

Modeling Latino/a Academic Performance at a State University

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**Prof. Charles Cappell
Northern Illinois University**

**George Gutierrez
Susan Timm**

Direct all correspondence to Prof. Charles Cappell, Social Science Research Institute and the Department of Sociology, Northern Illinois University, DeKalb, IL. Email address: ccappell@niu.edu

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Abstract

This paper presents a model explaining the achieved GPA of Latino/a university students as a function of background and institutional involvement indicators. From a population of all Hispanic students entering a major Midwestern university from 1993 to 1998 (N=1321), 412 completed surveys. Structural equations modeling revealed academic preparation and degree of English language based acculturation as the strongest direct effects predicting GPA. Family poverty has the largest influence in explaining academic achievement by virtue of its many indirect effects. The controversial issue of the extent and nature of acculturation and social assimilation v. marginalization are addressed with this study. Policy recommendations include a practical 'multiculturalism' approach that respects the student's heritage but integrates them into the dominant, non-Hispanic academic culture.

Theory and Previous Research regarding College Level Achievement

The general model of student achievement in higher education takes into account the background resources students bring with them, the institutional resources available to the students while attending (including other students), and importantly, the level of involvement or engagement of the student in the academic experience (Astin, 1985, 1993; Tinto, 1993). While complicated, these inclusive models seem to regularly identify a consistent set of characteristics that predict varying levels of student success.

It is reasonable to assume at the outset that a basic, general model applies to students of all ethnic and racial categories. Latino, African-American, and other marginalized ethnically and racially categorized students have fewer of the resources or attributes needed for success. Tinto reports, for example, that rates of departure from college are more a function of academic difficulties for minorities than for whites (Tinto, 1993, p. 71). Overall engagement in academic life seems to play a large role in determining academic success; and minority students apparently need higher levels of involvement and integration to succeed than do white students Tinto, 1993, p. 75). Nora, Carera, Hegeorn, and Pascarella (1996) found the model the basic model of engagement, personal and institutional resources did not fit for minority students. "Only environmental factors, cognitive abilities, and affective gains associated with attending college were found to contribute to the persistence behavior among minority students." (Nora, Carera, Hegeorn, and Pascarella, 1996, p.441). Background characteristics and institutional level variables had no effect on persistence.

Kraemer (1993) found that among community college Latino/a students, among the Tinto based engagement variables tested, only class participation was related to persistence. Other engagement variables, such as use of library, seeking tutoring, using a computer lab, meeting instructors outside of class to discuss academic topics, or meet with academic counselors had no effect. The presence of Hispanic faculty, staff, and students made the students feel 'more at home', as did Hispanic cultural activities.

The type of culture, or dimensions of culture in which students operate also has been targeted as a cause of academic success. Research has now shown that parents of Hispanic children have far less knowledge of the processes needed to generate a college degree than whites (Tornatzky, Cutler, and Lee, 2002). So even with strong parental encouragement and support, the type of cultural capital needed to make success more probable may not be present. More general research on social support networks suggests that African American networks may be circumscribed than white networks, and that Hispanic networks more family focused (Kim and McKenry (1998).

Hypotheses have also been suggested that aspects of minority, non-European, non-Western cultures inculcate different cognitive learning styles that make it more difficult for members of these cultural groups to succeed in the European, Anglo based culture of most universities (Anderson, 1988).

Even more complex socio-psychological processes have been proposed in which minority students, feeling the threat posed by negative stereotypes of their academic ability will reduce their effort for fear of failing (Charles and Massey, 2003 referencing Steele,) Narrative analysis of interactions some minority students have with mentors, teachers, and peers has revealed a complex pattern in which self-concepts are renegotiated to strike compromises, perhaps only temporary, between traditional ethnic self-concepts, even stereotypes, and the self-

identities needed for academic success (Nasir, Na'ilah Suad, and Geoffrey B. Saxe. 2003; Stepick, Alex. 2003).

The models developed and tested in this study recognize the need for some measure of 'cultural affinity' to the dominant academic culture as a component in predicting success, along with the usual set of attributes of student preparedness and institutional engagement.

Description of Study

The population of all Latino students entering a large mid-western university from 1993 fall term to 1998 spring term (N=1321) were mailed questionnaires. Of those, 412 students completed questionnaires that were usable (31%). Students who entered in the more distant past were under-represented. The sample consists of mostly current Latino N.I.U. students, and female students are over-represented. We then obtained institutional data: student GPA, etc. for the 412 students who completed the survey.

The students were asked about their involvement in social organizations (fraternities, sororities, etc.). An index was created to reflect this level of involvement. Another set of questions based on Hazuda, Stern, and Haffner (1988) were factor analyzed to produce three concepts related to Anglo assimilation and acculturation: Extent of English language based social networks when growing, when an adult, and extent to which books read, radio stations, etc. are in English.

The structural equation model initially estimated was based on a composite of Tinto's and Astin's model of student achievement, modified by the indicators that have been identified in specific research on Hispanic achievement: the degree of social and cultural assimilation, the importance of the Latino culture, and the cultural interpretation of traditional Hispanic family ties and gender roles.

The original model tested did not provide a good fit of the data, so modification indices and theoretically guided judgements were used to revise a series of models that were tested. The final, best fitting model appears in Figure 1 and estimates of the effect statistics are presented in Table 1. This model has the following endogenous variables:

η_1 : CUMGPA	(Cumulative GPA)
η_2 : SOCINVL	(Index of Involvement in Social Clubs – Standardized)
η_3 : ACADSUPP	(Index of use of Academic Support – Standardized)
η_4 : LATCLUB	(Participation Level in University Latino/a Clubs & Organizations)
η_5 : ADULTFRN	(Factor Score of English Social Network as Adult)
η_6 : ENGLLANG	(Factor Score of Language of Culture)
η_7 : CHILDFRN	(Factor Score of English Social Network When Growing Up)
η_8 : ACTCOMP	(Comprehensive ACT Score)
η_9 : S5Q042	(Self-Evaluation of How Well High School Prepared for College)
η_{10} : S5Q036	(Self-Reported High School GPA – ordered categories)
η_{11} : S4Q028	(Family Income – ordered categories)
η_{12} : LATCULT	(Factor Score of Importance of Latino Culture)

The three exogenous variables in the model are as follows:

ξ_1 : S4Q031B	(Father's Education)
ξ_2 : S4Q031A	(Mother's Education)
ξ_3 : S5Q045	(Ave. Number of Hours per Week Spent Studying)

Specified Functional Form of Trimmed Model Explaining GPA:

Eq. 1: Predicting CUMGPA

$$\text{CUMGPA} = f (\begin{array}{l} \eta_2: \text{SOCINVL} - \text{Level of participation in college social clubs} \\ \eta_3: \text{ACADSUPP} - \text{Level of use of academic support organizations} \\ \eta_4: \text{LATCLUB} - \text{Level of involvement in Latino clubs} \\ \eta_6: \text{ENGLLANG} - \text{Level of English language friends/family/media} \\ \eta_8: \text{ACTCOMP} - \text{Comprehensive ACT score} \\ \eta_9: \text{S5Q042} - \text{High school prep. (subjective evaluation)} \\ \eta_{12}: \text{LATCULT} - \text{Subjective evaluation of Latino culture's importance} \\ \xi_1: \text{S4Q031B} - \text{Father's Education} \\ \xi_3: \text{S5Q045} - \text{Hours study in typical week} \end{array})$$

Findings

Referring again to Table 1 and Figure 1, we see the full model used to ultimately explain variation in cumulative GPA. Structural equations modeled the direct and indirect effects of background variables, cultural variables including the level of English used in social and cultural activities, institutional effects including the participation in Latino campus organizations, and academic preparation.

Academic preparation and degree of English language based cultural assimilation emerge as the strongest direct effects on predicting GPA.

The strongest direct effects on GPA were found to vary according to:

- English language as the primary cultural language (.19),
- Subjective evaluation of level of high school preparation for college (.19),
- Hours study in a typical week (.17),
- ACT Comprehensive score (.13),
- Importance of Latino Culture (.14).

The major institutional variables in this analysis are important because they can be manipulated via organizational policy. Below are several of the paths by which institutional variables are involved, or not involved, in affecting a student's GPA:

- Level of academic support use positively influences GPA (.10), but this effect is not significant at the .05 level.
- Level of involvement in social clubs (fraternities, sororities, etc.) negatively influences GPA (-.10), but again this effect is not significant at the .05 level.
- Level of involvement in Latino organizations has an effect parallel to social clubs in general, i.e. a negative effect, (-.10), but this effect is not significant at the .05 level. This indicates, in a direct fashion, increased participation in Latino organizations reduces GPA.
- However, the level of involvement in Latino organizations positively affects using academic support organizations, which positively influences GPA.
- The levels of Anglo friends and English language cultural assimilation are negatively associated with the level of use of the Latino organizations (-.27, -.23 respectively). Hence, it appears that it is students with lower levels of English based social and cultural assimilation who participate in the Latino organizations. That makes these organizations even more important socializing agents. By emphasizing aspects of the local academic culture as part of routine organizational activities, some of the apparent benefits to GPA that more Anglosized Latino students obtain through their social networks can be delivered in these ethnocentric organizations.

This last finding may bring into relief a tension, or contradiction, campus-based ethnic organizations face: how to provide a degree of integration and succor to students in a way that also socializes the student into the academic culture and gives them the facility to become more integrated with broader campus life. Ethnographic research cited earlier has shown that there may be a dynamic oscillation between an ethnic identity and an 'academic' identity. Ethnic organizations may experience the same identity strain.

Background Effects

Latino/a student resources and backgrounds also play a role in predicting student GPA, although in ways that may be unique to this sample or population.

- Mother and father's education levels and family income have no direct effects on GPA.
- However, level of family income has a relatively large total positive effect via its many paths of influence on indicators of high school achievement, social and cultural assimilation, which in turn affect GPA.

These findings regarding background may reflect atypical characteristics of our population. The Latino students at this university include a substantial proportion from suburban and satellite cities, as well as some from the central city. Nevertheless, the multiple paths by which family income affects the high school level achievement, as well as integration into Anglo social networks and cultural communication, and how those in turn affect achievement, make family income the most pernicious effect negatively influencing Latino/a college level performance.

Limitations of the Present Study

The response rate of this survey was low, roughly 30% of the population surveyed. Students who enrolled in the university in the early years covered in this study had lower response rates than those currently enrolled. Common sense suggests that some selection bias is likely in the current project; one can speculate that a few of variables influencing GPA probably also influenced the student's decision to participate in the survey.

While the structural equation methods employed in this analysis provide diagnostic information about the direction of the effects, a cross-sectional survey cannot clearly delineate causal direction. For example, student's GPA could influence involvement with Latino organizations, rather than the direction modeled here. Only by implementing a longitudinal design can direction be clearly established. It might be the case that having a low GPA in a prior term could increase the use of Latino organizations; then, in a subsequent term, the prior use of Latino organizations could exert a positive influence on GPA, just as use of academic support organizations does. At the zero order, it would appear as if participation in Latino organizations has a small or zero effect.

The analysis of GPA achievement does not reflect retention. The effects of involvement in social clubs and Latino organizations may be positive if the outcome measured is successful rate of matriculation instead of GPA. That question is left for subsequent analysis.

Policy Implications of Findings

Given the limitations of the study, it still seems reasonable to take seriously the effects due to the level of academic preparation brought to the university by the student. While some universities are trying to reduce the number of remedial courses offered, this will undoubtedly have negative consequences for Latino students from poorer backgrounds. presented by the student applying. Offer remediation, intensively supervised and evaluated, for borderline students.

We speculate that the effect of language and degree of Anglo assimilation and acculturation operate through two mechanisms: the first a pure language ability factor, and the second through an awareness and appreciation of, and integration into the academic culture that requires average English language skills. Latino and other support centers emphasizing ethnic culture and appreciation also need to address the importance of obtaining the skills needed to perform in an academic culture, a culture one hopes is also aware of a need to accommodate cultural diversity. The effects that we modeled related to language and Anglo acculturation may reflect a partial measurement of ability to navigate the "academic culture" or of the ability to understand the "academic idiom".

This implies support centers need to address the apparent importance of language, above and beyond that measured as part of academic preparation (ACT), as an important factor in predicting academic success. Programs need to "acclimate" students to the "academic culture". In our study, higher rates of involvement with the University Resources for Latinos is associated with lower levels of Anglo cultural assimilation. Yet higher levels of interactions with Anglos, and higher levels of English language based cultural communications are positively associated with academic performance. Thus, ethnic group support centers are in a contradictory position to influence academic success. The challenge is to increase the level of English language based cultural assimilation ingredients most linked to academic success while maintaining or increasing the involvement and appreciation of Latino culture and Spanish language.

There is no justification for not developing a statistically valid, longitudinal design, combining survey information, naturalistic observation, and institutional records to monitor and model academic performance and retention of all students, especially those at risk. Research needs to supercede rhetoric in discovering what works and what doesn't.

And finally, the tension between the core set of cultural dimensions needed for academic success needs to be investigated and made compatible and accessible to a wide range of sub-cultures. To estimate a model that shows a degree of assimilation and acculturation with the dominant English-academic culture leads to greater academic success is not to affirm or justify any prejudice and discrimination that is part of that model. Alternative models can be conceptualized as superior, but most universities will take a long time to become truly bilingual and multicultural. And even then, we still should address the question of whether clear expression in language, formal-operational, analytical level thinking, and standard based evaluations are to be the core of academic culture.

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Figure 1: Empirically Modified Conceptual Path Model Explaining Latino/a Student GPA

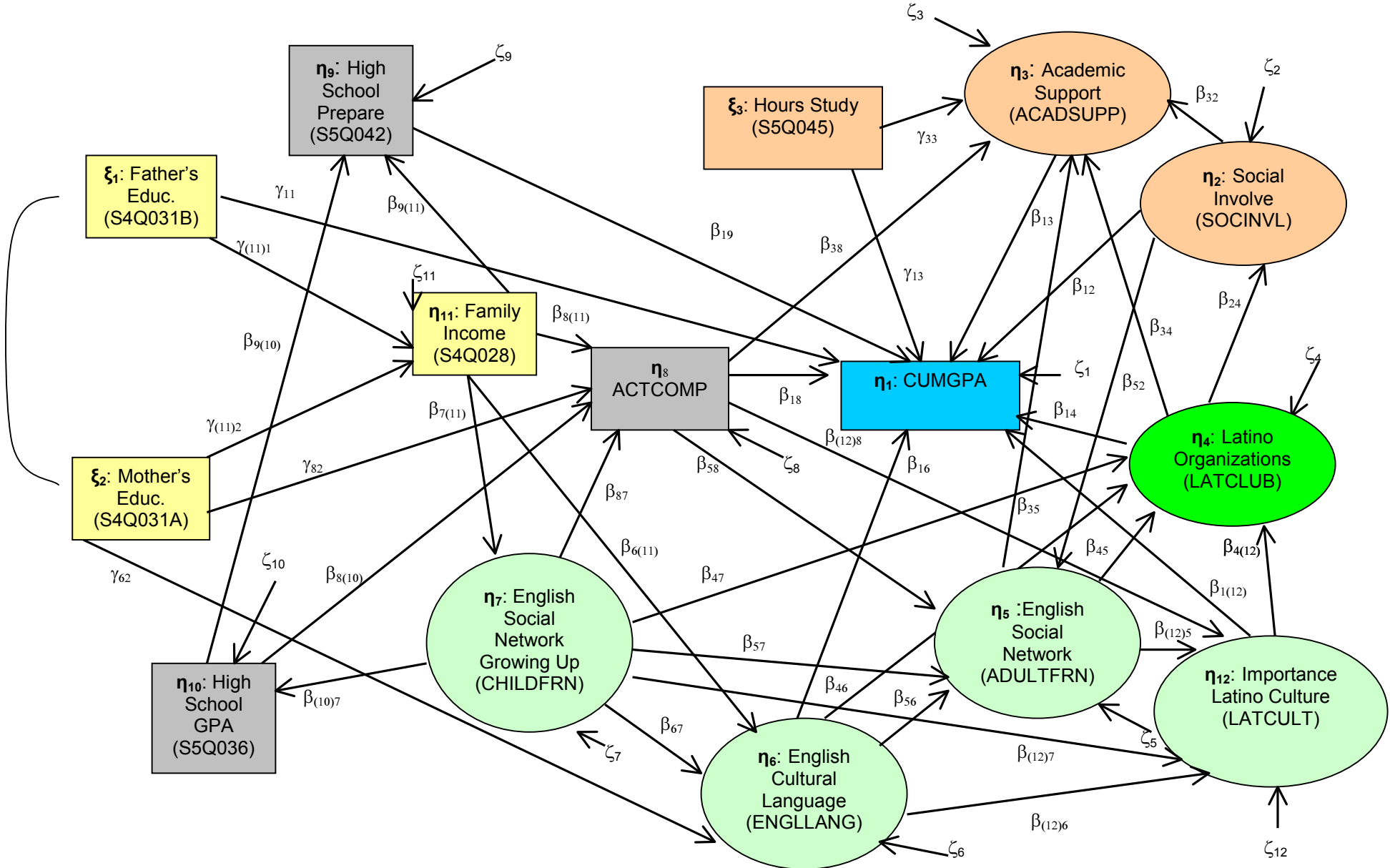


Table 1: Standardized Path Coefficients/Total Effects & (t-statistics) of Final Empirically Specified Model shown in Figure Final

		η 1	η 2	η 3	η 4	η 5	η 6	η 7	η 8	η 9	η 10	η 11	η 12
		CUMGPA	SOCINVL	ACADSUP	LATCLUB	ADULTFRN	ENGLANG	CHILDFRN	ACTCOMP	HSPREP	HSGPA	FAMINC	LATCULT
SOCINVL	η 2	-.10 /-.05 (-1.16)		.45 /.45 (7.59)	/.05	.19 /.18 (2.84)							
ACADSUPP	η 3	.10 /.10 (1.18)											
LATCLUB	η 4	-.10 /-.09 (-1.11)	.49 /.48 (7.18)	.29 /.51 (4.41)		/.09							
ADULTFRN	η 5	/.03	/.13	.14 /.00 (2.41)	-.27 /-.27 (-2.94)								-.08 /-.08 (-1.14)
ENGLANG	η 6	.19 /.15 (2.06)	/.21	/.15	-.23 /-.43 (-2.55)	.54 /.50 (8.99)							-.58 /-.62 (-8.31)
CHILDFRN	η 7	/.08	/.12	/.11	-.08 /-.25 (-1.10)	.25 /.37 (4.23)	.26 /.26 (3.90)		.10 /.14 (1.46)		.14 /.14 (1.93)		.04 /-.15 (0.58)
ACTCOMP	η 8	.13 /.10 (1.91)		-.22 /-.22 (-4.09)		.07 /.06 (1.20)							-.05 /-.05 (-0.94)
HSPREP	η 9	.19 /.19 (2.85)											
HSGPA	η 10	/.06		/.07					.31 /.31 (4.69)	.16 /.16 (2.29)			
FAMINC	η 11	/.10	/.07	/.08	/.15	/.20	.16 /.24 (2.23)	.32 /.31 (4.64)	.10 /.15 (1.43)	.25 /.25 (3.63)	/.04		/.15
LATCULT	η 12	.14 /.13 (1.60)		/.05	.11 /.10 (1.34)								
FATHED	ξ 1	-.11 /-.09 (-1.64)			/.03		/.05	/.07	/.03	/.06		.22 /.22 (2.71)	/.03
MOTHEd	ξ 2	/.06		/.07	/.11	/.14	.20 /.24 (2.92)	/.06	.11 /.14 (1.57)	/.05		.20 /.20 (2.45)	/.16
HRSSSTUDY	ξ 3	.17 /.18 (2.57)		.10 /.10 (1.83)									
R-SQUARE		.14	.20	.45	.26	.41	.19	.10	.16	.09	.02	.14	.39