Simple Multilevel Modelling

Results

A 2-level multilevel model was used to analyze these data, because money was nested in states. Pro-tobacco voting was modeled as a function of corporate donations and tobacco acreage. I modeled this effect both as a random intercept model and a random slope and intercept model. I wanted to see whether the random intercept model or the random slope and intercept model fit the data better. The model was estimated with an unstructured covariance matrix using the lme function from the nlme package (Pinheiro, Bates, DebRoy, Sarkar, & R Core Team, 2015) in R 3.4.1 (R Core Team, 2015). A Likelihood Ratio test of the two models suggested that the models did not fit the data equally well, 𝝌2(2) = 12.32, p = 0.002. Thus, the model with the lower AIC was chosen (random slope model).

As shown in Figure 1, corporate donations had a small positive relationship with pro-tobacco voting, b = 0.096, SE = 0.01, t(525) = 7.56, p < .001, r = .60. Tobacco acreage did not have an effect on pro-tobacco voting, b = 0.06, SE = 0.03, t(525) = 1.75, p = .10, r = .06. ICC for the model suggested that voting was sufficiently clustered within states, ICC = .35.



Figure 1. Random slope and intercept model