Cultural Mismatch in the Achievement Gap: Self-Construal as Mediator Between Socioeconomic Status and Academic Achievement

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Abstract

This secondary analysis explored whether an interdependent self-construal (defined by valuing relationships with others, conformity, and adjusting oneself to maintain social harmony), as opposed to an independent self-construal (valuing standing out, stability across situations, and promoting one's own goals) was related to lower college GPAs for students with low socioeconomic status. This research is informed by the cultural mismatch model (Stephens et al. 2012a) and uses Gates Millennium Scholars data (Bill & Melinda Gates Foundation). Multivariate regression analyses determined that those who did not think good luck was important, relied on their cultural group for support, and did not have a positive self-concept (interdependent tendencies) had significantly lower GPAs, and these variables were mediators between socioeconomic status and academic achievement. A second multivariate regression demonstrated that those with a largely salient interdependent self-construal who self-reported improved independence while in college had significantly higher GPAs than those who did not.

Cultural Mismatch in the Achievement Gap: Self-Construal as Mediator Between Socioeconomic Status and Academic Achievement

Institutions of higher education in the United States have increased emphasis on matriculating student bodies representing a wide range of social classes. Though the diversity of students has increased, the achievement gap between students of low socioeconomic status and their peers persists (Stephens, Fryberg, Markus, Johnson, and Covarrubias, 2012a). Stephens et al. (2012a) attribute a portion of this achievement gap to a cultural mismatch model, based on their finding that more than 80% of administrators from first-tier American colleges and universities classified the culture of their institutions as more independent than interdependent. The cultural mismatch model is the idea that educational institutions in the United States facilitate the success of students with a salient independent self-construal, or way of defining the self, and therefore deter the success of students with a more salient interdependent self-construal.

Markus and Kitayama (1991) studied self-construal cross-culturally and found East Asians to be more interdependent and holistic in their thinking than Westerners, who demonstrated more independence and individualism in their thinking. Having an interdependent self-construal contained aspects such as being more connected to and conforming to social context and occupying a role within said social context to foster cohesive harmony (Markus & Kitayama, 1991). Having an independent self-construal is defined as being more separate from social context and promoting one's own individual goals and unique attributes that cause one to stand out (Markus & Kitayama, 1991). Stephens et al.'s (2012a) research found that these cultural differences were paralleled with different social classes in the United States; individuals with lower socioeconomic status tended to be more interdependent while individuals with higher socioeconomic status tended to have a more independent self-construal. Stephens et al. (2012a)

also found that self-construal mediated the relationship between socioeconomic status and academic achievement in a sample of first-generation college students.

Stephens et al. (2012a) used a variety of measures to determine that the first-generation sample of college students demonstrated more interdependence than independence. For example, the motive for attending college was much more influenced by family in first-generation college students than non-first-generation students. Statistically, first-generation students do not perform as well academically as their peers; they also have higher dropout rates and participate in fewer extra-curricular activities (Billson & Terry, 1982; Richardson & Skinner, 1992; Terenzini et al., 1994 in Stephens et al., 2012a). Stephens et al. (2012a) attribute these shortcomings partially to the cultural mismatch model and the idea that first-generation students have an interdependent self-construal that is not compatible with the independently structured expectations of their professors and institution overall. In order to test the cultural mismatch model, Stephens et al. (2012a) provided the participants with a welcome letter from their institution with either an interdependent or independent culture made salient within the letter. Stephens et al. (2012a) then had participants complete an anagram task in one study and a tanagram task in another. In both studies, first-generation students performed less well than non-first-generation students when independence was made salient, but this gap in performance was not present when interdependence was made salient (Stephens et al., 2012a). The fact that this minor manipulation affected task performance demonstrates that self-construal has a large impact on students and certainly creates achievement obstacles.

Stephens et al. (2012b) also looked at physiological implications of cultural mismatch by testing participants' cortisol levels following the reading of independently or interdependently salient welcome letters, and supporting effects were found; first-generation students had

significantly higher cortisol levels (indicating more stress) after reading the independent letter than the non-first-generation students and vice versa for the interdependent letter (Stephens et al., 2012b). Stephens et al. (2012b) also tested emotional reaction and found that first-generation students had more positive feelings about the interdependent letter and more negative feelings about the independent letter. These experiments exemplify the discomfort created by contrasting self-construals and provide a strong possible explanation for one reason why first-generation students and students of low socioeconomic background are struggling academically in colleges and universities. Stephens et al. (2012a, 2012b) provide a nice experimental framework with supporting evidence for the cultural mismatch model. This quantitative research explores the cultural mismatch model with a much larger sample of survey data from low-income ethnic minorities, who are a part of the Gates Millennium Scholars dataset (Bill & Melinda Gates Foundation) attending institutions of higher education, and their actual academic outcomes (rather than task performance).

This research poses two hypotheses. The first is that having a largely salient interdependent self-construal mediates the relationship between socioeconomic status and academic achievement, and individuals with low socioeconomic status who have a largely interdependent self-construal will demonstrate less academic achievement than their peers with a more salient independent self-construal. The second hypothesis is that those students with a more salient interdependent self-construal who report improved independence while at college will demonstrate higher academic achievement than those with a salient interdependent self-construal who do not report improved independence while at college.

Method

Participants

The sample of this quantitative research is taken from the Gates Millennium Scholars data (Bill & Melinda Gates Foundation). The Bill & Melinda Gates Foundation founded the Gates Millennium Scholars Program (GMS) in 1999 to help close the achievement gap between minority students with low socioeconomic status and their counterparts. GMS awarded 4,000 scholarships in its first year and has awarded 1,000 scholarships every year since to individuals who meet the aforementioned criteria and are also seen as high achievers. The Bill & Melinda Gates Foundation is the primary investigator for the survey conducted longitudinally with five cohorts made up of roughly half scholarship recipients and half a representative sample of non-scholarship recipients. This research focuses on cohort five, who were awarded the scholarship in 2004, and uses data from the baseline survey in 2004 and the first follow-up survey conducted in 2007. The survey is Web-based and asks a spectrum of questions both academic and personal. This research uses responses from 1,645 students (cases with missing variables were excluded from analyses). The GMS data were originally collected to monitor the success of GMS scholars on a variety of measures, often in comparison to their non-GMS counterparts. (Note: Restricted files of this dataset exist, but this research was done using the public data files).

Procedure

For the purpose of this research, socioeconomic status was operationalized using the following variables from the GMS dataset: “Mother’s Education Level,” “Parent Contribution Towards College Finances,” and “Student Feels He or She Can Afford the Same Things as Others.”

The self-construal measures for the first hypothesis were operationalized using variables that coincided with previous literature outlining a dichotomy between independence and interdependence. The variables chosen for this analysis were "Good Luck is Important," based on the notion that those with a largely salient independent self-construal attribute failure to external causes (e.g. good luck) and successes to internal causes, while those with a largely salient interdependent self-construal perceive the self as malleable and attribute failure to lack of sufficient effort, not external causes (Heine et al., 2001; Markus & Kitayama, 1991); "Considered Leader," based on the notion that those with a largely salient independent self-construal are more likely to exhibit leadership and be comfortable standing out as leaders while those with a largely salient interdependent self-construal prefer to fit in with the majority (Hardin, Leong, & Bhagwat, 2004; Kim, 2002); "Chose Major Based on Ethnicity," based on the notion that those with a largely salient interdependent self-construal conform to a culturally designated role (Markus & Kitayama, 1991); "Talk to Family about Personal and Academic Problems," based on the notion that those with a largely salient independent self-construal derive motivation from autonomous, agency-oriented thought while those with a largely salient interdependent self-construal derive motivation from familial goals and familial responsibility (Stephens et al., 2012a); this was also the rationale for the variables "Rely on Cultural Group for Support" and "Family Encourages to Stay in College" (despite having the same rationale, these variables did not load together on a factor analysis so they remained separate); "Need More Control/Others Stop Me from Getting Ahead," based on the notion that those with a largely salient independent self-construal want to succeed above others, while those with a largely salient interdependent self-construal want to succeed to the maximum level expected of them along with others, not ahead of others (Heine et al., 2001; Markus & Kitayama, 1991); "Have

Much to be Proud of," based on the notion that those with a largely salient independent self-construal have a self-enhancing bias while those with a largely salient interdependent self-construal have a modesty bias (Markus & Kitayama, 1991); and finally, "Non-Cognitive Score: Positive Self Concept," based on the independent self-construal modesty bias and the fact that a component of this non-cognitive score in the baseline measure was strictly designed to measure independence (a higher self-appraisal score meant higher independence). This non-cognitive score is the only variable taken from the 2004 baseline survey.

All necessary self-construal variables were recoded in order to reflect the following scale: 1=most independent response through 5=most interdependent response. For example, for the variable "Chose Major Based on Ethnicity," "Strongly Agree" is the more interdependent response so the variable was coded so that 5=Strongly Agree, while for the variable "Have Much to be Proud of," "Strongly Agree" is the more independent response so the variable was coded so that 5=Strongly Disagree.

Academic achievement was operationalized using the "Current GPA" variable, which grouped students into four quartiles with quartile one being the lowest GPAs (0-1.00) and quartile four being the highest GPAs (3.00-4.00).

The following variables were controlled for in all analyses: "Race," which was converted into a dummy variable using 1=White, 2=Non-White (Native American, Hawaiian, Asian, and Black), "Gender" (1=Male, 2=Female); "GMS scholarship recipient" (1=Scholar, 2=Non-recipient); and whether the student is "Currently Working for Pay" (1=Yes, 2=No). In addition to controlling for race and gender, the other two controls were selected for their possibly confounding factors. For example, since only half of the students in the sample are GMS scholars, it is possible that those who are scholars will have higher GPAs than those who are not

because of their GMS programming and because they were selected to be scholars, indicating possibly higher academic achievement in high school. Additionally, students who work for pay while in school may have statistically lower GPAs because of reduced time to spend on academics. For the second hypothesis, all of the socioeconomic variables in the first hypothesis were used as controls.

For the second hypothesis, the mean self-construal scores for all 1,645 cases were determined by taking the aggregate mean of the self-construal variables used in hypothesis one. Every case with a mean higher than 3.5 was determined to have a largely salient interdependent self-construal and was used for analysis in the second hypothesis (N=1,021). The second hypothesis utilized the GMS dataset variables "School Improved Oral Communication," "School Improved Analytic Thinking," and "School Improved Independence."

Factor analyses were performed, which resulted in the combining of certain variables that loaded on the same factor and had high reliability. For example, all three non-control variables in the second hypothesis loaded on the same factor and had a high Cronbach's alpha, so they were combined to create one variable, "School Improved Oral Communication, Analytic Thinking, and Independence," with 1=Strongly Agree (most independent response) and 5=Strongly Disagree (most interdependent response). Three multiple regression analyses were conducted to test the mediating effects of the self-construal variables for the first hypothesis. One multiple regression analysis was conducted to test the second hypothesis.

Results

Table 1. Hypothesis 1: Unstandardized Coefficients (t-values) Regressing GPA on Socioeconomic Status, Self-Construal, and Controls

Variable	Model 1	Model 2	Model 3
Mother's Education	0.03 (0.99)		0.01 (0.25)
(Less than high school-graduate degree)			
Parent Contribute Towards College Finances	-0.05 (-0.72)		-0.07 (-0.90)
(1=Yes, 2=No)			
Afford Things Other Students Do	-0.20 (-2.82)**		-0.10 (-1.38)
(1=Yes, 2=No)			
Good Luck is Important		-0.06 (-1.65)*	-0.08 (-1.87)*
(1=Strongly Agree-5=Strongly Disagree)			
Considered Leader		0.02 (2.44)**	0.02 (1.91)*
(1=Strongly Agree-5=Strongly Disagree)			
Chose Major Based on Ethnicity		0.01 (0.41)	0 .04 (0.23)
(1=Strongly Disagree-5=Strongly Agree)			
Talk to Family about Personal and Academic Problems		-0.00 (-.06)	-0.00 (-0.26)
(1=Strongly Disagree-5=Strongly Agree)			
Need More Control/Others Stop Me From Getting Ahead		0.12 (5.72)***	0.12 (5.38)***
(1=Strongly Agree-5=Strongly Disagree)			
Rely on Cultural Group for Support		-0.04 (-1.38)	-0.05 (-1.67)*
(1=Strongly Disagree-5=Strongly Agree)			
Family Encourages to Stay in College		-0.03 (-1.25)	-0.04 (-1.44)
(1=Strongly Disagree-5=Strongly Agree)			
Have Much to be Proud of		0.04 (1.07)	0.03 (0.61)
(1=Strongly Agree-5=Strongly Disagree)			
Non-Cognitive Score: Positive Self-Concept		-0.12 (-3.04)***	-0.13 (-3.10)***
(1=Strongly Agree-5=Strongly Disagree)			
Race	0.30 (3.77)***	0.31 (3.99)***	0.27 (3.24)***
(0=Non-White, 1=White)			
Gender	0.03 (0.36)	0.05 (0.73)	0.06 (0.81)
(1=Male, 2=Female)			
Work for Pay	0.09 (1.11)	0.11 (1.57)	0.16 (1.97)*
(1=Yes, 2=No)			
Scholarship Recipient	-0.17 (-2.03)*	-0.03 (-0.38)	-0.02 (-0.16)
(1=Yes, 2=No)			
F	4.44***	6.43***	5.19***
R^2	0.03	0.07	0.08

Table 1. N=1645, *p<.05, **p<.01, ***p<.001, (one-tailed significance). For the mediating self-construal variables, higher value indicates interdependent self-construal.

The three regression models in Table 1 provide some evidence that the self-construal variables serve as a mediator between the socioeconomic status variables and academic achievement (GPA quartile). This is indicated by the fact that the socioeconomic variable of "Afford Things Other Students Do" is significant in the first regression model, which uses only socioeconomic status and the control variables to predict variance in academic achievement, but is not significant in the third model, which includes the self-construal variables. The third model supports the cultural mismatch model and significantly predicts about 8% of the variance in academic achievement. In the third model, the self-construal variables that are significant in the direction of the hypothesis (more salient interdependence predicts lower academic achievement) include "Good Luck is Important" ($p < .05$), "Rely on Cultural Group for Support" ($p < .05$), and "Non-Cognitive Score: Positive Self-Concept" ($p < .001$). There were also two variables that were significant in the opposite direction of the hypothesis (more salient interdependence predicts higher academic achievement): "Considered Leader" ($p < .05$) and "Need More Control/Others Stop Me from Getting Ahead" ($p < .001$).

Table 2. Hypothesis 2: Unstandardized Coefficients (t-values) Regressing GPA on School Improved Independence and Controls

Variable	
School Improved Oral Communication, Analytic Thinking, and Independence	-0.05 (-2.01)*
(1=Strongly Agree-5=Strongly Disagree)	
Race	0.40 (4.03)***
(0=Non-White, 1=White)	
Gender	0.09 (0.95)
(1=Male, 2=Female)	
Work for Pay	0.05 (0.57)
(1=Yes, 2=No)	
Scholarship Recipient	-0.27 (-2.50)*
(1=Yes, 2=No)	
Mother's Education	0 .03 (0.86)
(Less than high school-graduate degree)	
Parent Contribute Towards College Finances	0 .00 (0.05)
(1=Yes, 2=No)	
Afford Things Other Students Do	-0.17 (-1.96)*
(1=Yes, 2=No)	
F	4.01***
R^2	0.05

Table 2. N=1021, *p<.05, **p<.01, ***p<.001

The multiple regression analysis displayed in Table 2 utilized a sample of 1,021 cases, all of whom had a mean score of 3.5 or higher on the aggregate of self-construal measures reflected in Table 1, signifying a more salient interdependent self-construal. Table 2 indicates that the students with a largely interdependent self-construal who self-reported that their school improved their oral communications skills, analytic thinking skills, and overall independence had significantly higher GPAs than those largely interdependent students who did not feel their school facilitated improvement in these areas. Overall, these variables explain about 5% of the variance in GPA.

Discussion

The results of the first multivariate regressions (displayed in Table 1) indicate that self-construal variables have some mediating effect on the relationship between socioeconomic status and academic achievement. For the mediating self-construal variables, if the coefficient is negative, interdependence has a negative impact on GPA, which is what the hypothesis predicts. Thus, those who exhibit the interdependent tendencies of disagreeing that good luck is important and relying on their cultural group for support have statistically worse GPAs. The most significant variable in the direction of the hypothesis is positive self-concept. This variable rated students on their level of independence in 2004, so its predictive ability of students' GPA in 2007 demonstrates strong support for the cultural mismatch model. This significance exemplifies that students who had the highest ratings of independence in 2004 had the highest GPAs in 2007.

The significant positive coefficients, however, suggest that interdependence, rather than independence, has a positive impact on GPA, which is contrary to the hypothesis. However, the positive significant coefficients do not necessarily refute the hypothesis, but instead probably demonstrate an issue of construct validity. For example, agreeing or disagreeing with the statement "others stop me from getting ahead" does not necessarily reflect a student's desire to stand out from his or her peers, which is the construct the variable was chosen to measure. Rather, regardless of self-construal, those with good GPAs probably do not feel held back at all, let alone by others, so this variable certainly presents a confound that explains the strong significance in the opposing direction of the hypothesis.

The results of the second hypothesis displayed in Table 2 indicate that the variable encompassing self-reported improved oral communication skills, analytic thinking skills, and independence was significant. Thus, students with a largely interdependent self-construal who

report improvement in these areas have higher GPAs than those with a largely interdependent self-construal who do not report improvement. This finding heavily supports the cultural mismatch model with the notion that the more acclimated students become to their institution's independent structure, the more academic achievement they demonstrate.

For all regression analyses, the control variable of race was significant, showing a large discrepancy in academic performance where White students significantly outperform non-White students. Since all but 33 of the White students in the dataset are Hispanic, this demonstrates that variance in GPA also exists among different ethnic minorities.

Conclusion

While these data analyses produced significant findings in support of the cultural mismatch model, the dataset did have limitations that could have possibly prevented more confirmatory results. For instance, the first hypothesis examined self-construal variables as a mediator between socioeconomic status and academic achievement, and while there was significant evidence of a mediating effect, a stronger effect may have occurred if the sample were more diverse in socioeconomic status and demonstrated a stronger initial relationship of socioeconomic status predicting variance in academic achievement. In addition, the sample for the second hypothesis looked only at students with a mean self-construal score that was predominantly interdependent, and it still included a majority of the students (62%). This supports the assumption that low socioeconomic status is correlated with an interdependent self-construal, which is in line with the research hypotheses. However, because this sample was not representative of college students with higher socioeconomic status and a largely independent self-construal, no major comparative assertions can be made. Furthermore, this dataset is not necessarily representative of college students with low socioeconomic status since at least half of

the students in the sample were definitely high achievers with a very good high school performance record. Thus, it is hard to say if this sample reflects students who may have been average or below in high school but still continued on to higher education. Third, the results highlight definite issues with construct validity when operationalizing self-construal as was indicated by the significant findings in the opposite direction of the first hypothesis. Finally, GPA is not necessarily a sufficient measure of academic achievement, especially in this dataset since it is not standardized across institutions and it is split up into quartiles, which minimizes room for expressed variance. Future research could address these methodological issues with a more representative sample and better construct coverage.

Despite the shortcomings of this research, it still demonstrates important issues regarding the presence of cultural mismatch. Many colleges and universities are seeking to increase the socioeconomic diversity of their student bodies and are doing so by admitting larger proportions of low-income and first-generation college students; in fact, at four-year American colleges and universities, about one in six students is a first-generation college student (Saenz, Hurtado, Barrera, Wolf, & Yeung, 2007 in Stephens et al., 2012a). Once low-income and or first-generation students matriculate to institutions of higher education, if there is a cultural mismatch with the school, the students will not be equipped for high academic achievement as well as their more independent peers. Since the data provide evidence that students who feel as though college improved their independent tendencies have greater academic achievement, more research could be done on how to implement programming in order to increase independent skills and/or how to decrease the independent nature of institutions to make them more accessible to those with a largely interdependent self-construal. For example, Stephens et al. (2012a) suggest that even taking away the “independent study” wording of schoolwork and

classifying it in ways such as a “guided research project with a faculty member” could alleviate some of the cultural mismatch that contributes to students with an interdependent self-construal’s inferior success.

In conclusion, there are certainly a plethora of mediators in the relationship between socioeconomic status and academic achievement. The cultural mismatch model proposes one explanation and possible solutions for ways to reduce the gap in achievement among students with low socioeconomic status and those with higher socioeconomic status, and this secondary analysis provides further evidence in favor of the model.

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