

Construction Management Students' Mentors and Role Models: Developing a Demographic Profile

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Previous studies have observed that career and academic decision-making are influenced by supportive relationships such as those with family members, teachers, and others. To better understand the influence of supportive persons on construction management students' academic and career decisions, a quantitative survey was administered in construction education ($n = 587$) courses at three universities. The goal of this study was to develop a profile of mentors and role models in order to provide educators with a better understanding of these influential relationships. In total, 80.6% of construction management students reported having a person who influenced their academic decisions. Results indicate that role model relationships have greater influence on construction management students' academic decisions than do mentor relationships. Overall, family members were reported most frequently as the person of greatest influence. Demographic characteristics of mentors and role models and cross-tabulation of the data are presented. The items in this study were part of a larger instrument designed to explore factors shown to have value as predictors of career choice and student success. Study limitations and opportunities for further research are discussed.

Keywords: construction education, career decision-making, academic decision-making, mentors, role models

Introduction

Research has shown that factors including perceived self-efficacy, motivation, and the influence of others have value as predictors of career choice and student success (Bandura, 1977, 1986; Day & Allen, 2004; Fried & MacCleave, 2010; Kram & Isabella, 1985; Nauta & Kokaly, 2001). However, few studies examining these relationships for students in construction education were identified through an exhaustive review of literature.

The Influence of Others

Research on academic and career choice revealed several influential relationships. Zeldin and Pajares (2000) observed that family members, teachers, and peers influenced the academic and career decisions of women in mathematics, science, and technology careers. The women's confidence to enter a male-dominated field was developed through encouraging messages and frequent exposure to mathematics by family members with related careers or experiences. Teachers also influenced female students' pursuit of a non-traditional career through vicarious experiences and verbal persuasions. "As had been the case in their experiences with their families, women felt that teachers' influences were effective because of the teachers' enthusiasm for the subject matter and because of their passion regarding the success of women in the male domains" (p. 232). While less influential compared to family members and teachers, peers contributed to the women's confidence and ability within their field of study. Lastly, the authors noted the degree of influence was related to how supportive each person was, regardless of gender (Zeldin & Pajares, 2000).

Moore and Gloeckner (2007) reported similar findings among women that graduated from a construction management (CM) program. For these women, the confidence to enter a non-traditional academic program was an outcome of several factors including their levels of mathematics and science skill, personality traits, self-efficacy, and the influence of others. The majority of women had a parent with a construction industry-related occupation. Yet, only one out of the 24 women entered CM as their first major after high school. The remaining women first entered programs such as architecture, design, engineering, business, science, art, and education. For those who

initially chose male-dominated fields (e.g., engineering), parental support influenced their decision to enter a non-traditional program and their father had the strongest influence. However, the decision to change to a CM program was influenced most often by significant others, such as boyfriends, husbands, and friends (Moore & Gloeckner, 2007). To recruit and retain women in construction education, Lopez del Puerto, Guggemos, and Shane (2011) suggested that CM programs include a formal mentoring program to match students with a female faculty member or peer. Female role models and mentors provide guidance and support to female students, and they are effective in recruitment efforts (Lopez del Puerto et al., 2011).

Koch, Greenan, and Newton (2009) explored career influences (e.g., experiences and relationships) of undergraduate students pursuing CM education. In their study, the highest ranked factors were students' interest in construction, hands-on activities, and inside/outside work environment. Fathers, work supervisors, and teachers were ranked as the most influential persons, respectively, and high school counselors were reported to be the least influential on career decisions (Koch et al., 2009). Francis and Prosser (2014) explored career counselors' perceptions of the construction industry and their results suggest that male and female counselors had similar perceptions of the construction industry. While both male and female counselors perceived construction careers to be a better career option for young men compared to young women, there was no significant difference in scores by counselor gender. Furthermore, while career counselors were directing more young men than women to careers in construction, there was no significant difference in reported frequencies by counselor gender (Francis & Prosser, 2014).

Mentors and Role Models

Mentors and role models have differing definitions in the literature with various, and sometimes contradictory, functions (Gibson, 2004; Mertz, 2004). "In the psychosocial sphere, the mentor offers role modeling, counseling, confirmation, and friendship, which can help the young adult to develop a sense of professional identity and competence" (Kram & Isabella, 1985, p. 111). In the workplace, a mentor can be "an experienced employee who serves as a role model, provides support, direction and feedback regarding career plans and interpersonal development" (Day & Allen, 2004, p. 77). Role models have been defined as persons "in an influential role position, such as a parent, teacher, supervisor or mentor, who provides an example for individuals to imitate" (Erikson, 1985 as cited by Gibson, 2004, p. 135) and as "someone to whom individuals look or to whom they turn for social and emotional support and affirmation or from whom they seek to learn something related to their 'person-ness'" (Mertz, 2004, p. 552).

Kram (1983) described mentors as providing two separate functions, psychosocial and career. Psychosocial functions of mentoring are "those aspects of a relationship that enhance an individual's sense of competence, identity, and effectiveness" and career functions are "those aspects of a relationship that enhance advancement in an organization" (Kram, 1985 as cited by Mertz, 2004, p. 549). Career functions of mentoring include "professional development (activities designed to help individuals grow and develop professionally) and career advancement (activities designed to help individuals advance professionally)" (Mertz, 2004, p. 549). Gibson (2004) differentiated role models from mentors and other types of developmental relationships. According to Gibson, role model relationships influence self-concept and provide learning, motivation and inspiration. Self-conception, as defined in Bandura's (1986) social cognitive theory, is the evaluation of oneself formed through experiences and evaluations of performances from significant others; a person's self-conceptions can be positive (i.e., judges oneself favorably) or negative (i.e., devalues oneself) and these perceptions may vary across activities.

Purpose of the Study

The purpose of this study was to investigate the demographic characteristics of mentors and role models as a basis of understanding CM students' academic decisions. Mentors, role models, and other supportive relationships generally fall into the following categories: family, significant persons, educational, career, and others (e.g., acquaintances, public figures, and media personalities). This study sought to develop a profile of mentors and role models that had the greatest influence. According to Koch et al. (2009), "A better understanding of student characteristics in construction is critical to provide educators a better understanding with respect to interests and motivations of CM students. Demographic information regarding the influences of students can assist construction management programs in strategic planning and program improvement....Additionally, the results could be used to improve the

recruitment and marketing of CM programs by furthering the development of retention and mentoring programs” (p. 295).

Method

Instrumentation

The mentor and role model profiles were developed using eight items that were administered as part of a larger instrument containing 71 items in total. All survey responses were recorded on a Scantron® form, which limited responses to five categories. Participants reported demographic information including gender, age (reported in ranges), ethnicity, major, current year in school, and family involvement in the industry. Participants were asked, as separate items, if they had a mentor and role model who influenced their academic decisions. In order to frame the questions, these terms were defined in the survey. A mentor, adapted from Fried and MacCleave (2010, p. 485), was defined as “a person who has influenced your academic decisions by actively giving advice, encouraging (or discouraging), supporting, providing information, or helping you make decisions.” A role model, adapted from Nauta and Kokaly (2001, p. 85), was defined in this survey as “a person who, either by doing something or by being admirable to you in one or more ways, has had an impact on the academic decisions you have made in your life. Role models may be people you know personally, or they may be people you simply know of.”

Participants were asked to identify the mentor who has the greatest influence on their academic decisions by selecting one of the following five response categories: family member, friend/peer/significant other (spouse/partner), professor/instructor/academic advisor, co-worker/supervisor, other. Participants with a role model were asked to identify the role model who has the greatest influence on their academic decisions by selecting one of the following five response categories: family member, friend/peer/significant other (spouse/partner), professor/instructor/academic advisor, co-worker/supervisor, and “someone I know of, but do not know personally”. In addition, participants were asked to report the genders of the mentor and role model and indicated if that person works in the construction industry.

Participants and Survey Administration

A quantitative survey was administered to 828 students enrolled in undergraduate-level CM courses at three universities during the Spring 2014 semester. The intent of this manuscript is to explore the demographic characteristics of mentors and role models for undergraduate CM students. Participants were classified as CM students if they reported one of the following majors: CM or pre-CM, dual major (including CM), construction science, and dual major (including construction science). A survey designed to assess the existence of mentors and role models, as well as profile their demographic characteristics (described below), was administered at the beginning or end of each class session. Attendance in each course was recorded on the day of survey administration in order to determine the response rate. The course instructors were asked to leave the room during survey administration, and students were informed that participation was voluntary and the instructor for the course would not know who participated and who did not.

Results

Sample and Data Screening

In total, 679 responses were returned, yielding an 82% response rate. The targeted sample for this study was adult undergraduate CM students. Therefore, minors (participants who reported an age of “17 years old or younger”), graduate students, and non-CM majors (e.g., interior design, architecture, etc.) were removed from the data set. The responses were screened for outliers, missing and invalid responses prior to analysis. Through data screening procedures, 92 surveys were removed prior to analysis. The demographic data of the cleaned sample ($n = 587$) is provided in Table 1. Participants reported if they had a mentor and/or role model, as described previously. The items

related to having a mentor and items related to having a role model were independent of one another. If a participant responded “yes” to having a mentor and/or to having a role model, they were considered as having a person who influenced their academic decisions. Participants who responded “no” to having a mentor and “no” to having a role model were considered as having no person of influence.

Table 1

Sample Demographic Data of Construction Majors (n = 587)

Characteristic	<i>n</i>	%
Age (years)		
18-19 years	153	26.1
20-21 years	250	42.6
22-24 years	138	23.5
25 years or older	46	7.8
Current year in school at the time of survey		
Freshman	95	16.2
Sophomore	239	40.7
Junior	120	20.4
Senior	133	22.7
Gender		
Female	64	11.0
Male	520	89.0
Ethnicity		
Non-Hispanic White	484	83.2
Hispanic	68	11.7
Asian American	12	2.1
African American	9	1.5
Other or International	9	1.5
Family involvement in the construction industry		
Yes	293	51.6
No	275	48.4
Has a mentor		
Yes	290	50.3
No	286	49.7
Has a role model		
Yes	398	73.6
No	143	26.4
Has a person who influenced their academic decisions		
Yes (reported “yes” for mentor and/or role model)	441	80.6
No (reported “no” for both mentor and role model)	106	19.4

Note. Includes Construction, Construction Management, and Construction Science majors.

Mentors and Role Models

Participants that responded “yes” to having a mentor and/or role model reported demographic characteristics of the mentor and/or role model who had the greatest influence on their academic decisions. Participants identified the person by selecting one of five response categories as shown in Table 2. The participants also reported gender of the person identified in the previous item and documented if that person works in the construction industry. Cross-tabulation analysis for the demographic characteristics of mentors and role models are shown in Tables 3 and 4, respectively. For example, for mentors categorized as family members ($n = 158$), 16.6% were female and 83.4% were male (see table 3); for role models categorized as family members ($n = 270$), 13.8% were female and 86.2% were male (see table 4).

Table 2

Demographic Characteristics of Mentors and Role Models

Characteristic	Mentors (<i>n</i> = 290)		Role Models (<i>n</i> = 398)	
	<i>n</i>	%	<i>n</i>	%
Category				
Family member	158	56.4	270	69.1
Friend, peer, or significant other (spouse, partner)	46	16.4	74	18.9
Professor, instructor, or academic advisor	58	20.7	20	5.1
Co-worker or supervisor	13	4.6	18	4.6
Other	5	1.8		
Someone I know of, but do not know personally			9	2.3
Gender				
Female	54	19.1	60	15.3
Male	229	80.9	332	84.7
Works in the construction industry				
Yes	171	60.6	218	55.8
No	111	39.4	173	44.2

Table 3

Demographic Characteristics of Mentors by Category

Characteristic	Family member (<i>n</i> = 158)	Friend, peer, or significant other (spouse, partner) (<i>n</i> = 46)	Professor, instructor, or academic advisor (<i>n</i> = 58)	Co-worker or supervisor (<i>n</i> = 13)	Other (<i>n</i> = 5)
	%	%	%	%	%
Gender					
Female	16.6	21.7	27.6	0.0	20.0
Male	83.4	78.3	72.4	100.0	80.0
Works in the construction industry					
Yes	56.3	67.4	59.6	100.0	40.0
No	43.7	32.6	40.4	0.0	60.0

Table 4

Demographic Characteristics of Role Models by Category

Characteristic	Family member (<i>n</i> = 270)	Friend, peer, or significant other (spouse, partner) (<i>n</i> = 74)	Professor, instructor, or academic advisor (<i>n</i> = 20)	Co-worker or supervisor (<i>n</i> = 18)	Someone I know of, but do not know personally (<i>n</i> = 9)
	%	%	%	%	%
Gender					
Female	13.8	18.9	10.0	5.6	66.7
Male	86.2	81.1	90.0	94.4	33.3
Works in the construction industry					
Yes	50.7	60.6	95.0	83.3	22.2
No	49.3	39.4	5.0	16.7	77.8

Demographics by Gender

The sample demographic data of construction majors were analyzed by the students' gender. As shown in Table 5, 56.6% of female students and 49.6% of male students reported having a mentor whereas 79.7% of female students and 73.1% of male students reported having a role model. The demographic characteristics of mentors and role models were analyzed by the students' gender (see table 6 for cross-tabulation). Among students with a person of influence, 73.5% of female students and 58.7% of male students reported that their mentor works in the construction industry, while 52.2% of female students and 56.2% of male students reported that their role model works in the construction industry.

Table 5

Sample Demographic Data of Construction Majors by Students' Gender (n = 584)

Characteristic	Female Students (n = 64)		Male Students (n = 520)	
	n	%	n	%
Has a mentor				
Yes	35	56.5	254	49.6
No	27	43.5	258	50.4
Has a role model				
Yes	47	79.7	351	73.1
No	12	20.3	129	26.9
Has a person who influenced their academic decisions				
Yes (reported for mentor and/or role model)	51	86.4	389	80.0
No (reported for mentor and role model)	8	13.6	97	20.0

Table 6

Demographic Characteristics of Mentors and Role Models by Students' Gender (n = 289)

Characteristic	Mentor		Role Model	
	Female Students (n = 35)	Male Students (n = 254)	Female Students (n = 47)	Male Students (n = 351)
	%	%	%	%
Category				
Family member	38.2	58.8	58.7	70.4
Friend, peer, or significant other (spouse, partner)	23.5	15.5	17.4	19.1
Professor, instructor, or academic advisor	26.5	20.0	4.3	5.2
Co-worker or supervisor	5.9	4.5	10.9	3.8
Other	5.9	1.2		
Someone I know of, but do not know personally			8.7	1.4
Gender				
Female	37.1	16.6	37.0	12.4
Male	62.9	83.4	63.0	87.6
Works in the construction industry				
Yes	73.5	58.7	52.2	56.2
No	26.5	41.3	47.8	43.8

Discussion

Research on career and academic decision-making suggested that self-efficacy was positively correlated with support, guidance, inspiration, and modeling provided by others (Bandura, 1977; Day & Allen, 2004; Hutchison, Follman, Sumpter, & Bodner, 2006; Moore & Gloeckner, 2007; Zeldin & Pajares, 2000). In addition, previous studies on career and training performance have observed a relationship between the influence of others and protégé motivation (Day & Allen, 2004; Noe, Noe, & Bachhuber, 1990; Zeldin & Pajares, 2000). In order to attract students to CM programs, it is important to understand what influences their academic decisions. Developing a profile of mentors and role models provides educators with a better understanding of CM students' academic decision-making.

The results showed that 80.6% ($n = 587$) of the participants reported having a person who influenced their academic decisions, as defined in this study. Among these, having a role model ($n = 398$) was reported more often than having a mentor ($n = 290$); it should be noted that 247 students reporting having both a role model and mentor. The study revealed differences in the demographic profile of CM students' mentors and role models. The most frequently reported category was family member (69.1% of role models and 56.4% of mentors). Overall, 19.1% of mentors and 15.3% of role models were female. When analyzed by category, the majority of mentors and role models were reported as male in all but one category. Role models identified as "Someone I know of, but do not know personally" was the only category that had a higher percentage of females than males; while the number of responses for this category was small ($n = 9$), it should be noted that 66.7% of these role models were female.

There were also several notable differences between male and female students. A higher percentage of female students reported having a person who influenced their academic decisions compared to male students (86.4% and 80.0%, respectively). While family member was the most frequently reported category for both male and female students, the percentage of mentors and role models identified as family members was lower for female students (38.2% and 58.7%, respectively) compared to male students (58.8% and 70.4%, respectively). A higher percentage of female students (73.5%) reported that their mentor works in the construction industry compared to male students (58.7%). Understanding these differences may help educators design effective recruiting and mentoring programs (e.g., developing criteria for matching mentors with protégés).

This paper represents an initial step in understanding the demographic profile of persons of influence on students who choose to pursue CM education. The results of this study must be understood within the assumption that respondents could discern the difference between the terms of role model and mentor (specifically defined in the survey) and reported based on accurate understandings of these terms. Future studies would benefit from the inclusion of open-ended questions or interviews to explore the influence of others in further detail and to address these limitations (e.g., participants were limited to reporting the mentor and role model that had the greatest influence on their academic decisions, within the categories of relationships provided in the survey). Further investigation is needed to develop a more descriptive mentor/role model profile, which would provide educators with a better understanding of how others influence academic decisions. The results of this paper support ongoing research that examines and compares the existence of role models and mentors with students' levels of self-efficacy and motivation within the construction education domain. Furthermore, future research will investigate the differences between men and women concerning how these constructs influence academic choice and performance in construction management programs.

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