

Proximal Versus Distal Influences on Underrepresented Minority Students Pursuing Health Professional Careers

Ramie Cooney, PhD; Omofolasade Kosoko-Lasaki, MD, MSPH, MBA; Barbara Slattery, MA; and M. Roy Wilson, MD, MS

Omaha, Nebraska and Denver, Colorado

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The Health Careers Opportunities Program (HCOP) at Creighton University provides an important illustration of the short- and long-term successes of pipeline programming. The Pipeline to Success program at Creighton University provides exposure and enrichment activities to participants beginning in middle school and continuing through a one-year postbaccalaureate component in order to ensure that they are knowledgeable about health professional careers and competitive in applying for these training programs. This study hypothesized that the enrichment activities experienced by participants would have the additional benefit of providing indirect or distal influences to motivate participants to meet their career goals. In partial support of this hypothesis, a MANOVA demonstrated that the middle-school participants demonstrated a different pattern of influence from the other program components. Results indicate that as participants progressed through the Pipeline to Success HCOP at Creighton University, the program resources impacted their desire to pursue health professional careers in addition to positively preparing them for health professional training programs. We conclude that these findings have particular importance for planning and implementing student education programs.

Key words: minorities ■ health professions ■ education

© 2006. From the Department of Psychology (Cooney, currently a consultant living in Washington State), Health Sciences Division (Kosoko-Lasaki, Slattery) and School of Medicine (Kosoko-Lasaki), Creighton University, Omaha, NE; and University of Colorado Denver and Health Sciences Center, Denver, CO (Wilson, chancellor; past vice president, Health Sciences and Dean of the School of Medicine, Creighton University). Send correspondence and reprint requests for *J Natl Med Assoc.* 2006;98:1471-1475 to: Dr. Omofolasade Kosoko-Lasaki, Health Sciences—Multicultural and Community Affairs (HS-MACA), Creighton University, 2500 California Plaza, Omaha, NE 68178; phone: (402) 280-2332; fax: (402) 280-4030; e-mail: skosoko@creighton.edu

INTRODUCTION

Research clearly indicates that the achievement of young children is influenced by proximal factors, such as family members.¹ However, research also indicates that older children are positively influenced by mentors and internal motivations.² In this study, we hypothesize that as an individual progresses through the educational system, the relative importance of influences shift from direct to indirect in nature. This has particular importance for individuals from disadvantaged backgrounds. By looking at individuals involved in a health career pipeline program at Creighton University, this study aims to determine how achievement and motivational influences differ across age and race.

BACKGROUND

Creighton University's Health Career Opportunity Program (HCOP), also called Pipeline to Success, is a comprehensive response to the problem of underrepresentation of economically and/or educationally disadvantaged persons in the nation's healthcare workforce. This is a collaboration with the Omaha Public Schools, Jesuit Middle School, Sacred Heart School, Boys and Girls Club, Creighton University Medical Center (CUMC), Boys Town National Research Hospital, Charles Drew Health Center, and One World Community Health Center. Since 1975, Creighton University School of Medicine (CUSOM) has been a national leader in the planning and implementation of educational programs, including postbaccalaureate programs for disadvantaged students who need an additional year of academic preparation following undergraduate graduation before attending medical school. Creighton's programs are widely regarded as innovative and effective. Today, approximately 230 practicing physicians and dentists have participated in Creighton University's postbaccalaureate programs. The director who initiated Creighton's Postbaccalaureate Program, John Elder, PhD, died in 1996. His untimely death coincided with the struggle within medical schools nationwide to allocate resources in the midst of decreasing income

caused by the widespread phase-in of managed care. Creighton faced the same struggle and was unable at that time to support the Postbaccalaureate Program without continuing federal funds. In 1999, however, under the direction of M. Roy Wilson, MD, MS (one of the coauthors of this publication), Creighton reestablished the Postbaccalaureate Program with funding from Health Resources and Service Administration (HRSA). After Wilson's departure from Creighton University, the program was directed by Omofolasade Kosoko-Lasaki, MD, MSPH, MBA (coauthor on this publication). Thus, CUSOM has expanded upon its success and developed a comprehensive program—Pipeline to Success at Creighton University.

The Pipeline to Success program introduces students to health professions with awareness programs in middle schools and begins educational enrichment and mentoring programming in high school. Students who participate in Pipeline to Success programming are more likely to successfully complete their high-school and college education curricula as well as more likely at the postbaccalaureate level to enroll in graduate-level health professional training. However, the focus of this study will be on other, indirect benefits that these programs provide for participants.

Current research labels different influences as a student's primary motivator toward achievement; however, few address how these influences change across differing age groups. Research also clearly indicates that the achievement of young children is influenced by proximal factors. For example, parenting practices have been

shown to significantly influence younger children's cognitive development and, later, academic achievement.¹ In contrast, environmental factors such as peer and teacher influence³ are known to be predictive of motivation and achievement for early adolescents. However, research indicates that older children are also positively influenced by mentors and internal motivations.² Finally, mentors have been found to be beneficial for ethnic minorities and adolescents at risk for school failure.⁴

How can one reconcile these apparently contradictory findings? We hypothesize that as an individual progresses through the educational system, direct influences and the relative importance of indirect influences shift. Specifically, we predict that as an individual moves from high school into college and postbaccalaureate studies, he or she is more likely to be influenced by indirect or distal factors. By looking at individuals involved in CUSOM's HCOP, our aim is to determine how achievement and motivational influences differ between age and race.

METHODS AND MATERIALS

Data from a total of 72 students (18 middle-school, 23 high-school, 24 collegiate and seven postbaccalaureate students) were included in this study. All participants were students in the Creighton University HCOP, Pipeline to Success. In order to meet the criteria for admission to the HCOP, participants must be either economically and/or educationally disadvantaged. The overall sample utilized for this study consisted of 54.17% females (n=39). The majority of the sample described their ethnicity as black or African-American 88.9% (n=64), and 6.8% (n=5) were Hispanic or Latino, 1.4% (n=1) as Asian, 1.4% (n=1) as Alaskan Native and 1.4% (n=1) as Caucasian or biracial.*

A questionnaire (Figure 2) was developed by an independently contracted evaluation specialist, Ramie Cooney, PhD (a coauthor on this publication), as a part of the comprehensive program review. This instrument was given to all Creighton University HCOP participants at the end of the program year. The questionnaire looked at four dimensions of the program: awareness of the health profession field, awareness of programs available, effectiveness of programs, and percep-

* Some students indicate multiple racial designations on the application form.

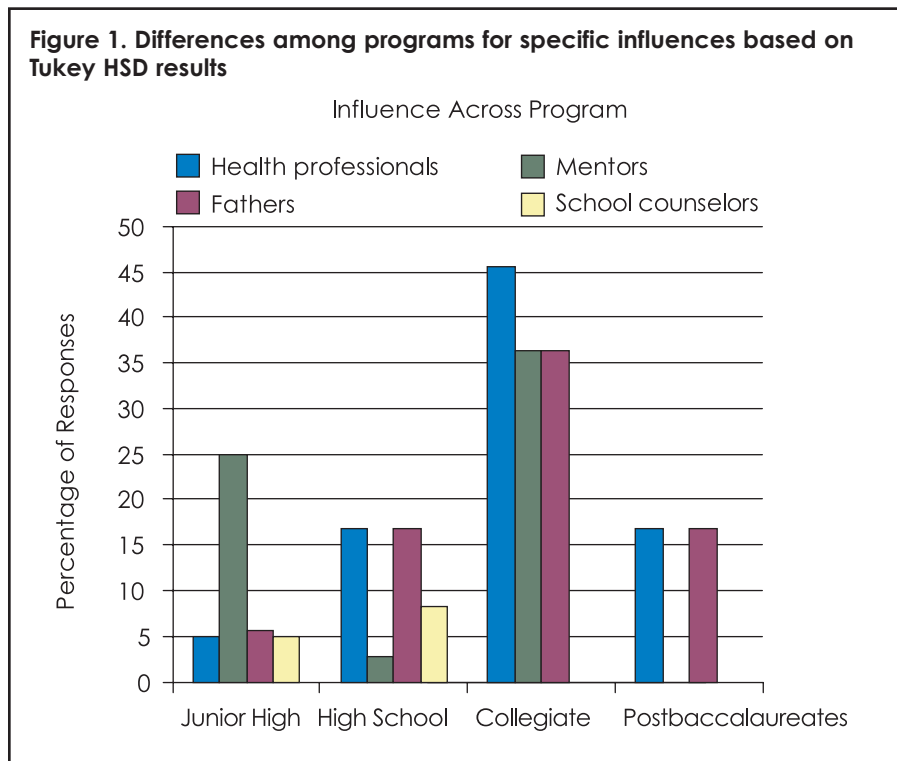


Figure 2. Program satisfaction survey

Spring

Program Satisfaction Survey

For office use only: ID NUMBER

1. What is your birth date? ___ / ___ / ___.
2. What is your gender? Female Male
3. Are you in ...? Middle school High school College Postbaccalaureate
4. Where do you go to school? _____
5. What type of school is your school? Public Private
6. Which of the following Creighton University programs have you joined?
 HPPI HCOP Both Neither I am not sure Other
7. Do you consider yourself economically disadvantaged? Yes No
8. Why or why not?
9. Do you consider yourself educationally disadvantaged? Yes No
10. Why or why not?
11. What are your plans after graduation?
 Attend college/graduate school Attend vocational school Work full time
 Begin a residency program Join the military services
 Do not have plans after graduation Other
12. Have you thought about what you would like to do 5–10 years from now?
 Not at all A little Some, but ... Yes, I think Yes, I am certain
 0 1 2 3 4
13. Which type of career interests you the MOST?
 Business Law Computer Science Religion Education
 Science Engineering Undecided Health Professions Other
14. Why does the career you picked in question 13 interest you the most?
15. Which type of career interests you the LEAST?
 Business Law Computer Science Religion Education
 Science Engineering Undecided Health Professions Other
16. Why does the career you picked in question 15 interest you the least?
17. What was your father/male guardian's last grade in school? _____
18. What was your mother/female guardian's last grade in school? _____
19. I have a strong network of friends and family who care about my future and me.
 Strongly disagree Disagree Neutral Agree Strongly agree
 1 2 3 4 5
20. Who has influenced your future interests the most?
 Myself School counselor Father or male guardian School presenter(s)
 Mother or female guardian Tutor(s) Other relatives Mentor(s)
 Friends/peers Business professional(s) Teacher(s) Health professional(s)
21. How much have presenters at your school influenced your future interests?
 No influence Some influence A lot of influence
 0 1 2 3 4
22. Which school presentations have interested you the most?
23. How much have tutors influenced your future interests?
 No influence Some influence A lot of influence
 0 1 2 3 4
24. How much have mentors influenced your future interests?
 No influence Some influence A lot of influence
 0 1 2 3 4
25. How much have business professionals influenced your future interests?
 No influence Some influence A lot of influence
 0 1 2 3 4
26. How much have health professionals influenced your future interests?
 No influence Some influence A lot of influence
 0 1 2 3 4
27. How much have groups and clubs at school helped you stay interested in mathematics and science?
 Not at all Not much Some A little A lot
 0 1 2 3 4
28. What groups and clubs do you belong to?
29. How did you find out about the groups and clubs you belong to?

Figure 2. continued

30. Do you think that students often know about their own academic strengths and weaknesses?
 Never 0 Maybe (but not me) 1 Sometimes 2 Yes, probably 3 Yes (even me) 4

31. Mathematics and science play an important part in everyday life.
 I disagree 0 Sometimes 1 Yes, I agree they do 2 3 4

32. I believe that someone's racial/ethnic background will enhance their chances of being accepted into a college or professional school.
 Strongly disagree 1 Disagree 2 Neutral 3 Agree 4 Strongly agree 5

33. It is easy for me to get help with homework/coursework.
 Strongly disagree 1 Disagree 2 Neutral 3 Agree 4 Strongly agree 5

34. Where does this help with your homework/coursework come from?
 Father or male guardian Mother or female guardian Other relatives
 Friends/peers Teacher(s) Tutor

35. List as many health science careers as you can think of ... _____

36. How long does someone need to go to school to become a dentist? _____

37. How long does someone need to go to school to become a doctor? _____

38. How long does someone need to go to school to become a nurse? _____

39. How long does someone need to go to school to become a pharmacist? _____

40. In general, how long does someone need to go to school to become a health professional? _____

41. What is HCOP? _____

42. If you are in HCOP, what do you like best about it? _____

43. Which of the opportunities provided by HCOP is the most effective for your career goals?

44. What is HPPI? _____

45. If you are in HPPI, what do you like best about it? _____

46. What are the goals of HPPI? _____

47. Which of the opportunities provided by HPPI is the most effective for your career goals?

48. What is your racial/ethnic background?
 White African-American Latino/Hispanic Asian/Pacific Islander Other (please specify) _____

49. What is your name? _____

Thank you for providing this important information!

tions of academic and social support. The questionnaire incorporated two existing instruments⁵ as well as questions specifically designed for the HCOP program review. A specific question assessing, “Who has influenced your future career interests the most?” was the focus of this investigation (Figure 2, item 20). The participants were allowed to choose more than one of the 12 influences. Four of the choices were proximal or direct in nature: myself, father/male guardian, mother/female guardian and other relative. The remaining eight answer choices were distal or indirect: friends/peers, teacher, school counselor, school presenter, tutor, mentor, business professional and health professional. For analyses, the percentage of responders who selected each of the 12 potential influences was utilized to determine which proximal and distal influences impacted a responder’s career choice the most. The sur-

veys were distributed to all HCOP participants through their project coordinators and were returned to the evaluation specialist at the start of scheduled focus group discussions to probe the strengths and limitations of the program at Creighton University.

RESULTS

A 4-x-12 multivariate analysis of variance (MANOVA) was conducted to determine the differences among the different age groups (junior high, high school, college, postbaccalaureate) on the 12 dependent variables assessing who exerted the most influence on the future careers of participants. Results revealed a significant difference between the programs in the most frequently reported influences on career choice [Wilks’s $\lambda=0.42$, $F(44, 208.55)=1.60$, $p<0.02$]. In summary, junior-high participants reported significantly more direct or proxi-

mal influences, whereas older participants had significantly more distal or indirect influences.

As hypothesized, univariate analyses of variances (ANOVA) were conducted for each dependent variable as a follow-up test to the MANOVA. Results indicated a significant effect for health professionals to influence participants differently at different ages [$F(4,64)=3.80$, $p<0.03$]. Tukey Honestly Significant Difference (HSD) tests to probe the programmatic differences revealed the distal influence of health professionals was significantly higher for the college program than the high-school and junior-high programs ($M_{\text{difference}}=0.399$, $p=0.05$). Second, there was a significant effect for mentors to influence participants differently at different ages [$F(4,64)=3.29$, $p<0.02$]. Tukey HSD tests to probe the programmatic differences revealed the distal influence provided by mentors was significantly higher for college than high school [$M_{\text{difference}}=0.364$, $p<0.05$]. Finally, there was a significant effect for parents (specifically the father/male guardian) to influence participants differently at different ages [$F(4,64)=3.15$, $p<0.02$]. Tukey HSD tests to probe the programmatic differences a proximal father figure provided participants revealed influence was significantly higher for junior high than high school [$M_{\text{difference}}=0.486$, $p<0.02$].

DISCUSSION

Consistent with previous research, this study partially confirmed that there are differences in motivational influences across age. In particular, the factors influencing middle-school participants differed significantly from those identified by high school, college and post-baccalaureate participants. In particular, collegiates are more influenced by health professionals and mentors, or distal influences, than younger individuals. In addition, results indicated that younger individuals (i.e., middle-school students) are more influenced by proximal influences, such as a father figure, than older individuals. Recognizing that younger students need more proximal involvement, the student education programs could try and introduce more familial involvement at the middle-school level. Further, by identifying what influences these individuals, we can determine a better way to help them enhance their academic performance and provide them with more-effective resources. These findings can be applied to the HCOP in the future, along with other similar "pipeline" programs.

CONCLUSION

We have demonstrated that older students are more influenced by distal factors. This is important in student education programming in order to best utilize active involvement by health professionals in programs that are designed for various age groups. As students progress through the education system, our results sug-

gest that more indirect influences such as job shadowing experiences, course instructors and program staff provide an important role in motivating and influencing at-risk, disadvantaged students.

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Contact

Joan Y. Reede, MD, MPH, MS
Dean for Diversity and Community Partnership
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164 Longwood Avenue, 2nd Floor, Boston MA 02115-5818
Phone: (617) 432-2922
E-mail: mfdp_cfhuf@hms.harvard.edu
Web site: www.mfdp.med.harvard.edu



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