Deanship of Scientific Research

Three Circles of Alemat: Growth and Sustainability through Mentoring

Rana Dajani[1] iD , *Zeena Tabbaa[2]* iD , *Nancy Hakooz[3]* iD , *Afaf Al-Nadaf [4]* iD ,

Fadwa Al-Halaiqa[5] iD , *Sokyna Alqatawneh[6]* iD

[1] Biology and Biotechnology Department, Hashemite University-Zarqa-Jordan and University of Richmond-Virginia-USA
[2] Jordan Society for Scientific Research, Entrepreneurship, and Creativity (JSSREC)-Amman-Jordan
[3] Biopharmaceutics and Clinical Pharmacy-School of Pharmacy-University of Jordan-Amman-Jordan
[4] Department of Pharmaceutical Chemistry-School of Pharmacy-Mutah University- Jordan
[5] Faculty of Nursing-Philadelphia University-Amman-Jordan
[6] Department of Multimedia Technology-Faculty of Architecture and Design –Al-Zaytoonah University of Jordan-Amman-Jordan

Abstract

Objectives: The present study aimed to present and analyze a collection of caricature artworks reflecting the artist's standpoint on introducing and addressing terrorism. It also sought to provide insights and recommendations on the potential use of caricature art in countering terrorism in contemporary society.

Methods: Researchers employed a descriptive analytical design, which is the most appropriate scientific method for studying the sample. The methods used were as follows: Survey Method - Gathering, studying, and describing a collection of notable cartoonists' works addressing terrorism. Content Analysis Method - Examining and analyzing caricature works from the study sample.

Results: The study yielded several findings, with the most important being that in most countries worldwide, the majority of cartoonists have committed themselves to countering the widespread terrorism in contemporary societies. However, their efforts are insufficient in light of the growing phenomenon.

Conclusions: Caricature art plays a prominent role in countering the causes of terrorism, even before its emergence. This is achieved through the significant influence of caricature art in shaping the cultural and emotional perspectives of society members. Moreover, caricature art is free from negative beliefs and attitudes that can serve as a foundation for extremism and terrorist activities.

Keywords: Caricature art, art and terrorism, counterterrorism.

ثلاث دوائر من العالِمات: النمو والاستدامة من خلال التوجيه

رنا دجاني [1]، زينة الطباع [2]، نانسي هاكوز [3]، عفاف النداف [4]، فدوى الحلايقة [5]، سكينة القطاونة [6]

[1] الجامعة الهاشمية، الزرقاء، الأردن وجامعة رِتشموند، الولايات المتحدة.
[2] الجمعية الأردنية للبحث العلمي والريادة والإبداع، عمان، الأردن.
[3] كلية الصيدلة، الجامعة الأردنية، عمان، الأردن.
[4] كلية الصيدلة، جامعة مؤتة، الأردن.
[5] كلية التمريض، جامعة فيلادلفيا، الأردن.
[6] قسم تكنولوجيا الوسائط المتعددة - كلية العمارة والتصميم - جامعة الزيتونة الأردنية - عمان - الأردن

ملخَّص

الأهداف: ما زال التمثيل النسائي في العلوم الأكاديمية ضئيلا، كما أنّ هناك حاجة ملحة لاتخاذ إجراءات لتمكين المرأة. تقترح ثلاث دوائر من العالِمات نموذجًا مبتكرا لتزويد الأكاديميات في العلوم من خلال إنشاء نموذج توجيه من 10*10 (مرشدين ومتدربين). قُسِّم المشروع إلى ثلاث دوائر تضم أكاديميات في مجالات العلوم من الأردن والمنطقة العربية والعالم .

المنهجية: تعمل هذه الدراسة على التحليل الكمي لسيناريوهات مختلفة من العلاقات التي تشمل 26 أستاذة من 10 جامعات في الأردن .

النتائج: أظهرت النتائج أن ممارسة الإرشاد له العديد من الآثار الإيجابية للمتدربين والموجهين. يمكن اعتبار هذا النموذج برنامج توجيه مبتكر، خاصة للنساء اللواتي يحتجن إلى الدعم اللازم للتوازن بين العمل والحياة والتوجيه. يقسم المشروع إلى ثلاث دوائر تضم أكاديميات في مجالات العلوم من الأردن والمنطقة العربية والعالم. تعمل هذه الدراسة على التحليل الكمي لسيناريوهات مختلفة من العلاقات التي تشمل 26 أستاذة من 10 جامعات في الأردن. أظهرت النتائج أن ممارسة الإرشاد له العديد من الآثار الإيجابية للمتدربين والموجهين. الخلاصة: يمكن اعتبار هذا النموذج برنامج توجيه مبتكر، خاصة للنساء اللواتي يحتجن إلى الدعم اللازم للتوازن بين العمل والحياة والتوجيه.

الكلمات الدالة: المرأة، الأكاديميا، التوجيه.

Introduction

Exploring women's working lives has gained widespread attention among worldwide, western, as well as Arab researchers. Recently studies have mostly been limited to North America and Europe with little attention to Arab women (Christie *et al.*, 2017; UNESCO, 2015). Studies about Arab women examined the cultural role in hindering women's participation in public positions, women's leadership and political development, gender and management (UNESCO, 2018). In Jordan, some efforts have been dedicated to examining women's employment and issues of discrimination. Nevertheless, the focus has been on studying women's representation in political, public and private positions (Ensour, Maaitah and Kharabsheh, 2017). However, the status of academic women has not been given adequate attention.

In academia worldwide, women are underrepresented. This underrepresentation is evident as early as elementary school years, where the number of girls is still low in STEM classes, and the case in adolescence becomes more worrying as some girls tend to shy away from the sciences (Christie *et al.*, 2017). This in turn reflects itself in college academic selection, and later in the professional world. Some studies have shown that young women select their career choices based on gender beliefs (Correll, 2001; Christie *et al.*, 2017). Men are viewed as more capable of joining STEM fields than women and those negative stereotypes influence social norms and women's education path (Hill, Corbett and St Rose, 2010).

Although this appears to be a worldwide trend, it is different in the Arab world. In 2015, UNESCO reported that 34–57 percent of STEM graduates in Arab countries were women—a figure higher than that seen across universities in the US and Europe (Nosek *et al.*, 2009; UNESCO, 2015; Dajani, Dhawan and M. Awad, 2020). Nevertheless, once women enter the workforce the numbers decline rapidly (UNESCO, 2017). As a result, data shows that women publish less than men and assume less decision-making positions in their careers (Hejase *et al.*, 2005). Men outnumber women in higher ranking positions in academia despite adequate professional credentials of women (Hill, Corbett and St Rose, 2010). According to UNESCO Institute for Statistics (2017), women constitute only 30% of science researchers worldwide. Yet again, among Arab countries the numbers vary; according to UNESCO, the percentage of female researchers in science in Tunisia is 55.4 percent; in Egypt, 44.1 percent; in Iraq, 39.7 percent; and in Bahrain, 39 percent (UNESCO, 2018). Women in different countries face barriers to fully contribute to the wealth of scientific research and assert their presence in academia.

Jordan is no exception. Statistics show that over half the student population at the university level is female. Among those studying for masters' degrees, 45% are female; pursuing PhD's, only 34% are female; and women in academic positions see a plunge to 6%, only 2% in the sciences (Dajani and Tabbaa, 2017). Although the number of women entering STEM has increased, the numbers are still indicating an evident gender gap in career trajectories. By closing the gender gap and empowering women in scientific fields, gender equality can be achieved. Gender equality is one of the sustainable development goals. Therefore, it is important to empower women because the advancement of scientific research depends on the equal contribution of male and female scholars to secure a balanced perspective on global issues. Today, these efforts are more critical because of the global innovation and creativity call towards sustainability. The goal number 9 of the sustainable development goals focuses on innovation and creativity which is tightly connected to technology. This fourth industrial revolution might increase the gap between the two genders if we do not take major intervention steps in schools and institutions (UNESCO, 2017).

To address this gender gap, mentoring has been considered as an effective tool to empower women and ease their journey both professionally and personally (Jones, 2017). Mentoring is generally defined as a relationship between an experienced mentor and a younger novice mentee for the purpose of supporting and improving the mentee's career (Ragins and Kram, 2007). Mentoring is perceived as a development relationship that has a profound impact on the individual both in terms of career and psychosocial aspects. These high-stake outcomes have led organizations, scholars and academic communities to consider mentoring as means to empower women in academia and bridge the gender gap in STEM fields. The original form of mentoring has positive effects on stakeholders. However, its dynamics restricts reciprocal benefits and is based on the male ladder of professional success.

Researchers have introduced various models to maximize the advantages of mentoring for both the mentor and the mentee. Koontz and colleagues (Koontz, Walters and Edkin, 2019), suggested a mentoring community model to empower

faculty women in their careers. Women participating in this study, experienced connectedness to their career world and personal life. In their report, The American Association of University Women (AUWA), emphasized that women in STEM need more support and sense of camaraderie than their male counterparts, and stressed the vital role of informal mentoring models that develop organically out of the individual's needs (Hill, Corbett and St Rose, 2010).

Therefore, there is an urgent need to take a global action to provide women with social networks to advance their professional lives and boost their well-being. Accordingly, this program "Three Circles of Alemat" is designed to offer an understanding of the female academics' career development. It is an attempt to expand our understanding of mentoring and provide a mentoring model in Jordan that can be expanded worldwide.

Three Circles of Alemat proposes an innovative yet simple model to provide female professors in STEM with opportunities of collaboration and collegiality through a creative mentoring model. This project is divided into three circles: Circle 1 (DEMN) is within Jordan, Circle 2 (BAYN) is within the Arab region, and Circle 3 (TAJAMUGH) is engaging women in the diaspora. This Study represents the output of the first Circle that is DEMN. Designed to empower STEM women in academia in Jordan through mentoring circles that provide social networks and tend to the different aspects of the mentoring relationship.

Methodology
Intervention

Three Circles of Alemat is a new approach to instill a social impact. It is based on simple networking requiring simple ways of communication in a very naturalistic setting which makes it easy to sustain yet it addresses the female science professor in a very holistic way: professional and personal growth.

Study Design

The selection of an appropriate mentoring model plays a main role of understanding the importance of mentoring relationship (Yurtseven and Altun, 2011; Leidenfrost *et al.*, 2014). Therefore, Three Circles of Alemat with its 10x10 model (10 mentors and 10 mentees) has been designed to empower STEM women in academia through mentoring circles that tend to the different aspects of the mentoring relationship.

This quantitative study design analyzed different scenarios of mentor/mentee relationships from Circle one (DEMN). This Circle involved 26 female STEM faculty members from 10 Jordanian universities (public and private). The scenarios focused on mentoring in a holistic approach that addresses both professional and personal growth. This work was supported by Partners for Enhanced Engagement in Research (PEER), under the title, Three Circles of Alemat: Creating Collaborative Multicultural Networks for Women in the Sciences (project number 3-047 Jordan).

Data Collection and Analysis

In this paper, the data collection encompassed the quantitative data collected via online surveys. The collected data was then analyzed in order to understand the impact and importance of the proposed mentoring model.

Surveys

Four rounds of online surveys were emailed to participants: each one month apart, starting in March 2015. The online survey was launched using Qualtrics to follow up with participants on the progress of their mentorship. This survey was adopted from University of Wisconsin–Madison, Institute for Clinical and Translational Research study (Sorkness *et al.*, 2013) where they developed the Mentoring Competency Assessment (MCA), which is a validated instrument to assess the impact of mentoring and evaluate the mentoring experience for both the mentor and the mentee in consideration to six competencies:
- Maintaining effective communication (6 items)
- Aligning expectations (5 items)

- Assessing understanding (3 items)
- Addressing diversity (2 items)
- Promoting professional development (5items)
- Fostering independence (5 items)

Mentors assess their own skills and mentees assess their mentors' with the regard to the six areas listed above. The mentor template can be accessed at this link

https://uwmadison.co1.qualtrics.com/jfe/form/SV_5jMT4fhemifK01n?Q_JFE=qdg, while the mentee template is available at https://uwmadison.co1.qualtrics.com/jfe/form/SV_cZ5jT2DdKYxE66V?Q_JFE=qdg

Survey used is in Appendix 1. We used Qualtrics to generate cumulative reports for each round of surveys. Surveys included questions on positive psychology, general reflection, communication method used, professional and mentoring activities.

The assessment tool: Mentoring Competency Assessment (MCA) uses a validated scale (Fleming *et al.*, 2013) to assess the progress or change in six areas while the mentor/mentee are participating in the study. These areas included: positive psychology, general reflection, communication method used, professional and mentoring activities. After each round of surveys, we generated cumulative reports using Qualtrics. Qualtrics is a software used for data analysis (Carpenter *et al.*, 2019). For more information, please visit https://ictr.wisc.edu/mentoring/mentor-evaluation-form-examples/

The survey focused on **research skills, satisfaction & happiness, communication and professionalism.** comparisons between mentors and mentees perception*s* before and after the implementation of this study regarding the improvement of research skills, satisfaction and happiness were done. Along with comparisons of the total average of the responses rate of mentors and mentees to the communications and professionalism aspects over the course of four months of assessment period. The rate of mentoring relations effect was scaled from 1 to 7, where 1 indicates no improvement, 4 represents a moderate improvement and 7 suggest a high improvement (See Appendix 1).

Participants and intervention

The study included 26 female STEM faculty participants: 13 mentors and 13 mentees representing 10 private and public universities in Jordan from different fields (e.g. pharmacy, chemistry, information technology, nursing, agriculture etc.). Table 1 shows the demographics summary of this study. Participants were recruited by contacting all private and public universities to enroll in the peer mentoring program in January 2015 on a voluntary basis. The program consisted of a one-day workshop that included different activities to explain the concept of mentoring and create initial bonds between participants to set up pairs of mentors and mentees. Participants signed a commitment agreement for fulfilling their roles as mentors and mentees and completed a feedback questionnaire to evaluate the workshop. The duration of the program was one academic year.

Results and Discussion

The four rounds of surveys revealed different aspects of the mentoring relationship that are discussed in this section from the perspective of the mentor and that of the mentee. Table 1 summarizes the demographics of the sample population, where 13 pairs of mentors and mentees participated in these surveys. The main disciplines of participants were in the fields of Science and Information Technology. 16 participants were working in public universities while 9 were working in private universities. Most of the participants were from the universities of the central provinces of the Kingdom, followed by the universities of the northern provinces, while the participation was weak for the universities of the southern provinces, where only one mentor and one mentee from Mutah University have participated. Participants also varied in their number of years of experience and academic rank. Some were assistant professor early in their careers, some were associate professors, and a few were full professors. The years of experience for most of the participants in this sample ranged from six to ten years.

Table 1. Summary of demographic characteristics of circle-one participants

	Mentor	Mentee
No. of Participants	8	8
Discipline		
Science	11	12
Technology	2	1
Region		
Northern Provinces	3	3
Central Provinces	9	9
Southern Provinces	1	1
Sector		
Public	9	8
Private	4	5
Academic Rank		
Professor	3	0
Associate Prof.	6	3
Assistant Prof.	4	9
Years of Experience		
15 >	3	0
11 - 15	3	1
6-10	7	11
< 5	0	1

Research skills

The development of the understanding of mentoring and the bigger picture progressed from vague, research collaboration, personal growth, professional networking. It is a relationship that is not based on family, work or any benefit. It is purely a new friendship. Main topics discussed between mentors and mentees: setting priorities, time management, family, research, promotion and funding. Several studies found that faculty mentoring relationships play a significant role in developing research knowledge and skills of mentees in graduate education, where faculty mentors and student mentees agree on the same perceptions of research skills development (Feldon *et al.*, 2015; Chatterjee *et al.*, 2021). However, this is not necessarily the case when it comes to mentorship between faculty mentors and faculty mentees.

The findings of current study of circle one of Three Circles of Alemat showed positive impact for mentor and mentee in term of research skills. The mentor's perception of research skills improved over time; however, the mentee perceptions of their skills was decreased. This may be explained because the mentee had high expectations of the mentoring relationships and false assumptions that the mentor would help the mentee publish research or obtain grants. They were not aware that the mentoring relationship is more about support and providing advice. Therefore, the mentees were in some days disappointed. It is recommended that the participants be aware of the role of the program from the start. Figure 1 illustrates a comparison between the mentor and mentee perception of research skills improved over time before and after the implementation of this project.
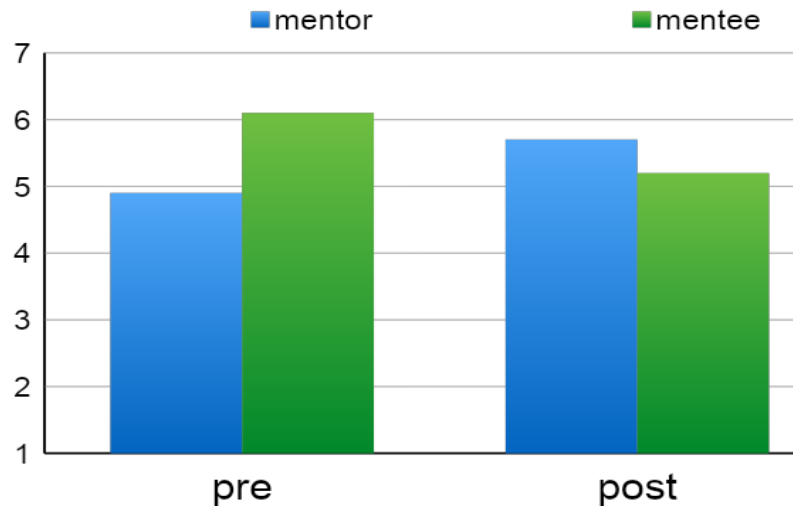
Figure SEQ Figure * ARABIC 1. The mentor and mentee perceptions before and after the mentoring relationship with regard to the improvement of research skills.

Satisfaction and Happiness

Different studies about mentoring relationships at workplace have revealed that a high number of workers, who are in a mentor relationship would be satisfied and happy when they feel valued by their employers and coworkers (Bahniuk, Dobos and Hill, 1990; Høigaard, R. and Mathisen, 2009). According to Dutton (2003), helping students in academia benefits both the mentors and mentees where mentors gain satisfaction by helping students (Dutton, 2003). Although the mentorship relationship is meant to help the mentee initially, but mentors do benefit from these relationships by helping mentors to develop and to learn (Haggard *et al.*, 2011).

In this work, a comparison was made on the level of satisfaction and happiness for both the mentors and mentees before and after the mentoring relationships. It was noticed that the level of satisfaction did increase for both; mentors and mentees, but it increased more for the mentors. In addition, the level of happiness increased for both almost to the same extent. Studies show that in a mentorship relationship, mentors feel happy as they give and help others. While the lower increase in satisfaction and happiness for the mentees maybe related to false expectations as described above. Figure 2 and Figure 3 provide a comparison between the level of happiness and satisfaction between the mentors and mentees before and after the mentoring relationships, respectively. The findings of this work are consistent to the findings of the other related studies.
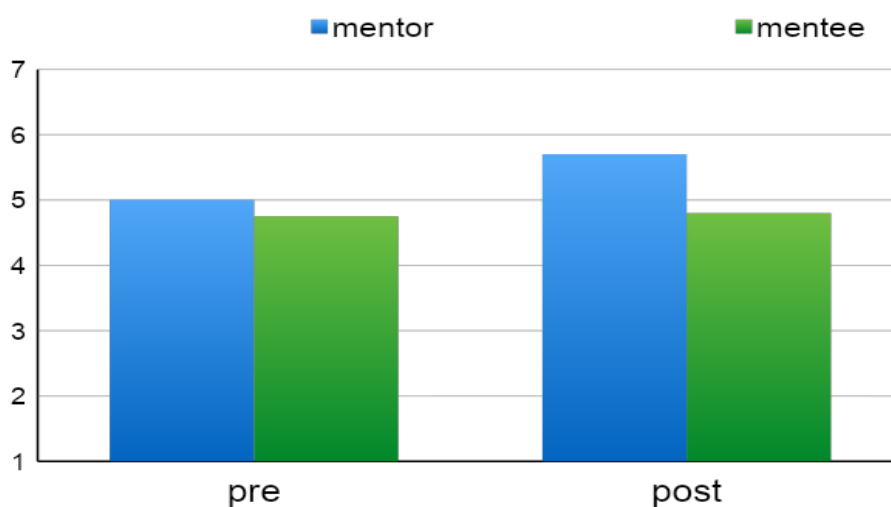
Figure 2. A comparison between the level of happiness between the mentors and mentees before and after the mentoring relationships
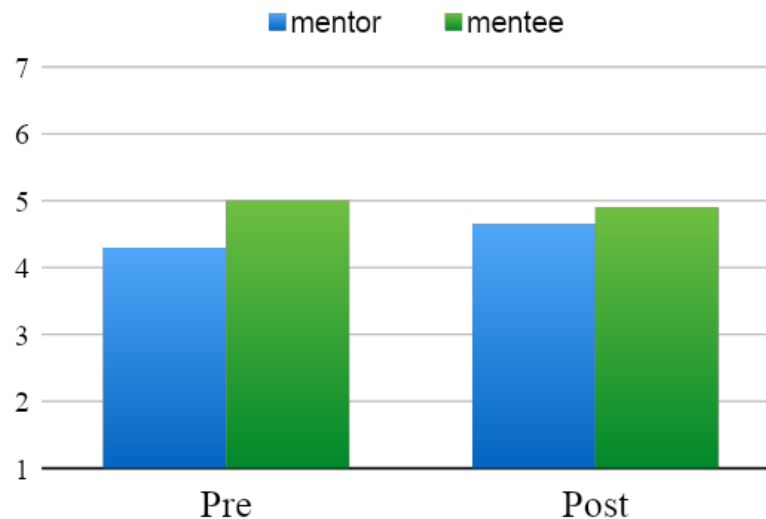
Figure 3. A comparison between the level of satisfaction between the mentors and mentees before and after the mentoring relationships

Communications

Many researchers such as Haigaard and Mathisen (2009) examined mentor function and communication and their relationship with potential benefits for female mentee (Høigaard, R. and Mathisen, 2009). The communication of mentors which include active listening, paying attention to non-verbal and other effective communication skills increased the mentee job satisfaction, career planning and perceived leader behaviors. Another study conducted by (Madlock and Kennedy-Lightsey, 2010) investigated the association between supervisors mentoring and subordinates perceived communication satisfaction. Their results from 200 full time working adults revealed that there was positive relationship between mentoring behaviors of supervisors and subordinate communication satisfaction (Madlock and Kennedy-Lightsey, 2010). Additionally, peer mentor's playful communication helped mentee ease tension of socialization (Young and Cates, 2005).

In this study, participants became more aware of their strengths and weaknesses in communication during the journey: some reported that they discovered they are good listeners. Some found they need to improve their decision-making skills and become less hesitant. This experience led some to evaluate their communication skills as well. Some were fascinated by their openness to new solutions in problem solving. Busy schedules hinder the amount of communication especially face to face interactions between mentors and mentees.

The effects of mentoring relationship on communication process between mentors and mentees are shown in Figure 4. In the beginning of the relationship, mentors and mentees communicated with each other to clarify their common interests. After building the relationship, they kept close to each other in their communication over the period of the study. Mentors and mentees expressed improvement in their communication skills. This may have resulted from active listening and paying attention to non-verbal clues. Our project findings are consistent with several studies (Bahniuk, Dobos and Hill, 1990; Høigaard, R. and Mathisen, 2009; Kogler Hill, Bahniuk and Dobos, 1989; Leidenfrost *et al.*, 2014).
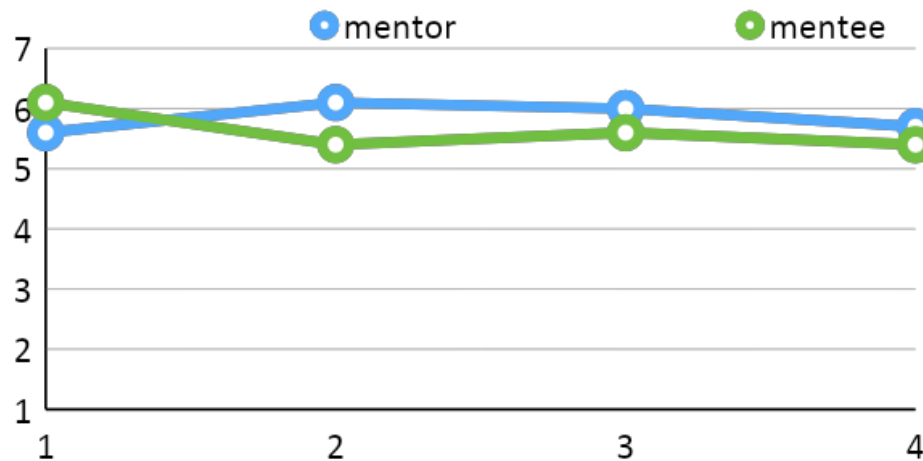
**Figure 4. The rate of communication during the mentoring relationship from mentor and mentee perspectives**

Professionalism

Mentoring skills are valuable assets for mentors, who help shape the professionalism of their mentees. Mentors are role models who also act as guides for mentees' personal and professional development over time, where they are expected to provide support and encouragement to their mentees. The mentoring relationship benefits mentors as well, through greater productivity, satisfaction, and personal gratification (Rose, Rukstalis and Schuckit, 2005)

In order to evaluate the mentor abilities to enhance the mentee professionalism, both parties were asked to rate the mentor abilities to influence the mentee from different aspects such as being motivated, stimulating her mentee's creativity, acknowledging the mentee's professional contributions, negotiate a path to professional independence with her mentee, understanding her impact as a role model for her mentee, helping the mentee to build up her confidence, network effectively, set career goals, and balance work with her personal life. Figure 5 illustrates a comparison between the total average of the responses rate of mentor abilities in improving the mentee professionalism from mentor and mentee perspectives during the four months of assessment period. As seen in the graph, the mentees' responses to the professionalism rate in the first month of assessment was around 6.4 which indicates that the mentees have received some kind of support during this period to enhance their professionalism to a high extent. However, the rate experienced a drop in the second month whereas the mentees evaluated the ability of their mentors to influence them in different aspects such as their impacts as role models and their abilities to help them to achieve professional independence at a moderate rate. By the third month of assessment the professionalism rate from the perspectives of mentees has increased slightly to 5.2 and settled at that rate during the fourth month which may indicate a better understanding among mentors of their role and impact in this mentoring relationship.

On the other hand, the average of the responses rate of mentors to the tested professionalism aspects during the assessment period contrasted with the mentees perspectives. The mentors rated their abilities to direct the mentees towards more professionalism were high.   In the first month of assessment, the total average rate was around 5.6, and it increased by the second month assessment. However, it decreased slightly in the third month of assessment to 6. The mentor's abilities toward their mentee's professionalism continued to decrease by the fourth assessment.
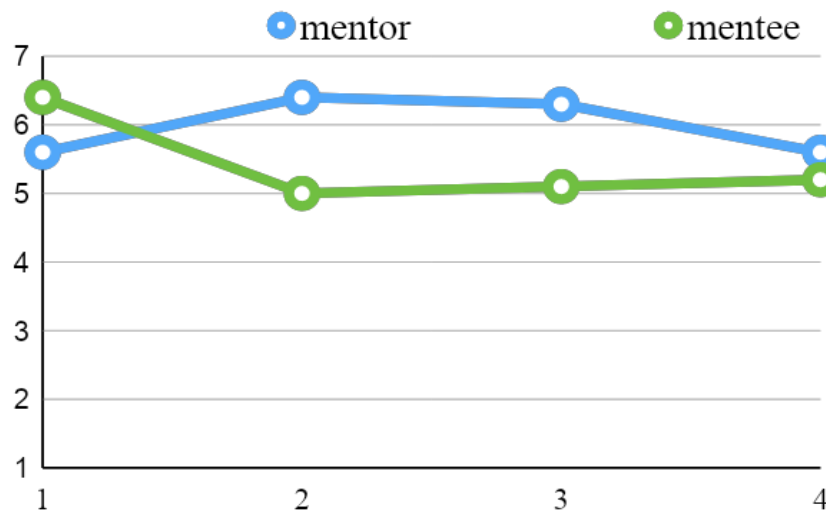
Figure 5. A comparison between the rate of mentor abilities in improving the mentee professionalism from the mentor and mentee perspectives.

In general, our findings support other researchers finding such as (Gardiner *et al.*, 2007; Boles and Diehm, 2016); where they concluded that mentoring in academia is very important and should be introduced into academia Mentoring facilitate new colleagues' engagement within the academic environment, reduces their stressors, and improves their achievement (Boboc, Smaldino and Persichitte, 2012). Besides, our findings showed that mentoring among academic personnel provided colleagues with networks that increased their communication skills, consequently improving their career development and personal satisfaction. Findings of the current study were supported by previous studies showing that positive relationship between senior and new faculty members facilitated by mentoring program, enhanced career development and produced a healthy work environment (Leidenfrost *et al.*, 2014; Boles and Diehm, 2016; Abugre and Kpinpuo, 2017). The mentees in our study did not experience any challenges that might affect their relationships as explained in the study of (Ensher and Murphy, 2011).

Although our findings are considered as strengths, the generalizability of findings is limited by using convenience sampling methods and using self-reported questionnaires. Additionally, data collected over long period of time using longitudinal design increases the liability of attrition rate. The current study includes only women in academia without measuring in which year of their professional experience which also affects the generalizability. Therefore, we recommend that future research must address these limitations. We recommend stakeholders whether in academia or other sectors to adopt such a mentoring model to achieve the sustainable development goal which is gender equity. This mentoring model was able to deliver benefits in improving research, communication and professional skills among women academics. Therefore, we encourage policy makers to design policies targeting integrating mentoring into academia.

Conclusion and Recommendations

Mentoring has been considered as an approach to empower women in academia. Implementing the "Three Circles of Alemat" mentoring program has many positive impacts not only for mentees but also for mentors. We have demonstrated the effectiveness of the mentoring model within the first circle and we are currently applying the model in the second and third circles. The proposed mentoring model improved mentor and mentee relationships, research and communication skills, satisfaction and happiness, consequently their professional performance. The proposed mentoring program" Three Circles of Alemat" framework is cost-effective to implement and can scale organically. Moreover, the flexible framework allows the program to look past race or gender, bridging gaps in personal and professional lives across all social groups and ethnicities. This methodology also invites creative thinking that includes diversity across disciplines and career stages. Therefore, higher education institutions are encouraged to adopt mentoring programs to achieve high quality of academic performance, research, healthy work environment, communication, and satisfaction.

About this Project:

Three Circles of Alemat received the Partners for Enhanced Engagement in Research (PEER) Award in 2014, under the title, Three Circles of Alemat: Creating Collaborative Multicultural Networks for Women in the Sciences (project number 3-047 Jordan). The project partnered with the Jordan Society for Scientific Research and Dr. Gillian Bowser, from Colorado State University. To date, the project has received funding from the National Science Foundation (NFS), National Academies of Science (NAS), and USAID for different stages of its development and implementation from 2014 to 2017. More information is available on the project and its toolkit on the Three Circles of Alemat website

Appendix 1

The study used online surveys in tracking the impact of mentoring among participants during the project using Qualtrics. This survey was adopted from University of Wisconsin–Madison, Institute for Clinical and Translational Research study (Sorkness *et al.*, 2013).

The assessment tool: Mentoring Competency Assessment (MCA) uses a validated scale to assess the progress or change in six areas while the mentor/mentee are participating in the study. These areas included: positive psychology, general reflection, communication method used, professional and mentoring activities. After each round of surveys, we generated cumulative reports using Qualtrics.

For more information, please visit https://ictr.wisc.edu/mentoring/mentor-evaluation-form-examples/

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