Exercise 04

Exercise 4.1

Intergenerational transmission of social status is a key concept in sociological research, exploring how parental social status influences the future social status of their children. A large body of research demonstrates differences in parental investment in their children according to social class or income, whether the investment is measured as money or time or type of investment (DiPrete, 2020). One hypothesis that can be formulated is:

Hypothesis 1: Higher parental social status is positively associated with higher expected social status of their children.

The hypothesis posits that children's expected social status is directly linked to their parents' social standing. It is widely recognized that children from more privileged backgrounds tend to attain higher levels of education, income, and occupational status compared to their peers from less advantaged backgrounds. Furthermore, the gaps by family income in financial investment in children are wider when income inequality is higher (Schneider et al., 2018).

According to social capital theory, individuals from higher social status families have greater access to valuable social resources, such as influential connections, mentors, and role models, which can significantly impact their children's opportunities and outcomes. As a result, children from such families have greater access to networks and resources that positively influence their expectations and aspirations.

In summary, this hypothesis aligns with the foundational concepts of social capital and intergenerational transmission. It is supported by extensive empirical evidence and theoretical frameworks in the field of sociology and inequality studies.

Exercise 4.2

In assessing the regression models predicting expected social status (ISEI), two models were utilized, as illustrated in **Table 1**.

Model 1 included the predictor variables FISEI (Father’s ISEI), age, and gender. The results revealed that FISEI, age, and gender all significantly influenced ISEI. FISEI had a coefficient estimate of 0.10 (significant at the 0.1% level), indicating that higher father's social status was associated with a higher expected social status for the individual.

Model 2 extended the analysis by incorporating an additional predictor, MISEI (Mother’s ISEI). The results showed that both FISEI and MISEI had significant effects on ISEI, suggesting that both parents' social status independently contributed to the expected social status of the individual. Notably, the effect size of MISEI (coefficient estimate of 0.08) was greater than that of FISEI (coefficient estimate of 0.07), indicating a slightly stronger influence of the mother's social status.

Table 1. OLS Regression Models Predicting Expected Social Status

	Model1			Model2		
Characteristic	**Beta**	**95% CI**[1]	**p-value**	**Beta**	**95% CI**[1]	**p-value**
FISEI	0.10	0.09, 0.12	<0.001	0.07	0.05, 0.08	<0.001
AGE						
15	—	—		—	—	
16	0.85	0.01, 1.7	0.047	0.90	0.03, 1.8	0.041
GENDER						
1-Male	—	—		—	—	
2-Female	-6.2	-7.0, -5.5	<0.001	-6.3	-7.1, -5.6	<0.001
MISEI				0.08	0.06, 0.10	<0.001

[1] CI = Confidence Interval

Overall, these findings highlight the significance of parental social status in shaping the anticipated social status of individuals, with a nuanced role for both fathers and mothers. **Hypothesis 1** is supported, demonstrating that parental background does influence an individual's expected social status. However, the adjusted R-squared values for both models were relatively low, suggesting that unmeasured factors also influence expected social status.

Exercise 3.3

The regression models (MODEL03) were separately estimated for girls and boys to explore gender differences in the relationship between parental and maternal social status, age, and expected social status (ISEI), as shown in **Table 2**.

Table 2. OLS Regression Models Predicting Expected Social Status by Gender

	Girls			Boys		
Characteristic	**Beta**	**95% CI**[1]	**p-value**	**Beta**	**95% CI**[1]	**p-value**
FISEI	0.10	0.07, 0.13	<0.001	0.04	0.01, 0.06	0.005
MISEI	0.10	0.07, 0.12	<0.001	0.06	0.04, 0.09	<0.001
AGE						
15	—	—		—	—	
16	0.59	-0.79, 2.0	0.4	1.2	0.10, 2.3	0.033

[1] CI = Confidence Interval

For girls, both FISEI (Father's ISEI) and MISEI (Mother's ISEI) significantly and positively influenced ISEI, with coefficients of 0.10 ($p < 0.01$). Age did not exhibit a significant effect on ISEI for girls.

In the case of boys, FISEI and MISEI also significantly and positively affected ISEI, with coefficients of 0.04($p < 0.01$) and 0.06 ($p < 0.01$), respectively. Age showed a significant and positive effect on ISEI (1.2, $p < 0.05$), suggesting that older boys tended to have a higher expected social status.

While both models had significant F-statistics, indicating a good overall fit, the R-squared values were relatively low for both girls (0.044) and boys (0.019). These results suggest that while parental and maternal social status influenced expected social status for both genders, other unmeasured factors contribute to the variability in expected social status among girls and boys.

Exercise 4.4

While Argentina has a relatively modest migrant population, constituting 5% of the total, it remains pertinent to explore the "immigrant optimism hypothesis." The regression models (Model 4 and Model 5) were employed to investigate the connection between migration status, age, gender, parental and maternal social status, and the educational and occupational aspirations of immigrant children in Argentina, as detailed in **Table 3**.

Table 3. Regression Results for the "Immigrant Optimism Hypothesis" in Argentina

	Model4			Model5		
Characteristic	**Beta**	**95% CI**[1]	**p-value**	**Beta**	**95% CI**[1]	**p-value**
MIG						
Native	—	—		—	—	
First gen	2.1	-0.18, 4.4	0.071	2.9	0.25, 5.5	0.032
Second gen	2.5	0.46, 4.6	0.016	4.0	1.7, 6.4	<0.001
AGE						
15	—	—		—	—	
16	0.67	-0.11, 1.5	0.092	0.87	0.02, 1.7	0.044
GENDER						
1-Male	—	—		—	—	
2-Female	-6.2	-6.9, -5.5	<0.001	-6.2	-7.0, -5.5	<0.001
FISEI				0.11	0.09, 0.12	<0.001

[1] CI = Confidence Interval

For Model 4, encompassing first-generation and second-generation immigrant status, both categories demonstrate an influence on expected social status (ISEI) with coefficient estimates of 2.1 ($p < 0.1$) and 2.5 ($p < 0.05$), suggesting weak significance. Age exhibits a positive but non-significant effect, while being female is linked to a significant decrease in expected social status (-6.2, $p < 0.01$).

In Model 5, introducing the additional predictor FISEI (Father's ISEI), the positive influence of immigrant status remains robust for both first and second generations (coefficient estimates of 2.9 and 4.0, respectively, both significant at $p < 0.05$). Age continues to have a positive effect (0.874, $p < 0.05$), while being female is associated with a decrease in expected social status (-6.2, $p < 0.01$). FISEI significantly contributes (0.11, $p < 0.01$), reinforcing the positive association between immigrant status and expected social status.

In summary, both models align with the immigrant optimism hypothesis, indicating that immigrant children in Argentina express heightened educational and occupational aspirations, even after accounting for parental background. The inclusion of FISEI in Model 5 underscores the robustness of this relationship.

References:

DiPrete, T. A. (2020). The Impact of Inequality on Intergenerational Mobility. *Annual Review of Sociology*, *46*(1), 379–398. https://doi.org/10.1146/annurev-soc-121919-054814

OECD (2019), PISA 2018 Assessment and Analytical Framework, PISA, OECD Publishing, Paris, https://doi.org/10.1787/b25efab8-en.

Schneider, D., Hastings, O. P., & LaBriola, J. (2018). Income Inequality and Class Divides in Parental Investments. *American Sociological Review*. https://doi.org/https://doi.org/10.1177/0003122418772034

R Packages:

Enzmann JAIRscadwbD, Schwartz M, Jain N, Kraft S (2023). _descr: Descriptive Statistics_. R package version 1.1.8, <https://CRAN.R-project.org/package=descr>.

Hlavac, Marek (2022). stargazer: Well-Formatted Regression and Summary Statistics Tables. R package version 5.2.3. https://CRAN.R-project.org/package=stargazer

Rich B (2023). _table1: Tables of Descriptive Statistics in HTML_. R package version 1.4.3, <https://CRAN.R-project.org/package=table1>.

Sjoberg DD, Whiting K, Curry M, Lavery JA, Larmarange J. Reproducible summary tables with the gtsummary package. The R Journal 2021;13:570–80.

Wickham H, Miller E, Smith D (2023). _haven: Import and Export 'SPSS', 'Stata' and 'SAS' Files_. *R package version 2.5.4*, <https://CRAN.R-project.org/package=haven>.

```r
library(haven)
library(descr)
library(stargazer)
library(table1)
library(gtsummary)


#### Step 1: data preparation ####
rm(list=ls())
#Read in data
DATA01 <- read_dta("assets/PISA2018.dta")
DATA01 <- subset(DATA01, DATA01$CNT=="ARG")


#### Step 2: variables construction ####

#VAR: Age
DATA01$AGE <- as.factor(DATA01$AGE)

#VAR: Migration Background
DATA01$MIG<-NA
DATA01$MIG[DATA01$IMMIG==1] <-"Native"
DATA01$MIG[DATA01$IMMIG==2] <-"Second gen"
DATA01$MIG[DATA01$IMMIG==3] <-"First gen"
DATA01$MIG <-as.factor(DATA01$MIG)
DATA01$MIG <-relevel(DATA01$MIG, ref="Native") #Change reference
category

#VAR: Expected ISEI
DATA01$ISEI <- NA
DATA01$ISEI <- as.numeric(DATA01$BSMJ)

#VAR: Mother's ISEI
DATA01$MISEI <- NA
DATA01$MISEI <- as.numeric(DATA01$BMMJ1)

#VAR: Father's ISEI
DATA01$FISEI <- NA
DATA01$FISEI <- as.numeric(DATA01$BFMJ2)

#VAR: Gender
```

```r
DATA01$GENDER<-NA
DATA01$GENDER[DATA01$ST004D01T==1]<-"1-Male"
DATA01$GENDER[DATA01$ST004D01T==2]<-"2-Female"
DATA01$GENDER<-as.factor(DATA01$GENDER)

#Sample Statistics
table1(~ FISEI+AGE+GENDER, data = DATA01)
table1(~ MISEI+FISEI+AGE+GENDER, data = DATA01)

#Split Sub-Dataset
GIRLS <- subset(DATA01,DATA01$ST004D01T == 2)
BOYS <- subset(DATA01,DATA01$ST004D01T == 1)



#### Step 3: Analysis ####

# Exercise 4.2
MODEL01 <- lm(ISEI ~ FISEI+AGE+GENDER, data = DATA01)
MODEL02 <- lm(ISEI ~ FISEI+MISEI+AGE+GENDER, data = DATA01)
stargazer(MODEL01,MODEL02,type="text")

OUTPUT01 <- tbl_regression(MODEL01)
OUTPUT02 <- tbl_regression(MODEL02)
tbl_merge(tbls = list(OUTPUT01, OUTPUT02), tab_spanner =
c("Model1", "Model2"))

# Exercise 4.3

MODEL03_G <- lm(ISEI ~ FISEI+MISEI+AGE, data = GIRLS)
MODEL03_B <- lm(ISEI ~ FISEI+MISEI+AGE, data = BOYS)
stargazer(MODEL03_G,MODEL03_B,type="text")

OUTPUT03_G <- tbl_regression(MODEL03_G)
OUTPUT03_B <- tbl_regression(MODEL03_B)

tbl_merge(tbls = list(OUTPUT03_G, OUTPUT03_B), tab_spanner =
c("Girls", "Boys"))

# Exercise 4.4

freq(DATA01$MIG) # Argentina has few migrants
MODEL04 <- lm(ISEI ~ MIG+AGE+GENDER, data = DATA01)
MODEL05 <- lm(ISEI ~ MIG+AGE+GENDER+FISEI, data = DATA01)
stargazer(MODEL04,MODEL05,type="text")
```

```
OUTPUT04 <- tbl_regression(MODEL04)
OUTPUT05 <- tbl_regression(MODEL05)

tbl_merge(tbls = list(OUTPUT04, OUTPUT05), tab_spanner =
c("Model4", "Model5"))
```