Policy Research Brief

Langston University
Rehabilitation Research and Training Center (RRTC) on Research and Capacity Building for Minority Entities
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A Historically Black College/University Based Evaluation of a Disability and Health Peer-to-Peer Mentor Research Team Model: Case Study Approach

Key Informant Characteristics

(Research Fellows)

Race/Ethnicity	*n*	*%*
African American	2	66.7
Asian	1	33.3
Gender		
Female	3	100
Institutional Rank/Title		
Associate Professor	2	66.7
Assistant Professor	1	33.3

(Mentors)

Race/Ethnicity	*n*	*%*
White	3	60
African-American	1	20
Asian	1	20
Gender		
Male	1	20
Female	4	80

■ Purpose of Study

The participation of minority serving institution-based researchers remains critical to addressing the community living, rehabilitation, and health needs of individuals with disabilities from diverse racial and ethnic target populations.[1-3] The intersection between the inadequate supply of such investigators available to answer important service and policy questions and the need for leaders and role models of color available to mentor them contributes to the pervasive and disturbing cycle of related disparities. As such, there is widespread consensus among research capacity building experts that new and innovative research mentorship approaches designed to build these investigators' research skills and diversify the scientific workforce are key strategic components within minority serving institution research capacity building context.[1,3,4] Traditional federal research agency sponsored mentorship efforts have focused on building individual trainees' research methodology and grant writing skills through hierarchy-based independent research training models.[5] However, in light of institutional and investigator contextual issues (e.g., unavailability of seasoned research mentors/role models, poor research culture and infrastructure, little experience in research and development [hereafter referred to as R&D] and grant writing), minority

■ Summary of Findings

The results track the study's objective, which was to evaluate the PPMRTM. Three different theories (i.e., planned change, critical mass, and self-efficacy), contemporary study findings, and our personal experiences as minority serving institution-based investigators provided a useful framework for developing the model. A concurrent, equal status mixed-methods design was used to triangulate data collected from two different sources: (a) a mixed-methods (i.e., qualitative and quantitative) web-based survey and (b) telephone interviews. Data were collected and analyzed separately for fellows/trainees and mentors through open coding, memo-writing and category development processes. The following strategies emerged as potentially useful and important.

PPMRTM- Useful Mentorship Strategies

Strategy/approach	Respondent
Research Team/Team Science	Fellows and Mentors
Weekly Calls	Fellows and Mentors
Research Resource Provision	Fellows and Mentors
Time Management Skills	Fellows and Mentors
Collaboration	Fellows and Mentors
Feedback on Process	Fellows and Mentors
Community of Practice	Fellows

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serving institution-based early career investigators may need new mentorship models that reflect a more supportive, nurturing, and team-based approach. The Peer-to-Peer Mentor Research Team Model (PMRTM) represents one such emerging conceptual framework for guiding the research capacity building science that considers mentoring across groups (i.e., between fellow research team cohorts and mentor panels), and within fellow research teams to be the new research skill building paradigm. The purpose of this study was to evaluate the PPMRTM, a component of the Institutional Research Capacity Building and Infrastructure Model (IRCBIM), at a historically Black college/university (HBCU) in the eastern region of the United States.

■ Background

Mentorship at minority serving institutions in the United States represents an innovative research capacity building strategy for increasing early career research scientists' research skills (i.e., research methods and grant writing), and diversity in the behavioral, social science, clinical, and biomedical scientific workforce.[1,5,7,8] These institutions, as defined in Section 21 of the Rehabilitation Act Amendments, are historically Black colleges or universities (HBCUs), Hispanic-serving institutions of higher education, American Indian tribal colleges or universities, or other higher education institutions whose minority student enrollment is at least 50 percent.[9-11] Mentorship scholars have long supported the benefits of mentoring relationships in the areas of personal growth, professional development, and the transition of knowledge and skills from one generation to another.[12,13] Research mentorship has especially been singled out as an effective research capacity building element[14,15] and an important professional development strategy through which qualified investigators are produced.[1,3,16-19]

This construct serves as a critical component in the acculturation and integration of early career investigators of color to the scientific community,[3] and has shown potential for attracting and retaining them in the scientific workforce.[20,21] Although mentorship has been documented as an effective research capacity building approach, minority serving institution-based investigators rarely receive this kind and level of support due partly to their limited access to seasoned researcher leaders and role models available to mentor them.[4,22,23] Moore and his colleagues,[22] in a Delphi study, reported that HBCU-based disability faculty scholars as key informants ranked the lack of adequate formal research mentorship programs as the second most important overall research skill building and participation obstacle.

Additionally, faculty members at HBCUs experience a plethora of institutional obstacles such as heavy teaching loads, inefficient institutional review boards, sponsored programs office operations, lack of supportive administrative cultures, inadequate research dissemination/ presentation travel funds, and inadequate library resources.[1,3,4] For example, rigid and bureaucratic administrative organizational structures can discourage faculty members from research participation and reduce the amount of time they are willing to devote to scholarly activities due to lack of administrative support.[22,24] Consequently, these institutions remain underrepresented in the federal disability and health research enterprise's investment portfolio as "grantees", and their affiliated investigators continue to under-participate in sponsored R&D programs and scientific publications.[4,25,26]

The marginalization of these institutions and their affiliated researchers from optimal participation in federally sponsored R&D that benefit African Americans and other minorities with disabilities (i.e., Latinos, Native Americans, and Asians) and their communities has been increasingly linked to a cascade of suboptimal rehabilitation, health, and independent living experiences and outcomes.[11] For example, studies consistently show that people with disabilities from minority populations and communities experience poorer rehabilitation outcomes when compared to non-Hispanic Whites.[27-30] Moreover, adult Hispanics, American Indians or Alaska Natives, and African Americans with disabilities are significantly more likely to report fair or poor health (55.2%, 50.5%, and 46.6%, respectively) compared to their non-Hispanic White counterparts (36.9%).[31]

■ Population

Three full-time faculty members (fellows) and five mentors representing a scientific panel participated in this case study. Faculty members' expertise areas were rehabilitation counseling and counseling education. None of the fellows had participated in a formal mentorship program prior to their participation in the model. A purposive sampling was used to select participants.[32] All fellows were employed at a four-year HBCU. Of the 3 fellows, 2 (66.7%) were African American and 1 (33.3%) was Asian, while 2 held the rank of Associate Professors, and 1 served as Assistant Professor. They reported serving as faculty members at the current HBCU for an average of 7.6 years, with a range of 3 years to 13 years. Fellows advised on average 51.67 students per semester, taught approximately 12 hours per week, and on average served on 4.33 on campus and 2 off campus committees. All 5 of the mentors who participated in the study worked at the Institute for Community Inclusion (ICI) at the University of Massachusetts Boston. Three of the mentors were White females, 1 was an African American female, and 1 was an Asian male. One mentor reported having a disability. The fellows' HBCU employer entered into a subcontract with the Langston University (HBCU) Rehabilitation Research and Training Center (LU-RRTC) on Research and Capacity Building committing them to model participation for 1 year. Participation was voluntary.

■ PPMRTM Intervention

The Peer-to-Peer Mentor Research Team Model (PPMRTM), funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), is a collaborative effort involving the LU-RRTC on Research

and Capacity Building for Minority Entities, ICI, and South Carolina State University (HBCU). The model intervention was officially launched in April 2014 at an HBCU located in the eastern United States and was implemented through the month of May, 2015. LU-RRTC and ICI staff together conceptualized the model and its intervention components and strategies. While the ICI staff coordinated and implemented mentoring efforts and a South Carolina State University faculty member coordinated the community of practice activities, LU-RRTC investigators alone evaluated the model (i.e., developed data collection instruments in collaboration with Advisory Panel members, collected the data, analyzed and interpreted data). Lippitt's planned change theory, the critical mass theory, self-efficacy, contemporary relevant research study findings, and our personal experiences as minority investigators at a minority serving institution helped to inform the design of this model. This integrated model was designed to meet the following primary goals: (a) to increase fellow's research skill levels and (b) enhance their research self-efficacy levels by providing them with state-of-the-science knowledge of scientifically valid measurement strategies and methodologies, and direct hands-on experience in the conduct of research and grant proposal development.

The model represents a new theoretical paradigm that considers mentoring across groups (i.e., between fellow research team cohorts and mentor panels) and within fellow research teams to be the emerging conceptual framework for increasing minority serving institution-based early career investigators' research skills and self-efficacy levels. In addition, mentoring in this model is conceived as a non-hierarchical, reciprocal peer like relationship between experienced researchers and early career research scientists who work towards specific research capacity building and personal outcomes for the fellows and mentors. The mentorship relationship is developmental and purposeful.[33]

Consistent with theories of planned change and the development of mentoring relationships,[13,34-36] the PPMRTM is organized in phases as reflected in Table 1. These phases correspond with step six and seven of Lippitt's theory of planned change, which is concerned with implementing and maintaining the change so that it becomes a stable part of the system.[34,37] Mentoring activities were spread over a period of a year. Spreading activities over time has been identified as one of the best practices in change processes (e.g., academic mentoring) as it serves to connect and solidify relationships,[15,38,39] allows scheduling flexibility, and prevents fellows, who are often overloaded, from experiencing burnout. During the implementation stages, the emphasis is on communication, feedback on progress, teamwork, motivation and research team coordination. Mentors use their professional and interpersonal skills to inspire change and meet fellows' intrinsic and extrinsic needs.

Table 1: Phases of the Peer-to-Peer Mentor Research Team Model indicating duration and sample research activities

Phases	Project	Research Activities
Residency phase	Orientation	Participate in program orientation sessions, participate in research capacity training workshops, Fellows meet with mentors and begin matching process.
Remote Contact I: Research project	Research project	Conceive and develop research project, participate in online trainings, make presentations, receive mentorship and feedback.
Consultative Contact Phase I: Research project	Research project and manuscript development	Participate in disability, health, independent living, and rehabilitation research trainings, document and report progress, receive mentorship and feedback, complete research project and submit manuscript for publication consideration.
Remote Contact Phase II: Research grant proposal	Proposal Development	Receive intensive grant writing and management training, start developing research grant proposal, document and report progress, and receive mentorship and feedback.
Consultative contact phase II: Grant proposal	Proposal Development	Participate in research trainings, document and report progress, complete and submit proposal to NIDILRR, receive mentorship and feedback.
Research leadership institute	Leadership Development	Learn research leadership concepts and skills, make presentations on projects, network with research leaders and other fellows, receive mentorship and feedback.
Final Completion phase	Revision Research and Proposal Project	Tie up loose ends on research agenda, complete survey, Participate in exit interview, receive mentorship and feedback, conduct graduation ceremony.

Application of the Model

Figure 1 presents a graphic representation of our model that includes nine broad variables; initial planning, research team, mentors, community of practice, critical mass of researchers, research capacity building, incentives, research leaders, and outcomes. All of these variables are interrelated, but each is quite different in their features. Initial planning, research teams, mentor panels, incentives, research leadership, and research productivity variables are represented as critical contributors to a successful mentoring process. A critical mass of researchers is depicted as necessary to sustainability and the spread of research culture. Consistent with the mentoring practice, the PPMRTM is generally presented as nonlinear and fluid.

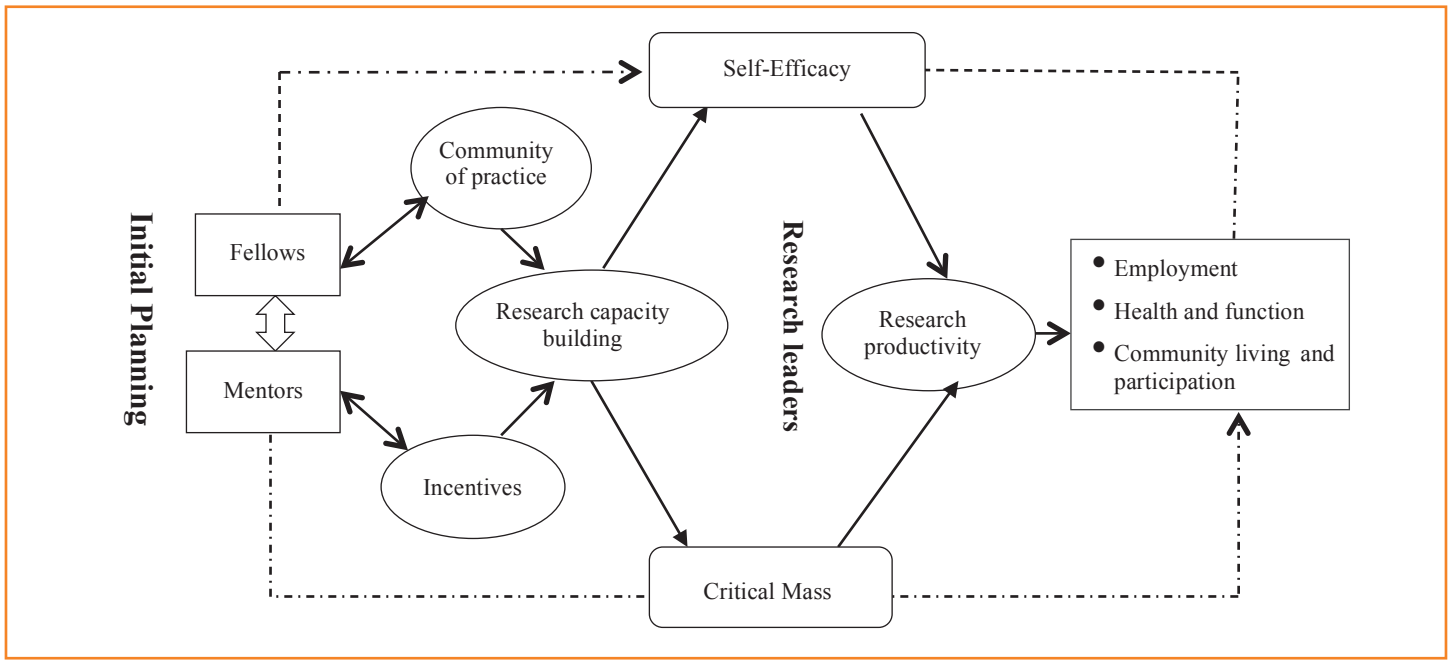

Figure 1. The PPMRTM illustrating the link between planned change, critical mass, self-efficacy, and outcomes: Source: Manyibe, Moore, Aref, Washington & Hunter (2015).

■ Method

Study Design

This case study, which is part of a larger inquiry examining the effectiveness of the IRCBIM across several minority-serving institutions (i.e., historically Black colleges/universities, Hispanic serving institutions), was conducted at an HBCU located in the eastern region of the United States. The institution offers degrees at the baccalaureate, master's and doctorate (Ph.D.) levels. Like other HBCUs, the institution prides itself on serving a diverse, but predominant African American study body, and addressing problems and inequities experienced by individuals residing in communities of color. In this study, a concurrent, equal status mixed-methods case study approach[40,41] was used to obtain both qualitative and quantitative data. This technique maximizes the benefits of both qualitative and quantitative methodology, allowing for a comprehensive in-depth understanding of findings.[40-42] Qualitative and quantitative data were garnered from two different sources: telephone interviews and online surveys. The interviews and surveys were conducted and administered, respectively, across two separate study cohorts; fellows and mentors. This mentorship model evaluation was guided by the following research questions:

1. How did fellows evaluate the Peer-to-Peer Mentor Research Team Model? How did they describe their mentoring experience?
2. How did mentors evaluate the Peer-to-Peer Mentor Research Team Model? How did they describe their mentoring experience?
3. What model components did fellows and mentors find beneficial? What were the challenges?

■ Procedures and Instrumentation

Quantitative Measures

The Mentorship Effectiveness Scale. The Mentorship Effectiveness Scale, developed by an Ad Hoc Faculty Mentoring Committee at John Hopkins University, is a 12-item six-point scale ranging from 1 (strongly disagree) to 6 (strongly agree), which evaluates 12 behavioral characteristics of the mentor.[14]

Faculty Survey. Consistent with research methodologists suggestions,[41] the design and development of the evaluation survey was informed by information gathered through a comprehensive literature review, expert panel input, and piloting. The survey included several questions related to demographics and mentorship model evaluation. Most of the items required participants to rate their perceptions using a six-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Data were collected post intervention.

Qualitative Data

We collected qualitative data using telephonic interviews. Before conducting interviews, participants received a consent form, through email, which they signed, scanned, and emailed to the researchers. Once the research team received the signed form, we scheduled one-to-one in-depth phone interviews with each participant. The semi structured interview protocol, developed by the research team members, contained questions about the participants' perspectives regarding different aspects of PPMRTM, including their experiences, useful strategies, and challenges. Two research team members, trained interviewers, conducted the one-on-one telephone interviews

post intervention. Each interview took an average of twenty minutes to complete as some researchers suggest that telephone interviews should not exceed that amount of time.[43]

Data Analysis

We utilized descriptive statistics to examine demographic characteristics of the sample, mentor characteristics, fellows' research confidence and satisfaction with the model design, and the experiences of the mentors. SPSS [version 22]) was used to analyze quantitative data. We analyzed telephone interviews responses from fellows and mentors separately. The analysis process for this qualitative data included open coding, memo-writing, category development, and constant comparison of data, which are elements closely aligned with a grounded theory approach.[44] We began the formal analysis by reading the verbatim transcripts of the audiotape interviews separately. In this process, we highlighted and coded similar verbiage independently. We used a peer-check system whereby three investigators cross-checked categorizations and statement codes. Multiple discussions eventually led to 100% agreement of the final set of codes. We entered the Microsoft Word text file into NVivo (v.10.0) for data organization and content analysis using the codes that reflected the emerging themes we had previously identified. Quantitative and qualitative data results were integrated to facilitate the discussion of the findings regarding the evaluation of the PPMRTM.

■ Results

Quantitative Findings

Table 2 presents the quantitative analysis of the experiences of fellows with their mentors. Fellows provided positive feedback in the majority of categories with the "accessibility of mentors" (M = 5.33) and the "support and encouragement mentors provided" (M = 5.33) items rating the highest. Overall, fellows (M = 4.48) indicated that they had a very positive mentoring experience. Likewise, survey results indicated that mentors perceived the mentoring experience as very positive (see Table 3) with "maintaining a positive work-life balance while acting as a formal mentor" (M = 5.20) and "matching mentors with suitable fellows" (M = 5.00) items scoring the highest.

Research Confidence. Table 4 presents survey results of fellows' post-intervention perspectives on their research confidence levels. Fellows reported high research confidence levels as reflected in their ability to identify research questions (M = 5.67), understand the process for research development (M = 5.67), conduct data collection and analysis (M = 5.67), and develop research manuscripts (M = 5.67). They reported lower confidence levels on the item measuring "their ability to utilize large databases" (e.g. RSA-911 national data set) (M = 2.67).

Table 2: The analysis of the experiences of fellows regarding their relationship with mentors

Domain	Indicators	M	SD
Fellows (M=4.48)	Were accessible	5.33	0.577
	Demonstrated professional integrity	4.00	1.00
	Demonstrated content expertise in my area of need	3.33	2.309
	Were approachable	5.00	1.00
	Were supportive and encouraging	5.33	0.577
	Provided constructive and useful critiques of my work	3.00	1.00
	Motivated me to improve my work product	5.00	0.00
	Provided direction and guidance on professional issues	5.00	1.00
	Answered my questions satisfactorily	3.67	1.115
	Suggested appropriate resources	5.33	1.115
	Challenged me to extend my abilities	4.33	1.528

Table 3: The analysis of the experiences of the mentors

Domain	Indicators	M	SD
Program Experiences (M=4.77)	Matched with suitable fellows	5.00	.00
	Fellows (mentees) benefited from the mentoring relationship	4.80	.447
	Satisfaction with my relationship with the fellows	5.00	.707
	Responsibilities clearly defined	4.20	.447
	Adequate tools and resources	4.40	.548
	Maintained a positive work-life balance	5.20	.447
Satisfaction with the Program (M=3.93)	Overall, satisfaction with the model	4.80	.447
	Recommend model to other faculty members	4.80	.447
	The model was well organized	4.40	.894
	Helped fellows build their research confidence	4.60	.548
	Felt supported	5.00	.707

Table 4: Descriptive analysis of variables regarding fellows' research confidence

Domains	Indicators	M	SD
Research Design *(M=4.57)*	Ability to conduct a research needs assessment	5.33	0.577
	Ability to identify research questions	5.67	0.577
	Ability to define research instruments	5.33	0.577
	Ability to pilot test research instruments	5.33	0.577
	Ability to conduct qualitative studies	4.00	1.732
	Ability to conduct mixed-methods research	3.33	1.528
	Ability to conduct advanced quantitative research	4.33	2.082
	Ability to utilize advanced statistics	4.00	1.732
	Ability to utilize large databases for research	2.67	1.155
	Ability to conduct data collection and analysis	5.67	0.577
Publication *(M=5.07)*	Ability to develop research manuscripts	5.67	0.577
	Ability to use statistical software for data analysis	4.33	1.155
	Ability to use reference management software	4.67	1.528
	Understands the manuscript development and publication process	5.33	0.577
	Ability to participate in Journal Editorial Boards	5.33	0.577
Grant writing and Management *(M=4.75)*	Ability to put together a research proposal development team	5.33	0.577
	Ability to interpret request for proposals	5.33	0.577
	Ability to develop research networks and partnerships	5.00	1.00
	Ability to become a proposal peer reviewer	5.00	1.00
	Ability to conduct post-award grant management	5.33	0.577

Table 5: Descriptive Analysis of Variables about Fellows' Satisfaction with the Model Design

	Indicators	M	SD
Satisfaction with the Program *(M=4.75)*	Organization of the model	4.33	.577
	Assignments and lectures usefully complemented each other	4.00	1.00
	Developed my team learning ability (i.e. inter-professional learning)	5.33	1.155
	Developed my ability to provide constructive critiques to others	5.33	.577
	Will recommend model to other faculty members	5.00	1.00
	Overall, I would rate the model as very effectiveness	4.33	1.528
	CoP was instrumental in developing my ability to conduct research	4.67	1.155
	CoP fostered my ability to work in a research team	5.00	1.00

Satisfaction with Model Design. Quantitative findings (Table 5) based on the survey results showed that fellows were generally satisfied with the mentoring program (M = 4.75). The fellows' rated the "team learning ability" (i.e. inter-professional learning) (M = 5.33) and the "ability to provide constructive criticism to others" (M = 5.33) items highest.

Qualitative Results

The following section presents the four overarching mutually inclusive themes (i.e., mentorship relationship, mentorship outcomes, mentorship strategies, and challenges) that emerged from the qualitative data analysis. The first is concerned with the relationship between fellows and mentors, which included subthemes of: (a) establishing rapport and building trust, (b) support and resources, (c) motivation, and (d) experienced mentors. The second relates to participants' perceptions of mentorship outcomes. The third relates to strategies participants perceived as useful. The last theme addresses perceived challenges.

Mentorship Relationship.

Establishing Rapport and Building Trust. Creating rapport and building trust repeatedly emerged as one of the essential ingredients to having a positive mentoring relationship between the fellows and mentors. One fellow explained: "We were able to develop rapport quickly and determine what needs we had with regards to writing." Another fellow stated, "My mentors are very friendly and approachable." Likewise, mentors felt that the quality of their relationship with fellows contributed to the successful implementation of the mentoring model. They described the steps they took to establish rapport from the very beginning of the mentoring relationship, as one mentor reflected in the following excerpt: "So we tried at the beginning to kind of get to know each other." Mentors explained that they allowed the relationship to evolve, the goal being, as one mentor elaborated, "to have a good understanding of each other." Subsequently, fellows became more confident in asking questions and sharing information. One mentor made the following comment regarding the growth of their relationship:

They [fellows] felt very comfortable in asking any kind of question once we got started, once we got to know each other, and our group kind of gelled, much more comfortable being able to ask questions and discuss questions.

Support and Resources. Receiving support and having access to resources needed to accomplish the goals of the mentoring program emerged as critical to having quality mentoring relationship. All fellows reported that they felt greatly supported by the mentors and the research team. Fellows explained that it is not easy for them to have the kind of resources and support they received during the mentoring process. They also discussed the importance of receiving the necessary support and resources needed to advance their research agenda and careers at a minority serving institution. One Fellow, for example, noted:

We were on conference calls with some of the experts [mentors]. Our topic changed. It changed quite a bit. We went from thinking about working with incarcerated youth to the elderly to finally vocational transitioning using motivational interviewing. And as those themes developed and emerged, we were greatly supported.

In addition, all the fellows reported that mentors were very resourceful. For example, one of the fellows contributed the following excerpt:

There were cases where we did not have the resources that we needed, and let me say that the mentors were able to come right in and help us.

Similarly, mentors identified providing support and resources as their second significant role, as reflected in the following excerpt:

It is important to note that the most positive aspect of this experience for all of us is knowing that we are helping faculty that face significant challenges in getting their own funding and conducting research focused on minority populations closer to achieving these goals.

Motivation. The three fellows felt that mentors motivated and encouraged them throughout the mentoring process. They described how the mentors motivated them to stay focused until they accomplished mentoring projects. All the fellows acknowledged that there were times when they felt overwhelmed with mentoring requirements; teaching, student advising, and administrative responsibilities; and family demands. Consequently, they missed attending some meetings or did not complete assignments in time. One fellow stated:

Having other individuals there to motivate you and encourage you and to keep you engaged in the process" was a "true benefit to me.

When asked about strategies they used to encourage fellows, mentors described that they frequently shared their experiences and used phrases such as "you can do this" to motivate and inspire fellows.

I think one of the greatest impacts was sort of having cheerleaders [mentors] and a group of people that supported them along the way, giving them the confidence to work on their proposal, and I think that was a huge impact.

Experienced Mentors. The experience of the mentors was identified as a critical factor that influenced mentoring relationship. This theme also encompassed the fellows' willingness to share their experiences as well as their ability to learn from each other. All three fellows discussed how difficult it is to find mentors who have obtained and managed research grants from federal agencies such as NIDILRR and the National Institute of Health (NIH). In the interview, one fellow responded: "Learning from seasoned grant writers" made the experience "very memorable and wonderful." Another fellow observed:

We met with those seasoned grant writers. They are real people, and they are very approachable.

In support of the fellows' perception, mentors discussed how they used their experience to help fellows understand the mechanics of grant writing. They described how they provided insights on when to start to writing proposals, how to make the process effective and team oriented, and shared provided tips of the trade and tricks to making things easier. Moreover, mentors considered fellows as peers and felt a sense of fulfillment as reflected in the following excerpt:

It was a great way to share ideas and engage with peers. I thought the fellows felt well supported and in the end were able to produce a quality product.

Another mentor talked about the importance of experience in mentoring model relationships:

I think some of the main benefits are just being able to provide insights from personal experience, especially with the challenges in grant writing and particularly the schedule around grant writing, which ended up being an issue with the fellows.

Mentorship Outcomes. Outcomes of mentoring consist of perceived benefits of the mentoring model. The following are the sub-themes that emerged.

Professional Relationships. The development of professional relationships repeatedly emerged as a major reward for participating in the mentoring program. Fellows explained that, although they worked at the same institution and knew each other, they never really had a strong professional or personal connection prior to their engagement in PPMRM. The fellows felt that the mentoring program gave them the opportunity to know each other professionally and personally. One Fellow stated, "I think one of the biggest advantages is that it becomes a long-standing professional relationship." Another fellow concurred: "We interact on a daily basis, but somehow we do not really have any opportunity to sit down and do any research or write a grant, and this grant opportunity has helped us to be able to really more focus and get to know my team a lot better."

Interpersonal Skills Development. This theme, which involves the set of abilities enabling a person to interact positively and work successfully with others, emerged frequently in the interviews. Fellows reported that mentoring was not just about research skills but also involved the development interpersonal skills, as reflected in the following excerpt:

> *I feel like this opportunity--- it's really built me up on how to interact with different people …It just help you to be more holistic in a way and a more holistic researcher, more competent in every way. So it's just building up. It's not just one aspect.*

One mentor noted, "I think it actually had a good impact in a couple of ways. I think one is it brought the three [fellows] of them together to work on a project, and they hadn't worked together before."

Research Skills and Knowledge. Both fellows and mentors indicated that the mentoring relationship helped them increase their research skills and knowledge. For example, fellows felt that the mentoring program helped them enhance their research skills (e.g., developing research ideas, designing a study, grant writing and proposal development, negotiating, collaboration, compromising, and receiving and utilizing feedback). One fellow reported that they also learnt "the importance of focusing on your research interests" when developing a proposal. Another fellow stated, "I have learned the basic components of research grants, particularly NIDILRR grants, and all the details that go into writing a successful grant." One fellow described the training on "research statistics and research analysis" as "very, very helpful." Mentors concurred with the fellows, as one of them explained:

> *Along the process, I think they get information from us about how to develop a grant from start to end.*

The mentors noted that the fellows learned "important research skills in a team setting" "such as the budget and also how to distribute the work among three fellows." Mentors also indicated that the mentoring relationship was a learning experience for them and served as a refresher course. When asked to reflect on the benefits of the mentoring program, one mentor stated:

> *I think it's a very good experience in terms of improving my knowledge, in terms of writing up the grant, developing manuscript.*

Another mentor added:

> *I think their [fellows] questions helped us to refine some of our skills and get the most up-to-date information regarding grant writing.*

Interprofessional Learning. Fellows and mentors discussed the importance of interprofessional learning, as an important pedagogical approach for developing research skills in a collaborative team environment. Terms such as "expanded research interest", "different experiences", "collaboration on ideas", "information sharing", "interdisciplinary experience" were used to describe different ways inter-professional learning occurred. One fellow, for example, stated, "I think having that interdisciplinary experience is very fruitful experience because it allows for a lot of exchange of great ideas and great theories." Another fellow explained the benefit of collective learning, "You don't feel like you are creating something in isolation of other people so there's this level of support that exists." Mentors concurred, as one of them explained: "they [fellows] also learned different things like how to reach out and get partners onboard, how to work within their university to get a budget done."

Research Productivity. All fellows perceived their mentorship experience as productive. They reported that, for the first time in their career, they were able to develop and submit a research grant proposal to NIDILRR, the flagship for the federal disability research agenda. Writing and submitting a proposal for competitive funding consideration to NIDILRR's Minority Serving Institution-Field Initiated Program (i.e., CFDA 84.133 G-4 research or CFDA 84.133 G-5 development) was the primary research productivity measure. One fellow summed her proposal development achievement: "I am truly grateful for the opportunity to just learn how to write a grant of this nature." Just like fellows, mentors shared that they were very pleased with the accomplishments of the fellows, taking into consideration the fellows not lacked prior experience developing research proposals but also had many responsibilities (i.e., teaching, service, advisement) they were undertaking. One mentor shared:" I'm satisfied because they were able to develop a proposal and submit it to NIDILRR."

Confidence to Conduct Research. Fellows perceived the mentoring model as having contributed to their confidence to participate in research grant writing. Although the fellows had participated in grant writing trainings before, they were nonetheless uncertain about their capacity to write a research grant. They felt that the opportunity to participate in the mentoring model prepared them to actively pursue grant opportunities in the future.

> *I had some experience in grant writing, but this grant is obviously something of a higher caliber that I had not participated in … As we write and as we share information, I feel very confident in my ability to write a grant.*

Mentors also expressed several other benefits to themselves. For example, individual growth and increased self-awareness emerged repeatedly as vital benefits and outcomes of the mentorship among all participants. Mentors also indicated that the mentoring program helped them to have a better understanding of minority serving institutions' environments. As one mentor explained:

> *The experience made us understand some of the significant institutional challenges that fellows from HBCUs or minority serving institutions will face.*

Table 6: Themes on useful mentoring strategies with illustrative exemplars

Theme	Respondent
Research team	
Having that good team allows you to try different areas of interest and still feel successful because you already know what your team is capable of doing.	Fellow
I think teamwork approach is very important in this project. So by participating in this project, they may feel that they're not alone anymore; they can seek help from others and also be able to succeed in the proposal development.	Mentor
Weekly Calls	
I think the weekly calls. We had weekly calls, and we probably were committed to those weekly calls for maybe seven months, seven, eight months. So the weekly calls were very important.	Fellow
I think the weekly calls were helpful, especially when the mentees [fellows] did have questions that they prepared in advance.	Mentor
Providing resources	
There were cases where we did not have the resources that we needed, and let me say that the Boston group [mentors] was able to come right in and help us with the things such as that.	Fellow
I am a research study coordinator with the ICI and in participating in the model we--I participated in every phone call and meeting. I served as kind of like a liaison at certain points in getting them resources such as if they needed some journal articles, taking notes.	Mentor
Time management	
But mainly the time management, that was something that was stressed repeatedly throughout this time, this whole process, and so I think that's something that I will continue to build upon as I go on and continue to do research and write more grants.	Fellow
So the challenge really was the ability of the very committed and passionate fellows to be able to find that time and their energy to be able to really spend on developing some good research, good data.	Mentor
Collaboration/Research Team	
I think having that interdisciplinary experience is a very fruitful experience because it allows for a lot of exchange of great ideas and great theories. So doing that, that was a really good experience. In fact, I really enjoyed that research team kind of model.	Fellow
And I would like to say that this opportunity provides in a way that I'll work closely with my colleagues, and you know that things can get really busy. We interact on a daily basis, but somehow we don't really have any opportunity to sit down and do any research or write a grant, and this grant opportunity that help us to be able to really more focus and get to know my team a lot better and just the enjoyment out of the collaboration, it's incredible.	Fellow
I would say that the teamwork makes the whole process really fun and helps me to move forward, and instead of just me alone keeping on working, working - it makes the process really fun and engaging.	Fellow
I think one is it [mentoring program] brought the three of them together to work on a project, and they hadn't worked together before.	Mentor
Feedback	
I will say the feedback, it's a great learning to build us up in terms of grant writing and then research.	Fellow
Being very open to people[fellows], giving suggestions and good feedback.	Mentor
Assignments	
Having given homework. It wasn't called homework, but there were things that we needed to have in preparation for the following weekly call. So just making sure that we stayed on task, I think were part of the mentorship requirements that we all seemed to be vested in.	Fellow
I would say "assignment"--assignment to the fellows before weekly meetings and having them review that in advance.	Mentor
Community of Practice	
We learned a lot about collaborating and finding working groups to work with, people with the same interests as us.	Fellow

Mentorship Strategies

Although fellows and mentors felt that model could be improved, they generally indicated that the model design and structure were effective. Table 6 provides seven strategies and illustrative examples that fellows and mentors identified when asked which mentorship components and strategies were beneficial: (1) research team, (2) weekly calls, (3) providing resources, (4) time management, (5) collaboration/research team (6) feedback, (6) assignments, and (7) community of practice.

Challenges

Fellows and mentors discussed various challenges that affected the mentoring experience. In addition to family responsibilities, all three fellows reported that they carried heavy teaching, community service, and student advising loads. They also experienced miscommunication, scheduling conflicts, and difficulties managing time. One fellow was appointed interim chair of her department. These responsibilities, obviously, took up a significant amount of their time than was expected. Mentors expressed that at times they felt overwhelmed with the fellows' lack of control of their time. One mentor expressed her frustration: "There really is no way to limit the amount of competing work demands that fellows have per semester." When asked how they overcame challenges, mentors identified patience, flexibility, addressing issues early, scheduling meetings in advance, and communicating more frequently with fellows as some of the strategies they employed. For example, one mentor provided the following strategy: "addressing the issues as early as possible and as professional as possible, I think was helpful." Despite the challenges, both mentors and fellows reported that they were very satisfied with the mentoring model.

■ Recommendations for Improvement

In this study, we evaluated the PPMRTM designed to build minority serving institutions' research capacity by improving affiliated early career investigators' research skills (i.e., research methods and grant writing). The evaluation involved the use of a survey and telephonic in-depth interviews. Overall, the results indicated that the model was successful and thus a promising research mentorship model for faculty members at minority serving institutions. Quantitative results indicated that fellows and mentors had a positive mentoring experience. Metrics such as fellow reports about feeling supported and motivated, accessibility of mentors, and mentors providing direction and guidance on professional issues suggest that the mentoring relationship was generally positive. In addition, the design of the model including aspects such as matching mentors with fellows, defining goals and objectives, organization, and delineating roles and responsibilities were perceived as essential elements of successful mentoring relationship. Qualitative results supported quantitative findings, and illuminated some of the mechanisms through which positive relationships were established. For example, qualitative results provided rich perspectives, not captured in the survey, regarding the importance of establishing rapport, building trust, providing a supportive environment and resources, and the experience of mentors in establishing positive mentoring relationship. These findings are consistent with other mixed methods studies, which have found that positive mentorship relationships are a result of an interplay of many factors related to the behaviors and actions of mentors and fellows as well as program design aspects[45]. The findings shed light on the importance of having experienced mentors involved in nurturing HBCU-based early career investigators.

Participants made the following recommendations on how to improve the model and ensure continuous quality enhancement:

- Periodic use of video conferencing and face-to-face meetings should be utilized as a strategy to deepen mentoring relationships among fellows, mentors, researchers, and other stakeholders.
- Mentoring model implementers, mentors, and fellows should identify innovative approaches and techniques that facilitate and improve communication.
- The PPMRTM should be more structured and tailored to unique needs of mentors, fellows, and institutions.
- The number of mentors for each research team should be between three and four; mentor panel should consist of individuals who have content expertise, grant writing, publication experience, institutional knowledge, and cultural competency skills, among others.
- There is need to increase the sub-contract amount to participating minority serving institutions in order to buy-out the fellows' time and release them from some of their teaching, administrative, and service duties.

■ Conclusion

Our findings lend support to the importance of formal research mentoring that is an essential but often neglected perspective in increasing research productivity among HBCU-based faculty members. Moreover, the current results lend considerable credence to anecdotal mentoring literature by documenting that formal mentoring provides valuable insight and experience regarding research opportunities and strategies to overcome barriers associated with career development in research. The overall findings suggest that the PPMRTM represents a promising conceptual framework for improving investigators' at minority serving institutions research skills and self-efficacy levels. Additional case study evaluation trials at HBCUs and other minority serving institutions (i.e., Hispanic Serving Institutions and Tribal Colleges and Universities) that build upon these results, nonetheless, are needed to either confirm or refute the model's veracity in achieving desired outcomes.

References

1. Epps IE, Guidry J. Building capacities among minority institutions to conduct disability research: What is the problem? *Journal of Minority Disability Research and Practice*. 2009;1(1):3-15.

2. Cargill VA. Recruiting, retaining, and maintaining racial and ethnic minority investigators: why we should bother, why we should care. *American journal of public health*. 2009;99(SI):S1-S7.

3. Bernal G, Ortiz-Torres B. Barriers to research and capacity building at Hispanic-serving institutions: The case of HIV/AIDS research at the university of Puerto Rico. *American Journal of Public Health*. 2009;99(S1):S60-S65.

4. Moore CL, Johnson JE, Manyibe EO, Washington A, Uchegbu NE, Eugene-Cross K. *Barriers to the participation of historically black colleges and universities in the federal disability and rehabilitation research and development enterprise: The researchers' perspective*. Oklahoma City, OK: Department of Rehabilitation Counseling and Disability Studies/Langston University2012a.

5. Manyibe EO, Moore CL, Aref F, Washington AL, Hunter T. An emerging conceptual framework for conducting disability, health, independent living, and rehabilitation research mentorship at minority serving institutions. *Journal of Rehabilitation* 2015;81(4):25-27.

6. Brayboy BMJ, Fann AJ, Castagno AE, Solyom JA. *Postsecondary Education for American Indian and Alaska Natives: Higher Education for Nation Building and Self-Determination: ASHE Higher Education Report 37: 5*. John Wiley & Sons; 2012.

7. National Institute on Disability and Rehabilitation Research [NIDRR]. *Research capacity building summit: Critical conversations on repositioning NIDRR's investment for the future*. Alexandria, VA, July 21, 20112011.

8. Moore CL, Wang N, Davis D, et al. Disability, health, independent living, and rehabilitation research leaders from traditionally underrepresented racial and ethnic populations: Career development and success factors. *Journal of Rehabilitation* 2015;81(1):19-33.

9. Gasman M, Baez B, Turner C. *Minority-serving institutions*. Albany: State University of New York Press; 2008.

10. Li X, Carroll CD. *Characteristics of minority-serving institutions and minority undergraduates enrolled in these institutions*. National Center for Education Statistics, Institute of Education Sciences, US Department of Education;2007.

11. Moore CL, Aref F, Manyibe EO, Davis E. Minority entity disability, health, independent living, and rehabilitation research productivity facilitators: A review and synthesis of the literature and policy. *Rehabilitation Counseling Bulletin*. 2016;59(2):94-107.

12. Bezyak JL, Ditchman JB, Chan F. Communities of practice: A knowledge tool for rehabilitation professionals. *Rehabilitation Research, Policy, and Education*. 2013;27(2):89-103.

13. Kram KE. Phases of the mentor relationship. *Academy of Management journal*. 1983;26(4):608-625.

14. Berk RA, Berg J, Mortimer R, Walton-Moss B, Yeo TP. Measuring the effectiveness of faculty mentoring relationships. *Academic medicine: Journal of the Association of American Medical Colleges*. Jan 2005;80(1):66-71.

15. Johnson SJ. Toward a Useful Model for Group Mentoring in Public Accounting Firms. *International Journal of Business and Social Research*. 2013;3(6):1-7.

16. Beech BM, Calles-Escandon J, Hairston KG, Langdon SE, Latham-Sadler BA, Bell RA. Mentoring programs for underrepresented minority faculty in academic medical centers: a systematic review of the literature. *Academic medicine : journal of the Association of American Medical Colleges*. Apr 2013;88(4):541-549.

17. Colón-Emeric CS, Bowlby L, Svetkey L. Establishing faculty needs and priorities for peer-mentoring groups using a nominal group technique. *Medical teacher.* 2012;34(8):631-634.

18. Dutta A, Kundu M, Chan F. The conduct of socially valid investigation by culturally diverse researchers: A Delphi study. *Rehabilitation Education*. 2010;24(3-4):113-121.

19. Files JA, Blair JE, Mayer AP, Ko MG. Facilitated peer mentorship: a pilot program for academic advancement of female medical faculty. *Journal of Women's Health*. Jul-Aug 2008;17(6):1009-1015.

20. Viets VL, Baca C, Verney SP, Venner K, Parker T, Wallerstein N. Reducing health disparities through a culturally centered mentorship program for minority faculty: the Southwest Addictions Research Group (SARG) experience. *Academic medicine: journal of the Association of American Medical Colleges*. 2009;84(8):1118.

21. Evans GL, Cokley KO. African American women and the academy: Using career mentoring to increase research productivity. *Training and Education in Professional Psychology*. 2008;2(1):50.

22. Moore CL, Johnson JE, Manyibe EO, et al. Policy and systems issues limiting the participation of historically black colleges and universities in the federal disability research agenda. *Rehabilitation Research, Policy, and Education*. 2012b;26(1):67-82.

23. Rabionet SE, Santiago LE, Zorrilla CD. A multifaceted mentoring model for minority researchers to address HIV health disparities. *American journal of public health*. Apr 2009;99 Suppl 1(S1):S65-70.

24. Sutherland K, Wilson M, Williams P. *Success in academia? The experiences of early career academics in New Zealand universities*. Ako Aotearoa National Centre for Tertiary Teaching Excellence PO Box 756 Wellington 6140 2013.

25. Chen RK, Vaughn M, Zanskas SA, Kuo H-k. Scholarly productivity in rehabilitation counseling: A review of journal contributors from 2000 to 2009. *Rehabilitation Counseling Bulletin*. 2014;57(2):116-123.

26. Matthews CM. *Federal support for academic research*. Congressional Research Service, Library of Congress;2012.

27. Balcazar FE, Oberoi AK, Suarez-Balcazar Y, Alvarado F. Predictors of outcomes for African Americans in a Rehabilitation State Agency: Implications for national policy and practice. *Rehabilitation Education*. 2012;26(1):43-54.

28. Feist-Price S. African Americans with disabilities and equity in vocational rehabilitation services: One state's review. *Rehabilitation Counseling Bulletin*. 1995.

29. Manyibe EO, Moore CL, Kampfe CM. Competitive employment outcomes and spinal cord injury: Relationship between race/ethnicity, gender, age, education and rehabilitation services. *Rehabilitation Professional*. 2012;20(1).

30. Moore CL, Wang N, Johnson J, Manyibe EO, Washington AL, Muhammad A. Return-to-work outcome rates of African American versus White veterans served by state vocational rehabilitation agencies: A randomized split-half cross-model validation research design. *Rehabilitation Counseling Bulletin*. 2015:0034355215579917.

31. Wolf LA, Armour BS, Campbell VA. Racial/ethnic disparities in self-rated health status among adults wih and without disabilities. *Morbility and mortality Weekly Report* (MMWR) 2008; http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5739a1.htm.

32. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*. 2015;42(5):533-544.

33. Ambrosetti A, Dekkers J. The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. *Australian Journal of Teacher Education*. 2010;35(6):3.

34. Lippitt GL. *Visualizing change; model building and the change process*. NTL Learning Resources Corp; 1973.

35. Ziegler SM. *Theory-directed nursing practice*. Springer Publishing Company; 2005.

36. Sagini MM. *Organizational behavior: The challenges of the new millennium*. Univ Pr of Amer; 2001.

37. Burnes B. Kurt Lewin and the planned approach to change: a reappraisal. *Journal of Management studies*. 2004;41(6):977-1002.

38. Carvin BN. The hows and whys of group mentoring. *Industrial and Commercial Training*. 2011;43(1):49-52.

39. Nick JM, Delahoyde TM, Del Prato D, et al. Best practices in academic mentoring: a model for excellence. *Nursing research and practice*. 2012:937906.

40. Clark VLP, Creswell JW. Designing and conducting mixed methods research. Thousand Oaks, CA: Sage; 2011.

41. Creswell JW. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications; 2013.

42. Griffin KA. Learning to mentor: A mixed methods study of the nature and influence of Black professors' socialization into their roles as mentors. *Journal of the Professoriate*. 2012;6(2).

43. PWGSC. Stage 1: Research Design. 2013; http://www.tpsgc-pwgsc.gc.ca/rop-por/rapports-reports/telephone/etape-stage-01-eng.html.

44. Charmaz K. *Constructing grounded theory*. 2nd ed. CA: Sage; 2014.

45. Worthington CA, O'Brien KK, Mill J, Caine V, Solomon P, Chaw-Kant J. A Mixed-Methods Outcome Evaluation of a Mentorship Intervention for Canadian Nurses in HIV Care. *Journal of the Association of Nurses in AIDS Care*. 2016.

■ Related RRTC Publications

The following other resources published by RRTC investigators may be of interest to readers of this Policy Research Brief.

Title: Federal Research Agency Policy and Systems and Disability and Health Scientific Workforce Diversity Development: A Key Informant Study

Abstract: The purpose of this research was to examine key informants' perspectives on ways in which federal agencies (i.e. National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), National Institutes of Health (NIH), Agency for Healthcare Quality and Research (AHQR), and Office of Disability, Aging, and Long-term Care) can assist the field in increasing the pool of seasoned minority investigators available to answer important questions, diversify and behavioral, social science, clinical, and biomedical scientific workforce, and mentor early career minority researchers.

Source: Moore, C. L., Wang, N., Davis, D. M., Aref, F., Manyibe, E. O., Washington, A. L., Johnson, J. E., Eugene-Cross, K., Muhammad, A., Jennings-Jones, D. (2016). Federal Research Agency Policy and Systems and Disability and Health Scientific Workforce Diversity Development: A Key Informant Study. *Langston University Rehabilitation Research and Training Center (RRTC) on Research and Capacity Building for Minority Entities Policy Research Brief*, 1(2), 1-16.

Title: Immigration Trends' Impacts on State Vocational Rehabilitation Agency Minority Application Rates: A National Time Series Forecast Model Demonstration Study

Abstract: The purpose of this policy research was to demonstrate and assess the efficacy of the Vector Autoregressive [VAR] model's and Multivariable Grey Model's [MGM]) ability to accurately predict immigration trends' impact on SVRA new application rates among minorities. The Multivariable Grey Model (MGM) was demonstrated to be superior to the Vector Autoregressive (VAR) model in predictive accuracy. The MGM generated three-year forecast projected an upward curve trend trajectory in the percentage of new Black or African American, American Indian or Alaskan Native, Asian, and Latino SVRA applicants for Fiscal Years (FYs) 2015 thru 2017. The model can be considered for use by SVRAs as a promising tool to help them develop new policy initiatives that respond rapidly to the needs of minority group members.

Source: Moore, C. L., Wang, N., Eugene-Cross, K., & Washington, A. L. (2016). Immigration trends' impacts on state vocational rehabilitation agency minority application rates: A national time series forecast model demonstration study. *Langston University Rehabilitation Research and Training Center (RRTC) on Research and Capacity Building for Minority Entities Policy Research Brief*. 1(1), 1-12.

Title: An Emerging Conceptual Framework for Conducting Disability, Health, Independent Living, and Rehabilitation Research Mentorship and Training at Minority Serving Institutions

Abstract: Research mentorship has long been considered a preeminent research capacity building (RCB) approach. However, existing mentorship models designed to improve the research skills (i.e., research methods and grant writing) of faculty scholars at United States minority serving institutions (i.e., historically Black colleges and universities, Hispanic serving institutions, and American Indian tribal colleges and universities) may be insufficient for building such capacities. This paper proposes an emerging conceptual framework for a new Peer-to-Peer Mentor Research Team Model (PPMRTM) designed to enhance the research skills of faculty scholars (herein referred to as fellows) and help to build the needed critical mass of researchers of color in the field of disability, health, independent living, and rehabilitation. A combination of Lippett's planned change theory and critical mass theory provided a useful framework to contextualize and support the design of this model. A set of recommended approaches that can be considered by federal research organizations (i.e., National Institute on Disability, Independent Living, and Rehabilitation Research, and National Institutes of Health), minority serving institutions, and researchers for assessment of the model and advancing the current state of science on minority serving institution RCB are presented.

Source: Manyibe, E. O., Moore, C. L., Aref, F., Washington, A. L., & Hunter, T. (2015). An emerging conceptual framework for conducting disability, health, independent living, and rehabilitation research mentorship and training at minority serving institutions. *Journal of Rehabilitation*, 81(4), 25-37.

Title: Disability, Health, Independent Living, and Rehabilitation Research Leaders from Traditionally Underrepresented Racial and Ethnic Populations: Career Development and Success Factors

Abstract: This article provides a comprehensive overview of select research skill and leadership building opportunities and research infrastructure systems that contribute to research leaders' from traditionally underrepresented racial and ethnic populations and communities (i.e., African Americans, Native Americans, Latinos, and Asians) in the field of disability, health, independent living, and rehabilitation career development and success. After a short presentation of the Social Change Model of Leadership (SCML) and issues relative to the current insufficient supply of such research leaders, the article shifts focus to a detailed synthesis of the available peer review and grey literature and policy on research career development and success factors. Critical contemporary issues affecting these target groups are discussed. Recommendations for advancing the current state-of-the-science for improving the research and leadership skills and career development outcomes for investigators from these populations, especially those with disabilities, are presented.

Source: Moore C. L., Wang N., Davis D., Aref, F., Manyibe E.O., Washington A.L., Johnson J., Cross K. E., Muhammad, A., & Quinn, J. (2015). Disability, health, independent living, and rehabilitation research leaders from traditionally underrepresented racial and ethnic populations: Career development and success factors, *Journal of Rehabilitation*, 81(1), 19-33.

Title: Minority Entity Disability, Health, Independent Living, and Rehabilitation Productivity Facilitators: A Review and Synthesis of the Literature and Policy

Abstract: The United States (U.S.) federal research agency (i.e., National Institute on Disability and Rehabilitation Research [NIDRR], National Institutes of Health [NIH]) sponsored research capacity building (RCB) efforts in the field of disability, health and rehabilitation have historically focused on individual research skill building activities (e.g., postdoctoral fellowships, advanced research methods and statistics courses, grant-writing workshops) as a main intervention to facilitate increased research productivity among investigators. However, investigators' personal intrinsic attributes as well as federal research agency policy and systems context are rarely considered as research productivity facilitators. On trend, minority entity (ME) RCB efforts tend to focus on addressing a single challenge, research skill building, while oftentimes neglecting the importance of intrinsic factors and federal agency policy and systems context. The purpose of this review was to synthesize the available peer review and grey literature, and policy on factors that facilitate investigators' research productivity. Recommendations for advancing the current state-of-the-science on research productivity facilitators are presented.
Source: Moore C. L., Aref F., Manyibe E. O., & Davis, E. (2016). Minority entity disability, health, independent living, and rehabilitation research productivity facilitators: A review and synthesis of the literature and policy. *Rehabilitation Counseling Bulletin*, 1-14. doi: 10.1177/0034355214568527.

Title: New Immigrating Racial and Ethnic Populations and "Trends Impacts" on State Vocational Rehabilitation Agencies

Abstract: Current migration trends and projections indicate that the United States (U.S.) population continues to increase and diversify. Consequently, the numbers of new citizens and legalized permanent residents with disabilities from traditionally underserved racial and ethnic populations are expected to grow at an accelerated rate-roughly 1 million new citizens and legal permanent residents annually. These unceasing migration patterns raise concerns about the capacity of state vocational rehabilitation agencies (SVRAs) across the U.S. to effectively respond to this growing crisis. There exists a serious need to forecast these trends' impacts on SVRA systems capacity to serve persons with disabilities from these new and emerging racial and ethnic populations and communities. The purpose of this review was to synthesize available peer reviewed literature and policy on multicultural migration trends and select SVRA systems forecast implications. A set of recommended approaches are presented that can be used to inform, guide, and forge future research directions.

Source: Cross K. E., Moore C. L., Manyibe E. O., Aref, F., Washington A. L., Umadjela, A., Sanders P. R., Payma H. S., Pandey, J., & Cyprian, D. (2015). New immigrating racial and ethnic populations and" trends impacts" on state vocational rehabilitation agencies, *Journal of Applied Rehabilitation Counseling*, 46(2), 20-33.

Title: Diffusion of Innovations Theory and Veterans of Color: A framework for Promoting the Adoption of Effective State Vocational Rehabilitation Agencies, American Indian Vocational Rehabilitation Programs, and Veterans Affairs-Vocational Rehabilitation & Employment Co-Service Practices in Vocational Rehabilitation

Abstract: This article discusses the proposition of the adoption of co-service practices between state vocational rehabilitation agencies (SVRAs), American Indian vocational rehabilitation programs (AIVRPs), and Veterans Affairs-Vocational Rehabilitation and Employment (VA-VR&E) programs as a means to increase employment outcomes for veterans of color (i.e., African Americans, Latinos, Native Americans, and Asians) with disabilities. Collaborative agency practices have been shown to contribute to successful outcomes. However, there is less discussion on how to implement and promote the adoption of co-service practices between SVRA, AIVRP and VA-VR&E agencies. The purpose of this article is to discuss the need for interagency collaborations and Diffusion of Innovations Theory as an approach for promoting the adoption of co-service practices across these agency contexts to increase successful employment services and outcomes for these veterans. A set of recommended approaches that can be considered for advancing the current state-of-the-science on improving SVRAs and VA-VR&E, and AIVRPs and VA-VR&E program co-service strategies for placing these veterans into competitive integrated employment are presented.

Source: Johnson, J. E., Moore, C. L., Wang, N., Sanders, P., & Sassin, J. (2016). Diffusion of innovations theory and veterans of color: A framework for promoting the adoption of effective state vocational rehabilitation agencies, American Indian vocational rehabilitation programs, and veterans affairs-vocational rehabilitation & employment co-service practices in vocational rehabilitation. *Journal of Applied Rehabilitation Counseling,* 47(1), 7-16.

Title: A National Benchmark Investigation of Return-to-Work Outcome Rates Between African American, Native American or Alaskan Native, Latino, Asian American or Pacific Islander, and Non-Latino White Veterans Served by State Vocational Rehabilitation Agencies: Application of Bootstrap Data Expansion

Abstract: Research examining the provision of effective state vocational rehabilitation agency (SVRA) sponsored services is pertinent to improving successful return-to-work outcomes among veterans of color (i.e., African Americans, Native Americans or Alaska Natives, Latinos, and Asian Americans or Pacific Islanders versus non-Latino Whites). To date, however, scant attention has been paid to examining such target group's outcome patterns. This study employed a stratified bootstrap data expansion approach to assess the relationship between race/ethnicity, gender, level of educational attainment at closure and return-to-work among veterans with a signed individualized plan for employment (IPE). National fiscal year (FY) 2013 Rehabilitation Services Administration (RSA)-911 case records (N =11,603) were extracted and re-sampled across multiple trials using bootstrap procedures to increase logistic regression model accuracy. The findings indicated that African American and female veterans were statistically significantly less likely to return-to-work compared to non-Latino White and female veterans, respectively. Return-to-work probabilities were 'poorest' for African American veterans followed by Native Americans or Alaska Natives, Asian Americans or Pacific Islanders, Latinos, and then non-Latino Whites. These findings warrant new service (e.g., greater SVRA and U.S. Department of Veterans Affairs' (VA) co-service provision) and policy initiatives.

Source: Moore, C. L., & Wang, N. (2016). A national benchmark investigation of return-to-work outcome rates between African American, Native American or Alaskan Native, Latino, Asian American or Pacific Islander, and Non-Latino White veterans served by state vocational rehabilitation agencies: Application of bootstrap data expansion. *Journal of Vocational Rehabilitation*, (47), 133-147.

Title: An Evaluation of a Disability and Health Institutional Research Capacity Building and Infrastructure Model (IRCBIM) at a Tribal College/ University: A Case Study Approach

Abstract: The purpose of this research brief was to evaluate the Institutional Research Capacity Building and Infrastructure Model's (IRCBIM) implementation and outcomes in the case of a Tribal College/University (TCU) located in the central region of the U.S. IRCBIM represents an emerging innovative and integrated approach designed to build, strengthen, and sustain adequate research capacity (i.e. research infrastructure and investigators' research skills) at TCUs and other minority-serving institutions. Several IRCBIM benefits such as knowledge and skill enhancement, creating a pipeline for American Indian researchers, and building research infrastructure emerged as important factors for increasing TCU disability and health research capacity.

Source: Moore, C. L., Manyibe, E. O., Sanders, P., Washington, A. L., Aref, F. & Robertson, C. (2016). An evaluation of a disability and health institutional research capacity building and infrastructure model (IRCBIM) at a tribal college/ university: A case study approach. *Langston University Rehabilitation Research and Training Center (RRTC) on Research and Capacity Building for Minority Entities Policy Research Brief*, 1 (3), 1-16.

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Policy Research Brief is available online at www.langston.edu/capacitybuilding-rrtc. Additional copies and alternative formats of this Policy Research Brief can be obtained by writing to: Dr. Corey L. Moore, Principal Investigator and Research Director AND Delta Sigma Theta Sorority, Inc. Distinguished Professor Endowed Chair.

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