68)	1.59	0.11	1.34 (0.49, 3.70)	0.56	0.57

Abbreviations: OR, Odds Ratio. CI, Confidence Interval.

Table S7. Logistic Regressions for the Relationship between Bereavement and 7-Year Functional Impairment Controlling for Covariates at Each Time Point

		Odds Ratio		
		(95% Confidence Interval)	t	P
Prior to death	Bereavement	2.38 (1.28, 4.43)	2.73	0.01
	History of Psychiatric Disorder (Offspring)	6.39 (3.36, 12.15)	5.65	<0.001
9-months after death	Bereavement	1.70 (0.90, 3.21)	1.65	0.10
	Self-reported depression	1.35 (0.97, 1.87)	1.77	0.08
	Social Support	0.62 (0.43, 0.90)	-2.52	0.01
	Negative Life Events	1.60 (1.20, 2.15)	3.15	0.002
Average score at the next 3 time points	Bereavement	1.77 (0.93, 3.39)	1.73	0.08
	Self-reported depression	2.89 (1.87, 4.45)	4.81	<0.001
	Negative Life Events	4.07 (1.97, 8.41)	3.80	<0.001

Figure S1: Kaplan-Meier Curves for Incident Functional Impairment



Supplementary Material References

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