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Proposal Details

Personal Information

Name	Dr. Lyle McKinney
Informal Name	Lyle
Institution / Affiliation	University of Houston
Unit / Department	
Title	Assistant Professor of Higher Education
Preferred Mailing Address	Dept of Educ Psych
	427 Farish Hall
City	Houston
Country	United States
State	Texas
Zip/Postal Code	77204-5019
Email	llmckinney@uh.edu
Phone	713-743-1784
Fax	713-743-4996

Financial Representative

Name	Anne Sherman
Informal Name	
Institution / Affiliation	University of Houston
Unit / Department	Office of Contracts and Grants
Title	Director
Preferred Mailing Address	316 E. Cullen Building
City	Houston
Country	United States
State	TX
Zip/Postal Code	77204-2015
Email	acsherman@uh.edu
Phone	713-743-9240
Fax	

Secondary Investigator

1. Secondary Investigator Information

Name	Dr. Andrea Burridge
Informal Name	
Institution / Affiliation	University of Houston
Unit / Department	
Title	Visiting Associate Professor
Preferred Mailing Address	465 Farish Hall
City	Houston
Country	United States

State   TX
Zip/Postal Code   77204-5023
Email   aburridge@central.uh.edu
Phone   713-743-0412
Fax

Project Description I

Title:

Helping or Hindering? How Loan Borrowing Impacts Certificate and Associate's Degree Attainment among Community College Students

Statement of the research problem and national importance:

Project Overview:
The purpose of this project is to examine the effects of federal loan borrowing and debt on persistence and certificate/associate's degree attainment among community college students. Contradictory findings from a limited body of research on this topic make it difficult to conclude whether loans help or hinder students enrolled at community colleges. Findings from this study are needed to inform public policy and institutional practice because there remains considerable debate about the utility of loan borrowing among this student population.

Context of the Research Problem:
Our nation's community colleges have a longstanding reputation as affordable institutions that provide access to higher education for thousands of lower-income and underrepresented students each year (Cohen & Brawer, 2008). However, many community college students are no longer able to afford the total costs of attendance without borrowing. Steele and Baum (2009) found that 38% of associate's degree graduates and 30% of students earning certificates had acquired federal and/or private loan debt. Their analyses also show that between 2003-04 and 2007-08, median debt levels increased for students earning associate's degrees (up 14% to $7,125) and certificates (up 44% to $6,534). Perhaps this growing reliance on loans should not be a surprise given that, "forty percent of community college students have such low incomes that they have no resources to pay for a college education" (Institute for College Access & Success, 2009, p. 1).

Loan borrowing among community college students is a contentious issue and there remains debate as to whether these students should even have access to loans (see Project on Student Debt, 2011). Approximately 1 million community college students (9% nationwide) are denied access to federal loans because their institution does not participate in the federal loan programs (Project on Student Debt, 2011). Community colleges that do not make federal loans available to their students often cite a desire to protect students from future financial hardships. Perhaps these concerns as justified given community college students who borrow are at greater risk of dropping out before earning their degree (Gladieux & Perna, 2005) and defaulting (Dynarski, 1994; Field & Brainard, 2010) than students attending four-year institutions.

While the rationale for not participating in the federal loan programs may be well-intentioned, denying students access to loans can have unintended consequences. Without access to a federal loan, students may be forced to attend part-time or work more than 20 hours per week to afford tuition (Project on Student Debt, 2009). Research indicates that attending part-time and working more hours per week can adversely affect persistence (Horn & Berktold, 1998; King, 2002). The Project on Student Debt (2009) claims that even a modest federal loan "can make it possible for a student to limit work hours, pay for child care, attend school full-time, or otherwise free up time needed for classes and studying" (pg. 2).

Several reports (Project on Student Debt, 2008, 2009, 2011) have criticized community colleges that elect not to make federal loans available to their students, suggesting this policy approach shortchanges students and reduces their chances for degree attainment. In response, the American Association of Community Colleges (2008) issued a formal statement in support of institutional choice, claiming that community colleges are structured in a way that makes borrowing a last resort and largely unnecessary for most students.

National Importance & Timeliness of the Study:
So which policy approach is best? Do federal loans help or hinder community college students' chances of remaining enrolled and earning their certificate or associate's degree? If loans help facilitate attainment, then borrowing would represent a wise investment for many community college students because of the higher labor market returns associated with earning a certificate (Bosworth, 2011) or associate's degree (Baum, Ma, & Payea, 2010). Conversely, if borrowers are more likely to dropout than non-borrowers, then community colleges that deny their students access to federal loans may be increasing students' chances for attainment.

Unfortunately, existing research provides no definitive conclusions on this issue that could help inform current policy or practice. These inconclusive findings are troublesome in light of recent events (e.g. economic recession, rising tuition, modifications to Pell Grant eligibility) that are likely to increase borrowing among community college students. In addition, effective policy on this issue could directly benefit the national completion agenda efforts, which aims to increase by 50% the number of degree and certificate graduates by 2020 (McPhail, 2011). Findings from this project are intended to inform current policy decisions about the utility of loan borrowing among community college students.

Review the literature and establish a theoretical grounding for the research:

The majority of research examining loan borrowing has focused on students attending four-year institutions. Far less attention has been given to borrowing among community college students. This abbreviated literature review briefly describes trends in loan borrowing among this student population before turning attention to the handful of studies that have examined the relationship between loans and community college student persistence.

Among full-time students with documented financial need in 2007-08, approximately 29% of community college students borrowed federal loans compared to 72% of students attending public four-year institutions (Institute for College Access & Success, 2009). Even when they have remaining financial need of $2,000 or more, community college students are less likely to borrow than students attending four-year colleges and universities (Cunningham & Santiago, 2008). England-Seigerdt (2011) used data from Washington state to identify characteristics of community college students who use loans and found that in, "Washington's community colleges, students who are White, older, male, financially independent of their parents, or have higher family incomes are the most likely to borrow" (p. 94).

Unfortunately, existing research generates more questions than answers regarding the effects of loans on the persistence and degree attainment of community college students. Only a handful of studies have empirically examined this issue and the findings are contradictory. Using data from NPSAS:86, St. John and colleagues found loans did not affect within-year persistence for either traditional-aged (St. John & Starkey, 1994) or non-traditional-aged (Hippensteel, St. John, & Starkey, 1996) community college students during their first year of enrollment. In contrast to findings from St. John and colleagues, Cofer and Somers (2000) analyzed data from NPSAS:96 and found that low and moderate levels of loan debt negatively impacted within-year persistence, while high levels of loan debt were positively associated with persistence. In a similar study, the researchers analyzed NPSAS:93 data and found that higher levels of loan debt had a negative impact on persistence (Cofer & Somers, 2001).

Only two studies have specifically examined the effects of federal loans on between-year persistence among community college students. Using data from BPS:90/94, Dowd & Coury (2006) found that loans had a negative influence on persistence to the second year and no effect on degree attainment measured five years after initial enrollment. Conversely, Mendoza and colleagues (2009) analyzed state-level data and found that loans, alone and in combination with grant aid, positively impacted persistence to the second year for community college students in Oklahoma. In conclusion, a review of existing research on the effects of loans on community college student persistence/attainment reveals, "…the empirical literature does not present consistent results, and more work is clearly needed in this area" (Dowd & Coury, 2006, p.57).

Limitations of Existing Research:
The current project seeks to address several limitations in the literature. First, no studies of this topic utilizing national data have explicitly controlled for the self-selection associated with which community college students choose to borrow. Self-selection bias has been identified as a major statistical problem plaguing many financial aid studies because it can undermine the precise of estimates and even the magnitude and direction of effects (Alon, 2005; Cellini, 2008; Chen, 2008; Dowd, 2008). Therefore, this project utilizes propensity score matching techniques to control for self-selection bias. Second, previous studies have not examined how the cumulative level of loan debt acquired beyond the first year impacts persistence. This line of inquiry is valuable because it may reveal a particular 'debt threshold' that causes many community college borrowers to drop out and when this drop out typically occurs. Third, the only study (i.e. Dowd & Coury, 2006) examining how loans affect associate's degree attainment among community college borrowers analyzed data from BPS:90/94. These data are now over 15 years old and borrowing among community college students, as well as the maximum amounts students can borrow annually, has increased during this time period. Finally, the literature review revealed no other studies that have examined the causal effects of loans on persistence and attainment for students enrolled in certificate programs.

Conceptual Framework:
This study draws upon two multidisciplinary conceptual frameworks in order to establish a more comprehensive understanding of two issues: a) community college students' willingness to use loans and accumulate loan debt, and b) how loan borrowing impacts persistence and attainment among this student population.

Human capital theory assumes that students borrow in the present under the assumption that the long-term monetary and nonmonetary benefits of earning a college degree will outweigh the immediate costs of becoming indebted (Becker, 1993). Building upon the strengths of human capital theory, Perna (2006a) proposed a conceptual model of student choice that "integrates aspects of the economic theory of human capital and sociological notions of social and cultural capital and recognizes that multiple layers of context influence an individual's college-related decision making" (Perna, 2006b, p. 1621). By accounting for relevant sociocultural and exogenous factors (e.g. institutional characteristics, public policies) absent from many extant studies, Perna's model has the potential to offer new perspectives on how different student groups assess the costs and benefits of borrowing (see Perna, 2008). This study adapts Perna's model to understand the factors that shape community college students' decision to borrow and their willingness to accumulate varying levels of debt in order to achieve their academic goals.

The present study also utilizes an integrated conceptual model recommended by Chen (2008) for examining the effects of financial aid on student persistence/dropout. This model incorporates perspectives from five major and well-researched theories (i.e. psychological, sociological, organizational, interactionalist, economic) used in studying persistence. In addition to the independent variables recommended by Chen, the 'environmental variables' (e.g. hours of employment, family responsibilities) offered by Bean and Metzner's (1985) model of non-traditional student attrition will be analyzed because of their relevance for many community college students. The heterogeneous approach proposed by Chen underscores the value of examining aid effects by students' income status and race/ethnicity, and provides guidance for the research design of this project.

Describe the research method that will be used:

This project will address three related research questions using data from the latest Beginning Postsecondary Students Longitudinal Study (BPS:04/09). The methodology that will be used to answer each question is discussed below.

Research Question 1: Are there significant differences in persistence and associate's degree attainment among community college students who do, and do not, borrow through federal student loans?

The sample will consist of students who began at a community college during the 2003-04 academic year and were enrolled in an associate's degree program. The outcome of interest is persistence/attainment status measured at two time points: year three (2006) and year six (2009). This outcome will be coded: 1) earned associate's, 2) transferred before earning associate's, 3) no degree but still enrolled, and 4) dropped out. The analysis will first rely on propensity score matching (PSM) to adjust for selection bias (Rosenbaum & Rubin, 1983). Next, two multinomial logit models (MNLMs) will be employed as the outcome categories do not have strict ordering (Long, 1997).

Propensity score matching: In observational studies, because of the lack of randomization, imbalances in observed and unobserved variables can occur, which result in bias when researchers study group differences (Rubin, 1997). In PSM, a probability (propensity) is generated for each case that represents an individual's propensity to undergo a treatment, given their background characteristics. Thus, the propensity score can be represented as the probability of treatment (i.e. borrowing a federal loan) given a vector of observed variables:

$$p(x) = Pr[T=1|X=x]$$

where Pr is the probability of experiencing an outcome, T is the treatment, and X is a vector of characteristics. These propensity scores can be matched, creating groups of subjects who are as similar as possible on observed variables, potentially eliminating bias in comparing treatment groups using observational data (Mitra, Schnabel, Neuget, & Heitjan, 2001; Rubin, 1997).

The PSM will follow these steps: 1) Selection of covariates based upon Perna's conceptual model and extant literature on borrowing. Because the goal of PSM is to create equivalent groups, not parsimony, variables hypothesized to be related to borrowing, with the exception of variables affected by participation (Malcolm & Dowd, 2012), will be included; 2) Probit regression to calculate propensity scores; 3) Kernel matching with a narrow bandwidth to avoid matching cases with large differences (Malcolm & Dowd, 2012; Titus, 2007); 4) Test of balance of covariates in matched groups; 5) Estimation of treatment effects and standard errors; 6) Sensitivity analysis.

Multinomial Logistic Regression Model: The MNLM will estimate the treatment effect of borrowing. This model can be thought of as simultaneously estimating the binary logits for all comparisons of the outcome categories (Long, 1997). To examine the effect of a predictor *x* on the odds of outcome A versus B, the following binary logit is estimated:

$$\ln\left[\left(Pr(A|X)\right)/\left(Pr(B|X)\right)\right] = \beta_{(0,A|B)} + \beta_{(1,A|B)}\, x + \varepsilon_i$$

where A and B are two of the four outcomes, $\ln\left[\left(Pr(A|X)\right)/\left(Pr(B|X)\right)\right]$ is the log odds ratio, β's are paramenter estimates, and ε's are error terms. Thus, this model addresses how an individual's characteristics affect their likelihood of being in a certain category on an outcome variable.

Research Question 2: Among students enrolled in associate's degree programs who do borrow federal loans, how does their cumulative level of federal loan debt affect their persistence and degree attainment?

The sample used for research question one will be delimited to only those associate's degree-seeking students who did borrow federal loans. This line of inquiry is valuable because it may reveal a particular level of debt that causes many borrowers to dropout and the timeframe when this dropout most often occurs. The outcome of interest is persistence measured annually across all six academic years available in the dataset (i.e. 2003-04 to 2008-09). The outcome will be coded: 1) earned associate's; 2) transferred before earning associate's; 3) no degree but still enrolled; or 4) dropped out. A competing risks event history analysis (or survival analysis) is employed, which is used to determine whether one of these events occurs, and if so, when (Allison, 1995; Clark, Bradburn, & Love, 2003; Singer & Willett, 2003). This analysis is commonly used in medical literature (e.g, Baer et al., 2011; Friedlin & Korn, 2005; Kojori et al., 2004; Evans et al., 2010) and its use has grown in recent years among education researchers (e.g. DesJardins, Ahlburg, & McCall, 2005; Lassibille & Navarro Gómez, 2008; Scott & Kennedy, 2005).

Survival analysis is described elsewhere extensively (Singer & Willette, 2003); the distinguishing feature of a competing risks approach is that the event of interest is composed of multiple subtypes and that the timing of, and factors predicting and controlling the outcomes could also be different (Allison, 1995; Putter, Fiocco, & Geskus, 2007). A fundamental concept in competing risks analysis is the cause-specific hazard function, which is the hazard of failing from a given cause (D) in the presence of competing events

$$\lambda_k(t) = \lim_{\Delta t\downarrow 0}\left[\left(Pr(t\leq T<t+\Delta t, D=k|T\geq t, X)\right)/\Delta t\right]$$

for time of failure T, in the presence of a vector of covariates X. Thus, this analysis allows examination of both the distributions and predictors of risk for the outcomes.

Research Question 3: Are there significant differences in certificate (i.e. non-degree programs) attainment among community college students who do, and do not, borrow through federal student loans?

The sample will consist of students who began at a community college during the 2003-04 academic year and were enrolled in a certificate program. The outcome of interest is certificate attainment measured at two time points: end of year one (2003-04) and year three (2006). The outcome will be coded: 1) earned certificate, 2) transferred before earning certificate, 3) no certificate but still enrolled, and 4) dropped out. This analysis will proceed analogously to that of Research Question 1.

BPS utilizes a complex sampling design that necessitates the use of a model-based or design-based approach (Hahs-Vaughn & Onwuegbuzie, 2006; Hahs-Vaughn et al., 2011). Therefore, Stata 12 software will be employed for data analysis as both approaches can be implemented. A primarily design-based approach will be used to answer these research questions (Thomas

& Heck, 2001).

Uploaded Appendix Document(s):

Project Description II

Will you use NCES target dataset? Yes

Please check all NCES datasets that apply
- Beginning Postsecondary Student (BPS) Longitudinal Study and Transcript Data

Explain why each dataset best serves this research. Include a variable list for each dataset used.
The Beginning Postsecondary Students Longitudinal Study (BPS:04/09) restricted-use dataset will be used for this project. BPS:04/09 surveys cohorts of first-time, beginning students at three points in time: at the end of their first year (2003-04), and then three and six years after first starting in postsecondary education. Data on students' persistence/attainment is also available for the years between these three time points. While the associate's degree is often referred to as a 'two-year' degree, 52% of students take between two and four years to complete their associate's and 26% take more than four years (Johnson, 2011). Certificate programs are often organized into three categories based on length of study: less than one academic year; between one and two years; and between two and four years (Bosworth, 2010). Therefore, the six-year time frame offered by BPS:04/09 is well-suited for the goals of this project.

The conceptual frameworks and the extant research literature will be used to select the variables to be analyzed in this project. Examples of the variables of interest are listed below, though data limitations may require the use of some alternative variables during analysis. BPS variable names are provided in parentheses.

Outcome Variables

- *Persistence/Attainment status (PROUTF; CCSTAT3Y)*

Predictor Variables

Student Background Characteristics

- Gender (GENDER)
- Race/ethnicity (RACE)
- Student's age (AGE)
- Dependency status (DEPEND)

Social and Cultural Capital

- Parent's level of education (PAREDUC)
- Primary spoken language (PRIMLANG)

Pre-College Variables

- High school GPA (HCGPAREP)
- Delayed postsecondary enrollment (DELAYENR)

College Experiences

- Attendance pattern (ATTNPTRN)
- College GPA (GPA)
- Remedial coursework (REMETOOK)
- Met with an academic advisor (FREQ04C)

Expected Costs and Benefits

- Grant/work-study aid received (TOTGRT; PELLCU; PELYRS; TOTWKST)
- Level of federal loan debt (TFEDLN; T4XCUM06)
- Highest degree ever expected (HIGHLVEX)
- Received financial assistance from parents/family (PARHELN)
- Tuition and fees (TUITION2)
- Program type (i.e. type of associate's degree program; UGDEGAA)

Environmental Pull Factors

- Family income (DEPINC; INDEPINC)
- Hours worked per week (JOBHOUR2)
- Distance lived from institution (HOMEDIST)

Will you use NSF target dataset? No

Explain why each dataset best serves this research. Include a variable list for each dataset used.

Will you address the NPEC focus topic? Yes

If yes, please briefly describe:
Yes, this project does address the NPEC focus topic by examining the effects of federal loans on the persistence and attainment of students enrolled in certificate (i.e. non-degree) programs at community colleges. Demand for certificate programs remains strong, as there has been a 242% increase in the number of certificates awarded at community colleges over the past 20 years (Mullin, 2011). Many of these certificates are awarded in the health professions, business and management, technology, and mechanic and repair tech. Increasing certificate attainment has been identified has a strategy that can contribute significantly to the national completion agenda efforts (Bosworth, 2010; McPhail, 2011). Considering that loan borrowing and debt among certificate students is rising (Steele & Baum, 2009), it is important to understand if loans are helping or hindering students' chances of successfully earning their certificate. This project offers the first known empirical examination of this issue.

Project Description III

Provide a timeline of key project activities:

Timeline	Project Activities
June – August 2012	Data preparation and descriptive analysis
September – October 2012	Model specification and data analysis Begin drafting manuscript #1 (RQs 1 & 2)
November – December 2012	Draft findings/discussion sections of manuscript #1 Submit AIR Forum proposal Submit CSCC conference proposal Submit mid-year progress report to AIR
January – February 2013	Submit manuscript #1 to *Research in Higher Education* Begin drafting manuscript #2 (RQ 3)
March – April 2013	Presentation at CSCC conference Draft findings/discussion section of manuscript #2
May – June 2013	Submit manuscript #2 to the *Community College Journal of Research & Practice* Present cumulative findings at AIR Forum UH Communications Office develop press release about project findings

	Prepare and submit final report to AIR	

List deliverables such as research reports, books, and presentations that will be developed from this research initiative:

The deliverables resulting from this project will include:

- Manuscript submitted to *Research in Higher Education* (Research Questions 1 and 2)
- Manuscript submitted to *Community College Journal of Research & Practice* (Research Question 3)
- Presentation at the 2013 AIR Forum in Long Beach, California
- Presentation at the 2013 Council for the Study of Community Colleges conference in San Francisco, California

Describe how you will disseminate the results of this research:

Findings from this project will be shared with education researchers and practitioners through two journal articles and two conference presentations. In addition, because of the policy implications of this project, findings will be shared directly with the American Association of Community Colleges, the National Association of Student Financial Aid Administrators, and the Project on Student Debt. The Communications Office at the University of Houston will also develop a press release and feature story about this project to be pitched to media outlets.

Provide a reference list of sources cited:

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IRB Statement

Statement of Institutional Review Board approval or exemption:

According to guidelines of the Committee for the Protection of Human Subjects (CPHS) at the University of Houston, research studies that utilize existing data are 'exempt from review' under Category 4: Research Involving the Collection or Study of Existing Data. Therefore, the 'request for exemption' documentation will be submitted to CPHS if this project is funded. CPHS review of research studies categorized as 'exempt' occurs on a weekly basis.

Statement of Use of Restricted Datasets

Restricted-use data from BPS:04/09 is required to carry out this project. This dataset was acquired by the PI in December 2011 as an amendment to an existing NCES data license. The statistical consultant for this project will file a formal request to be added to this data license if the project is funded. The PI is aware of and will adhere to all data security guidelines described in the license agreement.

Biographical Sketch

Lyle McKinney's Biography Sketch

Dr. Lyle McKinney currently serves an Assistant Professor of Higher Education within the Higher Education and Cultural Studies Program at the University of Houston. He earned his Ph.D. in Higher Education Administration, with a concentration in Educational Policy, from the University of Florida in 2010 with support from a Presidential Fellowship. Prior to pursuing his Ph.D. he was the Director of the AndrewServes Servant Leadership Program and an instructor at Andrew College.

Dr. McKinney's research examines the impact of higher education policy and finance on the success of students from lower socioeconomic backgrounds, particularly those attending community colleges. He teaches graduate courses on community colleges, higher education policy and governance, and the history and philosophy of higher education. His research has been published in reputable education journals and received both internal and external grant funding.

Dr. McKinney has training and several years of experience working with NCES datasets. He was a fellow of the Summer 2010 AIR/NCES Summer Data Policy Institute in Washington, DC. In Fall 2010, he led a workshop at the University of Florida about analyzing data from large-scale, secondary datasets. Dr. McKinney utilized NPSAS:08 for his dissertation research and has also published research using data from BPS:04/06. The proposed research project is directly aligned with his research agenda and builds upon his knowledge and experience with NCES datasets.

Andrea Burridge's Biography Sketch

Dr. Andrea Backscheider Burridge currently serves as a Visiting Associate Professor in the Educational Psychology Department of the University of Houston. She earned her Ph. D. in Psychology and her MA in Applied Statistics from the University of Michigan. Prior to joining the University of Houston, she served as a behavioral statistician at the National Center on Birth Defects and Developmental Disabilities of the Centers for Disease Control and Prevention (CDC), and a senior biostatistician in Health Services Research and Development (HSR&D) at the Atlanta Veterans Affairs Medical Center. She has also served as statistical consultant on numerous projects, with collaborators from sites such as the Emory Division of Geriatrics and Gerontology, the Houston Advocates for Mental Health in Children, and Florida Atlantic University.

Dr. Burridge's research involves examining longitudinal change in diverse areas, including work in language acquisition, gerontology, psychology, and medicine. She has taught courses in research methods and statistics at both the graduate and undergraduate level, including courses in advanced regression methods, statistics in clinical research, analysis of categorical data, and multivariate methods. Her research has been published in reputable peer-reviewed journals in psychology and in medicine and she has served as a statistician on grants funded by national agencies such as the NIH, VA, and CDC. She has analyzed data from several large datasets, including the VA Normative Aging Study (NAS) and the National Health Interview Survey (NHIS).

Budget Requirements

Lyle McKinney' Budget

Personnel-Time on Project
%(FTE) Academic Year: 12.50
%(FTE) Summer: 50.00

Personnel-Salary & Benefits
Academic Year: $ 70974.00
Summer: $ 23457.00

Andrea Burridge's Budget

Personnel-Time on Project
%(FTE) Academic Year: 0.00
%(FTE) Summer: 33.33

Personnel-Salary & Benefits
Academic Year: $ 0.00
Summer: $ 23425.00

Graduate Research Assistant's Budget

Personnel-Time on Project
%(FTE) Academic Year: 0.00
%(FTE) Summer: 0.00

Personnel-Salary & Benefits
Academic Year: $ 0.00
Summer: $ 0.00

Total Salary and Wages: $28407.80

Travel: $1580.00
Other travel related expenses: $1110.00
Other research expenses: $1210.00
Total Request: $32307.80

Funding History

The proposed project does not utilize any prior, current, or pending funds. A University of Houston small grant in the amount of $3,000 was funded that examines the topic of loan borrowing among community college students, but this study utilizes a qualitative research design and interviews with 15 community college borrowers to better understand their 'first-hand' experiences with loans. The goal is for findings from the qualitative study to complement findings from this project, thus offering a more comprehensive understanding of the effects of loans and debt on the success of community college students.

The PI has successfully completed (or is on schedule to complete) all of the research projects for which he has received prior funding.

McKinney, L. (2011). *The Effects of Loan Borrowing and Indebtedness on the Success of Community College Students.* Funded by the Small Grants Program, University of Houston. Amount: $3,000.

McKinney, L. & Horn, C. (2011). *Interconnecting Higher Education: Using Online Education to Enhance Preparation of Higher Education Leaders.* Funded by the Faculty Development Initiative Program, University of Houston. Amount: $23,100.

Novak, H. & McKinney, L. (2011). *Leaving Money on the Table: Examining the Persistence of First-Year College Students who do not apply for Federal Financial Aid.* Funded by the National Association of Student Financial Aid Administrators (NASFAA) Sponsored Research Grant Program. Amount: $2,500.

McKinney, L. & Novak, H. (2011). *Failure to File: Examining the Characteristics and Persistence Rates of Community College Students who do not file a FAFSA.* Funded by the Council for the Study of Community Colleges (CSCC) Research Grant. Amount: $2,000.

McKinney, L. (2011). *The Community College Baccalaureate: Implications for State Policy and Institutional Practice.* Funded by New Faculty Research Grant Program, University of Houston. Amount: $5,200.