



The Power of Practice: Predicting Career Decision Self-Efficacy

Among High School Agricultural Education Students

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Abstract

School-based Agricultural Education (SBAE) programs emphasize experiential learning as a mechanism for supporting students' career development; however, limited empirical research has examined which aspects of experiential participation most strongly predict career decision self-efficacy. This study investigated whether hours invested in experiential learning, years of participation, and type of experiential learning predicted Career Decision Self-Efficacy (CDSE) among secondary Agricultural Education students. Data were collected from a geographically convenient sample of 240 students enrolled in grades 9–12 across eight rural, suburban, and urban programs in Central Pennsylvania during the 2017–2018 academic year. Students completed the Career Decision Self-Efficacy-Short Form and reported demographic characteristics and experiential learning involvement. Multiple linear regression was employed to evaluate competing predictive models. Results indicated that a model including age and a natural log transformation of hours invested in experiential learning best predicted CDSE scores, explaining approximately 4% of the variance. Both predictors were statistically significant, while models including years of participation, type of experiential learning, and interaction terms did not yield stronger explanatory power. Assumptions of linearity, homoskedasticity, and normality were met, though independence was not satisfied due to the non-random sample. Findings suggest that time investment and developmental factors play a modest yet significant role in shaping students' confidence in career decision-making, highlighting the importance of sustained experiential engagement within Agricultural Education programs.

Introduction

- High School students enrolled in school-based Agricultural Education courses participate in various types of experiential learning to apply classroom content and help determine their future careers (National Council for Agricultural Education, 2017)
- Some *types of experiential learning* are introductory while other types incorporate business planning, employment at a local business, or conducting Agriscience research
- Years of participation and hours invested* in experiential learning varies depending upon student interest, years of enrollment, and available support from parents, mentors, and instructors (National Council for Agricultural Education, 2017)
- To determine students' ability to make decisions relating to future career choices, researchers utilized the Career Decision Self-Efficacy Scale (Lent & Hackett, 1987) and collected relevant demographic data related to the research questions
- Sample:** Students enrolled in Agricultural Education courses in grades 9–12 in Central Pennsylvania who had parental consent to participate ($n = 240$)

Research Questions

- What is the best predictor of career decision self-efficacy for Agricultural Education students involved in experiential learning?
- Is there a significant relationship between the *hours of experiential learning* and level of career decision self-efficacy based upon *years of participation* in experiential learning?
- Is there a significant relationship between the *hours of experiential learning* and level of career decision self-efficacy based upon the *type of experiential learning*?

Results

Table 1. Descriptive Statistics of Quantitative Independent and Dependent Variables

Variable Name	Mean	Standard Deviation	Median	N
Career Decision Self-Efficacy (CDSE) Score	93.94	15.11	93	240
Age	16.62	1.14	17	240
Years in Agriculture Education	2.05	1.08	2	240
Hours Invested in Experiential Learning	95.14	125.16	43	240

Table 2. Frequencies for Type of Experiential Learning

Type of Experiential Learning	N	%
Foundational	112	46.67
Entrepreneurship & Placement	91	37.91
Research & Service Learning	37	15.42

Table 3. Multiple Linear Regression Models Determining Predictors for Career Decision Self-Efficacy Scores ($n = 240$)

	Model A	Model B	Model C	Model D
Hours	0.014 [-0.003, 0.031]	0.010 [-0.011, 0.031]	0.044 [-0.013, 0.103]	1.463 [0.093, 2.835]
Years		0.366 [-2.123, 3.355]		
Age	1.675 [-0.151, 3.501]	1.450 [-0.721, 3.621]	1.851 [0.0006, 3.701]	1.843 [0.127, 3.560]
Type of Experiential Learning				
Entrepreneurship		0.867 [-4.292, 6.027]	-0.349 [-6.312, 5.614]	
Research		1.216 [-4.712, 7.145]	-0.619 [-7.43, 6.194]	
Hours*Type				
Entrepreneurship			-0.042 [-0.105, 0.019]	
Research			-0.008 [-0.085, 0.067]	
Constant	93.94 2e-16	93.42 2e-16	95.511 2e-16	88.561 2e-16
Adjusted R ²	0.033	0.023	0.031	0.040
F-Statistic	5.128 (2, 237)	2.143 (5, 234)	2.259 (6, 233)	5.972 (2, 237)
F-Statistic (p-value)	0.006	0.061	0.039	0.003

Note 1: For Models A – C, quantitative variables were centered at their means. Mean Hours = 95.14, Mean Years = 2.05, Mean Age = 16.62

Note 2: For Model D, Age was centered at its mean of 16.62. A natural log transformation was utilized on the Hours variable.

Note 3: 95% Confidence Intervals in brackets.

Regression Equation for Model D
*Predicted CDSE Score = 88.561 + 1.463*ln(Hours) + 1.843 (Age - 16.62)*

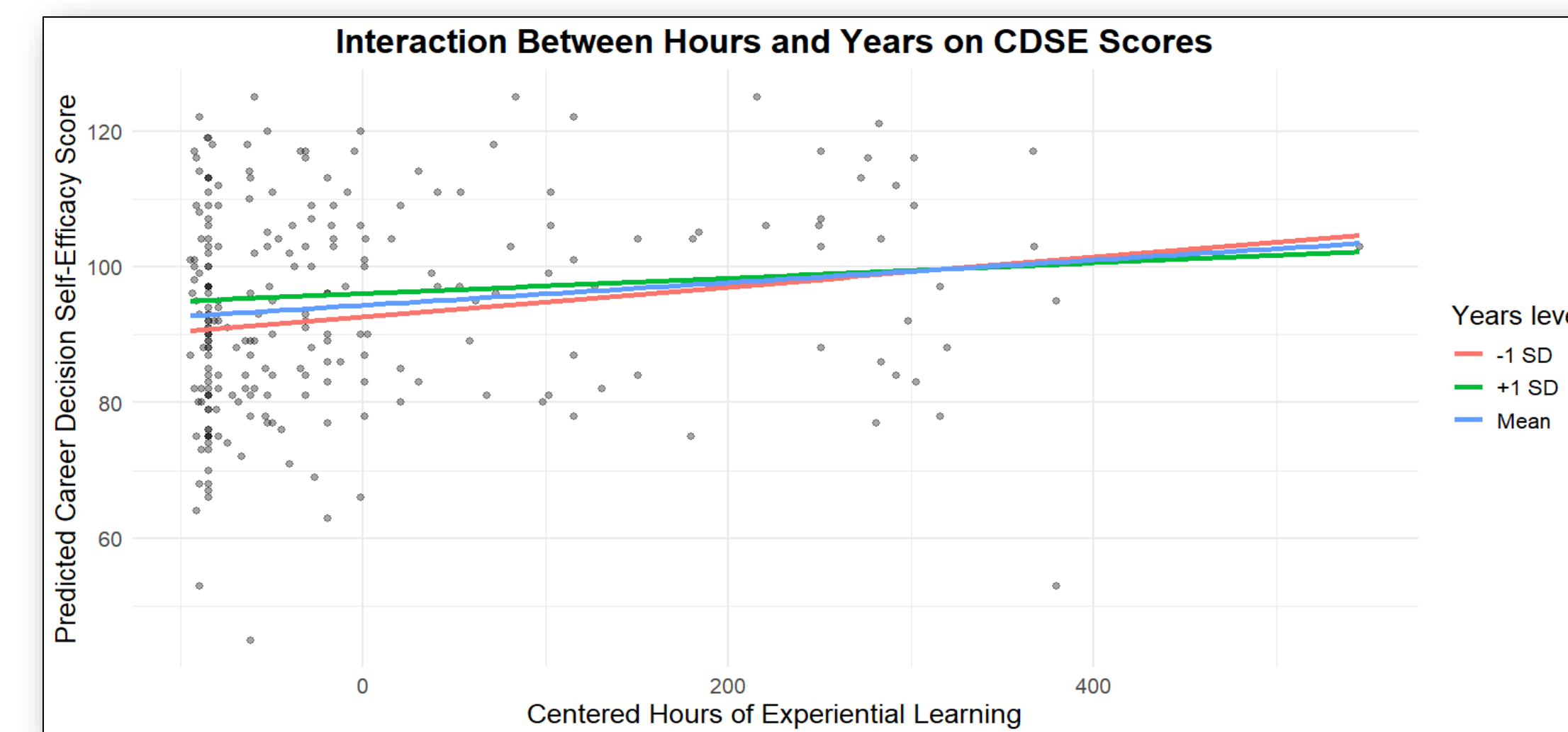


Figure 1. To address Research Question 2, a model was developed with an interaction term between Hours and Years of Experiential Learning to determine the impact on Career Decision Self-Efficacy Score.

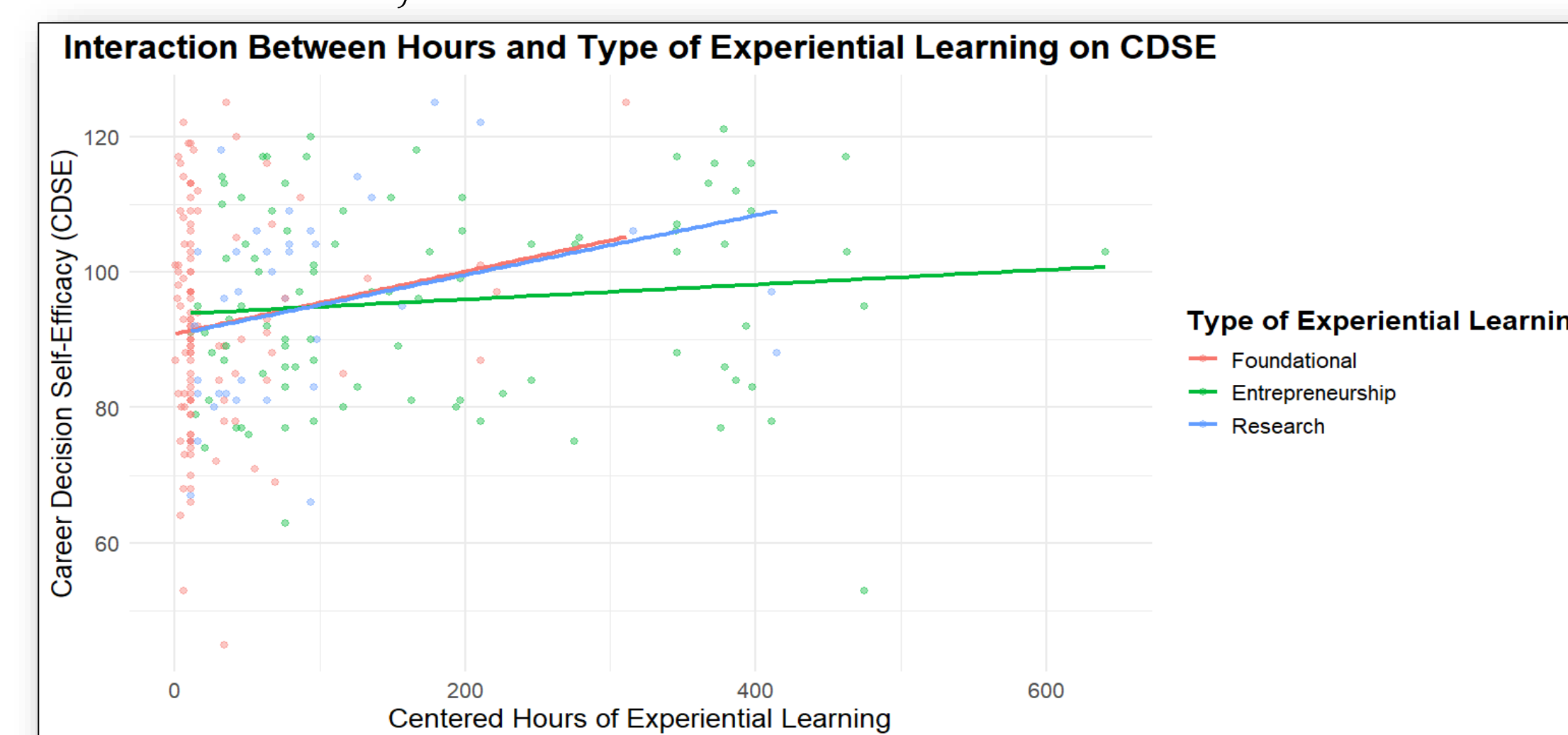


Figure 2. To address Research Question 3, Model C was developed with an interaction term between Hours and Type of Experiential Learning (Foundational, Entrepreneurship, and Research) to determine the impact on Career Decision Self-Efficacy Score.

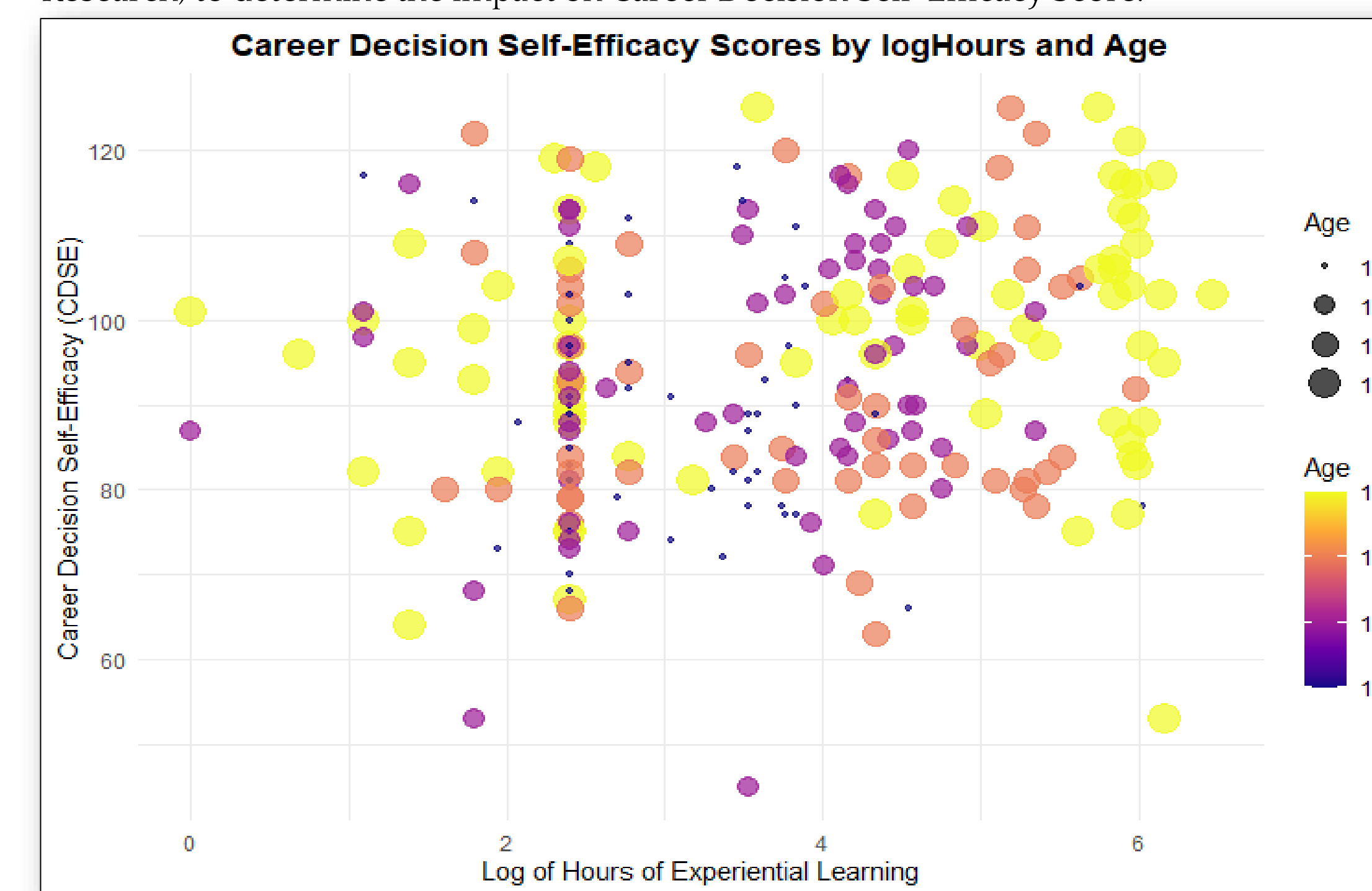
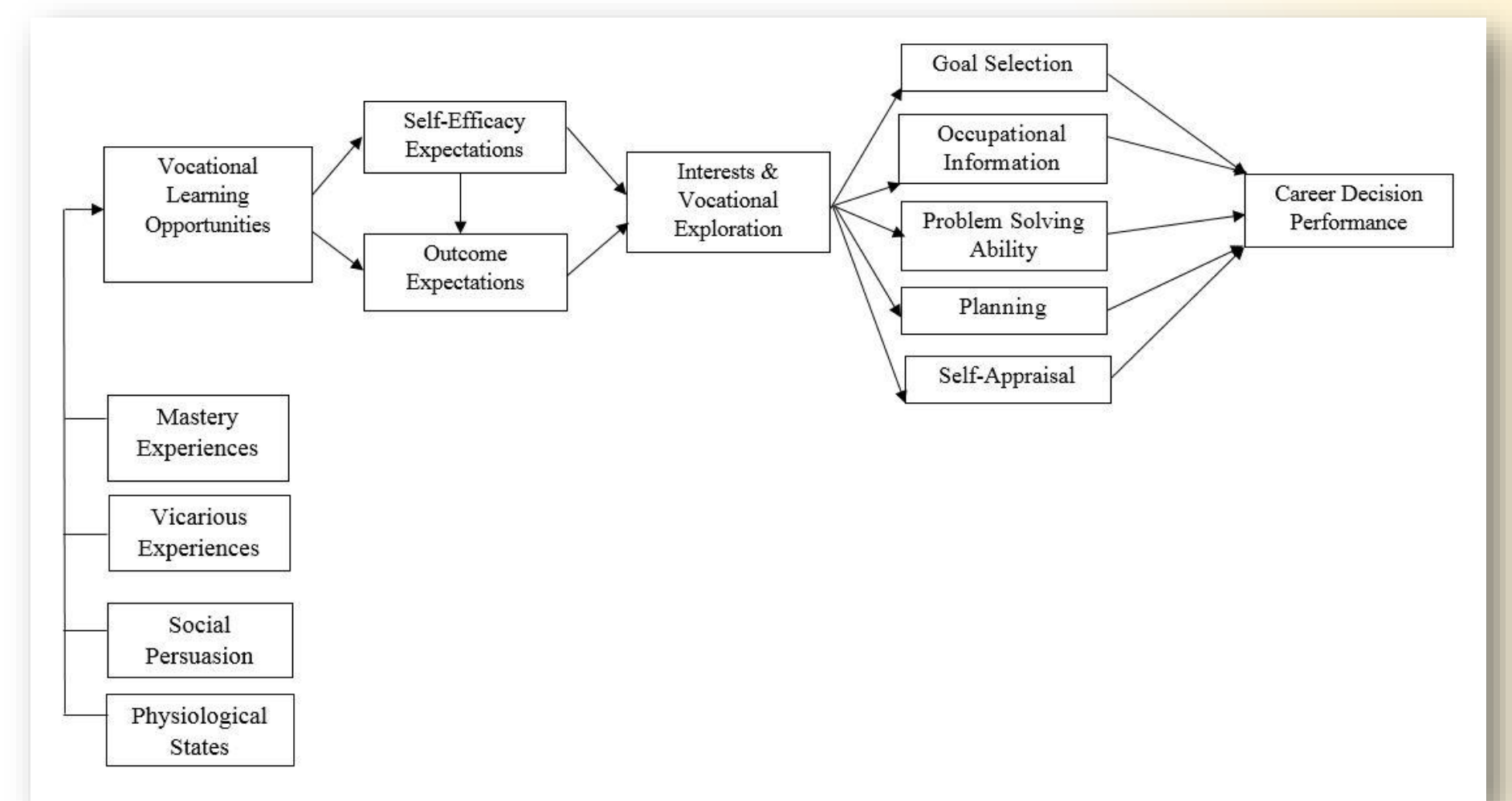


Figure 3. This graph displays the distribution of individuals by age (represented by dot size and color) and the LogHours used to predict Career Decision Self-Efficacy Score using Model D. A noticeable trend is the large group of 18-year-olds who have a greater number of hours, evidenced by the group of yellow dots on the right side of the graph. Examining that group reveals significant variation in CDSE scores among individuals aged 18 who invested the most hours. Looking at the top 1/3 of the graph for individuals with a CDSE score of 100 or greater, there are more individuals aged 18 (yellow dots) than the sum of the other ages combined. However, individuals aged 18 years or older with a CDSE score of 100 or greater had a broad distribution of hours invested.

Framework

Conceptualizing the Role of Vocational Exploration in Career Decision Self-Efficacy Development

- Elevated self-efficacy through experiential learning engagement
- Reinforcement of self-esteem via experiential learning
- Experiential learning supports goal formation
- Self-Appraisal improves through extended vocational experiences



Conclusions

Research Question #1: After developing Models A – D, it was determined that Model D was the best predictor of Career Decision Self-Efficacy Scores. This model utilizes Age and a natural log transformation of Hours to address skewness in the residual plots for CDSE Scores and Hours.

Utilizing Model D to predict Career Decision Self-Efficacy Scores can explain 4% of the variability using Age and LogHours after accounting for the complexity of the model.

Research Question #2: There is evidence of an interaction between hours and years of participation in experiential learning (Figure 2). However, the slopes were very similar, so regression analysis focused on other independent variables when building models A-D.

Research Question #3: There is evidence of an interaction between hours and type of experiential learning (Figure 1). Model C revealed that the slopes for each type of experiential learning were not significant, so this was not considered for the final model.

Hypothesis Test for LogHours
 $H_0: \beta_1 = 0$
 $H_a: \beta_1 \neq 0$
 t-value = 2.103
 p-value = 0.0365

Hypothesis Test for Age
 $H_0: \beta_2 = 0$
 $H_a: \beta_2 \neq 0$
 t-value = 2.116
 p-value = 0.0354

Confidence Interval for LogHours
 We are 95% confident that for a 10% increase in Hours, the population median for CDSE score will increase between 0.0089 and 0.2701 points when Age is held constant.

Conclusion: There is moderate evidence that the population slope between CDSE Scores and LogHours is different than 0 after controlling for age.

Conclusion: There is moderate evidence that the population slope between CDSE Scores and Age is different than 0 after controlling for LogHours.

Confidence Interval for Age
 We are 95% confident that for a 1-year increase in Age, the population mean for CDSE score will increase between 0.127 and 3.560 points when Hours are held constant.

Recommendations

- Future studies should include a larger sample size (i.e. all Agricultural Education students in a particular state)
- Future studies should consider a longitudinal design to collect Career Decision Self-Efficacy scores in 9th grade and 12th grade, then predict increase/decrease in CDSE scores after 4 years of participation
- More detailed information about experiential learning involvement should be collected to allow for additional models to be developed