Appendix A:

Measurement models

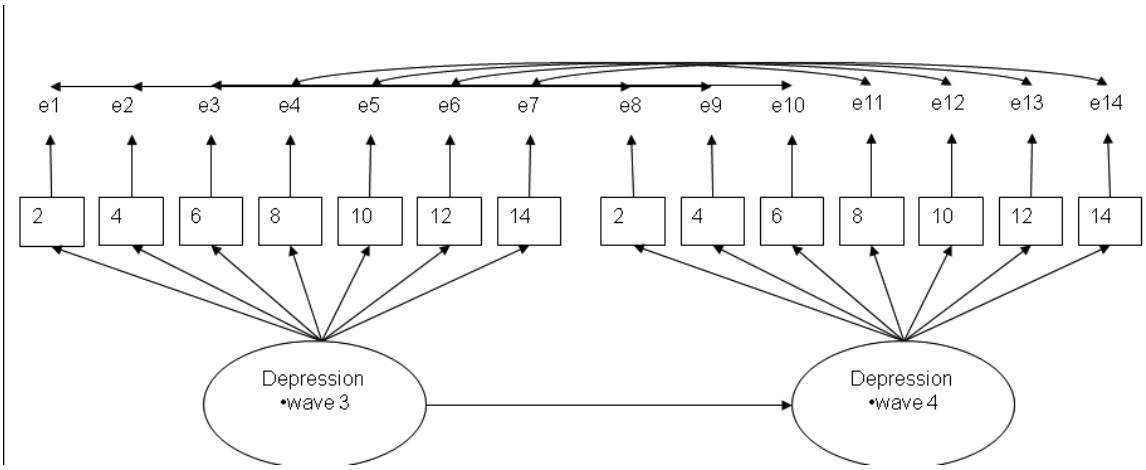
The three measurement models for depression and anxiety scores and life event burden were developed separately incorporating the two time points. The measurement model for depression is shown in Figure A1. Depression at the two time points is represented as two latent variables (in ellipses) with the even numbered HADS items as indicators of the latent variable. In the conventions of SEM, measured variables such as the HADS items are shown in boxes. Error terms are represented as numbered letters (e1 to e14 in Figure A1). In this type of longitudinal model it is common for correlations between individual items over time to be necessary to achieve adequate model fit. These correlations are in addition to that implied by the effect of one latent variable on the other and are specified by allowing a non-zero correlation between the error terms of the items and represented graphically as a double headed arrow connecting the correlated terms. In the case of depression all the correlations shown in Figure A1 were needed. The measurement model for anxiety was essentially the same with anxiety indicated by the odd numbered items of the HADS. In the measurement model for life events, event burden was indicated by six variables, which included the number of life events and five scores derived from summing the ratings for those events of: disruption caused by the event at the time; disruption currently caused by it; stressfulness of the event at the time; stressfulness currently; and an overall rating of the seriousness of the event. The measurement model included three correlations between the event scores at each time point but none over time. Figure A2 shows the measurement model for one time point. In principal components analyses of these six event scores the first component explained over 93% of

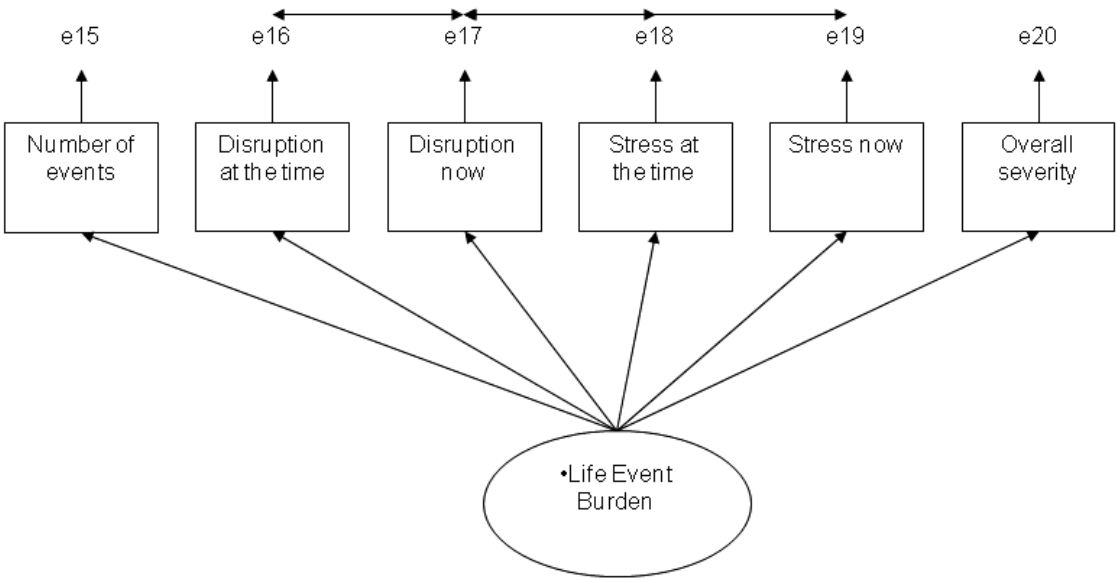
the variance both at wave 3 and wave 4 clearly indicating that they represented a single dimension of life event burden.

A sensitivity analysis was also carried out in which the main analyses were repeated with life event burden indicated only by the number of events and their summed severity ratings. The results were essentially the same.

Factorial Invariance

Factorial invariance was tested by constraining the corresponding factor loadings in the measurement models to be the same at the two time points: the loading HADS of item 2 on depression was forced to take the same value at wave 3 and wave 4 and likewise for all the other items and event scores. Introducing these constraints decreases the fit of the model, increasing its X^2 value, and the significance of this change can be against a X^2 distribution with degrees of freedom equal to the number of constraints. For depression and anxiety this led to increases in the X^2 value of 10.05 and 2.2, respectively, and corresponding *p* values (for 6 df) of 0.123 and 0.895. For life event burden the values were $X^2 = 5.28$, df=5, $p = 0.383$. Thus there is no evidence of departure from factorial invariance.


e1
e2
e3
e4
e5
e6
e7
e8
e9
e10
e11
e12
e13
e14
2
4
6
8
10
12
14
2
4
6
8
10
12
14
Depression
•wave 3
Depression
•wave 4


e15
e16
e17
e18
e19
e20
Number of events
Disruption at the time
Disruption now
Stress at the time
Stress now
Overall severity
•Life Event Burden