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Title

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Permalink

Journal

AEM Education and Training, 5(3)

ISSN

2472-5390

Authors

Jordan, Jaime
Coates, Wendy C
Gottlieb, Michael
et al.

Publication Date

2021-07-01

DOI

10.1002/aet2.10565

Peer reviewed

The Impact of a Medical Education Research Faculty Development Program on Career Development, Through the Lens of Social Cognitive Career Theory

Jaime Jordan, MD, MAEd[1] , Wendy C. Coates, MD[1] , Michael Gottlieb, MD[2] ,
William E. Soares III, MD, MS[3], Kaushal H. Shah, MD[4], and Jeffrey N. Love, MD, MHPE[5]

ABSTRACT

Objectives: The Medical Education Research Certificate at the Council of Residency Directors in Emergency Medicine (MERC at CORD), a specialized adaptation of the Association of American Medical Colleges MERC program, provides faculty development in education research in emergency medicine. However, its long-term influence on career development remains unknown. Our study explored the impact of MERC at CORD on career development through the lens of social cognitive career (SCC) theory.

Methods: This was a prospective qualitative study using a constructivist/interpretivist paradigm to assess long-term career development outcomes. A purposeful randomized stratified sampling strategy of MERC at CORD graduates (2011–2014) ensured diversity of representation (sex, region, number of research publications, and project group leadership). Subjects were invited by e-mail to participate in semistructured phone interviews. Thematic analysis by two independent reviewers followed an iterative process until saturation was reached.

Results: Twelve graduates were interviewed. All engaged with MERC at CORD early in their careers with minimal previous education research experience. Currently, all hold medical education leadership positions. Graduates had a mean of 19.3 publications (range = 9–43). Themes explaining reasons for participating in MERC at CORD include: desire for education research skills, recommendation of mentors/colleagues, and accessibility. Themes citing the program's value to career development include networking/collaboration, mentorship, informational framework to build upon, and the application of theoretical knowledge through experiential learning. MERC at CORD impacted career development aligning with the core domains of SCC theory including self-efficacy, outcome expectations, and goals.

Conclusion: MERC at CORD enhanced the long-term career development of participants by providing a core knowledge framework in a mentored, experiential learning environment. Participants identified themes aligned with SCC theory as influential in their long-term career advancement in medical education including the development of education research skills, successful completion of education research, career acceleration, promotion, niche development, and formulation of professional goals.

A recurring critique of research in medical education is the lack of methodologic rigor.[1–6] This may be due, in part, to limitations in expertise and mentorship opportunities for medical educators, who are often expected to produce scholarship, including research as part of their academic roles.[7–9] For example, Jordan et al.[10] reported that 43% of academic emergency medicine (EM) faculty are primarily involved in education; however, few possess formal training or expertise in performing and disseminating education research. To familiarize educators with the key skills needed to participate meaningfully in medical education research projects, the Association of American Medical Colleges (AAMC) Group on Educational Affairs (GEA) developed a series of workshops leading to a Medical Education Research Certificate (MERC).[11] These sessions are designed so that each participant can independently gain skills that will facilitate their ability to carry out education research.[11]

While this focused introductory approach is valuable, it is likely that more comprehensive training and the development of research networking with personal mentorship are still needed. To address this need for training in medical education research, dedicated medical education fellowships, and executive-type master's degree programs have been developed.[12–16] Yet, not all those interested in developing skills and networks in medical education research are able to devote the time nor bear the cost of a longitudinal program. In 2009, a unique faculty development partnership emerged between the AAMC and the Council of Residency Directors in Emergency Medicine (CORD) to offer a mentored, collaborative approach to the well-established MERC program for EM physicians, entitled Medical Education Research Certificate at the Council of Residency Directors in Emergency Medicine (MERC at CORD).[9,17,18] In addition to the usual MERC didactic workshops, MERC at CORD participants from multiple institutions form study groups and, under the guidance of a mentor who is an experienced expert in medical education research methods, work together to identify a research question and design a multicenter study that is carried out at participants' institutions.[9] In addition to providing skills in education research, the program aims to develop a network of education scholars and infrastructure for education research in EM.[9,17]

At its 5-year review, the MERC at CORD program demonstrated Kirkpatrick levels 1, 2, and 3 outcomes, including improved skills and knowledge in domains related to education research, production of education scholarship, mentorship of others in the area of education research and scholarship, and improved job performance.[18,19] The MERC at CORD program has been active for 10 years and enrolls participants annually. While the early and intermediate outcomes remain positive, the effect of the MERC at CORD program on long-term career development in medical education scholarship domains is unknown.

Changes in career related behaviors can be framed through social cognitive career (SCC) theory. SCC theory emphasizes three domains as crucial to career development: self-efficacy beliefs, outcomes expectations, and personal goals.[20–23] Self-efficacy represents an individual's belief that they can succeed at a given task. Outcome expectations describe the individual's understanding of the consequences of their behaviors. Personal goals represent the individual's desired result or the target of their effort and ambition. In medical research, SCC theory has demonstrated a positive relationship between academic and career self-efficacy with regard to career choices and achievement across a range of fields and populations.[24–31] Self-efficacy beliefs and positive outcome expectations can be strengthened by personal success experiences, exposure to successful role models, and a supportive learning environment.[21,24] Since the MERC at CORD program is designed to address and include these experiences, we predict that the program has a positive impact on the career development of participants. The objective of this study was to describe the impact of the MERC at CORD Program on career development through the lens of SCC theory.

METHODS

Selection of Participants

The MERC at CORD program participants who completed the program in its entirety and thus attained the title of "MERC at CORD Scholar" between 2011 and 2014 were eligible to participate in this study. We chose these years to ensure that graduates of the program had sufficient time to realize career progression. We employed a purposeful randomized stratified sampling strategy to reduce bias and ensure diversity of representation of scholars. Strata included sex (male, female), region (west, north east, south, midwest), number of peer-reviewed research publications (above vs. below mean of potential participants), and whether

they served as the MERC at CORD project group leader. Program graduates who met eligibility criteria according to their graduation year were divided into these predefined strata and randomly sorted. Graduates were listed in all strata that matched their characteristics. Therefore, individuals could be listed in multiple strata; that is, a female graduate from an institution in the west would be listed under both "female" and "west" strata. Potential participants were invited via e-mail in a stepwise fashion. For example, we first invited graduate A from strata 1. If that graduate declined to participate or failed to respond after 1 week, we reached out to the next graduate on the randomly generated list. If a graduate agreed to participate, the other strata they belonged to were noted. We initially aimed to have representation of two individuals from each stratum, understanding that a single individual could satisfy multiple strata. We were prepared to continue to collect data until saturation was reached.

Study Design and Setting

We conducted a prospective qualitative study utilizing semistructured narrative phone interviews. A single member of the study team (MG), who is experienced in qualitative methods and interviewing techniques and is not a member of the program's leadership, conducted all the interviews after informed consent. During the interviews, real-time member checking was performed to ensure understanding of intended meaning. Interviews were approximately 30 to 60 minutes in length and were recorded and transcribed verbatim. Transcripts were deidentified prior to analysis. Data were collected between November 2019 and January 2020. This study was deemed "exempt" by the institutional review board of the David Geffen School of Medicine at UCLA.

Instrument Development

To maximize content validity, the interview questionnaire was developed by the study team of education researchers, all of whom had engaged in MERC at CORD as prior participants and/or faculty mentors, with an emphasis on the core tenets of SCC theory including self-efficacy beliefs, outcome expectations, and personal goals.[20–23] We developed the interview script with a focus on open-ended questions to maximize the depth of response. All interview questions were piloted with comparable representative subjects to ensure response process validity. We made revisions for clarity based on feedback from pilot testing. After pilot testing, no additional changes to the interview script were made during data collection. The final version of the interview script is available in Data Supplement S1 (available as supporting information in the online version of this paper, which is available at http://onlinelibrary.wiley.com/doi/10.1002/aet2.10565/full).

Data Analysis

Two researchers experienced in qualitative methods (JJ and WC) independently analyzed transcribed interview data using a constructivist/interpretivist thematic approach. Data were examined line by line to identify recurring concepts and assign codes which were then further refined into themes using the constant comparative method.[32] The two analysts met to establish a final coding scheme that was applied to all data. Inter-rater agreement was 91.4%. Discrepancies were resolved by in-depth discussion and negotiated consensus.

RESULTS

Characteristics of Study Subjects

We invited 12 MERC at CORD graduates to participate and all agreed to be interviewed. Data saturation was reached after the ninth interview; however, we analyzed the remaining three interview transcripts to ensure diversity of representation and to confirm that no important themes were missed. All participants currently hold education leadership positions in their departments and institutions and at the national level. Characteristics of participants are displayed in Table 1. Many (8/12) are active in education research and one is a member of a national EM education research consortium. For five of the graduates, mentoring others in education research was an explicit academic duty. One participant described his role as chair of their department's education research group:

> "Along with several of my [associate program directors] and some of the medical student leadership, I actually chair our education research group that we started here a few years ago … Our mission is to take the everyday … innovative things that we do as educators and turn them into scholarship so that we can increase [scholarly productivity], help [faculty] get promoted, do some mentorship, and teach each other about new education theory and statistical analysis …"

	Total n = 12
Sex male	6 (50.0)
Region of current practice	
West	3 (25.0)
Midwest	2 (16.7)
Northeast	5 (41.7)
South	2 (16.7)
MERC project leader	4 (33.3)
Number of years since residency graduation	11.1 (5–26)
Current academic rank	
Assistant professor	4 (33.3)
Associate professor	6 (50.0)
Professor	2 (16.7)
Current department position*	
Program director	4 (33.3)
Assistant/associate program director	5 (41.7)
Vice chair	2 (16.7)
Fellowship director	1 (8.3)
Clerkship director	1 (8.3)
Director of education research	2 (16.7)
Institutional education leadership role	6 (50.0)
National education leadership role	3 (25.0)
Number of peer reviewed research publications	19.3 (9–43)
Number of peer reviewed research publications prior to MERC	2.3 (0–6)
Recipient of grant funding for research†	
Internal grant funding	5 (41.7)
External grant funding	7 (58.3)
None	4 (33.3)

Data are reported as n (%) or mean (range). This table describes demographic characteristics and current academic responsibilities of MERC at CORD graduates who were interviewed.
MERC at CORD = Medical Education Research Certificate at the Council of Residency Directors in Emergency Medicine.
*Individuals may hold more than one position.
†Individuals may have received more than one type of grant funding.

Experience in Education Research Prior to MERC at CORD

Participants engaged with the MERC at CORD program as either trainees (resident 3/12; fellow 1/12) or early in their faculty career (8/12). None had significant experience in education research at the time they participated in the program. Motivations for enrolling in MERC at CORD focused on three major themes, including program accessibility, recommendation of a mentor or colleague, and a desire to learn skills in an area of interest. Exemplar quotes include:

"[MERC at CORD] was recommended to me by a mentor. He knew that I was interested in education and academics and wanted to find something to help me learn new skills in this area. I was going to CORD [Annual Academic Assembly] anyway, and this [program] was well known and established, so it seemed like the one that I would be able to do."

"I decided to make academics a career and realized education was important to me, not just personal education, but the study of education was important to me and I felt that MERC [at CORD] would provide me with the skillset to be able to grow in this arena."

"My chair recognized my interest and encouraged me to apply for [MERC at CORD]."

What MERC at CORD Provides

Participants cited multiple aspects of the program that helped their career development. Major themes that emerged were centered on unique opportunities that the program offered. These included networking and collaboration, mentorship, a knowledge framework to build upon, and experiences fostering application of theoretical knowledge through experiential learning (Table 2). All 12 participants highlighted the networking/collaboration and the opportunity to apply knowledge through the mentored group project. Interestingly, participants valued having a safe and supportive environment to experience and learn from failure. As one participant remarked,

"At the time, it really felt like an immediate failure … we really didn't feel like we did that good a job with [our project] … but, now it's one of those things that I look back on as a very valuable experience of trying to bite off too much in one project and being realistic about making a change …. I think there were a lot of valuable lessons that have impacted my future projects."

How MERC at CORD Impacts Career Development

Major themes that emerged as to how MERC at CORD impacted career development aligned with the core domains of SCC theory including self-efficacy beliefs, outcome expectations, and personal goals (Table 3).

Self-efficacy. After the program, participants believed they possessed the necessary research and

Table 2
What MERC at CORD Provides

Major Theme	Number of Interviews Demonstrating Theme (n = 12)	Exemplar Quotes
Networking/collaboration	12	"… the networking opportunities are tremendous. You will meet people and will stay in touch with people that will probably influence you for the rest of your career."
Mentorship	8	"I can a hundred percent directly correlate my early experience, and my early publications on those mentorship connections."
Foundational information/ framework to build upon	11	"… trying to get through the meat of how do you do a literature search, and how do you actually write a good paper, and what are the things that are important and, how do you actually get published, and what are the things that the editors are looking for … It just provided a nice scaffolding or framework for me."
Experiences fostering application of theoretical knowledge through experiential learning	12	"I think that MERC at CORD … gave me an opportunity to really try to apply [the fundamentals of research] … For me, it was the group work, the project work … That component was the most impactful for me."

Themes and examples describing the intrinsic value of MERC at CORD as reported by participants in the MERC at CORD course who were interviewed.
MERC at CORD = Medical Education Research Certificate at the Council of Residency Directors in Emergency Medicine.

project management skills that would enable them to successfully conduct medical education research. They noted a fluency in the language of the field and were empowered to seek assistance outside their department when needed.

Outcome Expectations. Participants reported that their career trajectories were enhanced by participating in MERC at CORD, including career acceleration/efficient advancement, promotion, successful publication, and MERC at CORD experiences and relationships directly offering opportunities for career advancement.

Personal Goals. We noted four major themes: Identification of education research as a valuable discipline, niche development, MERC at CORD as an impetus for future work, and a venue for the formulation/refinement of professional goals.

DISCUSSION

Our study applies SCC theory to help frame and understand the impact of MERC at CORD on the career development of graduates. By providing a learning framework, experiences that fostered the application of theoretical knowledge, mentorship, and opportunities for networking and collaboration, MERC at CORD helped shape graduates' self-efficacy, outcome expectations, and goals. The research methods and project management skills they acquired along with the ability to speak the language of the field,

confidence to seek assistance outside of their own department, a new scholarly lens with which to view everyday educational activities, and successes in education research positively contributed to their self-efficacy surrounding medical education scholarship. Outcome expectations included career acceleration, promotion, successful publication, and opportunities for career advancement. Graduates felt MERC at CORD helped them see medical education research as a valuable discipline and worthy career path, formulate and refine professional goals, and develop a niche and served as an impetus for future work. While certainly not the only factor, MERC at CORD positively influenced the career development of participants who later went on to become education leaders and scholars in the field. This finding is consistent with the report by Love et al.[18] report on the initial trend of a positive influence of MERC at CORD at the 5-year mark. These participants now serve as mentors in education research, thus propagating these skills to others. Some graduates are helping to build medical education research consortia which can strengthen outcomes by creating a multi-institutional infrastructure.

It is not surprising that participants highlighted the mentorship, networking/collaboration, and experiential learning opportunities offered by MERC at CORD as influential to their career development as these qualities are often cited as essential.[33–38] The findings of this study further support the deliberate incorporation of these opportunities in faculty development programs seeking to impact the career development of participants.

Table 3
How MERC at CORD Impacted Career Development

Domain	Major Theme	Number of Interviews Demonstrating Theme (n = 12)	Exemplar Quotes
Self-efficacy	Research methods skills	10	"... the ability to do an education literature search and see what's already out there so that I'm asking relevant questions. And ... the ability to refine my research question and then design it in a testable manner ... was all, I think, a direct result from things that I learned at MERC [at CORD]."
	Project management skills	6	"Setting goals and trying to stick to a schedule, and deadlines, and things like that. All of the mechanics of doing group-based work and of doing research. I think those mechanics were like really essential and it's the deeply unsexy work of research that is about ninety eight percent of it."
	Look at everyday activities with an eye towards scholarship	6	"The minute we think of something, we are automatically trying to turn it into scholarship here. [MERC at CORD] really gave me the creativity to realize that so much of what we were doing as far as curriculum development, faculty development, feedback ... that there was a scholarship component to all of that. And, it really made me, as I matured, start to think about things as not only how are we going to implement it for our residents but how are we also now going to study it and try and make something scholarly out of it."
	Ability to speak the language of the field	8	"When we're doing committee work at the institutional level or potentially beyond, like through SAEM [Society for Academic Emergency Medicine] committees, CORD committees, I think that it's really helpful to be able to speak that language and have that knowledge base. And it allows me to probably be more effective in those roles ..."
	Confidence to seek outside help/ relationships when needed	4	"I've partnered with our school of education PhDs and the professional school of the university."
	Success in conducting education research	10	"I guess it was nice to see really from a standpoint of 'accomplishability' ... It gave me a sort of sense like, 'Oh, you know [education research] isn't rocket science. This is really something that is repeatable and meaningful and fun, but it's not beyond my reach in any way."
Outcome expectations	Career acceleration/ efficient advancement	11	"MERC at CORD kind of came for me at an inflection point in my career and I think definitely was part of what pushed my trajectory upward and more steeply."
	Promotion	9	"There's so much more that, I think, having the skillset has helped with in terms of promotion. Giving seminars to other members of the GME community about dealing with difficult learners and providing effective feedback, and things that I learned about as a result of projects I have worked on, stemming from either the MERC program itself or MERC relationships."
	Successful publication of education scholarship	8	"And then finally, getting a publication in education research was helpful for me because it demonstrated that I could do it, which, made it easier for me then."
	MERC experiences and relationships offered opportunities for career advancement	6	"I met ___at MERC [at CORD] and that led to him coming to work [here] after I texted him and said, 'Hey, you know, we've worked on some stuff together, we kind of know each other, why don't you come and we'll work together.'"
Goals	Identification of education research as a valuable discipline	8	"I see the value in [education research] and we have been able to recruit people that also see the value in it. And, I probably would not have seen the value in that or our ability to do that type of research here had I not had the experience at MERC and CORD."
	Niche development	8	"One of the first papers that I wrote with my MERC group was about resident perceptions of faculty-initiated versus resident-initiated feedback. So, it was all about feedback and that not only led to more opportunities for scholarly work, but it really got me interested in feedback in general. And, that's become one of my areas of focus in my academic career.

Domain	Major Theme	Number of Interviews Demonstrating Theme ($n = 12$)	Exemplar Quotes
	MERC at CORD as an impetus for future work (training, scholarship)	10	"[MERC at CORD] absolutely jump-started it. And, I think it really put me in a position to do the work I've done subsequently . . . MERC at CORD was absolutely the thing that kick-started it."
	Formulation/ refinement of professional goals	9	"Coming out of [MERC at CORD] my goals were more well-formed and more directed toward an area of interest with specific deliverables and timelines and things that I wanted to achieve."

Themes and examples explaining the domains of self-efficacy, outcome expectations, and goal setting to enhance career development outcomes as reported by participants in the MERC at CORD course who were interviewed.
MERC at CORD = Medical Education Research Certificate at the Council of Residency Directors in Emergency Medicine.

Most participants engaged with the program early in their career when they had limited education research experience. This may explain why MERC at CORD had a great impact with the participants who indicated that it was a "spring board" or "launching pad" in their career development. Targeting motivated individuals early in their career when they have fewer competing demands may allow them to capitalize on all the offerings of this program to provide maximal results. Indeed, faculty development early in a medical career has been shown to be important for career advancement.[33] It is unknown if we would have found the same results if our participants had been further on in their careers. While faculty development can be beneficial at any career stage, deliberate approaches should be utilized to best meet the needs of the target audience.[34]

This study identified several themes describing how MERC at CORD impacted the career development aligned with the core tenets of SCC theory. This is similar to other studies on career development in medicine and research and further supports the use of this theory as a framework.[24,26,28] Additionally, the results of this study can inform the future development and implementation of other faculty development programs. Designers and leaders of faculty development programs whose aims include career development may want to deliberately incorporate learning opportunities and experiences that support the core tenets of SCC theory. Examples might include opportunities to succeed in tasks, exposure to successful role models and mentors and social support that can be achieved through collaborative learning environments.[24] While supporting personal success is important, participants should not be protected from obstacles or failure as several participants in this study commented on the value that they garnered from their failures and opportunities to overcome obstacles, which has also been supported in prior literature.[24] In order to support outcome expectations, programs should help participants recognize what they will be able to do after completion of the program and what they can expect to accomplish with continued work in the field. Faculty development programs that encourage their participants to create actionable goals both during program participation and for the future will also likely contribute positively to career development.

LIMITATIONS

This study has limitations that must be considered when interpreting the results. First, this was a small study of a limited subset of MERC at CORD graduates who consented to be interviewed. Despite purposefully selecting subjects with diverse characteristics and achieving thematic saturation, it is possible that we may have missed important comments from graduates who were not interviewed. Additionally, our interview script was not all-inclusive and may have omitted questions that could have led to other important themes outside of the framework of SCC theory. The MERC at CORD program involves educators from a single medical specialty and so the results may not be generalizable to other fields. Finally, several members of the study team serve in leadership roles for the MERC at CORD program, which could introduce bias. We tried to minimize this by having the interviewer and one of the qualitative analysts be nonprogram leadership.

CONCLUSIONS

The Medical Education Research Certificate at the Council of Residency Directors in Emergency

Medicine enhanced the long-term career development of participants by providing a core knowledge framework in a mentored, experiential learning environment. Participants identified themes aligned with social cognitive career theory as influential in their long-term career advancement in medical education including the development of education research skills, successful completion of education research, career acceleration, promotion, niche development, and formulation of professional goals. Our results may inform other faculty development programs in medical education research and underscore the importance of collaboration for maximal results.

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Supporting Information

The following supporting information is available in the online version of this paper available at http://onlinelibrary.wiley.com/doi/10.1002/aet2.10565/full

Data Supplement S1. Interview script.