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Research Performance: A View of Research Self-Efficacy, Interest, and Gender

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Abstract: There is great interest in promoting research in academic institutions and a need to understand the various factors influencing it. The main goals of this study are to investigate the factors that predict academic research outcomes and how gender and research authority (RA) support programs affect the relationship between research self-efficacy and research interest. The participants included 143 faculty members who completed a questionnaire, 19 of whom were interviewed. The results indicate that the faculty members' research interests and the RA's support significantly predicted academic research outcomes. A positive and significant correlation was found between research self-efficacy and research interest. Gender and RA support were found to significantly moderate this relationship. Research self-efficacy had almost no effect on research interest among female faculty members and among faculty members who had received support from the research authority. In contrast, among male faculty members and among those who did not receive support from the research authority, the higher the research self-efficacy, the higher the research interest. An analysis of faculty members' perceptions points to four factors that can advance research outcomes: support from the RA, mentoring, collaboration among researchers, and allotting time for research. Understanding the moderating role of gender is important to reveal the underlying mechanism of a gender gap in research interest and consequently in academic performance, considering the increased recognition that universities worldwide are male dominated and that women are underrepresented in senior positions in academia.

Keywords: academic performance; gender; research interest; research self-efficacy; research authority

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1. Introduction

Research is one of the key components of the work of academic institutions and is an important consideration in the funding [1–3] and professional development of faculty members [4]. Interest in improving the research performance of the higher education system is shared by many academic institutions around the world, but the theory and empirical capacity of research performance are not yet fully formed [5–8]. Various factors affect academic performance [3,6]. Bazeley [6] used an open-ended questionnaire among 295 academic teaching staff who were asked to give a description of their research. Based on a qualitative analysis, she suggested two preconditions for effective research performance training and experience. These provide an essential foundation for the skills required for high-level research, in addition to opportunities and resources including time, equipment, and funding. In addition, a conceptual model of the dimensions of research performance was extracted. Four dimensions were identified as research activities—engagement, task orientation, research practice, and intellectual process (analytic capacity and creative thinking). Two dimensions were identified as making the research visible—dissemination and collegial engagement.

Many academic institutions have established research authorities (RAs) with the aim of promoting academic research; however, few studies have examined the activity

of these RAs. Croghan et al. [9] defined the essential services that RAs should provide: scientific mentorship and navigation, supervision and mentoring of research staff, protocol development/regulation, study coordination/data management, and innovative cutting-edge programs. Snyder et al. [10] proposed three indices for evaluating the effectiveness of an RA: efficiency in performing actions (measured by average times for responding to and handling relevant inquiries), researchers' satisfaction with service, and economic growth.

The initial aim of this study was to examine how RA support programs contribute to research productivity. The study's preliminary findings led to more in-depth research questions as part of the second stage of the study. Therefore, the literature review deals with various aspects that may influence research outcomes of faculty members, such as research interest, research self-efficacy, and gender.

1.1. Literature Review

1.1.1. Gender and Research Outcomes

Various studies have been conducted among higher education staff members regarding competitiveness, job insecurity, increased work demands, tenure-related demands, research and publication pressures, teaching loads, and opportunities for promotion [11–13]. Many of them have examined the effect of gender, in light of the increased recognition that universities worldwide are male dominated and that women are underrepresented in senior positions in academia [14–20]. Several explanations have been presented for women's underrepresentation in the senior ranks of academies, such as limited mentoring [21,22], a lack of supportive networks [23], and insufficient socialization into academia [24].

In an investigation of the relationship between research outcomes (scientific publications) and gender, Rørstad and Aksnes [25] found that female researchers had approximately 20 percent lower publication counts than men, although there were significant variations by field and academic position. Vasil [26] reported that men spent significantly more time on research activities and had a greater academic productivity than women. Aiston and Jung [27] found that academic women are publishing fewer journal articles and book chapters; however, familial responsibilities are not adversely affecting this situation.

The issue of gender in higher education has been explored from different perspectives of the patriarchy [28,29], male-dominated norms and practices [24], women's self-efficacy or self-agency [30,31], women's priorities in promoting their personal rather than professional lives [24,32], capabilities for promoting gender equality [33], and institutional rank progression structures for academic promotions [34]. The gender issue among female researchers in academia is complex and is dependent on many factors [27].

1.1.2. Research Interest and Research Self-Efficacy

Research outcomes depend on a wide range of emotional, cultural, organizational, and managerial factors. Productive research behaviour, which is measured mainly by a high number of publications, has been found to be positively related to the faculty member's level of research interest [35] and sense of confidence in their research abilities [36,37]. Several studies have indicated a relationship of research self-efficacy, interest in research, and research outcomes [30,38–41].

Self-efficacy refers to an individual's belief in their ability to perform certain tasks [42] and involves their cognitive processes (thinking like a scholar–researcher), behaviour choices (conducting research activities), and motivations [30]. Bandura [43] claims that self-efficacy is developed through the cognitive integration of four indications: enactive mastery (successes heighten perceived self-efficacy while repeated failures lower it), vicarious experience (seeing similar others perform successfully can raise self-efficacy expectations), verbal persuasion (encouraging and leading to sufficient effort to succeed), and emotional arousal (high arousal usually debilitates performance, people are therefore more inclined to expect success when they are not beset than if they are tense and unreasonably disturbed). Self-efficacy is a predictor of performance, due to its relationship with aspirations, commitment to goals, and persistence in continuing with the task [43–45]. Pajares [46] argued that

behaviours are more effectively predicted by individuals' beliefs about their capabilities than by their actual capabilities.

Research self-efficacy predicts interest in conducting research [37,47]. Interest in research is grounded in the social-cognitive model suggested by Lent et al. [35] and depends on personal characteristics, environmental influences, research self-efficacy, and research outcome expectations. Personal characteristics such as gender and age affect interest in research directly and indirectly, through research self-efficacy, research outcome expectations, and environmental influences [30].

An examination of the role of gender in this respect based on two variables—research self-efficacy and interest in research—has not produced clear-cut conclusions [48]. For example, Wright and Holttum [49] did not find a significant relationship between gender and research self-efficacy or research interest but did corroborate previous research findings that research self-efficacy mediates the relationship between masculinity and the intention to do research [50]. Griffioen et al. [39] and Kerrigan and Hayes [51] also found no significant relationship between gender and research self-efficacy or research interest. In comparison, Vasil [26] reported significant differences between men and women in research self-efficacy beliefs, in favour of universities' male staff members.

In addition to the three variables presented above (gender, research interest, and research self-efficacy), we chose to examine the issue of research performance also in the context of three additional variables: faculty (Sciences/Social Sciences), main research method (quantitative/qualitative/mixed methods), and RAs' support. The choice of these variables is based on previous studies that found that they may also affect research performance. Wood [3], for example, claimed that the different research styles, processes, and techniques are the most important factors in explaining variations in research productivity. The type of research method (quantitative or qualitative) employed differs by discipline (natural sciences or social sciences and humanities). Wanner et al. [52] found an advantage for research productivity of researchers from the field of science. It is also important to consider previous findings of a correlation between gender and research method preference, with being women biased towards qualitative methods [49]. In the same vein, Grant et al. [53] found that the use of qualitative methods was significantly higher among women. As mentioned, the justification for examining RAs' contributions to research productivity stems from the lack of studies in this context and the definition of their roles in the promotion of research in the academic institution [9,10].

2. Materials and Method

2.1. Research Questions—First Stage of the Study

As stated, the initial aim of the study was to understand the role of the RA in promoting research among faculty members. The study was conducted with the approval of the research authority and the management of the college. In this context, two research questions were raised in the first stage of our study:

1. According to the views of faculty members, what could increase their research outcomes?
2. What are the factors that predict academic research outcomes?

2.2. Methodology

2.2.1. Research Tools

The number of publications, citation counts, doctoral students, and competitive research funds are common indicators for research productivity [54]. To answer the research questions, a combination of quantitative and qualitative tools was employed. The instruments included a close-ended questionnaire and semi-structured interviews. We used a four-part questionnaire. The first part was comprised of items on the participant's demographic data: gender (man/woman), age, seniority at the college, faculty (Science and Technology/Social Sciences and Humanities), institutional status (lecturer/adjunct), degree (Dr/Prof.), main research method (quantitative/qualitative/mixed methods), and whether the faculty member received RA support or not. The second part assessed research self-

efficacy using eight statements that describe different research activities. The participants were asked to rate their level of confidence in performing each research activity on a scale of 0 (total insecurity) to 10 (total confidence). The statements were based on the works of Bieschke et al. [55], Forester et al. [56], and Pasupathy and Siwatu [48]. Examples of statements in this part of the questionnaire include "generate researchable questions" and "choose an appropriate research design". The Cronbach's alpha reliability was 0.894.

The third part of the questionnaire examined research interest; it was based on Kerrigan and Hayes [51] and Lambie et al. [30]. Nine statements were presented, and the participants were asked to rate their level of interest regarding each statement on a scale of 1 (lack of interest) to 5 (high level of interest). Examples of statements in this part of the questionnaire included "reading a research journal article" and "taking a statistics course". The Cronbach's alpha was 0.849. The fourth part of the questionnaire examined research outcomes. Participants were asked to report on their research products (participating in conferences, winning grants, publishing articles or books, and supervising of graduate students) in the last four years. This part was based on Pasupathy and Siwatu [48]. The variable of research outcomes was constructed as an average of the subjects' reports in this section. At the end of the questionnaire, the participants were asked if they would agree to be interviewed. Nineteen semi-structured interviews were conducted with participants who agreed. Each interview lasted about 45 min. The purpose of the interviews was to examine the participants' views regarding the factors that could influence their research outcomes. Participants were asked, for example, how do they perceive themselves as researchers? what are the ways in their opinion for professional development as researchers? What can promote such development? What can hinder? How can the research authority at the college support the professional development as researchers? Do they know the requirements for faculty promotion in the college? Do they think that changes are necessary and if so, why, and how? What are their research outcomes? What factors might contribute to an increase in their research outcomes?

Subjects who did not answer most of the questions (over 60%) were removed from the sample. The analysis was performed on all the items in the questionnaire (the highest frequency of missing was 22%), assuming that it is missing at random; therefore, the subjects were included in the sample and the analysis included empty cells in these cases.

2.2.2. Research Population

The research took place at a college in northern Israel with about 400 faculty members and about 3500 students. The college has two faculties: the Faculty of Science and Technology and the Faculty of Social Sciences and Humanities. The college management encourages research among faculty members through the activity of the research authority. A total of 143 faculty members (61% of the research population) completed the questionnaire. There were 52% men and 46% women (3 did not indicate gender). A total of 60% of the faculty members who participated in the study taught in the Faculty of Social Sciences and Humanities and 40% in the Faculty of Science and Technology. Regarding institutional status, 58% of the faculty members were lecturers and 32% were adjunct teachers (14 did not answer this question). A total of 75% held a PhD degree and 15% held a professor degree (15 did not reply to this question). A total of 40% of the faculty members indicated that the main research method they used was quantitative, 18% indicated a qualitative research method, and 27% indicated a mixed-method approach (20 did not reply to this question). The average seniority in the college of the participants was 9.85 years, with a standard deviation or 7.44, and a median of 9 years. The oldest faculty member had been teaching at the college for 35 years and the least senior had worked at the college for only 1 year. A total of 50% of the participants had not used the support of the RA in the last four years and 41% had (14 did not reply to this question). Fifteen percent of the faculty members indicated that they were mentoring another faculty member in research processes. The average age of the participants was 50.74 years, with a standard deviation of 10.03, and

median of 50 years. The oldest faculty member was 72 years old and the youngest was 30 years old.

The interviews were held with 11 men and 8 women. The average seniority at the college of the interviewees was 10.61 years with a standard deviation of 6.18 years. A total of 4 participants taught in the Faculty of Science and Technology and 15 in the Faculty of Social Sciences and Humanities.

3. Results

3.1. First Stage of the Study

The findings are presented according to the research questions.

3.1.1. RQ#1: Faculty Members' Perceptions Regarding the Factors That Could Influence Their Research Outcomes

Analysis of the faculty members' answers regarding the factors that might contribute to increasing their research outcomes indicated four main factors: support of the RA, mentoring, collaboration among researchers, and allotting time for research.

Research Authority Support

Several actions by the RA and/or the college were mentioned as increasing the productivity of faculty members as researchers. These included internal grants and financial aid, research workshops, the provision of administrative services and information, and help with submitting proposals to external foundations.

The following examples demonstrate that offering grants was perceived as a factor that motivated faculty members to conduct research and submit proposals to external foundations:

> "Undoubtedly, I think that without this there would be nothing. It serves as an incentive. An internal call for research is less threatening than an external one. It encourages people to write, It's not an entire research proposal. It's much simpler and it helps people get started." (Interviewee 13)

> "I received grants [internal calls for papers] once or twice and that gave me confidence to submit research to the National Science Foundation (ISF)." (Interviewee 7)

> "These grants provide seed money for research so that you can examine probability and receive initial findings. You are then able to receive a significant research grant." (Interviewee 3)

According to these references, it is evident that the faculty members perceive the college's internal research grants to be a motivating and encouraging factor in carrying out research, both from a practical and even a psychological point of view. They receive initial findings and feel more confident to submit research proposals to external funds.

Faculty members noted that the process of submitting a request for a grant and receiving feedback constituted a learning process and helped them become better researchers:

> "You receive comments and you have to read them, even if they irritate you and you don't agree with them. You will gain from them and become a better researcher." (Interviewee 3)

One of the interviewees suggested dividing the budget for research grants differently, so that more applicants could receive help:

> "If it were possible to create a norm by which each researcher tries to utilise the amount of money that is available and calculate exactly how much they need, we could give what remains to others. I think that would be fair." (Interviewee 9)

The proposal for a fairer distribution indicates the desire of the researchers to promote all the researchers in the entire college and not just themselves personally.

The faculty members also perceived providing a budget and financial aid as an important means of promoting research activities:

> "In my experience, the college helps a lot. I didn't request everything that I wanted, but they gave a lot of money. The college offers a lot of possibilities. It's always possible to do more. I think that if you want to conduct a moderate-sized research project in the social sciences, you can do so with the money from the college. The natural sciences are a different matter." (Interviewee 15)

> "The budget enables us to attend conferences and present our research, attend research workshops, purchase equipment, and hire research assistants." (Interviewee 9)

These quotes indicate that faculty members acknowledge the college's efforts in supporting them in conducting research and publishing articles. In addition, it helps them to attend conferences and workshops and to enhance their research skills and professional growth. Interviewee 15 noted that, although the college offers a lot of possibilities, conducting research in natural sciences requires more funding than in social sciences.

Some of the interviewees were satisfied with the research workshops, as illustrated by the following:

> "The RA conducted two workshops. It also publishes data and offers incentives and support. We receive data about foundations and proposals from many universities abroad. We have an excellent RA." (Interviewee 14)

It seems that the faculty members perceived the workshops as useful and promoting their research skills and that they overall appreciate the incentives given by the RA and the information about foundations and proposals from universities abroad to support their academic promotion.

Another aspect that the interviewees noted was the offering of administrative services and information to the researchers and lecturers at the college:

> "I can't tell you whether we are being encouraged here or not. On the level of distributing information, anything that is connected to the college itself, even matters that are not connected to my field, are sent by email. There are constant updates about seminars and about local and international conferences." (Interviewee 6)

However, some of the faculty members felt that the response from the administration and information sharing was insufficient:

> "I was told there was a budget for bringing researchers from abroad. I don't know what to say. I don't have enough guidance in this area. I was told: 'Call the international relations department.' But I feel that this should be more than just an institution. Individuals shouldn't have to be the ones to call and make contact and try to gather information." (Interviewee 8)

It seems that the faculty members do not receive a supportive and detailed guidance regarding hosting researchers from abroad and expanding collaborations at an international level. They think it should not be their merely responsibility as individuals and they should be given more support. These references might indicate a broader concern in the institutional organizational culture.

The interviewees explained that faculty members helped them with approaching external research foundations in all matters pertaining to writing a budget for a research proposal. They expressed satisfaction with help regarding budgeting:

> "I always receive help from a member of the faculty who is a member of the RA. He goes over our division of budgets and makes changes according to his perception. His view is correct for dealing with a call for research." (Interviewee 12)

> "I think that from this standpoint we have no problem with the budget because there is a member of the faculty who is performing this job. During all the

> meetings I have attended, I have seen that he is perhaps one of the people who best understands budget management." (Interviewee 1)

However, in other matters associated with submitting requests to external foundations, some needs were not adequately met:

> "A system of technical support needs to be created here for writing research proposals, reading them, and ensuring that they are professional." (Interviewee 15)
>
> "When I want to submit a request to external research foundations, I feel that there is no one here who will help me. I need skilled staff that can provide organised information about all the European foundations, support editing and budget issues." (Interviewee 2)

These quotes indicate that faculty members do not receive adequate technical and professional support from the institution relating writing research proposals and requests to external research grants; it seems that there is a need for a system of technical support within the institution.

Mentoring

The interviewees mentioned additional actions that the RA and the college could take to help lecturers and researchers progress and develop. One of these recommendations was to create a system of mentoring, consultation, and guidance in the college. For example, experienced researchers could offer support and guidance to new or young researchers in the college:

> "I think that many people are occupied with their own matters and that mentoring would help. Senior lecturers should take newer lecturers under their wing. I think that would help." (Interviewee 8)
>
> "I'm in favour of beginning lecturers receiving a mentor from the same discipline who understands the subject." (Interviewee 14)

The above references highlight the significance of having a mentoring and guidance system in the college that will provide support and consultation services that are needed for researchers in their early stages of career development. These mentors will be able to help researchers both methodologically and in terms of fields of knowledge, ensuring a comprehensive and effective support system for all.

Collaboration between Researchers

Faculty members also recommended collaboration among researchers within and outside the college:

> "A college is a place where each of us is alone on an island and occupied with his or her own matters. Some of us succeed in connecting with others and some of us don't. The college doesn't provide opportunities for sharing common space. There is no day during which we conduct research, meet, or consult together. We come here to teach and then we leave, and we have little time for anything else." (Interviewee 9)
>
> "Perhaps the RA can create connections between researchers. This doesn't even have to be from within the college. They could also be from outside the college. They could create a database of researchers and create matches between people. That way we would have someone to approach and receive help in developing." (Interviewee 12)

It seems that the faculty members feel isolated and have a lack of opportunities for peer collaborations, since they are busy with their work and have little time for peer meetings and consultations. Interviewee 12 suggested the establishment of a data base of researchers in which scholars can find colleagues with the same research interests. This could help researchers to collaborate with their colleagues both within and outside the college and to promote their research productivity and enhance their professional development.

Allotting Time for Research

The faculty members also recommended allotting time to researchers for conducting research and decreasing their workload:

> "Time. The most significant thing would be if I had a sabbatical year every three, four, or five years and a budget that would enable me to be free to conduct research." (Interviewee 7)

The faculty members spoke about cutting down teaching hours that are assigned to lecturers and researchers at the college:

> "My entire research was conducted on a voluntary basis because the college allows lecturers who are conducting research to cut back their teaching hours, but at the most we are talking about 4 h out of 24." (Interviewee 3)

> "Decreasing teaching hours always helps, but it's a matter of money. Sometimes there is a deficit and sometimes there is more money to give. It varies." (Interviewee 14)

The above quotes illustrate the complex situation the faculty members are experiencing in their academic profession. They are overload with teaching hours and have limited time to conduct research. Nevertheless, the faculty members seem to understand the college's budget limitations. Overall, these statements indicate the barriers that researchers face when balancing their teaching and research commitments and highlight the need for the college to enact changes regarding teaching hours. This is particularly true for lecturers who are interested in carrying out research and for whom the teaching load is a significant limitation.

3.1.2. RQ#2: The Factors That Predict Academic Research Outcomes

Multiple linear regression was used to identify the factors that significantly predicted research outcomes. Table 1 presents the results.

Table 1. Regression analysis of variables as predictors of the research outcomes.

Variable	B	Std. Err.	β
Gender (male/female) (G)	−0.03	0.22	−0.01
Faculty (Sciences/Social Sciences) (F)	0.15	0.22	0.07
Main research method (quantitative/qualitative/mixed methods) (RM)	−0.20	0.11	−0.19
RA's support (yes/no) (RAS)	0.53	0.21	0.25 *
Research self-efficacy (RE)	0.04	0.09	0.04
Research interest (RI)	0.69	0.20	0.36 **

* $p = 0.015$, ** $p = 0.01$.

The overall regression was statistically significant, $R^2 = 26\%$, $F(6, 82) = 4.420$, $p = 0.001$. The fitted regression model was academic research outcome = $-1.944 - 0.01(G) + 0.07(F) - 0.19(RM) + 0.25(RAS) + 0.04(RE) + 0.36(RI)$. According to the results, research interest and use of research authority support significantly predicted academic research outcomes. A higher level of research interest and having received assistance from the research authority had a higher chance of greater research productivity.

According to the results, and contrary to our expectations, gender and research self-efficacy did not significantly predict research outcomes. These findings have led us to deepen our study and to examine in the second stage the relationship between the four variables: research self-efficacy, research interest, gender, and RA support.

3.2. Research Question—Second Stage of the Study

Although the findings of the first stage of the study showed that gender and research self-efficacy did not significantly predict research outcomes, we assumed that there is an

indirect relationship through the variable of research interest. Previous studies have indicated a relationship between research self-efficacy and interest in research (e.g., [30,38,40]). The variables are also theoretically related through the social-cognitive model suggested by Lent et al. [35]. This led to the assumption that a positive correlation was expected between the two variables. According to Lent et al. [35] theory, personal characteristics, such as gender, affect interest in research directly and indirectly, through research self-efficacy [30]. This relationship, in addition to previous studies that have indicated a direct connection between research self-efficacy and gender (e.g., [26]), has led us to assume that gender can influence the relationship between research self-efficacy and research interest. In light of the lack of research on RAs' contribution to various aspects related to research (as claimed by Croghan et al. [9] and Snyder et al. [10]), we suggested investigating the research model shown in Figure 1. According to this research model we hypothesized that there is a positive correlation between research self-efficacy and research interest and that gender and RA support may moderate this relationship.

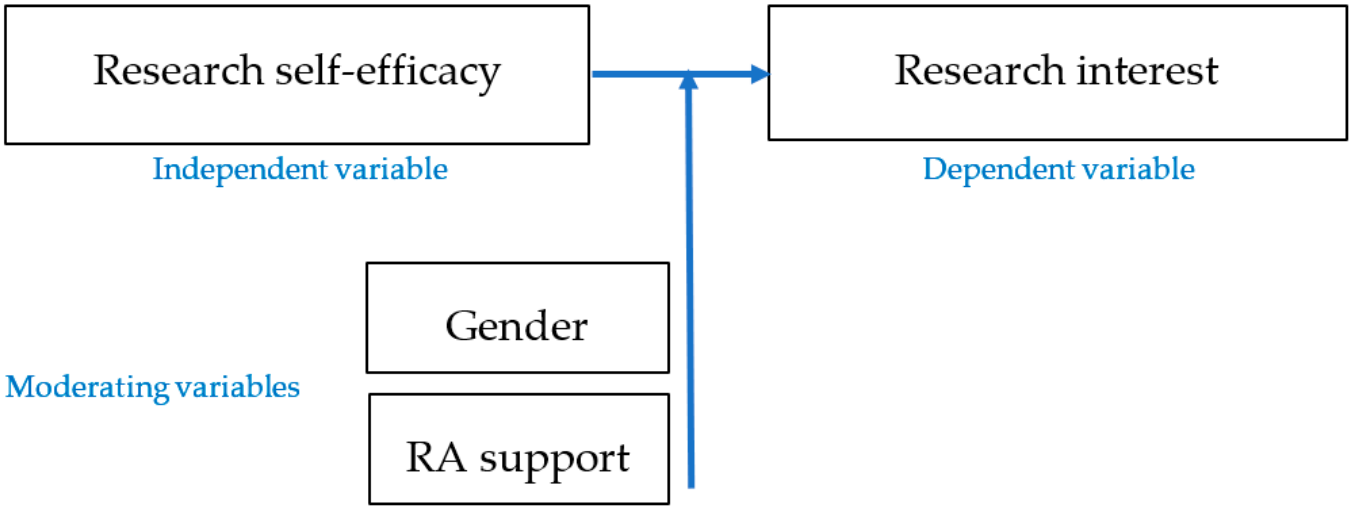

Figure 1. The research model.

A third research question was raised: what is the relationship between research self-efficacy and research interest, and how do gender and RA support affect this relationship? Further analysis of the questionnaire was performed to reply to this question.

Second Stage of the Study

RQ#3: The Relationship between Research Self-Efficacy and Research Interest and the Effect of Gender and Research Authority Support on this Relationship

The third research question explored the relationship between research self-efficacy and research interest, and of gender and RA support as moderating variables of this relationship. Table 2 presents the descriptive statistics and the correlations between all the research variables as a preliminary stage for the statistical examination of the moderating variables.

Table 2. Descriptive statistics and correlations between the study variables.

Variable	Mean	*SD*	1	2
1. Research self-efficacy	8.64	1.32	1	0.42 **
2. Research interest	4.09	0.68	-	-

** $p = 0.000$.

A significant moderate and positive correlation was found between research self-efficacy and research interest (r = 0.42). A similar correlation (r = 0.43) was found between research interest and research outcomes.

We performed the analysis using Hayes' [57] PROCESS macro in SPSS 25.0 to explore the moderation effect, where research self-efficacy was the independent variable and research interest was the dependent variable. Gender and RA support were found to significantly moderate the relationship between research self-efficacy and research interest. Table 3 presents the interactions between the study variables.

Table 3. Analysis of interactions between the study variables.

Variable	B	Std. Err.	β
Gender	0.05	0.11	0.04
Research self-efficacy	0.54	0.13	1.12 **
Gender * Research self-efficacy	−0.23	0.09	−0.74 *
RA support	−0.11	0.11	−0.09
Research self-efficacy	−0.23	0.12	−0.49
Research authority support * Research self-efficacy	0.32	0.09	0.97 **

* $p = 0.01$, ** $p = 0.000$.

As illustrated in Figure 2a,b, research self-efficacy had almost no effect on research interest among female faculty members and among faculty members who received support from the research authority. In contrast, among male faculty members and among faculty members who did not receive support from the research authority research interest was higher when research self-efficacy was higher. Gender (in the case of men) and lack of support of the RA strengthened the relationship between research self-efficacy and research interest. Figure 2a,b present the results.

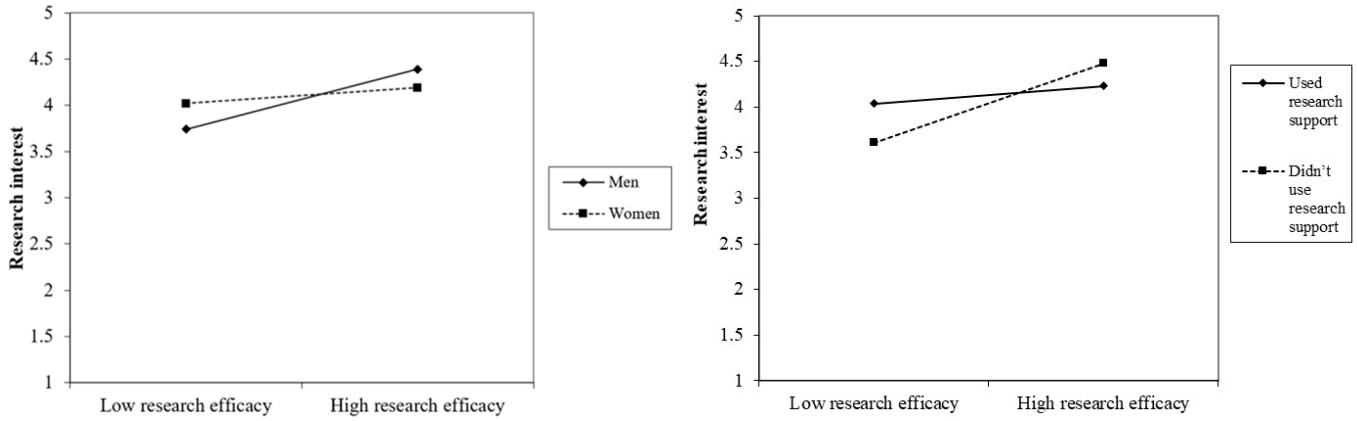

Figure 2. (**a**) Gender as a moderating variable and (**b**) research authority support as a moderating variable.

4. Discussion

The main goals of this study were to understand the faculty members' perceptions about the factors that might influence their research outcomes, to investigate the factors that predict research outcomes, and to explore how gender and support actions of the RA moderate the relationship between research self-efficacy and research interest. A close-ended questionnaire and semi-structured interviews were used.

Two variables significantly predicted the academic research outcomes according to the results in this study: research interest and use of research authority support. A faculty member who had a high level of research interest and assistance from the research authority was found to have a better chance of greater research outcomes.

The present findings indicated that gender and research self-efficacy did not significantly predict research outcomes, but that research self-efficacy was significantly correlated with research interest, which significantly predicted research outcomes. Previous studies

also found a positive relationship between research self-efficacy, interest, and research outcomes [30,39,40]. The significant and positive connection between research self-efficacy and interest can be explained using the social-cognitive model suggested by Lent et al. [35].

One of the interesting findings of the present study concerns the moderation of the relationship between research self-efficacy and interest by the gender variable. Gender significantly moderated this relationship and in the case of male participants, strengthened it. We found no previous studies on the moderating effect of gender on the relationship between research self-efficacy and interest. However, in a broader search, we found studies that examined the effect of gender on the relationship between similar measures of sense of confidence and interest in different areas, such as entrepreneurship. Shinnar et al. [58] found that gender had a significant moderating effect on the relationship between a perceived lack of support barriers and entrepreneurial intention (in the United States and Belgium, a stronger negative relationship was found among men than among women). However, they did not find a significant effect of gender on the relationship between the perceived fear-of-failure barrier and entrepreneurial intention.

Psychological and social factors might explain the intervention of the gender variable in the relationship between research self-efficacy and research interest. Previous studies (e.g., [59]) indicated that factors such as marriage, children, and domestic workload were related to the productivity of women in research. Women may recognise the influence of these family factors and are therefore less likely to form a relationship between their research interests and their sense of self-efficacy. In comparison, among men, who have no similar recognition of family commitments, a low sense of research self-efficacy lowers interest in the field of research and thus diminishes research productivity. This explanation is in line with the findings of Monroe et al. [60], who found that women in academia did not judge balancing work and childcare as relevant to their academic institute.

Both the quantitative and the qualitative findings of our research indicated that RA support helps to promote research outcomes. Faculty members who used the research authority support programs were more likely to have better research outcomes. In addition, a lack of RA support strengthened the relationship between research self-efficacy and research interest. An analysis of faculty members' perceptions indicated several RA actions that can support research productivity: internal grants, offering budgets and financial aid, offering research workshops, providing administrative services and information, and helping with the submitting of proposals to external foundations. Previous studies found that academic support programs contributed to the advancement of research by faculty members (e.g., [6,61–63]). Wood [3] and Ito and Brotheridge [64] also emphasised the availability of funding, such as research grants, as an important factor influencing research activities.

Our analysis of the interviews in the present study indicated three other factors that might increase research productivity: mentoring, collaboration between researchers, and allotting time for research. The interviewees highlighted the importance of a mentoring system that accompanies them and provides them with the consultation services needed for researchers in the early stages of their academic development. In addition, they noted the need to establish a data base of researchers for scholarly collaborations both within and without the college. These findings reinforce those from previous studies. Collaboration with peers and mentoring with experienced researchers were found to be crucial elements in providing a supportive climate for researchers [3,61,63,65]. Regarding the third factor, the allotting of time for research, faculty members described the challenges they faced regarding the need to balance their teaching hours with their roles as researchers. The time dedicated to conducting research is limited due to their being overloaded with teaching hours. They suggested that the college will perform changes and reduce their teaching hours. These results also support Wood's [3] claim that heavy teaching loads limit the ability of faculty members to conduct quality research. This is consistent with Ito and Brotheridge's [64] finding that the amount of time that faculty members invested in research activities predicted their level of research productivity.

One of the main strengths of this study is its combination of quantitative and qualitative tools. Its limitation is that it has focused on only one academic institution and with a relatively low number of faculty members; this may make it difficult to generalise the findings. It would be important and interesting to expand the research to include a greater number of faculty members and of different academic institutions. Nevertheless, this study is of great importance. There is widespread agreement that more attention should be paid to the development of researchers throughout their careers [66,67]. In response, academic institutions are focusing their efforts on building research capacity and capability [65]. There is an increasing emphasis on the measurement and accountability of academic research activity [7,68]. This highlights the importance of the current research, especially considering Ito and Brotheridge's [64] claim that very little research has explored the strategies employed by faculty members to improve their research productivity. Despite the extensive research conducted on the research self-efficacy and research interest of faculty members, there has been only limited investigation of whether the relationship between these variables differs according to gender. Understanding the moderating role of gender is important in revealing the underlying mechanism of a gender gap in research interest and consequently in academic performance. The present findings emphasise the importance of academic support programs in advancing research productivity and the need to consider different components when designing intervention programs for both men and women.

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