

Appendix

APLUS study

The APLUS study was designed with the goal of examining how young adults develop financial capability (e.g. financial knowledge, skills and values) and its associations with life outcomes (e.g. career, family formation, health and happiness). Please visit <https://www.aplushappiness.org> for detailed reporting on the study goals, methodology and major findings.

Data collection

In 2007, a multi-step recruitment plan was initiated. The study was announced via print and digital media, email and presentations in classrooms and dormitory buildings. All first-year students ($n=6231$) received information about the study and a direct link to the online survey via email. Nominal incentives for participation were offered.

Education and employment status at wave 3

The survey did not ask directly about graduate school attendance. We considered holding outstanding graduate debt a proxy for being in graduate school ($n=147$). However, only respondents who indicated that they had planned to go to graduate school after completing their undergraduate degree were asked about their graduate debt. Graduate students who had not planned to attend graduate school after completing their undergraduate degree, who funded their education without debt, or who had already finished paying off their graduate debt may not have been counted.

Missing data

As compared to included cases, excluded cases had slightly lower SFWB scores at wave 2 ($M=9.23$, $SD=.10$ versus $M=8.90$, $SD=.12$; $p=0.03$), and lower student debt at wave 3 ($M=17213.44$, $SD=25496.22$ versus $M=16819.01$, $SD=28930.0$ respectively; $p=0.90$). At wave 2, excluded cases were slightly less likely to be female (59% versus 64%; $p=0.015$) and more likely to have low income (52% versus 47%; $p=0.008$). Excluded cases also had a slightly higher mean depressed mood score at wave 2 ($M=2.74$, $SD=0.81$ versus $M=2.65$, $SD=0.77$]; $p=0.030$).

Measures

Personal factors

Depressed mood.

- How often do you feel unhappy, sad or depressed?
- How often do you feel that difficulties are piling up so high you can't overcome them?
- How often do you feel tired out?
- How often do you lose your appetite or eat a lot when you get upset?

Family socioeconomic factors

Childhood financial situation.

- When you were growing up, how often would you say your parents were able to meet the financial needs of your family? Responses: 1(none of the time) to 5(all of the time).
- When you were growing up, how difficult was it for your parents to pay their monthly bills? Responses: 1(not at all difficult) to 5(very difficult) – reversed.
- When you were growing up, was your family better off or worse off financially than the average family in your neighborhood? Responses:1(a lot better off) 5(a lot worse off) – reversed.

Emerging adult financial factors

Emerging adult income. In wave 1, the survey asked: “If you work, on average, what is your monthly gross (before taxes) income?”. In wave 2, the survey asked: “On average, what is your monthly gross (before taxes) income?”. In both waves, the response categories were: 0, \$1-249, \$250-\$499, \$500-749, \$750-999, and more than \$1000. The source of income was not asked about in either wave. In wave 3, the survey asked: “What is your current annual gross income (before taxes, total of all sources)?”. The response categories were: less than \$24,000, \$25,000-39,999, \$40,000-59,999, \$60,000-74,999, and more than \$74,999. In wave 3, the survey asked: “other than paid employment, what are your other sources of current financial support?”. Response categories were: family (e.g. parents, grandparents, siblings), spouse/partner/significant other, investments (e.g. Certificates of Deposit, stock/bonds, trust), loans/incur debt, government support (e.g. unemployment, Social Security), and fellowship, grant or other stipend.

Emerging adult financial independence. When filing their taxes, parents in the US can claim their children as dependents in order to receive certain tax deductions and credits. Dependent children must be under the age of 19 or a be a student under the age of 24 at the end of the calendar year. If a parent claims their child as dependent, the child cannot claim a personal exemption on their own tax return. In practical terms, when a young adult is not claimed as a dependent on their parents’ tax returns, it signifies that they are largely financially independent.

Table A1.
Summary of Correlations, by Wave.

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----------------------------------|-----------|-----------|----------|-----------|-----------|----------|----------|--------|----------|----|
| <u>Wave 1</u> | | | | | | | | | | |
| 1. SFWB | | | | | | | | | | |
| 2. Education debt | -0.294*** | | | | | | | | | |
| 3. Gender | -0.064 | 0.028 | | | | | | | | |
| 4. Race/ethnicity | -0.049 | -0.030 | -0.047 | | | | | | | |
| 5. Depression | -0.296*** | 0.049 | 0.149*** | 0.020 | | | | | | |
| 6. Parental income | 0.335*** | -0.103** | -0.048 | -0.221*** | -0.137*** | | | | | |
| 7. Parental education | 0.171*** | -0.145*** | -0.021 | -0.187*** | -0.034 | 0.373*** | | | | |
| 8. Childhood financial situation | 0.411*** | -0.211*** | -0.058 | -0.107** | -0.188*** | 0.451*** | 0.248*** | | | |
| 9. Emerging adult income | -0.012 | 0.019 | -0.071* | -0.089** | -0.011 | 0.097** | 0.005 | 0.046 | | |
| 10. Financial independence | -0.031 | 0.022 | -0.077* | 0.005 | -0.045 | -0.010 | -0.072* | -0.015 | 0.272*** | |
| <u>Wave 2</u> | | | | | | | | | | |
| 1. SFWB | | | | | | | | | | |
| 2. Education debt | -0.324*** | | | | | | | | | |
| 3. Gender | -0.097** | 0.029 | | | | | | | | |
| 4. Race/ethnicity | -0.037 | -0.029 | -0.047 | | | | | | | |
| 5. Depression | -0.312*** | 0.104** | 0.172*** | 0.061 | | | | | | |
| 6. Parental income | 0.238*** | -0.088** | -0.048 | -0.221*** | -0.106** | | | | | |
| 7. Parental education | 0.192*** | -0.144*** | -0.021 | -0.187*** | -0.081* | 0.373*** | | | | |
| 8. Childhood financial situation | 0.281*** | -0.228*** | -0.058 | -0.107** | -0.179*** | 0.451*** | 0.248*** | | | |
| 9. Emerging adult income | 0.018 | 0.060 | -0.071* | -0.089** | -0.034 | 0.097** | 0.005 | 0.046 | | |
| 10. Financial independence | 0.012 | 0.055 | -0.077* | 0.005 | -0.033 | -0.010 | -0.072* | -0.015 | 0.272*** | |
| <u>Wave 3</u> | | | | | | | | | | |
| 1. SFWB | | | | | | | | | | |
| 2. Education debt | -0.252*** | | | | | | | | | |
| 3. Gender | -0.115*** | 0.0250 | | | | | | | | |
| 4. Race/ethnicity | -0.027 | 0.062 | -0.047 | | | | | | | |
| 5. Depression | -0.411*** | 0.165*** | 0.182*** | 0.081* | | | | | | |

| | | | | | | | | | |
|----------------------------------|----------|-----------|---------|-----------|-----------|----------|----------|--------|----------|
| 6. Parental income | 0.131*** | -0.084* | -0.048 | -0.221*** | -0.133*** | | | | |
| 7. Parental education | 0.122*** | -0.063 | -0.021 | -0.187*** | -0.059 | 0.373*** | | | |
| 8. Childhood financial situation | 0.229*** | -0.154*** | -0.058 | -0.107** | -0.184*** | 0.451*** | 0.248*** | | |
| 9. Emerging adult income | 0.174*** | -0.151*** | -0.071* | -0.089** | -0.105** | 0.097** | 0.005 | 0.046 | |
| 10. Financial independence | 0.186*** | -0.065* | -0.077* | 0.005 | -0.085* | -0.010 | -0.072* | -0.015 | 0.272*** |

Note. Correlations for the full sample (n=903) are presented for each wave.

* $p < .05$, ** $p < 0.01$, *** $p < 0.001$

Table A2.

Full GCM Models Predicting the Effect of Education Debt on SFWB at Baseline (Intercept) and Over Time (Slope)

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|--|---------|----------------------|----------------------|----------------------|----------------------|
| <u>Intercept estimates</u> | | | | | |
| Log education debt | | -0.234*** (0.021) | -0.234*** (0.021) | -0.181*** (0.021) | -0.177*** (0.021) |
| Gender (male= ref) | | | | | |
| Female | | | -0.204 (0.193) | -0.085 (0.181) | -0.123 (0.182) |
| Race/ethnicity (white = ref) | | | | | |
| Black | | | -0.617 (0.548) | -0.446 (0.516) | -0.461 (0.515) |
| Other | | | -0.276 (0.201) | 0.162 (0.195) | 0.135 (0.195) |
| Depressed mood | | | -0.785*** (0.109) | -0.614*** (0.106) | -0.621*** (0.106) |
| Parental income (<\$50,000 = ref) | | | | | |
| \$50,000 - \$99,000 | | | | 0.126 (0.261) | 0.125 (0.265) |
| \$100,000 - \$200,000 | | | | 0.901** (0.281) | 0.918** (0.287) |
| >\$200,000 | | | | 1.612*** (0.343) | 1.637*** (0.347) |
| Parental education (HS or less = ref) | | | | | |
| Some college | | | | 0.279 (0.284) | 0.262 (0.327) |
| Bachelor's degree or more | | | | 0.292 (0.292) | 0.259 (0.291) |
| Childhood financial situation (low = ref) | | | | | |
| Medium | | | | 0.713** (0.213) | 0.696** (0.213) |
| High | | | | 1.649*** (0.245) | 1.656*** (0.245) |
| Emerging adult income (low = ref) | | | | | |

| | | | | | |
|---|-------------------|--------------------|---------------------|----------------------|----------------------|
| High | | | | | -0.175 (0.432) |
| Varies overtime | | | | | -0.318 (0.191) |
| Financial independence (dependent = ref) | | | | | |
| Independent | | | | | -0.214 (0.393) |
| Varies overtime | | | | | -0.171 (0.186) |
| <u>Slope estimates</u> | | | | | |
| Time | -0.100 (0.061) | 0.007 (0.078) | 0.458* (0.224) | 1.186*** (0.306) | 0.495 (0.326) |
| Log education debt | | 0.043** (0.014) | 0.053*** (0.014) | 0.031* (0.014) | 0.031* (0.014) |
| Gender (male = ref) | | | | | |
| Female | | | -0.055 (0.126) | -0.098 (0.123) | -0.028 (0.121) |
| Race/ethnicity (white = ref) | | | | | |
| Black | | | -0.291 (0.357) | -0.358 (0.348) | -0.355 (0.341) |
| Other | | | 0.218 (0.131) | 0.055 (0.131) | 0.091 (0.129) |
| Depressed mood | | | -0.226** (0.079) | -0.308*** (0.078) | -0.282*** (0.078) |
| Parental income (>\$50,000 = ref) | | | | | |
| \$50,000 - \$99,999 | | | | 0.035 (0.176) | 0.031 (0.175) |
| \$100,000 - \$199,999 | | | | -0.430* (0.189) | -0.470* (0.189) |
| >\$200,000 | | | | -0.855*** (0.230) | -0.903*** (0.229) |
| Parental education (HS or less = ref) | | | | | |
| Some college | | | | -0.107 (0.221) | -0.106 (0.217) |
| Bachelor's degree or more | | | | 0.102 (0.196) | 0.168 (0.193) |
| Childhood family financial situation (low =ref) | | | | | |
| Medium | | | | -0.195 (0.143) | -0.154 (0.140) |
| High | | | | -0.443** (0.165) | -0.439** (0.162) |
| Emerging adult income (low=ref) | | | | | |
| High | | | | | 0.469 (0.286) |
| Varies overtime | | | | | 0.417** (0.127) |

| | | | | | |
|---|--------------------|----------------------|----------------------|----------------------|----------------------|
| Financial independence (dependent = ref) | | | | | |
| Independent | | | | | 0.223 (0.260) |
| Varies overtime | | | | | 0.484*** (0.123) |
| <u>Constant</u> | 9.617*** (.102) | 10.154*** (0.108) | 12.543*** (0.177) | 10.228*** (0.446) | 10.587*** (0.478) |
| <u>Model fit</u> | | | | | |
| Pseudo R ² | | 11.61 | 21.30 | 26.34 | 27.43 |
| AIC | | 13087.97 | 12883.19 | 12765.55 | 12736.98 |
| BIC | | 13135.20 | 12977.66 | 12942.97 | 12961.34 |

Note. Standard deviations reported in parentheses. Model 1 includes time as the only covariate. Model 2 adds education debt intercept and slope terms. Model 3 adds gender, Race/ethnicity and depressed mood intercept and slope terms. Model 4 adds parental income, parental education and childhood financial situation. Model 5 adds emerging adult income and financial independence. Slope terms reflect the regression coefficient for the interaction between the covariate and time.

* $p < .05$, ** $p < 0.01$, *** $p < 0.001$

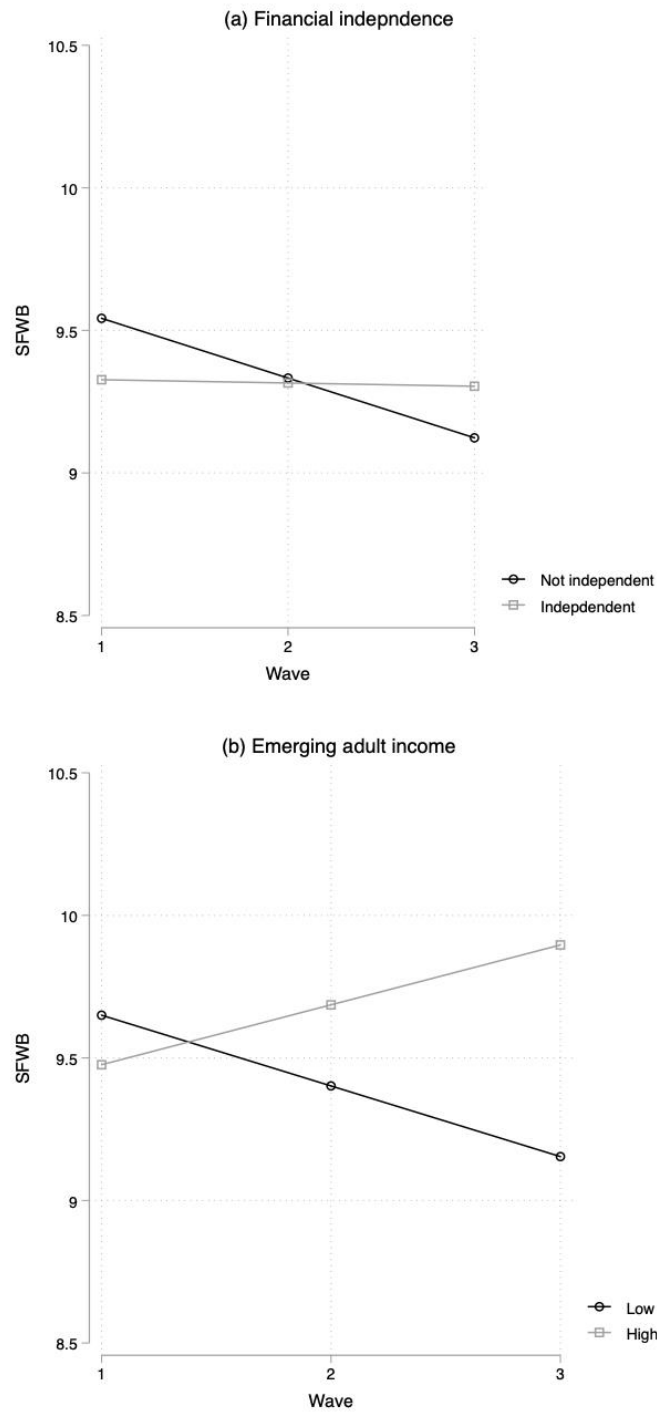


Figure A1. Predicted SFWB trajectories by emerging adult financial factors. Based on estimates from Table 4, Model 5.