Social Cognitive Predictors of Interest in Research Among Life Sciences Academics

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Social Cognitive Predictors of Interest in Research Among Life Sciences Academics

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Abstract. Research interest is the degree to which an individual is interested in conducting research-related activities. Nowadays, Indonesian higher education academics are expected to be research productive, especially those in life sciences. However, what predicts interest in research among life sciences academics is rarely known. We surveyed 240 life sciences academics (64.6% female, mean age = 31.91 years) from several higher degree institutions in Indonesia, using interest in research, research self-efficacy, and research outcome expectations questionnaires. We used social cognitive career theory which proposes that individual's interests are the results of the interaction between one's self-efficacy beliefs and outcome expectations overtime. Structural equation modelling demonstrated that research self-efficacy was directly and indirectly associated with interest in research via research outcome expectations. Understanding the social cognitive predictors of interest in research contributes to an understanding of the associations between research self-efficacy, outcome expectations, and interest in research. Recommendations for life sciences academics, faculties, and higher education institutions are discussed.

1. Introduction

Understanding the development of interest in research is an important foundation to building a model to explain research productivity[1]. Previous researcher investigated research motivation in business faculty members[2], other researchers found the relationships between achievement motivation, research environment, and interest [3-4]. More recently, researchers then developed a scale to measure research motivation[5]. In 2012, Deemer, Mahoney, and Ball used it to explain research engagement in academics. However, the participants were limited in science, technology, engineering, and mathematic (STEM) areas[6].

Social cognitive career theory explains the developmental processes of interests, choice, and performance outcomes in the career and education domains. From this theoretical perspective, interests are reflective of the interaction between individual's efficacy beliefs and outcome expectations over time[7]. Research self-efficacy is an estimation of individuals ability to successfully carry on research-related tasks, for example collecting data, analysing data. This belief is expected to affect the initiation and persistence of those research-related tasks[8]. Research outcome expectations are
beliefs about the outcomes of a course of research-related action[9]. Individuals act on the basis of their judgment about what they are able to do (i.e., self-efficacy), as well as on the beliefs about the expected consequences of their actions. Having high outcome expectations (i.e., a sense that

individuals will be successful when their goals are attained) provides motivation during the goal striving process and influences how individuals progress in the career decision making process. Through learning experiences, outcome expectations may take various forms of behaviour, namely, social effects such as recognition and acknowledgment from others, physical effects such as financial benefit, and self-evaluation that is progressively shaped via individuals' learning experiences[10].

Previous researchers used social cognitive career theory (SCCT) as a theoretical lens for the first time to explain interest in research[1][11] and also research productivity in doctoral psychology students[12]. However, previous studies demonstrated that research self-efficacy served as a more consistent predictor of research productivity that interest in research[13]. A more recent study also showed that achievement goals were more significant than social cognitive and demographic variables in predicting interest in research[3], and research outcome expectations were found to mediate the association between mastery approach goal orientation and research interest[4]. While the relationship between research self-efficacy, outcome expectations, and interest in research in previous studies was robust, these variables have not been tested in academics, especially in life sciences academics. Therefore, we were interested in examining the relationships between research self-efficacy, research outcome expectations, and interest in research in life sciences academics. We hypothesized that research self-efficacy would be positively associated with interest in research directly and indirectly via research outcome expectations. See Figure 1.

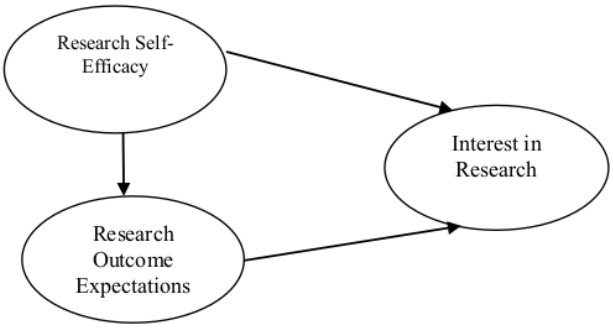

Figure 1. Hypothesized model

2. Method

Participants were 240 academics (64.6% female, mean age = 31.91 years) from several higher degree institutions in Indonesia. The data were collected using research self-efficacy, research outcome expectations, and interest in research scales. They came from medical, nursing, biology, animal sciences, and fisheries and marine sciences departments.

The 38-item Research Self-Efficacy Scale [8] was used to measure research confidence [8]. Participants were asked to assess the degree to which they feel confident in their ability to execute each task, such as "Discuss research ideas with peers" on a scale ranging from 1 (not confident) to 6 (totally confident). The 8-item Research Outcome Expectations Questionnaire-Revised [9] was used to measure research outcome expectations. Participants responded to items such as, "Involvement in research will enhance my job/career opportunities," on a 6-point scale (1 = strongly disagree and 6 = strongly agree). The 16-item Interest in Research Questionnaire [14] was used to assess interest in research. Participants were asked to rate the degree of interest they have in activities such as, "Reading a research journal article," on a 6-point scale (1 = very uninterested and 6 = very interested).

3. Results

Latent variable analysis (maximum likelihood estimation using AMOS V21) was used to examine the hypothesized structural model. We represented the latent variables using multi-item parcels to meet ideal ratios of sample size to parameters estimated (20:1) [15]. The measurement model, $\chi^2(24) = 63.09$, $p < .001$, $\chi^2/df = 2.63$, CFI = .98, RMSEA = .06 demonstrated good fit statistics, with factor loadings ranging from .40 to .85 ($p < .001$).

Table 1. Correlations, Means, Standard Deviations, and Cronbach's Alpha (N = 240)

Variables	1	2	3	*M*	*SD*	α
Research self-effcacy	-	.64	.75	196.12	17.63	.95
Research outcome expectations	.71	-	.62	40.62	4.40	.86
Interest in research	.78	.66	-	81.90	8.10	.93

Note. Correlations among scales reported above diagonal, correlations among variables reported below. ** $p < .01$, ***$p < .001$

The hypothesized structural model also demonstrated good fit statistics, $\chi2(24) = 63.08$, $p < .001$, $\chi2/df = 2.63$, CFI = .98, RMSEA = .08. All paths were significant: research self-efficacy → research outcome expectations ($\beta = .71$, $p < .001$), research outcome expectations → interest in research ($\beta = .22$ $p < .01$), research self-efficacy → interest in research ($\beta = .63$, $p < .001$). The model accounted for 50% of the variance in research outcome expectations, 63.4% in interest in research.

Using the AMOS bootstrapping procedure with 1,000 samples, we evaluated the standard errors and 95% bias corrected confidence intervals (CIs) for all direct and indirect estimates to test the mediation path. Mediation is established when the predictor is significantly related to the outcome variables, the mediator is significantly related to both the predictor and the outcome variables, and the 95% CIs of the indirect effect through the mediator do not include zero[16]. We tested a potential mediation path from research self-efficacy to interest in research (via research outcome expectations). When we tested the direct effect only, the path from research self-efficacy to interest in research was significant ($\beta = .78$, $p < .001$). Using 1,000 bootstrapped samples and 95% bias-corrected confidence interval to test the direct and indirect effects simultaneously. Research self-efficacy → research outcome expectations ($\beta = .71$, $p < .001$), research outcome expectations → interest in research ($\beta = .22$, $p < .01$) were all significant, showing all requirements for mediation were met. In the presence of research outcome expectations as the mediators, research self-efficacy remained significantly associated with interest in research ($\beta = .63$, $p < .001$), and as the indirect CI did not contain zero (CIs = .03 to .27), we concluded that the path from research self-efficacy to interest in research was partially mediated by research outcome expectations.

5. Conclusion

Based on the findings, it can be concluded that those who perceive that have higher levels of research self-efficacy are more likely to have higher outcome expectations in research activities and higher interest in research. The findings highlight the important contribution for research self-efficacy and outcome expectations in life science academics' interest in research. The results also highlighted the important role of the university in exposing life science academics to sources of research self-efficacy, such as role models, and facilitate positive research outcome expectations.

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