Malaise

Suggested teaching exercise using the CLOSER training dataset

How do people's early-life circumstances affect their propensity to suffer depression in middle-age?

1. Frequencies and basic statistics

To begin, run some frequency counts of childhood background variables like sex, mother's marital status at birth, father's social class (age 11), whether mother/father stayed on at school after minimum leaving age, and 'general ability test' results at age 11.

For depression in middle-age, start by running frequencies and/or means of the 24-point Malaise inventory variable at age 42.

Solution (SPSS syntax and output):

fre n622 n545 n2srgsc n016nmed n716dade n920/statistics=mean stdev max min. mal24n6.

Sex of NCDS cohort member

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	2710	47.0	47.0	47.0
	Female	3055	53.0	53.0	100.0
	Total	5765	100.0	100.0	

0 Mother's marital status at birth of cohort member

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sep,Div,Widowed	33	.6	.6	.6
	Stable union	6	.1	.1	.7
	Twice married	6	.1	.1	.8
	Married	5605	97.2	97.2	98.0
	Unmarried	114	2.0	2.0	100.0
	Total	5764	100.0	100.0	
Missing	NA, incomplt info	1	.0		
Total		5765	100.0		

1990-Style RGsocial class code (CLOSER-harmonised) for father's occupation 1969 (CM age 11)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Professional etc occupations	207	3.6	4.6	4.6
	Managerial and Technical occupations	971	16.8	21.6	26.2
	Skilled occupations (non-manual)	519	9.0	11.6	37.8
	Skilled occupations (manual)	1833	31.8	40.8	78.6
	Partly-skilled occupations	624	10.8	13.9	92.5
	Unskilled occupations	339	5.9	7.5	100.0
	Total	4493	77.9	100.0	
Missing	System	1272	22.1		
Total		5765	100.0		

Mother left education at min age or not [derived from age 0 and 16]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	left minimum age	4187	72.6	72.6	72.6
	stayed on	1577	27.4	27.4	100.0
	Total	5764	100.0	100.0	
Missing	System	1	.0		
Total		5765	100.0		

Father left education at min age or not [derived from age 7 and 16]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	left minimum age	4143	71.9	73.1	73.1
	stayed on	1528	26.5	26.9	100.0
	Total	5671	98.4	100.0	
Missing	System	94	1.6		
Total		5765	100.0		

2T Total score on general ability test, CM age 11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	9	.2	.2	.2
	3	1	.0	.0	.2
	5	1	.0	.0	.2
	7	3	.1	.1	.3
	8	2	.0	.0	.3
	9	9	.2	.2	.5
	10	11	.2	.2	.7
	11	5	.1	.1	.8
	12	11	.2	.2	1.0
	13	13	.2	.2	1.2
	14	21	.4	.4	1.6
	15	23	.4	.4	2.0
	16	29	.5	.5	2.5
	17	35	.6	.6	3.2
	18	34	.6	.6	3.8
	19	39	.7	.7	4.5
	20	48	.8	.9	5.4
	21	44	.8	.8	6.2
	22	47	.8	.9	7.1
	23	52	.9	1.0	8.1
	24	58	1.0	1.1	9.1
	25	49	.8	.9	10.0
	26	72	1.2	1.3	11.4
	27	76	1.3	1.4	12.8
	28	73	1.3	1.3	14.1
	29	67	1.2	1.2	15.3
	30	80	1.4	1.5	16.8
	31	91	1.6	1.7	18.5
	32	82	1.4	1.5	20.0
	33	86	1.5	1.6	21.6
	34	92	1.6	1.7	23.3
	35	101	1.8	1.9	25.1
	36	89	1.5	1.6	26.8
	37	103	1.8	1.9	28.7
	38	105	1.8	1.9	30.6

39	110	1.9	2.0	32.6
40	102	1.8	1.9	34.5
41	119	2.1	2.2	36.7
42	98	1.7	1.8	38.5
43	91	1.6	1.7	40.2
44	113	2.0	2.1	42.3
45	139	2.4	2.6	44.8
46	117	2.0	2.2	47.0
47	126	2.2	2.3	49.3
48	138	2.4	2.5	51.9
49	144	2.5	2.7	54.5
50	130	2.3	2.4	56.9
51	145	2.5	2.7	59.6
52	133	2.3	2.5	62.0
53	118	2.0	2.2	64.2
54	127	2.2	2.3	66.6
55	126	2.2	2.3	68.9
56	161	2.8	3.0	71.9
57	127	2.2	2.3	74.2
58	127	2.2	2.3	76.5
59	117	2.0	2.2	78.7
60	109	1.9	2.0	80.7
61	105	1.8	1.9	82.6
62	107	1.9	2.0	84.6
63	93	1.6	1.7	86.3
64	111	1.9	2.0	88.4
65	94	1.6	1.7	90.1
66	80	1.4	1.5	91.6
67	93	1.6	1.7	93.3
68	71	1.2	1.3	94.6
69	52	.9	1.0	95.6
70	49	.8	.9	96.5
71	36	.6	.7	97.1
72	51	.9	.9	98.1
73	35	.6	.6	98.7
74	30	.5	.6	99.3
75	17	.3	.3	99.6
76	8	.1	.1	99.7

	77	8	.1	.1	99.9
	78	4	.1	.1	99.9
	79	3	.1	.1	100.0
	Total	5425	94.1	100.0	
Missing	NA	340	5.9		
Total		5765	100.0		

Report

Malaise Inventory (24-pt) Score Age 42

Mean	N	Std. Deviation
3.42	5723	3.426

We see that the mean value for the 24-point Malaise scale at age 42 is 3.42. Generally someone with a score of 8 or more out of 24 is considered to be at risk of depression.

2. What is the relationship between the Malaise score at age 42 and different childhood characteristics?

Next, try seeing what the mean Malaise score is at age 42 for each category of the childhood background variables. For now, leave out the age 11 general ability test as it has too many values.

Solution (SPSS syntax and output):

means mal24n6 by n622 n545 n2srgsc n016nmed n716dade.

Malaise Inventory (24-pt) Score Age 42 * Sex of NCDS cohort member

Malaise Inventory (24-pt) Score Age 42

Sex of NCDS cohort member	Mean	N	Std. Deviation
Male	3.01	2684	3.295
Female	3.79	3039	3.497
Total	3.42	5723	3.426

Malaise Inventory (24-pt) Score Age 42 * 0 Mother's marital status at birth of cohort member

0 Mother's marital status at birth of cohort member	Mean	N	Std. Deviation
Sep,Div,Widowed	4.61	33	3.162
Stable union	4.67	6	6.186
Twice married	5.17	6	5.037
Married	3.41	5565	3.432
Unmarried	3.56	112	2.837
Total	3.42	5722	3.426

Malaise Inventory (24-pt) Score Age 42 * 1990-Style RGsocial class code (CLOSER-harmonised) for father's occupation 1969 (CM age 11)

Malaise Inventory (24-pt) Score Age 42

1990-Style RGsocial class code (CLOSER-harmonised) for father's occupation 1969 (CM age 11)	Mean	N	Std. Deviation
Professional etc occupations	2.75	207	2.751
Managerial and Technical occupations	3.17	966	3.071
Skilled occupations (non-manual)	3.01	515	3.005
Skilled occupations (manual)	3.60	1819	3.541
Partly-skilled occupations	3.56	620	3.711
Unskilled occupations	3.64	335	3.599
Total	3.40	4462	3.390

Malaise Inventory (24-pt) Score Age 42 * Mother left education at min age or not [derived from age 0 and 16]

Malaise Inventory (24-pt) Score Age 42

Mother left education at min age or not [derived from age 0 and 16]	Mean	N	Std. Deviation
left minimum age	3.56	4155	3.558
stayed on	3.06	1567	3.020
Total	3.42	5722	3.426

Malaise Inventory (24-pt) Score Age 42 * Father left education at min age or not [derived from age 7 and 16]

Malaise Inventory (24-pt) Score Age 42

Father left education at min age or not [derived from age 7 and 16]	Mean	N	Std. Deviation
left minimum age	3.56	4109	3.534
stayed on	3.03	1520	3.072
Total	3.41	5629	3.423

We see that:

- female cohort members have a higher mean Malaise score than males at age 42 (3.79 compared with 3.01);
- cohort members whose mother was married at their birth have a slightly higher mean Malaise score age 42 (3.56 compared with 3.41 for unmarried);
- roughly speaking, the higher the social class of the cohort member's father, the less likely the CM is to be depressed at age 42 (mean 2.75 for father's SClass 1, compared to 3.64 for SClass 5)
- cohort members whose father or mother stayed on at school after the minimum leaving age are less likely to be depressed at 42 (mean 3.06 or 3.03 compared with 3.56 for those with parents leaving school at min leaving age).

3. Construct a derived variable grouping cohort members into quintiles based on their 'general ability test' results at age 11. How does this variable relate to the Malaise score at age 42?

What is the mean Malaise score at age 42 for each of those five quintiles?

Solution (SPSS syntax and output):

From our frequency counts we see the quintile 'break points' (20%, 40%, 60%, 80% in 'cumulative percent' column) are roughly scores 32, 43, 51 and 60.

```
compute cogquint=-1.
if (n920 le 32)cogquint=1.
if (n920 > 32 and n920 le 43)cogquint=2.
if (n920 > 43 and n920 le 51)cogquint=3.
if (n920 > 51 and n920 le 60)cogquint=4.
if (n920 > 60)cogquint=5.
var labs cogquint 'Quintiles of general cognitive ability at age 11'.
val labels cogquint
1 '1st quintile'
2 '2nd quintile'
3 '3rd quintile'
4 '4th quintile'
5 '5th quintile'
-1 'No age 11 test result'.
Missing values cogquint (-1).
fre cogquint.
Means mal24n6 by cogquint.
```

Quintiles of general cognitive ability at age 11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1st quintile	1085	18.8	20.0	20.0
	2nd quintile	1096	19.0	20.2	40.2
	3rd quintile	1052	18.2	19.4	59.6
	4th quintile	1145	19.9	21.1	80.7
	5th quintile	1047	18.2	19.3	100.0
	Total	5425	94.1	100.0	
Missing	No age 11 test result	340	5.9		
Total		5765	100.0		

Report

Malaise Inventory (24-pt) Score Age 42

Quintiles of general cognitive ability at age 11	Mean	N	Std. Deviation
1st quintile	4.21	1066	4.044
2nd quintile	3.71	1090	3.611
3rd quintile	3.25	1049	3.151
4th quintile	2.96	1140	3.009
5th quintile	2.98	1043	2.985
Total	3.42	5388	3.416

We see those in the bottom quintiles of age 11 test results have a higher mean Malaise score at age 42 than those in the higher quintiles.

4. Now use multivariate regression to see which of the different characteristics you have examined is 'driving' Malaise scores at age 42.

First, do a 'stepwise' regression with Age 42 Malaise as the dependent variable, with the independent variables being sex, mother's marital status at birth, father's social class (age 11), and whether mother/father stayed on at school after minimum leaving age (leave out age 11 general ability test results for now).

Solution (SPSS syntax and output):

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT mal24n6
  /METHOD=ENTER n622 n545 N2SRGSC  n016nmed n716dade N2SRGSC.
```

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.197	.808		3.956	.000
	Sex of NCDS cohort member	.784	.101	.116	7.757	.000
	0 Mother's marital status at birth of cohort member	-.307	.193	-.024	-1.589	.112
	1990-Style RGsocial class code (CLOSER-harmonised) for father's occupation 1969 (CM age 11)	.118	.060	.032	1.969	.049
	Mother left education at min age or not [derived from age 0 and 16]	-.255	.122	-.034	-2.082	.037
	Father left education at min age or not [derived from age 7 and 16]	-.269	.127	-.035	-2.129	.033

a. Dependent Variable: Malaise Inventory (24-pt) Score Age 42

Looking in the final column (Sig.) we see sex is a significant predictor, but mother's marital status at birth is not. Father's social class is significant at the 5% level, as are the two variables on parents leaving school at the minimum leaving age.

Then introduce to the regression model the results of the cognitive test at age 11 (along with all the other variables).

Solution (SPSS syntax and output):

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT mal24n6
  /METHOD=ENTER n622 n545 N2SRGSC  n016nmed n716dade N2SRGSC n920.
```

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.694	.848		5.536	.000
	Sex of NCDS cohort member	.841	.103	.124	8.127	.000
	0 Mother's marital status at birth of cohort member	-.293	.197	-.023	-1.482	.138
	1990-Style RGsocial class code (CLOSER-harmonised) for father's occupation 1969 (CM age 11)	.042	.062	.011	.671	.502
	Mother left education at min age or not [derived from age 0 and 16]	-.102	.127	-.014	-.807	.420
	Father left education at min age or not [derived from age 7 and 16]	-.059	.131	-.008	-.453	.651
	2T Total score on general ability test, CM age 11	-.032	.004	-.141	-8.653	.000

a. Dependent Variable: Malaise Inventory (24-pt) Score Age 42

Now we see the general ability test score is very significant, but two of the other variables are no longer significant at the 5% level: father's social class and father's age of leaving education (but mother's education is still significant at 5 %).

So we can conclude the effects of father's social class and education are largely mediated by the cohort member's test scores at age 11.