

Appendix A

The following SAS code is an example for fitting the Trend Odds model with 4 outcome levels. The words in bold should be replaced to represent the actual data.

```
*****
* SAS code to run the bivariable Trend Odds model*
*****;

proc nlmixed data=DataName ;

*If you have a 4 level outcome, you will have 3 intercepts;
  parms Intercept1 = -1, Intercept2 = 0, Intercept3 = 1,
         beta = 0 trend = 0;

*Your RiskFactorName variable should be coded 0/1;
  p1= 1/(1 + exp(-(Intercept1 + trend*2*RiskFactorName + beta*RiskFactorName)));
  p2= 1/(1 + exp(-(Intercept2 + trend*1*RiskFactorName + beta*RiskFactorName)));
  p3= 1/(1 + exp(-(Intercept3 + trend*0*RiskFactorName + beta*RiskFactorName)));

*Your OutcomeName variable should be coded 1/2/3/4;
  if OutcomeName=4 then p = p1;
     else if OutcomeName=3 then p = p2-p1;
     else if OutcomeName=2 then p = p3-p2;
     else p = 1-p3;
  p = (p>0 and p<=1)*p + (p<=0)*1e-8 + (p>1);

  loglik = log(p);

  model OutcomeName ~ general(loglik);
run;
```