Convicted as a juvenile is defined as a conviction between ages 10-16, and being convicted as an adult is defined as a conviction between ages 17-24. There is a moderate (rs = .50) correlation between being convicted as a juvenile and convicted as an adult. The relationship is positive, meaning that if you were convicted as a child, you are moderately likely to be convicted as an adult. Being convicted as a juvenile correlated slightly less with being convicted overall (ages 10 - 24, rs = .72), than being convicted as an adult correlated with being convicted overall (rs = .87). The size of the correlations indicates that both juvenile and adult conviction are "strongly" and "very strongly"" (respectively) predictive of of criminality between ages 10-24 (as expected - the 2 predictor variables are subsets of the outcome variable). More importantly, we can see that adult convictions are more predictive of overall criminality (convictions ages 10-24) than juvenile convictions are - Thus not all juvenile offenders go on to be adult offenders. The difference in contribution, however, is not large enough to warrant a seperate examination of the two subsets as outcome variables in the main model, as convicted overall (ages 10-24) encompasses these two subsets quite evenly. Overall conviction is correlated at varying degrees with conviction at ages 10-13 (rs = .43), ages 14 - 16 (rs = .66), ages 17 - 20 ( rs = .79), and ages 21 - 24 (rs = .52). This highlights ages 17 - 20 as the most vulnerable period - adolescents who are convicted from ages 10 - 24 are most likely to be convicted during this period. Convicted between ages 17 - 20 is also more correlated with adult convictions (ages 17 - 24, rs = .91), than convicted at ages 21 - 24 correlates with conviction as an adult (rs = .60), indicating that most adult offenders (up to age 24) commit their crimes between ages 17 - 20.

The correlation plot inicates a high degree of multicollinearity - this is to be expected, as many variables are subsets of other variables. Being convicted between ages 10 - 24 is the broadest possible outcome variable, and can be seen as a measure of criminality overally for the duration of the measurements in the data. This is subsetted into being convicted as a juvenile (ages 10 - 16), and as an adult (ages 17-24). Each of these categories are further subsetted, with juvenile conviction being split into conviction between ages 10 -13, and ages 14 - 16, and adult conviction being split into conviction between ages 17 - 20, and ages 21 - 24. Being convicted between ages 14 - 16 is more predictive of juvenile conviction (rs = .92), than being convicted between ages 10 - 13 is (rs = . 60). And being convicted at ages 17 - 20 is more predictive of adult conviction (rs = .91) than being convicted between the ages of 21 - 24 is (rs = .60). Furthermore, both juvenile and adult conviction are strongly and similarly predictive of conviction overall (rs = .72 and .87, respectively). From this we conclude that the later juvenile period (ages 14 - 16) and the earlier adult period (ages 17 - 20) are very strongly predictive of each conviction period in each repective period, and thus a measure of conviction in these limited time frames is highly representative of the whole time frame. Furthermore, as both juvenile and adult conviction are strongly predictive of overall conviction to a similar degree, it may be useful to 1) use these two categories to represent overall conviction (so that the model predicts criminality in the most succeptible years), and 2) combine

Decide on outcome variable (to represent criminality) by considering the relationships between convictions at various ages.

The data can be treated as ordinal, as obtaining no convictions (coded as 1) measures a lower level of criminality than obtaining one/several convictions (coded as 2). As the data is ordinal and not continuous, we use spearman's method of correlation

```{r}

pairs.panels(wide\_conviction, method = "spearman")

I am interested in early life predictors of juvenile delinquency, thus I will consider number of juvenile convictions (between ages 10 - 16) as my measure of criminality (the outcome variable of interest). To test if juvenile delinquency may be further predictive of adult delinquency (between ages 17 -24), I will also check the correlations between number of juvenile and adult convictions with a Spearman correlation (for ordinal data).

Ages 8-9: Discipline of father & mother (v59 & v60), discipline quality of father & mother (v 62 & v63), interest in children by father (v90), physical neglect of boy (v123), praise by parents (v124), rules of parents (v132), broken home before age 10 (v134), separations up to 5 from father or mother or parents (v139, v140 & v141), separations before 10 from father or mother or parents (v144, v 145 & v 146) , temporary separations up to age 5 from father or mother or parents (v148, v149, v150), temporary separations up to age 10 from father or mother or parents (v151, v152 & v 153)

Ages 10-11: Attitude of father combined or mother combined (v178 & v179), authoratarianism of parents combined (v180), P. A. S. father and mother authoratarian (v249 & v250), supervision by parents (v274)

Ages 12-13: Parental approval of boy (v416), broken home before 15 (v425)

Ages 16-17: Who boy is living with (v495)

Ages 18-19: Natural parents alive or dead (v626), agree ment with mother and father (v629 & v630), relationships with parents combined (v791)

Ages 21-22: Age left home (v814)

Only the variables collected before age 17 can be used as predictors of juvenile delinquency, and all variables can be used as predcitors of adult delinquency

predictor\_variables\_recode.dat$discipline\_father\_8y <- recode(predictor\_variables\_recode.dat$discipline\_father\_8y, "0=NA; 2=3; 3=2; 4=2; 5=3; 6=NA")

predictor\_variables\_recode.dat$discipline\_mother\_8y <- recode(predictor\_variables\_recode.dat$discipline\_mother\_8y, "0=NA; 2=3; 3=2; 4=2; 5=3; 6=NA")

predictor\_variables\_recode.dat$discipline\_quality\_father\_8y <- recode(predictor\_variables\_recode.dat$discipline\_quality\_father\_8y, "0=NA; 4=2; 5=NA") predictor\_variables\_recode.dat$discipline\_quality\_mother\_8y <- recode(predictor\_variables\_recode.dat$discipline\_quality\_mother\_8y, "0=NA; 4=2; 5=NA")

predictor\_variables\_recode.dat$father\_interest\_8y <- recode(predictor\_variables\_recode.dat$father\_interest\_8y, "0=NA; 3=NA")

predictor\_variables\_recode.dat$maternal\_attitude\_8y <- recode(predictor\_variables\_recode.dat$maternal\_attitude\_8y, "0=NA; 3=2; 4:6=3; 7=NA")

predictor\_variables\_recode.dat$paternal\_attitude\_8y <- recode(predictor\_variables\_recode.dat$paternal\_attitude\_8y, "0=NA; 4=2; 5:6=NA")

predictor\_variables\_recode.dat$neglected\_8y <- recode(predictor\_variables\_recode.dat$neglected\_8y, "0=NA")

predictor\_variables\_recode.dat$parent\_praise\_8y <- recode(predictor\_variables\_recode.dat$parent\_praise\_8y, "0=NA")

predictor\_variables\_recode.dat$parent\_rules\_8y <-recode(predictor\_variables\_recode.dat$parent\_rules\_8y, "0=NA")

predictor\_variables\_recode.dat$permanent\_sep\_parent\_8y <- recode(predictor\_variables\_recode.dat$permanent\_sep\_parent\_8y, "3=2")

predictor\_variables\_recode.dat$over1mo\_sep\_father\_under5y <- recode(predictor\_variables\_recode.dat$over1mo\_sep\_father\_under5y, "3=2")

predictor\_variables\_recode.dat$over1mo\_sep\_mother\_under5y <- recode(predictor\_variables\_recode.dat$over1mo\_sep\_mother\_under5y, "3=2")

predictor\_variables\_recode.dat$over1mo\_sep\_parent\_under5y <- recode(predictor\_variables\_recode.dat$over1mo\_sep\_parent\_under5y, "3=2")

predictor\_variables\_recode.dat$over1mo\_sep\_father\_under10y <- recode(predictor\_variables\_recode.dat$over1mo\_sep\_father\_under10y, "3=2")

predictor\_variables\_recode.dat$over1mo\_sep\_mother\_under10y <- recode(predictor\_variables\_recode.dat$over1mo\_sep\_mother\_under10y, "3=2")

predictor\_variables\_recode.dat$over1mo\_sep\_parent\_under10y <- recode(predictor\_variables\_recode.dat$over1mo\_sep\_parent\_under10y, "3=2")

predictor\_variables\_recode.dat$temp\_sep\_father\_under5y <- recode(predictor\_variables\_recode.dat$temp\_sep\_father\_under5y, "3=2")

predictor\_variables\_recode.dat$temp\_sep\_mother\_under5y <- recode(predictor\_variables\_recode.dat$temp\_sep\_mother\_under5y, "3=2")

predictor\_variables\_recode.dat$temp\_sep\_parent\_under5y <-recode(predictor\_variables\_recode.dat$temp\_sep\_parent\_under5y, "3=2")

predictor\_variables\_recode.dat$temp\_sep\_father\_under10y <- recode(predictor\_variables\_recode.dat$temp\_sep\_father\_under10y, "3=2")

predictor\_variables\_recode.dat$temp\_sep\_mother\_under10y <- recode(predictor\_variables\_recode.dat$temp\_sep\_mother\_under10y, "3=2")

predictor\_variables\_recode.dat$temp\_sep\_parent\_under10y <- recode(predictor\_variables\_recode.dat$temp\_sep\_parent\_under10y, "3=2")

predictor\_variables\_recode.dat$parent\_vigilance\_8y <- recode(predictor\_variables\_recode.dat$parent\_vigilance\_8y, "0=NA")

= v159,

attitude\_father\_score\_8y = v178, attitude\_mother\_score\_8y = v179, pas\_authoritarianism\_parents\_10y = v180, maternal\_attitude\_10y = v227, paternal\_attitude\_10y = v248, pas\_authoritarianism\_father\_10y = v249, pas\_authoritarianism\_mother\_10y = v250,pas\_underconcerned\_mother\_10y = v251, supervision\_parents\_score\_8y = v274,

parent\_approval\_12y = v416, permanent\_sep\_parent\_12y = v425,

live\_parents\_home\_16y = v495,

parents\_alive\_18y = v626, live\_parentsorfoster\_home\_16y = v627, want\_live\_parents\_home\_18y = v628, agreement\_mother\_18y = v629, agreement\_father\_18y = v630, harmony\_parents\_score\_18y = v791,

age\_left\_home\_21y = v814