PEER ASSESSMENTS OF RESEARCH ADVISORS AND EFFECTS ON INVESTMENTS IN TEACHING
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ABSTRACT
In recent years, research on faculty performance measures has increased. Although peer reviews are an integral part of faculty's work and require time investment, they are typically not considered in measuring faculty performance. The aim of this research was to investigate associations between evaluations of peers' performance as research advisors, and teaching perceptions. We employed Exploratory Factor Analysis, followed by Structural Equation Modeling, to test our model's goodness-of-fit. Results show that the stronger the satisfaction from assessing peers’ performance as advisors, the greater the perceived significance of teaching. Excellence in teaching also effects teaching perceptions. Furthermore, female faculty members gained more satisfaction from assessing peers than did males. It has been argued that there is no association between teaching and assessing peers’ performance as research advisors. The findings of this study address the literature gap regarding the link between teaching quality and research, by employing the Projection theory.

Keywords: Teaching. Peers assessment. Academy. Performance measures. Teaching quality.

EVALUAÇÃO POR PARES DE ORIENTADORES DE PESQUISA E EFEITOS SOBRE OS INVESTIMENTOS NA DOCÊNCIA

RESUMO
Nos últimos anos, as pesquisas sobre medidas de desempenho do corpo docente aumentaram. Embora as revisões por pares sejam parte integrante do trabalho do corpo docente e exijam investimento de tempo, normalmente não são consideradas na medição do desempenho do corpo docente. O objetivo desta pesquisa foi investigar associações entre as avaliações do desempenho dos pares como orientadores de pesquisa e as percepções do ensino. Empregamos a Análise Fatorial Exploratória, seguida por Modelagem de Equações Estruturais, para testar a adequação do nosso modelo. Os resultados mostram que quanto mais forte é a satisfação em avaliar o desempenho dos colegas como conselheiros, maior é a importância percebida do ensino. A excelência no ensino também afeta as percepções do ensino. Além disso, as docentes obtiveram mais satisfação ao avaliar seus pares do que os homens. Argumentou-se que não há associação entre ensinar e avaliar o desempenho dos pares como consultores de pesquisa. Os achados deste estudo suprem a lacuna da literatura no que diz respeito à ligação entre qualidade de ensino e pesquisa, utilizando a teoria da Projeção.


RESUMEN
En los últimos años, ha aumentado la investigación sobre las medidas de desempeño de los profesores. Aunque las revisiones por pares son una parte integral del trabajo de los profesores y requieren una inversión de tiempo, normalmente no se consideran al medir el desempeño de los profesores. El objetivo de esta investigación fue investigar las asociaciones entre las evaluaciones del desempeño de los pares como asesores de investigación y las percepciones de la enseñanza. Empleamos el análisis factorial exploratorio, seguido del modelado de ecuaciones estructurales, para probar la bondad de ajuste de nuestro modelo. Los resultados muestran que cuanto mayor es la satisfacción de evaluar el desempeño de los compañeros como asesores, mayor es la importancia percibida de la enseñanza. La excelencia en la enseñanza también afecta las percepciones de la enseñanza. Además, las profesoras obtuvieron más satisfacción al evaluar a sus compañeros que los hombres. Se ha argumentado que no existe asociación entre la enseñanza y la evaluación del desempeño de los pares como asesores de investigación. Los hallazgos de este estudio abordan la brecha bibliográfica sobre el vínculo entre la calidad de la enseñanza y la investigación, mediante el empleo de la teoría de la proyección.

INTRODUCTION

Scientists encounter stringent review processes as graduate and doctoral students and in their post-doctoral work. From that point onward, the review procedure accompanies them whenever they wish to present their scientific work (articles, books, lectures, and conferences presentations), submit research grants, and advance in academic rank (ALMOSG; ALMOS, 2020). In the academia, performance evaluations are based on peer reviews (NDANDALA; ESPOIR, 2017). The use of external reviewers to evaluate academic papers is an essential stage before a scientific paper or book is published on a scientific platform or is published or disseminated only. Experts in the relevant subject area serve as reviewers or readers. The prestige of scientific publications is a function of peer reviews, with less reliance on non-peer-reviewed papers, although non-peer-reviewed outlets may still have value (WEST; RICH, 2012).

In terms of individual improvement, according to projection theory, when an individual speaks of another individual, they are effectively referring to themselves (HOLMES, 2013). The current study addresses faculty members’ role in evaluating the work of their peers, that is, when scholars examine and critique others, at least to some degree their peers create a benchmark for evaluating their own work, and promote in them a desire to improve. Moreover, when faculty evaluate their peers’ work, they function in the capacity of a role model that promotes change and improvement (SERBAN; HERCIU, 2019). That is, observation of peers’ work moves scholars to self-reflection of their own work, which also has an impact on their teaching.

Peer reviews

The need for peer reviews is the result of the fact that scientific work is occasionally complex and complicated and encompasses multiple fields, and identification of errors requires an additional critical eye and external review, which improves the chances that weaknesses are identified. Furthermore, peer reviews may identify attempted plagiarization, use of incorrect methodologies, and conclusions that cannot be inferred from the study’s findings or research (SPERLING, 2018).

Reviewers are experts in the subject matter of the reviewed scientific manuscript (LOUW, 1994). Reviewers evaluate the manuscript and offer suggestions for improvement (ORTINAU, 2011). This feedback is received by the editorial board of the journal or research fund, and ultimately reaches the author.

The reviews comments are only suggestions and do not obligate the editorial board. Reviewers may not act in concert or communicate with each other. Typically, reviewers are not aware of the identities of the other reviewers (VECCHIO, 2006). No consensus must be reached, and in this respect their work is very different from a jury panel. Their independent work model ensures that their reviews express opinions that are completely independent.

Reviewers’ identities should remain undisclosed to the authors of the scientific publication they review (FINE, 1996; RESNIK; ELMORE, 2016), but this situation has changed over the years and today many journals allow reviewers to decide whether to reveal their identity to the authors. Occasionally it is accepted to explicitly mention the reviewer’s name when the paper is published (SPERLING, 2018).

Other times a more careful double-blind procedure is used: Not only are the authors unaware of the reviewers’ identity, but the reviewers are also unaware of the authors’ identity (AQUINO; WHITLOCK, 2016). All references that might identify the author are eliminated from the manuscript. It is difficult and sometimes impossible to create a double-blind review procedure, when the manuscript clearly indicates the authors’ scientific school, which may be very limited.

In books and journals, the selection of reviewers is typically the job of the editor (WILLIAMS, 1988). Research funds establish committees to evaluate the requests that are received.

In the sciences, it is accepted practice to hold scientific conferences. To obtain a right to address attendees, scientists send a relatively short scientific article in advance to the conference committee that reviews it and refers it to reviewers. Because conferences operate on very rigid schedules, authors have limited opportunity to amend and improve their work, and the scope of flexibility in the decision process is limited.

After the reviewers (typically two or three) summarize their comments and suggestions and submit them to the editor, the editor sends them to the authors (some comments may have been marked as confidential, addressed to the editor alone) and decides whether to publish the paper. In some cases, the reviewers’ evaluations are inconsistent (WIERINGA; MAIDEN; MEAD; ROLLAND, 2006) and the editor will typically turn to another reviewer for a decisive evaluation. In such a case, the editor may ask the authors to respond to the negative critique of
their work. The editor will consider their response, and on rare occasions a lengthy correspondence between
the authors and the reviewers will develop. At the end of the process the paper may be accepted for publication
or rejected, and frequently articles are accepted on the condition that authors make certain changes or edits
(ALMOG; ALMOG, 2020).

Review process and drawbacks
A review may be extremely meticulous and rigorous (BLAKEY; BROWN; PINCHIN; BARLEY et al, 2015), or more
lenient. This largely depends on the demand and supply that the editor faces. A prestigious journal such as
Nature (BOWEN, 2014) which published a low percentage of the manuscripts it receives, can afford to reject
manuscripts that are very good if they do not report a genuine breakthrough. Other journals publish any
manuscript that is devoid of errors or is not completely insignificant (SPERLING; 2018).

A common criticism of peer reviews is reviewers’ slow response (TITE; SCHROTER, 2007). Months and
sometimes even years typically elapse before a process is concluded and a paper is published. In certain areas
such as astronomy, however, publications are currently less focused on the peer review process and more on
electronic databases (ALMOG; ALMOG, 2020).

According to several sociologists of science, peer reviews may create an elite group that controls the
publications in its area. The peer review process may be prone to bias (SMITH, 1997). Naturally, reviewers are
skeptical of conclusions contrary to their own perspectives and look favorably on positions close to their own.
The more popular reviewers will be those scientists who themselves received favorable reviews of their own
work and are therefore closer to the dominant approach in their field. Others have pointed to the large number
of scientific journals (IOANNIDIS, 2006), which makes it very difficult to control the flow of information.

Does the review process contribute to papers’ publication?
Almog & Almog (2020) argues that publishers of academic journals claim that the peer review process makes a
significant contribution to the quality of the papers, enriches them, and increases their scientific value. This is
also the justification for the extremely high prices they charge the readers who wish to read the complete texts
of academic materials.

Alongside journal publications, preprints represent a recent development in the field. A preprint is a paper that is
deposited in a specific database before a peer review process is conducted, and sometimes no peer review is
conducted (DA SILVA; DOBRANSZKI, 2019). These findings contribute to the debate on the added value of
academic publishers and the review process and may affect economic decision making related to the world of
academic publishing and the issue of open access (SPERLING; 2018).

Recruiting reviewers
Recruiting reviewers is a complex task (WARNE, 2016) because reviewers receive no monetary compensation
for their work, and the time they spend on reviewing might otherwise be directed to promote their own research.
Nonetheless, acting as a reviewer for an important journal (without disclosing the identity of the articles
reviewed) adds to professional prestige. Reviewers are largely scholars who publish scientific work of their own
and well understand the significance of the peer review system. Editors who know that a certain research needs
or will need their assistance may exploit this situation to persuade the researcher to accept a role as a reviewer.
Sometimes performing a review role is a condition of grant awards or membership in professional associations
(ALMOG; ALMOG, 2020).

One difficult problem in our times, due to the gradual shift to increasingly focused areas of expertise, is the lack
of experts in certain areas (OSMAR, 2017). In such circumstances it is extremely difficult to find a reviewer who is
free from any conflict of interest. Second-tier journals and research funds with limited resources find it especially
difficult to persuade the few available scholars to dedicate time to them.

For understandable reasons, editors will not choose researchers from among the authors’ relatives, friends, and
associates. Furthermore, the reviewers themselves must declare that they have no conflict of interest.
Frequently, journals may ask authors to suggest potential reviewers, and even permit authors to disqualify
specific reviewers, giving the reasons for their disqualification. The need to ask the authors to name potential
reviewers stems from the specialized areas of expertise that are common in modern science. In many cases the
editor lacks extensive knowledge on a specific topic that has been submitted and the experts in that field
(SPERLING, 2018).
As stated earlier, serving as a reviewer is not a performance measure that is taken into consideration in performance evaluations, even though it is an integral part of academic work that requires an outlay of time. However, it may have other consequences, while the peer review of teaching as a means of enhancing teaching quality been investigated (LOMAS; NICOLLS, 2005) in this study we aim to empirically prove the relationship between reviewers’ assessments and teaching performance.

Faculty members’ willingness to participate in the review process may be explained by projection theory, which holds that when an individual speaks of another individual, they are actually referring to themselves. Projective identification is defined as a relatively complex primitive defense mechanism that operates in the interpersonal space and describes how a certain part of one individual’s inner world appears in the mental work of another with whom they are in contact (WASKA, 1999).

Therefore, according to projection theory, faculty members’ satisfaction from evaluating peers’ performance as advisors by assessing students’ outcomes may reflect their own self-satisfaction with the peer review process. That is to say, faculty members, whose work is subject to constant evaluation, may identify with and feel empathy as peer reviewers who judge peers’ work, and although this work has no academic “reward,” it has ethical, emotional, and cognitive value for faculty and is considered an integral part of their teaching and research work. While previous studies (FIGLIO; SCHAPIRO, 2017) failed to demonstrate a statistical relationship between academic teaching and research, we present an empirical model that demonstrates this relationship.

**Gender effects in providing feedback**

An evaluation of excellence in teaching constitutes positive feedback on a lecturer’s work and reinforces lectures’ communication behavior (RATHEL; DRASGOW; CHRISTLE, 2008). At the same time, studies have shown that women are more sensitiveto feedback, and even need it for maintaining their self-esteem and goal settings (LENNEY, 1977). For example, Johnson and Helgeson (2002) conducted a field study to examine bank employees’ responses to evaluative feedback in an annual performance evaluation process. They found that while men’s self-esteem was relatively unaffected by the nature of the feedback, women’s self-esteem improved after positive feedback, and declined after negative feedback. Furthermore, after the evaluations, women reported greater intentions to change their behavior based on the evaluation.

Due to their heightened sensitivity to feedback, women may use positive feedback more often. For example, women tend to give positive feedback to subordinates as part of their leadership style (KOUZES; POSNER, 1990). Another potential explanation for women’s use of positive feedback is the fact that they also tend to receive more positive feedback. Studies on performance measures of male and female academic faculty members found significant relationships between gender and excellence in all aspects of teaching, based on student evaluations. On all student feedback items, female faculty scored higher than male faculty (DAVIDOVITCH; LAZAR; COREN, 2016).

**RESEARCH HYPOTHESES**

H1. Satisfaction from assessing peers’ performance as advisors positively affects teaching perceptions.

H2. Excellence in teaching positively affects teaching perceptions.

H3. Women are more satisfied by peer assessment work than men.

**METHODOLOGY**

**Initial sample**

The survey was distributed to members of the faculty at Ariel University with experience in serving as advisors to graduate and post-graduate students. Sixty questionnaires were collected. Based on the respondents who disclosed their age, the frequency of respondents age was 41-49 (13), 50-60 (17), and 61-85 (16). 50% of the respondents received an award of excellence for their teaching. The survey was a Likert scale survey, ranging from 1 (I don’t agree) to 5 (I agree) for the following constructs:

1. Teaching perceptions (TEACH)
2. Satisfaction from assessing peers’ performance as advisors (PEERS)

Final items are presented in Table 1.
While teaching experience has been shown to affect teaching quality (DAVIDOVITCH; ECKHAUS, 2019; ECKHAUS; DAVIDOVITCH, 2019), we therefore added an open-ended question, to maximize the information we can receive, and to examine different aspects of teaching: Were you ever awarded for excellence in teaching? (Yes/No).

**Analysis**

Exploratory Factor Analysis (EFA) was performed, followed by Structural Equation Modeling (SEM) to test the model’s goodness-of-fit (ECKHAUS, 2019; MARCOULIDES; YUAN, 2017). Model fit was estimated using CMIN/DF, CFI, TLI, and RMSEA. TLI and CFI values above .95 and RMSEA values below .06 are considered best (MELKA; LANCASTER; BRYANT; RODRIGUEZ, 2011). The ratio CMIN/DF lower than 2 is considered a good fit (PHAM; SOO-YONG; LUU; LAM, 2017).

**EFA**

A principle-components factor analysis of the 7 items using varimax rotations was conducted. After removing items which did not load well, Kaiser-Meyer-Olkin measure of sampling adequacy was .78, and Bartlett’s test of sphericity was significant ($\chi^2(21) = 137, p < .001$). The loadings were highly rigorous, all loaded $\geq .7$ (Table 1). Given these indicators, factor analysis was deemed to be suitable with the 7 items. Eigen values showed that each variable loads highly onto two factors, explaining 67.8% of the variance. The factor-loading matrix is presented in Table 1.

**Table 1. Factor Loadings Based on Principal Components Analysis with Verimax Rotation for 7 Items.**

<table>
<thead>
<tr>
<th>Item</th>
<th>PEERS</th>
<th>TEACH</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.5</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>A.6</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>A.4</td>
<td>0.80</td>
<td>0.42</td>
</tr>
<tr>
<td>A.1</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>B.5</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>B.6</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>B.7</td>
<td>0.70</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Research data, 2020.

Cronbach’s alpha examined internal consistency for the scales, showing adequate alphas of .84 for PEERS, .68 for TEACH.

**RESULTS**

Figure 1 illustrates the model and standardized estimates.

**Figure 1. Model path and standardized estimates**

**Source:** Research data, 2020.
The hypothesized model showed a good fit: CMIN/DF = 1.04, p < .05, CFI = 0.99, TLI = .99, RMSEA = 0.02. All hypotheses were supported. PEERS positively affect TEACH (H1) (β = .64, p < .01), HadExcellence positively affect TEACH (H2) (β = .50, p < .001). Age and Gender did not statistically significant effect on TEACH. However, Gender had a negative statistically significant effect on PEERS (H3) (β = -.4, p < .05). Since gender was coded as 1 = male and 0 = female, this finding implies that female faculty reported greater improvement from peer review work.

Model reassessment

SEM is a powerful tool for estimating model’s goodness-of-fit, far more than a selection of independent regressions. It combines the effects of all variables, observed or latent. However, it is typically used for much larger samples, to reduce the error risks. Therefore, in order to re-validate the results, we next performed two independent linear regressions, showing the results are replicated. In the first step, in order to show that both PEERS and HadExcellence affect TEACH, a linear regression was performed, where PEERS and HadExcellence are the independent variables, and TEACH is the dependent variable (Table 2). From Table 2, we observe that $R^2 = 0.42$, where PEERS and HadExcellence positively affect TEACH.

<table>
<thead>
<tr>
<th>Table 2: PEERS and HadExcellence effect on TEACH</th>
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<tbody>
<tr>
<td>Coefficients (β)</td>
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<tr>
<td>-------------------</td>
</tr>
<tr>
<td>PEERS</td>
</tr>
<tr>
<td>HadExcellence</td>
</tr>
</tbody>
</table>

***significant at $p < .001$


Next, to validate the effect of Gender on PEERS, a linear regression was performed, where Gender is independent variables, and PEERS is the dependent variable (Table 3). From Table 3, we observe that $R^2 = 0.1$, where Gender negatively affect PEERS.

<table>
<thead>
<tr>
<th>Table 3: Gender effect on TEACH</th>
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</thead>
<tbody>
<tr>
<td>Coefficients (β)</td>
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<tr>
<td>-------------------</td>
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<tr>
<td>Gender</td>
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*significant at $p < .05$


**FINAL CONSIDERATIONS**

Peer assessments provide authors and scholars with independent professional feedback on their work. All scientists find themselves engaged in peer assessment from time to time. This role deter scientists, however, not only because it entails a serious investment of time that is disproportionate to any reward it may generate, but also due to the responsibility of determining that a paper is not worthy of publication and the discomfort of conveying criticism and disqualifying a colleague’s work, as well as concerns regarding the disclosure of their role in the process.

Nonetheless, thousands of scientists around the work serve as peer reviewers. What motivates them? Already at the beginning of their career, they understand that reviewing is an important and integral part of their professional obligations. Without reviews there would be no science. Projection theory reinforces the possibility that satisfaction from assessing peers’ performance as advisors is an indication of the reviewer’s self-satisfaction with their own advising. That is to say, faculty members, whose work is subject to constant assessment, may identify with and feel empathy toward the peers whose works they assess, and although peer assessment work is unaccompanied by academic compensation, it has ethical, emotional, and cognitive value for faculty members and is perceived of an integral part of their teaching and research work. Finally, “a number of articles on the relationship between teaching and research, pointing to the failure to demonstrate statistically a connection between them, have indicated that efforts should be made to actively bring research and teaching together” (BREW, 2003, p. 3). Since guiding research students is typically considered part of the research realm (MUKHOPADHYAY, 2016), this study provides empirical proof of this contested relationship by employing projection theory.
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