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博 士 学 位 论 文

大学本科新生学业成就之影响因素分析

——基于某“985 工程”高校的考察

Factors Influencing Undergraduate Students' Academic Achievement

—Evidence from 2009 Freshmen Cohort of a Chinese Research

University

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摘要

本科第一年是大学生学习和发展的奠基阶段，也是大学生学术、社会生活双方面的适应时期。本科新生的学习与发展，既是高等教育管理者亟须关注的实际问题，也是高等教育研究的重要课题。本文以某“985工程”大学2009级大一新生为研究对象，采用问卷调查与管理数据收集相结合的方式建立新生学习经历综合数据组，客观展示当前中国高等教育改革与发展的特定情境和“985工程”高校的特殊院校背景下本科新生从高中到大学过渡时期的经历与表现；应用教育生产函数模型建立新生学业成就之影响因素的计量关系模型，采用线性回归、分位回归、包含工具变量的两阶段最小二乘回归和多层线性模型等统计、计量方法技术，探索新生学业成就背后个人特征和家庭背景、入学前的学习基础与能力、入学后的体验与投入、同辈效应等因素的影响。研究发现：

1. 个人特征与家庭背景因素分析显示，女生成绩显著高于男生，但学生的成绩越好，性别间的差异就越小。家庭背景因素中，家庭人均年收入对学生的学业成绩产生显著的负向影响，对成绩排名中、下的男生影响尤其明显；家庭所在地类型对学生成绩有显著的正向影响，并且这种效应集中体现在成绩高、低两极的学生群体中；父母教育程度和工作类型因素对学生成绩解释力不强。

2. 学生入学前的学习基础与能力对大一学生的学习成绩有较强的解释力。其中，学生的高中总体学业水平、高考成绩和高中就读重点班级对学生成绩有显著的正向影响；而通过保送入学、特招免考、自主招生等特殊招考途径入学的学生与统招统考学生的大一成绩并无显著差别。

3. 学生投入与体验因素中，大学满意度和出国学习计划对学生的大一成绩有显著的负向影响；专业满意度和课外参与学术活动的计划对学生的大一成绩有显著的正向影响；学生成绩在专业间存在显著差别。

4. 宿舍室友的学业特质对学生的大学成绩有显著的影响，而且男生比女生更容易受室友影响，成绩水平低的学生比成绩水平高的学生更容易受到室友影响。同辈效应在男女生群体中表现也有不同：男生成绩越高，受到的室友影响越小，而女生随着成绩提高，室友影响有变大的趋势。

本论文的主要贡献在于：

1. 本研究的理论框架、分析方法、指标选择和数据收集方案借鉴了国内外研究的最新进展，为综合分析中国大学本科生学业成就的研究设计提供了经验参考；

2. 本研究采用量化方法，通过调查数据和管理信息的综合使用，以样本高校为例客观呈现了当前大学本科生新生的学习经历与表现，为高等教育管理者、大学师生、学生家长和社会公众认识大学新生经历和本科教育质量提供了经过研究证实的信息；

3. 本研究针对国内外在教育生产函数框架内探讨大学生学业成就的研究都仍薄弱的现实，应用教育生产函数模型和计量分析方法，对大学生学业成就的复杂影响因素做了尽可能精确的分析；

4. 本研究与国内外已有的“院校影响力”、教育生产函数、同辈影响研究一脉相承。研究对中国当前情境以及特定院校背景下大学本科新生学业经历的呈现与学业成就分析，一方面为相关理论发展提供了新的实例和实证证据；另外一方面为我国本土相关研究的理论发展和研究方法进步提供参考。

关键词：学业成就；院校影响力；教育生产函数；同辈影响

Abstract

Entering college means taking a big step. What freshmen do can have a great impact on their academic and personal development in future college years, not to mention the rest of their lives. In China, though rapid and complex developments in higher education domain have prompted a prominent and visible voice asking for understanding freshmen's campus experience both at institutional and individual levels, rare data and analysis have been offered. Little research has been focused on examining facts of college students' freshman year; less is known concerning various factors affecting their achievement and development.

Thus, the central research question this study aims to answer is determination of the influence of selected factors-- demographic factors, family background, previous schooling experience, peer group and student involvement on academic achievement of freshmen at a Chinese research university, therefore to contribute to understanding of first year college students' academic experience, and quality improvement in higher education process.

The research utilizes datasets from the 2009 Freshmen Survey of sample University to determine grade 2009 students' situation at their initial stage of college attendance. The Freshmen Survey, using the census method of sampling, collected data on newly matriculated students' family background, high school experience, scores in National College Entrance Examination, student ID, and self-reported satisfaction, expectations, academic and co-curricular plans, time spending, knowledge, skills and interest, psychological health status in their first year of attendance at the sample University, and etc. In addition, to follow students' gain in academic development and living condition during their stay in the sample University, students' first year GPA and dormitory assignment were obtained from their official school records.

Based on the application of Education Production Function, the research ascertains the effects of gender, family income, family location, grade in senior high school, admission into class of elites in senior high school, score in NCEE, satisfaction with university and major, plan to study abroad, involvement in extracurricular academic activities, academic track and peer group on students' first

year GPA. Identification strategies including the instrumental variable model and the 2-level hierarchical linear model are applied in order to account respectively for the endogeneity of roommates' grades and hierarchical data structure. The quantile regression and the analysis of the male and female subsamples identify heterogeneous effects of various factors on student academic performance. The study finds that

1. Female students perform better than male students, but the gender gap is smaller among high performing students. For the top 10% sample, gender does not have effects on students' GPA.

2. Family income is a negative and significant predictor, especially for male students at the bottom or the middle; family location is a positive and significant predictor, especially for students who are at the top or bottom; parents' levels of formal education and occupations generally have no effects on students' GPA.

3. Average grade in senior high school, admission into class of elites in senior high school and score in NCEE are significant and positive predictors of students' GPA; ways of admission into university have no effects on students' GPA.

4. Satisfaction with university and plan to study abroad are significant and negative predictors; satisfaction with major and involvement in extracurricular academic activities have significant and positive effects on students' GPA; a grade gap between students of different academic tracks exists.

5. Roommate effects on students' GPA exist; male students, low performing students are more sensitive to roommate effects than female and high performing students; peer characteristics also have different effects on male and female sub-groups: for male students, the higher his grades, the less roommate effects, while for the female sub-group, the higher her grades, the greater roommate effects.

The study adds new knowledge to the college student research area in several ways:

1. It compares strength & weakness of different theoretical frameworks, models, research methods, approaches to measurements, summarizes general empirical findings and inconsistency, discusses in details the accomplishments of previous studies, knowledge gaps and areas for future research, which expands methodological possibilities to address questions that cannot be answered using traditional methods.

2. Using representative data collected through questionnaire survey and official records, it offers accurate, comprehensive and concrete data of undergraduate students' life experience and academic outcomes in a Chinese research university. It

provides information to students, parents, educators, social scientists and policy makers to better understand the needs of Chinese college students.

3. It determines and assesses the influence of selected factors upon students' academic achievement, including factors such as peer effects that were seldom considered in previous studies in China. Advanced procedures were employed, for example, instrumental variable model, and multilevel investigation of effects of schools and student characteristics on academic achievement. The findings of this study have significant implications for education decision making by public policymakers and parents.

Key Words: Academic Achievement; College Impact; Education Production Function; Peer Effect

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