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The Power of the Pygmalion Effect

Teachers Expectations Strongly Predict College Completion

By Ulrich Boser, Megan Wilhelm, and Robert Hanna October 6, 2014

People do better when more is expected of them. In education circles, this is called the Pygmalion Effect.[1] It has been demonstrated in study after study, and the results can sometimes be quite significant. In one research project, for instance, teacher expectations of a pre-schooler's ability was a robust predictor of the child's high school GPA.[2]

Raising student expectations has been in the news a lot recently as part of a larger conversation about improving learning outcomes. Most notably, a group of states have developed the Common Core State Standards, which go a long way toward establishing higher standards by setting out what students should know and be able to accomplish in reading and math. More than 40 states have adopted the standards so far. Recently, however, there has been a great deal of political pushback against them; a number of states, including Oklahoma, recently abandoned the reform effort.[3]

The importance of the Pygmalion Effect

To look at the issue of expectations more closely, we analyzed the National Center for Education Statistics' Education Longitudinal Study, or ELS, which followed the progression of a nationally representative sample of 10th grade students from 2002 to 2012.[4] The ELS has a longitudinal design, which allows researchers to link teacher expectations to individual student data collected up to 10 years later. For some findings, we conducted a logistic regression of students' actual academic outcomes on teachers' expectations. In other areas, we reported simple frequencies.[5]

Our study showed the following:

- **High school students whose teachers have higher expectations about their future success are far more likely to graduate from college.** All else equal, 10th grade students who had teachers with higher expectations were more than three times more likely to graduate from college than students who had teachers with lower expectations.[6] In other words, the expectations of teachers showed a very strong predictive relationship with college graduation rates. It cannot be said for sure that teacher expectations boosted college graduation rates. It is also possible that teachers with lower expectations were more likely to teach traditionally disadvantaged students who are less likely to succeed in colleges. It is also possible that teachers might simply be very good at figuring out who will graduate from college, regardless of the students they teach.

- **Secondary teachers have lower expectations for students of color and students from disadvantaged backgrounds.** Secondary teachers predicted that high-poverty students were 53 percent less likely to earn a college diploma than their more affluent peers.[7] They also believed that African American students were 47 percent less likely to graduate from college than their white peers.[8] Finally, they believed that Hispanic students were 42 percent less likely to earn a college diploma than their white peers. There is no doubt a significant methodological issue here, and teacher expectations of disadvantaged students might simply reflect those students' lower levels of academic achievement.[9] Put more simply, educators' expectations might simply be a mirror of the broader problems of the nation's education system.

- **College-preparation programs and other factors that support higher expectations are significant predictors of college graduation rates.** High school students who enroll in college-preparation programs are more likely to graduate from college—all else equal[10]—as are students who indicate that they work hard in high school. In short, students who have more rigorous academic opportunities and experiences—including opportunities to practice and gain knowledge—are more likely to succeed academically.

These findings build on a large body of research on the power of expectations. For instance, in a recent review of more than three decades of research on teacher expectations, psychologists from Rutgers University concluded that while self-fulfilling prophesies are "more likely to dissipate than accumulate," they can be quite strong for some students.*[11]

Expectations also often have long-term effects. For example, education researchers in the Netherlands found that biased teacher expectations at the end of primary school predicted secondary school outcomes.[12] Psychologists from the University of Michigan and Rutgers University concluded that teacher expectations can predict student achievement for years. Specifically, they found that teacher expectations in sixth and seventh grade predicted student achievement six years later.[13]

Teachers themselves also say that high expectations are important for student achievement. According to the most recent data available—a 2009 MetLife survey with a nationally representative sample of more than 1,000 K-12 teachers—86 percent of teachers say that there is a strong relationship between having "high expectations for all students" and student learning.[14]

But when it comes to actual expectations for students, only 36 percent of teachers say that "all of their students" can achieve academic success. The MetLife survey also revealed that only 13 percent of teachers "believe that all of their students are motivated to succeed academically." It seems, then, that teachers think that high expectations are important, but they are not always confident that everyone in their classrooms can achieve academic success.

Teacher expectations are more predictive than other factors

As noted above, the ELS follows students over time. Several studies have used ELS data to investigate teacher expectation effects.[15] To our knowledge, however, no other studies have examined the link between teacher expectations and future educational attainment using both the ELS data collected in 2002 and a new wave of data released in February 2014. We hope to add to the research knowledge by attempting to answer the following question: Can 10th grade teachers' expectations predict students' college completion? The survey asked teachers to predict "how far in school … you expect this student to get," including high school, college, and beyond.[16] We also looked at other factors that affect students' chances of graduating from college, including their race, academic effort and motivations, and high school coursetaking patterns. We also included their parents' expectations for their educational trajectory as well as their own expectations.

Notably, even after accounting for other factors, teachers' expectations and students' college-going outcomes had a significant relationship, and teacher expectations were tremendously predictive of student college completion rates.[17] In fact, after controlling for student demographics, teacher expectations were more predictive of college success than many major factors, including student motivation and student effort. These findings build on other research that suggests teacher expectations are powerful predictors of future success.

For instance, researchers from the University of Virginia and Rutgers University used the ELS data to determine if college-attendance expectations made while students were in 10th grade could predict if students would still be in college four years later.[18] The researchers found that of three groups—students, parents, and teachers—teacher expectations were more powerful predictors of postsecondary education status than the expectations of students and parents. They also found, however, that "teachers had the lowest expectations" for students. Our results extend this finding by showing that not only can teachers predict who goes to college, but they can also predict who graduates.

While it is clear that expectations matter, our study also found that teachers have far lower expectations for students who might need high expectations and support the most. For instance, some secondary teachers believe that students of color and students from high-poverty backgrounds are far less likely to complete college. As noted above, the data set does not allow for a conclusive interpretation of why this occurs, and it is possible that teachers are simply making accurate predications given previous performance.[19] In other words, one cannot rule out the possibility that teacher accuracy, rather than influence, can explain the predictive nature of teacher expectations for students' academic outcomes.

There are other reasons for caution here as well, as teacher expectations can be very subjective. Researchers from the University of North Carolina at Greensboro conducted a longitudinal study of almost 1,000 elementary school students and reported that teachers had higher expectations for the reading achievement of girls than boys.[20] Researchers have also found that teachers' perceptions of student effort predicted math grades with teachers giving higher grades to students they perceived to be hardworking, even though the students given lower grades said that they worked additional hours at home on their academics.[21]

What is clear, however, is that social stereotypes can play a crucial role as teachers build assumptions about their students and their future performance.[22] A growing body of research shows that some teachers have low expectations for low-income students and students of color.[23] It is also clear that more rigorous coursework and other experiences in high school make it more likely for students to succeed in college. Other studies support this finding, showing that teachers tend to expect more of students in higher academic tracks.[24] Furthermore, more rigorous classes typically entails harder coursework, which helps students better prepare for college.

Conclusion

Looking forward, the research outlined here suggests that policymakers must continue to raise expectations for students. The Common Core State Standards are one of the most powerful ways to do so, and states and districts should continue to support them. In particular, education leaders need to pay attention to the standards' implementation to ensure that they create higher expectations for students.

At the same time, the data suggest that more needs to be done to improve teacher instructional capacity. As a series of reports by the National Council on Teacher Quality, or NCTQ, have demonstrated, teachers do not get the rigorous training they need.[25] In particular, NCTQ has found that some teacher prep programs do not do enough to give teachers hands-on training in high-performing, high-poverty schools.

Other research shows that even before entering the classroom, some teachers have low expectations for low-income students of color.[26] It is therefore critical for teacher-preparation programs to communicate to aspiring teachers the importance of having high expectations for all students.

In short, the United States needs to raise its expectations for students—as well as educators. The Pygmalion Effect can go a long way toward helping our children succeed in college and in life.

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***Correction, October 7, 2014:** *This brief has been corrected to better reflect the role of self-fulfilling prophecies in student performance. The brief's subtitle has also been updated, endnote 1 was updated, and endnote19 was added.*

Endnotes

1 Robert Rosenthal and Lenore Jacobson, "Pygmalion in the classroom," *The Urban Review* 3 (1) (1968): 16–20. Alix Spiegel, "Teachers' Expectations Can Influence How Students Perform," NPR, September 17, 2012, available at http://www.npr.org/blogs/health/2012/09/18/161159263/teachers-expectations-can-influence-how-students-perform.

2 Jennifer Alvidrez and Rhonda S. Weinstein, "Early teacher perceptions and later student academic achievement," *Journal of Educational Psychology* 91 (4) (1999): 731–746.

3 KRJH News, "Oklahoma reading and math standards to change from Common Core to PASS until March 2016," August 13, 2014, available at http://www.kjrh.com/news/local-news/investigations/oklahoma-reading-and-math-standards-to-change-from-common-core-to-pass-until-march-2016.

4 National Center for Education Statistics, "Education Longitudinal Study of 2002 (ELS: 2002) Third Follow-up Restricted-use Data File," (U.S. Department of Education, 2002), available by request from the Institute of Education Sciences.

5 We conducted a logistic regression of students' actual college outcome on teachers' expectations for those students, controlling for a range of other factors.

6 Authors' analysis based on logistic regression using the Education Longitudinal Study of 2002 described in the brief. Here, "higher expectations" means that the teacher predicted that the students would graduate from a four-year college or pursue education beyond a bachelor's degree.

We measured student outcomes in terms of college completion. The controls included the students' race and gender; their academic skills, as measured by assessments given to students in the Education Longitudinal Study; items related to the students' motivations and effort with school work; their college-going expectations and their parents' expectations for their academic trajectory; whether the students were in a college-preparatory program in high school; their families' income; and their parents' educational background. We used the sample weights provided by the Institute of Education Sciences for each individual student. We conducted separate analyses for math and English teachers.

Considering math teachers' expectations, those students who had English teachers who predicted they would graduate from college had a 59 percent chance of graduating, all else equal. Those students with English teachers who predicted they would not graduate, had a 13 percent chance. This is a 320 percent difference. The findings were very similar for students with math teachers making predictions. Those students who had English teachers who predicted they would graduate from college had a 59 percent chance of graduating, all else equal; while those students with math teachers who predicted they wouldn't graduate had a 14 percent chance of graduating. This is a 350 percent difference.

See endnote 7 below for further explanation of our methods.

For data used, see National Center for Education Statistics, "Education Longitudinal Study of 2002 (ELS: 2002) Third Follow-up Restricted-use Data File."

7 Authors' analysis using the Education Longitudinal Study of 2002, where parents reported the total family income for the year 2001. We considered a student "low-income" if her family's income was below $20,000 per year. The poverty threshold in 2001 for a family of four was around $18,000 per year. Bureau of the Census, "Poverty Thresholds 2001," available at https://www.census.gov/hhes/www/poverty/data/threshld/thresh01.html (last accessed August 2014).

8 Authors' analysis using the Education Longitudinal Study of 2002.

9 Authors' analysis based on logistic regression using the Education Longitudinal Study of 2002. Here, we looked at teachers' predictions about their students' college completion, controlling for student demographics and their academic skills.

10 Authors' analysis based on logistic regression using the Education Longitudinal Study of 2002.

11 Lee Jussim and Kent D. Harber, "Teacher Expectations and Self-Fulfilling Prophesies: Knowns and Unknowns, Resolved and Unresolved Controversies," *Personality and Social Psychology Review* 9 (2) (2005): 131–155.

12 Hester De Boer, Roel J. Bosker, and Margaretha P. C. van der Werf, "Sustainability of teacher expectation bias effects on long-term student performance," *Journal of Educational Psychology* 102 (1) (2010): 168–179.

13 Alison E. Smith, Lee Jussim, and Jacquelynne Eccles, "Do self-fulfilling prophesies accumulate, dissipate, or remain stable over time?" *Journal of Personality and Social Psychology 77* (3) (1999): 548–565.

14 MetLife, "The MetLife Survey of the American Teacher: Collaborating for Student Success; Part 2: Student Achievement" (2009), available at https://www.metlife.com/assets/cao/contributions/foundation/american-teacher/MetLife_Teacher_Survey_2009_Part_2.pdf.

15 Anne Gregory and Francis Huang, "It Takes a Village: The Effects of 10th Grade College-Going Expectations of Students, Parents, and Teachers Four Years Later," *American Journal of Community Psychology* 52 (1-2) (2013): 41–55; Tina Wildhagen, "How Teachers and Schools Contribute to Racial Differences in the Realization of Academic Potential," *Teachers College Record* 114 (7) (2012) 1–27; Simon Cheng and Brian Starks, "Racial Differences in the Effects of Significant Others on Students' Educational Expectations," *Sociology of Education* 75 (4) (2002): 306–327; Shanyce Campbell, "For Colored Girls? Factors that Influence Teacher Recommendations into Advanced Courses for Black Girls," *The Review of Black Political Economy* 39 (4) (2012): 389–402; Carolyn Barber and Judith Torney-Purta, "The Relation of High-Achieving Adolescents' Social Perceptions and Motivation to Teachers' Nominations for Advanced Programs," *Journal of Advanced Academics* 19 (3) (2008): 412–443.

16 This was question 20 on the teacher questionnaire from the Education Longitudinal Study of 2002. Teachers were given the following options: "less than high school graduation only," "HS graduation or GED only," "will attend or complete a 2-year school course in a community or vocational school," "will go to college but not complete a 4-year degree," "will graduate from college," "will obtain a Master's degree or equivalent," "will obtain a Doctorate, professional degree or other advanced degree (Ph. D., M.D., etc.)," or "don't know." In our analysis, we said that a teacher predicted that a student would graduate from college if she indicated "graduate from college" or any higher educational attainment.

17 We conducted a logistic regression of students' actual academic outcomes on teachers' expectations for those students, controlling for a range of other factors. See endnote 6 for information on methodology.

18 Gregory and Huang, "It Takes a Village."

19 Jussim and Harber, "Teacher Expectations and Self-Fulfilling Prophesies."

20 J. Benjamin Hinnant, Marion O'Brien, and Sharon R. Ghazarian, "The Longitudinal Relations of Teacher Expectations to Achievement in the Early School Years," *Journal of Educational Psychology* 101 (3) (2009): 662–670.

21 Lee Jussim, Jacquelynne Eccles, and Stephanie Madon, "Social Perception, Social Stereotypes, and Teacher Expectations: Accuracy and the Quest for the Powerful Self-Fulfilling Prophecy," *Advances in Experimental Social Psychology* 28 (1996): 281–388.

22 Jussim, Eccles, and Madon, "Social Perception, Social Stereotypes, and Teacher Expectations: Accuracy and the Quest for the Powerful Self-Fulfilling Prophecy"

23 Jussim and Harber. "Teacher expectations and self-fulfilling prophesies."

24 George Ansalone, "Schooling, tracking, and inequality," *Journal of Children and Poverty* 7 (1) (2010): 33–47.

25 National Council on Teacher Quality, "2014 Teacher Prep Review" (2014) available at http://www.nctq.org/dmsStage/Teacher_Prep_Review_2014_Report.

26 Shelia C. Baldwin, Alice M. Buchanan, and Mary E. Rudisill, "What Teacher Candidates Learned About Diversity, Social Justice, and Themselves from Service-Learning Experiences," Journal of Teacher Education 58 (4) (2007): 315–327. Mary Louise Gomez and Edie White, "Seeing One Another as 'Other,'" Teaching and Teacher Education 26 (4) (2010): 1015–1022.