TO: Students in CJ 605
FROM: R. B. Taylor
DATE: 3/2/06
RE: Results of mini midterm

What follows are:

* answers to the 3 open ended questions
* how you scored, sorted by TUID
* the test itself

LETS TALK if and as there are questions.

1 .093 is the amount of variation in the outcome, collective efficacy, arising from between-neighborhood differences
2 null hypothesis: neighborhood context has no impact on the level of collective efficacy in the neighborhood; there is no significant variation on this outcome across neighborhoods.
11 – Those who see police acting more fairly than their neighbors think the police are acting, are significantly more likely to be less fearful than their neighbors, after controlling for neighborhood / district context

	mt_item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
	CORRECT			F	F	F	F	T	F	F	F		H	D	I	C	F	G	E	A	B		
TUID																						OUTOF20	PCT
907068908		0.5	1	1	0	1	1	0	1	1	1	0.2	1	1	1	1	1	1	1	1	1	16.7	83.5
908289763		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	100
908909840		1	1	0	0	0	1	1	1	1	1	0.7	1	1	1	1	1	1	1	1	1	16.7	83.5
909117467		1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	19	95
909598027		0.8	1	1	1	1	1	1	1	1	1	0.9	1	1	1	1	1	1	1	1	1	19.7	98.5
909659033		0.5	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	17.5	87.5
909755416		1	1	1	1	1	1	1	1	1	1	1.2	1	1	0	1	1	1	0	1	1	18.2	91
909826220		0.5	0.7	1	1	1	1	1	0	1	1	0.7	1	1	1	1	1	1	1	1	1	17.9	89.5
909834216		0.2	1	0	0	1	1	1	1	1	1	0.5	1	1	1	1	1	1	1	0	0	14.7	73.5
909952377		1	1	0	1	0	1	1	0	1	1	0.7	1	1	0	0	1	1	1	1	1	14.7	73.5
910031931		1	1	1	0	1	1	1	1	1	1	0.8	1	1	1	0	0	0	1	1	1	15.8	79
910040739		0.5	1	0	1	1	1	1	1	1	1	0.8	1	1	1	1	1	1	1	1	1	18.3	91.5
910054998		1	1	0	1	1	1	1	1	1	1	1.2	1	1	1	1	1	1	1	1	1	19.2	96
910205263		1	1	1	1	1	1	1	1	1	1	0.8	1	1	1	1	1	1	1	1	1	19.8	99

605 – SP 06 – Mini-midterm

PUT YOUR ANSWERS IN BLUE BOOKS – ON THE FRONT PUT YOUR COMPLETE TUID – **NO NAMES**

SECTION I – INTERPRETING A TABLE FROM A PUBLICATION

The Table below is from Duncan et al. The outcome is collective efficacy. Their survey had individuals (LEVEL 1) nested within families (LEVEL 2) nested within neighborhoods (LEVEL 3).

Table II. Parameter Estimates for the Unconditional Model

	Effect	*SE*	*t* Value
Mean collective efficacy	3.538	0.052	68.04¤¤¤
Level 1 variance	0.357	0.019	18.79¤¤¤
Level 2 variance	0.193	0.026	7.43¤¤¤
Level 3 variance	0.093	0.028	3.32¤¤

¤¤ $p < .01$; ¤¤¤ $p < .001$

1. What does the number 0.093 represent – explain what that term is telling you about, as simply as you can.
2. Explain what null hypothesis is being tested by the t test of the Level 3 variance. (In HLM this would be a chi square test – same idea, same test.)

SECTION II – INTERPRETING HLM OUTPUT

Following immediately below is the beginning of an HLM output file. The dependent variable is FEAR from the PAS Philadelphia data set. Level 1 is individuals; Level 2 is police districts. The predictor is police demeanor – a higher score means that the respondents think the police do their job more fairly and politely. More fear = higher score.

```
The outcome variable is    MFEAR
  The model specified for the fixed effects was:
 ----------------------------------------------------
   Level-1                  Level-2
   Coefficients             Predictors
 ----------------------   ---------------
         INTRCPT1, B0      INTRCPT2, G00
#* MPOL_DEM slope, B1      INTRCPT2, G10
'#' - The residual parameter variance for this level-1 coefficient has
been set
      to zero.
'*' - This level-1 predictor has been centered around its group mean.
 The model specified for the covariance components was:
 ----------------------------------------------------------
         Sigma squared (constant across level-2 units)
         Tau dimensions
               INTRCPT1
 Summary of the model specified (in equation format)
```

```
 ----------------------------------------------------
Level-1 Model
      Y = B0 + B1*(MPOL_DEM) + R
Level-2 Model
      B0 = G00 + U0
      B1 = G10
```

GIVEN THE ABOVE MODEL mark in your blue book whether each of the following statements are true or false:

3. Each police district will have a separate slope for the predictor MPOL_DEM.
4. Each DISTRICT'S **U0J** represents THAT DISTRICT'S PREDICTED score WHEN: respondents in that district SCORE ZERO on **un**centered MPOL_DEM
5. The B weight for MPOL_DEM (B1) will tell you about BOTH the individual AND the compositional impact of that predictor, on fear.

The Table below shows you some output from the same run. Following that are several questions – for each indicate true or false in your blue book

---

```
Tau (as correlations)
 INTRCPT1,B0  1.000

 ----------------------------------------------------
  Random level-1 coefficient   Reliability estimate
 ----------------------------------------------------
  INTRCPT1, B0                         0.565
 ----------------------------------------------------

The value of the likelihood function at iteration 16 = -2.982546E+002
 The outcome variable is    MFEAR

 Final estimation of fixed effects
 (with robust standard errors)
 ------------------------------------------------------------------------------
                                    Standard             Approx.
    Fixed Effect         Coefficient   Error      T-ratio   d.f.     P-value
 ------------------------------------------------------------------------------
 For       INTRCPT1, B0
    INTRCPT2, G00           0.250171   0.050137     4.990        22    0.000
 For MPOL_DEM slope, B1
    INTRCPT2, G10          -0.112829   0.048958    -2.305       340    0.022
 ------------------------------------------------------------------------------



 Final estimation of variance components:
 ------------------------------------------------------------------------------
 Random Effect           Standard      Variance     df    Chi-square  P-value
                         Deviation     Component
 ------------------------------------------------------------------------------
 INTRCPT1,       U0        0.18107       0.03279    22      56.39029    0.000
  level-1,       R         0.55676       0.30998
 ------------------------------------------------------------------------------
```

6. There are **no** significant differences between districts on the fear outcome, after controlling for differences between neighbors on the predictor MPOL_DEM.
7. A resident who sees the police acting more positively than his neighbors in that police district, is going to have a lower fear score, after controlling for neighborhood context.
8. After controlling for pooled, within-district differences on how police treat residents, the remaining differences (remaining variance) **between residents in the same district**, pooled across districts, is **.03279**
9. If you were thinking about whether it was worth while to add any Level 2 (district level) predictors to a subsequent version of this model, the output feature you would pay **closest** attention to would be the **reliability.**
10. This last analysis is an example of an HLM **ANOVA** model with no predictors.
11. This question asks you to write a short sentence: Explain what the results of the t-test of MPOL_DEM are telling you.

SECTION III – MATCH TERMS AND DEFINITIONS. Put in the letter of the correct answer for each term in the bluebook (assume throughout a 2 level model with individuals nested within police districts).

12. Reliability
13. G00
14. T00
15. U0j
16. Rij
17. group mean centered predictor
18. HLM ANOVA
19. ecological fallacy
20. individual fallacy

a. fallacy thinking that ecological observed relationships apply equally at individual level
b. fallacy thinking that individual-level observed relationships apply equally at the ecological level
c. deviation of district from grand mean
d. grand mean on outcome, when all predictors score zero (also works with no predictors)
e. model with no predictors, estimating random effects of aggregation units on outcome variance
f. individual deviation from district mean on outcome (after controlling for predictors, if entered)
g. X – X.j
h. Correspondence between observed district means on outcome and estimated true district means in population
i. Variance of district residuals on outcome (or variance of district outcome means if no predictors)