

# Psychological well-being and postgraduate students' academic achievement in research methodology at an ODL institution

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## **Abstract**

The purpose of this study was to determine the degree to which psychological well-being variables (sense of coherence, research self-efficacy, locus of control and hope) could predict the academic achievement of students enrolled for a research methodology module at a postgraduate level in an open and distance learning (ODL) context, while controlling for the effect of biographical variables (gender, age, culture group, home language and employment status). An availability sample (N = 840) of postgraduate students enrolled for a course in research methodology across three years was used. Stepwise linear regression showed that gender, culture group and language predicted 17.6 per cent of the variance in academic achievement in this module. When the psychological well-being variables were added, only research self-efficacy emerged as a statistically significant predictor, adding 1.5 per cent of the variance explained in academic achievement in this research methodology module.

**Keywords:** sense of coherence, research self-efficacy, locus of control, hope, academic performance, gender, age, culture group, language, employment status

## **INTRODUCTION**

Experience in teaching research methods courses for almost ten years has repeatedly confirmed that most students are unexcited about the prospects of completing a research methodology course during their studies. In fact, students tend to report feeling anxious, nervous and overwhelmed at the onset of a research methodology course (Papanastasiou and Zembylas 2008; Schulze 2009; Walker 2010), and if given the choice, would avoid such a course altogether (Selaledi 2009). But given the fact that there is a continued call to increase research capacity building at universities, there seems to be no escape for students going through 'the rigours of learning about research' (Selaledi 2009, 81). In fact, the Higher Education Qualifications Framework (HEQF) expects research to play an even more prevalent role in postgraduate studies than before (DoE 2007). At the same time, there appears to be increasing concern about the throughput rate of postgraduate students (Selaledi 2009), and according to the Department of Higher Education and Training (DHET 2012), there is an urgent

imperative to increase the production of postgraduate students in South Africa. It therefore seems critical to investigate the factors that can predict the success rate of postgraduate students in research methodology courses. Although a vast amount of literature is available on the various factors that may affect students' academic achievement in general (Goodman et al. 2011), these results may not all be applicable to the academic achievement of students in a research methodology course in an open and distance learning (ODL) context. When considering the diversity of and differences between students in distance education, several dimensions can be acknowledged, namely: the individual characteristics of students; the context and learning conditions; and the barriers to learning that these students face (O'Rourke 2009). Jama, Mapesela and Beylefeld (2008) recommend that in addressing the challenge of student retention, the pre-entry attributes of students should be adopted as a point of departure. The aim of this study therefore was to investigate the effect of a number of individual characteristics or pre-entry attributes of students on their academic achievement. Apart from the evidence that points to the influence of biographical characteristics on students' academic performance (Bemeke and Beeming 2011), recent studies also allude to the possible relationship between psychological well-being as a pre-entry variable that may influence students' academic performance to some degree (Howell 2009). The assumption would be that students who cope better with the stressors and demands of their studies, would also be able to perform better academically. This study therefore investigated the degree to which psychological well-being variables can predict students' academic performance, but controlling for the influence of biographical variables, and then specifically in a research methodology module at postgraduate level.

## **PSYCHOLOGICAL WELL-BEING VARIABLES**

As mentioned above, previous research suggests that psychological well-being leads to improved academic achievement. The psychological well-being variables included in the current study are sense of coherence, self-efficacy, locus of control and hope.

### **Sense of coherence**

Sense of coherence has been shown to act as a buffer against stress (Antonovsky 1993). Sense of coherence can be defined as the degree to which individuals perceive information and stimuli from the environment to be understandable and predictable (comprehensibility); the degree to which they believe they have the resources to cope with challenges (manageability); and the degree to which they regard it worthwhile to cope with the challenges facing them (meaningfulness) (Antonovsky 1987). Grayson (2007) found that students with a higher sense of coherence were better able to deal with problems associated with university life and they therefore also had higher levels of achievement. In a follow-up study, Grayson (2008) found that although the effect of sense of coherence on first-year academic achievement

was small, it was more noteworthy than the effect of some institutional experiences.

### **Self-efficacy**

Self-efficacy is defined as individuals' belief in their capabilities to accomplish a specific task or attain a goal and is coupled with a willingness to put in the required effort and persist until the target is reached (Bandura 2002). Jackson (2002) found self-efficacy beliefs to be significantly related to the examination scores of introductory psychology students. Lane, Lane and Kyprianou (2004) reported that self-efficacy had predictive power in the academic setting of a group of postgraduate students. Klomegah (2007) confirmed that self-efficacy was a strong predictor of the academic performance of undergraduate students. Yip (2012) confirmed that self-efficacy distinguished between high-performing and low-performing students. Self-efficacy beliefs are often measured in relation to a particular performance domain. In the current study, self-efficacy beliefs about the performance of research and passing the research methodology module were investigated. Research self-efficacy can be defined as an individual's confidence in performing tasks that are part of conducting research (Forester, Kahn and Hesson-McInnis 2004).

### **Locus of control**

Rotter (1966) defines locus of control as the extent to which individuals ascribe what happens to them either as a result of their own doing (these individuals display an internal locus of control) or as a result of luck, fate or powerful others (these individuals display an external locus of control). Hendrich and Schepers (2004) found that there was a statistically significant negative correlation between external locus of control and academic success at a residential university in South Africa. Gifford, Briceño-Perriott and Mianzo (2006) reported that students with an internal locus of control achieved significantly higher grade point average scores in their first of year study compared with students with an external locus of control. Moywood, Saylor and Cohen (2009) again confirmed in a sample of nursing students that externals were likely to have lower grades than internals.

### **Hope**

Hope is seen to be an important indicator of general psychological well-being (Seligman, Steen, Park and Peterson 2005). Maree, Maree and Collins (2008a) developed a multidimensional measure of hope that includes the following dimensions: goal achievement resources, which are indicative of a positive outlook and a belief in one's ability to find ways to solve problems and achieve goals (i.e. having inner resources); and ineffectuality, which seems to be a dispositional dimension that indicates feelings of self-doubt and a tendency to avoid taking responsibility or action. Maree et al. (2008a) refer to this dimension as the opposite of self-efficacy; future vision, which indicates an optimistic view of the future based on the belief that the future holds promise and that goals will be achieved; despondency, which

is a state dimension, reflecting an individual's current state of mind and situational feelings of hopelessness; and, lastly, agency, which reflects the ability to formulate goals and work towards them. Maree, Maree and Collins (2008b) found in a sample of undergraduate psychology students at a residential South African university that academic performance was predicted by an increase in agency and future vision, but a decrease in goal achievement resources.

## **DEMOGRAPHIC VARIABLES**

Previous research has confirmed that a number of demographic variables may have an influence on students' academic performance (Bemeke and Beeming 2011). These variables include gender, age, culture group, language proficiency and employment status.

### **Gender**

Baker (2004) found, in a sample of undergraduate psychology students, that female students performed better than their male counterparts. This finding was confirmed in a sample of undergraduate psychology students at a South African university (Beets, Nienaber and Botha 2011). All but one of the international studies reported on by Bemeke and Beeming (2011) repeatedly confirmed that women outperformed men, also in other disciplinary fields such as accounting and business studies. However, in determining the profile of a successful first-year student in accounting, Du Plessis, Müller and Prinsloo (2005) found that male students were more successful than females. In contrast to these findings, De Hart, Doussy, Swanepoel, Van Dyk, De Clercq and Venter (2011) found that gender was not a significant predictor of success in an undergraduate taxation course. Despite the mixed results, it seems that gender could have a bearing on students' academic performance.

### **Age**

The influence of age on students' academic performance has also been explored in the literature. De Hart et al. (2011) report that younger students performed better in an undergraduate taxation course. This seems to be in line with previous findings by Du Plessis et al. (2005) who found that younger students (aged between 17 and 30) were better achievers in first-year accounting studies. This was confirmed by Prinsloo, Müller and Du Plessis (2009) who found that students younger than 26 performed better in a first-year economics course. Some studies reported on by Bemeke and Beeming (2011) contrasted these results in showing that more mature students performed better, while other studies reported on by these authors did not find age to be a significant predictor of academic performance. Taking the evidence into account, however, it would seem that age could be a significant predictor of students' success.

## **Culture group**

The culture group of students has also been recognised for its impact on academic performance. Studies in both the United States (US) and Malaya, as reported on by Bemeke and Beeming (2011), confirmed that the population group of a student significantly influenced their academic achievement. Müller, Swanepoel and De Beer (2010) found culture group to be the most critical statistically significant contributor in explaining variance in the pass/fail performance of first-year diploma students in business management.

## **Home language**

Proficiency in language has also been shown to influence students' success in an academic context. As would be expected, earlier studies reported on by Bemeke and Beeming (2011) found that proficiency in the language of tuition (most often English) predicted better academic performance. Pretorius (2000) reported that English reading ability was strongly related to students' academic performance at a distance education institution. Van Eeden, De Beer and Coetzee (2001), in a study to determine the best selection criteria for students in engineering and other science and technology courses at a tertiary institution, found English proficiency to influence both the predictor and criterion variables of their study. Van Rooyen (2001) reported that English as home language was predictive of significantly higher marks in a bridging and first-year programme at a South African residential university. De Hart et al. (2011) found that students with English and Afrikaans as their home language outperformed the other language groups in an undergraduate taxation course. Eyselen and Geyser (2006) found in a group of first-year accounting students that achieving students had better language proficiency than at-risk students. In a sample of Chinese international postgraduate students at an Australian university, it was found that English language proficiency and English reading proficiency respectively accounted for 7 per cent and 10 per cent of their academic performance (Phakiti 2008). Similar results were revealed in a sample of international nursing students, namely that students with English as their second language had lower marks than students whose first language was English (Moywood et al. 2009).

## **Employment status**

Students' employment status has also been considered as a potential predictor of academic achievement in the past. Welman (2003) found that work status cannot be used with confidence to predict the academic success of students at a distance education institution. Although work status was not a strong predictor of these students' academic success, it appeared that students who were working performed slightly better than those who were not. In line with this, Du Plessis et al. (2005) found that students who were studying part time were better achievers than students studying full time. De Hart et al. (2011) also confirmed that students who were employed (especially students who were employed in their field of study) outperformed unemployed students.

The purpose of the current study was to determine to what degree students' psychological well-being can be used as predictors of their academic achievement in a research methodology course at postgraduate level and at an ODL institution. However, the researcher could not look at the influence of pre-entry attributes or characteristics of students without taking the influence of biographical factors into account. Biographical factors were therefore included in the study in order to control for their influence. Although previous studies have investigated these variables to some degree, there seems to be a paucity of research results on the degree to which these variables predict students' academic achievement in a research methodology course in an ODL context specifically, and also at postgraduate level.

## METHOD

### Sample

The study population consisted of all honour's students registered for a course in research methodology at an ODL institution in 2009, 2010 and 2011. The students received written study material in Afrikaans or English. An availability sample was taken from the population and 1 057 students responded to the questionnaires. Only 840 of these students' academic performance scores were available on the system. Descriptive information of the sample is provided in Table 1.

Table 1: Characteristics of the honours students in the sample

	Category	Frequency	Percentage
Gender	Males	216	20.4
	Females	832	78.7
	Not indicated	9	0.8
Age	20–25	400	37.8
	26–32	307	29.0
	33–56	333	31.5
	Not indicated	17	1.6
Culture group	African	549	51.9
	White	248	23.4
	Indian	149	14.1
	Coloured	98	9.3
	Not indicated	13	1.2
Home language	IsiZulu	128	12.1
	IsiXhosa	78	7.4
	Tshivenda	25	2.4
	IsiNdebele	8	.8

	Category	Frequency	Percentage
	Sepedi	89	8.4
	Sesotho	53	5.0
	Setswana	79	7.5
	IsiSwati	17	1.6
	XiTsonga	23	2.2
	English	350	33.1
	Afrikaans	159	15.0
	Other	35	3.3
	Not indicated	13	1.2
Employment status	Full-time student	186	17.6
	Work part time	119	11.2
	Work full time	739	69.9
	Not indicated	13	1.2

The sample consisted mainly of females (78.7%) between the ages of 20 and 56, with a mean age of 30. More than half of the participants were African (51.9%), whereas the remaining participants were white (23.4%), Indian (14.1%) and Coloured (9.3%). In total, 33.1 per cent of the students indicated English as their home language. In this sample, 69.9 per cent of the students worked full time, 11.2 per cent worked part time and only 17.6 per cent were studying full time.

### Measuring instruments

Students completed a biographical questionnaire requesting them to report on their gender, age, culture group, home language and employment status. Since some of the language groups were too small to be included in further analysis in terms of the minimum statistical requirements, it was decided to group the home language variable into four groups, namely, English, Afrikaans, Nguni and African languages as home language. De Hart et al. (2011) also partially adopted this practice in their research.

### *Sense of coherence*

The short-form orientation to life questionnaire (OLQ-13), consisting of 13 items, was used to measure sense of coherence (Antonovsky 1987). This version of the OLQ includes five items measuring comprehensibility; four items measuring manageability; and four items measuring meaningfulness. Each item is answered on a seven-point Likert scale. Antonovsky (1993) reported alpha coefficients of the OLQ varying between 0.85 and 0.91. In South Africa, alpha coefficients of > 0.8 are generally reported (Strümpfer, Gouws and Viviers 1998; Van Wijk 2008; Muller and Rothmann 2009).

### ***Research self-efficacy***

A self-developed questionnaire was used to measure the participants' research self-efficacy. The questionnaire consists of 15 items that ask participants to rate their chances of succeeding in various tasks associated with conducting a research project (e.g. 'What are the chances that you could effectively identify appropriate measuring instruments to use in a research project?'). Response options range from 1 = 'no chance at all that I could do it effectively' to 5 = 'I am completely certain that I could do it effectively'. Two additional questions were asked to determine students' self-efficacy in passing the research methodology module specifically (e.g. 'What are the chances that you could effectively master the content prescribed for this course during this year?'). Van der Westhuizen, De Beer and Bekwa (2011) reported a Cronbach's alpha value of 0.91 for the research self-efficacy scale.

### ***Locus of control***

The locus of control questionnaire developed by Rotter (1966) was used to measure the participants' motivational orientation. This questionnaire consists of 29 items (including six filler items that do not contribute to the final score). It is a forced-choice questionnaire and every item consists of two statements from which respondents have to choose which statement best represents their personal opinions. One of the statements expresses the opinion that the consequences of behaviour (success or failure) are the result of the respondent's own behaviour (internal locus of control), whereas the other statement indicates that consequences may be attributed to external influences beyond the respondent's control. Two scores are obtained respectively on the relative balance between internal and external orientation. Rotter (1966) reported internal reliability coefficients that varied between 0.65 and 0.76. Cilliers and Kossuth (2004) reported an alpha coefficient of 0.65.

### ***Hope orientation measure***

Hope was measured by means of the hope orientation measure (HOME) developed by Maree et al. (2008a). This questionnaire consists of 57 items measuring goal achievement resources (23 items); ineffectuality (11 items); future vision (10 items); despondency (6 items); and agency (7 items). Respondents are required to use the following four-point scale when responding to the items: definitely false, mostly false, mostly true and definitely true. Maree et al. (2008a) confirmed the construct validity of the measure and reported internal consistency estimates ranging between 0.65 for agency and 0.91 for goal achievement resources.

### ***Academic achievement***

The students' percentages in their final examination for the research methodology module were used as the criterion variable.

## Procedure

The questionnaires, as well as instructions on how to complete each, were included in the students' official study material, which they received when they registered for the course in research methodology. Students were requested to submit the questionnaires with their first assignment, and they provided written consent to participate by signing and submitting a consent form with the completed questionnaires. Students were required to indicate their student number on their questionnaires so that their final examination score could be retrieved at the end of the year. They were, however, assured that their anonymity and confidentiality would be protected and that their results would only be reported on in group format. They were also assured that their results would not be used to influence any decisions about their studies in the course, but only for research purposes.

## Data analysis

The data were captured in Excel, imported into SPSS and the dataset was cleaned before proceeding with the analysis by using descriptive statistics. The statistical analysis was conducted by means of the SPSS Program Version 20 (SPSS Inc. 2012). Cronbach's alpha values were used to determine the reliability of the various measuring instruments. Thereafter, independent *t*-tests, ANOVA (Hochberg's GT2 and Games-Howell's post hoc tests were used) and Pearson correlations were used to determine the relationship between the independent variables (biographical and psychological well-being) and the dependent variable (examination score as a measurement of academic achievement). A two-step hierarchical multiple regression analysis was then performed to determine which of the significantly related independent variables (biographical and psychological well-being) could be used to predict the dependent variable (academic achievement). In the first step, all the biographical variables were entered into the regression equation, followed by the psychological well-being variables in the second step. Dummy variables were coded for the categorical biographical variables. Cohen's (1992)  $f^2$  ( $R^2/1 - R^2$ ) was used to determine the effect size of the regression. Statistical significance was set at 0.05.

## RESULTS

### Descriptive statistics and the reliability of the measuring instruments

The descriptive statistics and reliability of the measuring instruments are shown in Table 2.

Table 2: Descriptive statistics and the Cronbach's alpha values of the measuring instruments

	Number of items	Cronbach's alpha value	Mean	SD	Skewness	Kurtosis
Sense of coherence	13	0.80	60.76	11.62	-0.26	0.02
Research self-efficacy	15	0.92	57.39	8.45	-0.47	0.45
External locus of control	29	0.74	8.93	3.72	0.23	0.09
Internal locus of control	29	0.74	14.06	3.72	-0.23	0.09
Goal achievement resources	23	0.90	3.35	0.38	-0.46	0.44
Ineffectuality	11	0.72	3.26	0.41	-0.56	0.29
Future vision	10	0.60	3.69	0.28	-1.47	3.72
Despondency	6	0.71	3.20	0.56	-0.71	0.14
Agency	7	0.51	3.34	0.36	-0.39	0.12

Table 2 indicates that the Cronbach's alpha values of all the measuring instruments were considered to be acceptable compared to the guideline  $\alpha > 0.70$  (Nunnally and Bernstein 1994) except for future vision and agency. When investigating the item statistics for these mentioned subscales, it was evident that even when removing item number 14, which loads on the future vision subscale, the reliability only increased to 0.63. Similarly, when removing item 17, which loads on the agency subscale, the reliability increased to only 0.61. It was therefore decided to exclude these subscales from the rest of the analyses. All scales also appeared to be normally distributed, except for future vision.

### **The relationship between the biographical and psychological well-being variables, on the one hand, and academic achievement, on the other**

The difference between gender groups regarding their academic achievement was determined by an independent *t*-test and the results are reported in Table 3.

Table 3: Difference between gender groups and academic achievement

Group statistics						
Gender	N	Mean	SD	Std. error mean		
Male	169	44.29	15.315	1.178		
Female	665	50.85	14.880	0.577		
Levene's test for equality of variances			t-test for equality of means			
	F-ratio	p(F)	t-value	DF	p(t)	Mean difference
Equal variances assumed	0.101	0.750	-5.084	832	0.000	-6.556
Equal variances not assumed			-4.998	254.576	0.000	-6.556

It is evident from Table 3, that there was a statistically significant difference between the gender groups with regard to their academic achievement in this research methodology course with females performing better than males.

Determining the relationship between age and academic achievement by means of a Pearson correlation revealed that age appeared to be statistically significantly related to academic achievement in this module, with the older groups performing less well ( $r = -0.133$ ;  $p = 0.000$ ).

The differences between culture groups, home language groups and employment status and academic achievement were determined by ANOVA and the results reported in Table 4.

Table 4: Differences between culture groups, home language groups and employment status and academic achievement

Culture group					
	N	Mean	SD	Std. error	
African	432	45.15	14.675	0.706	
Coloured	80	50.04	14.613	1.634	
Indian	116	53.56	14.483	1.345	
White	204	56.24	13.867	0.971	
	Sum of squares	DF	Mean square	F-ratio	p(F)
Between groups	19371.603	3	6457.201	30.933	0.000
Within groups	172845.014	828	208.750		
Total	192216.617	831			

<b>Home language group</b>					
	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Std. error</b>	
English	338	52.90	15.027	0.817	
Afrikaans	130	53.09	14.604	1.281	
Nguni	162	44.05	13.172	1.035	
African	180	45.12	15.298	1.140	
	<b>Sum of squares</b>	<b>DF</b>	<b>Mean square</b>	<b>F-ratio</b>	<b>p(F)</b>
Between groups	13849.447	3	4616.482	21.454	0.000
Within groups	173435.721	806	215.181		
Total	187285.168	809			
<b>Employment status</b>					
	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Std. error</b>	
Full-time student	142	51.92	15.504	1.301	
Working part time	98	52.44	14.261	1.441	
Working full time	593	48.51	15.114	0.621	
	<b>Sum of squares</b>	<b>DF</b>	<b>Mean square</b>	<b>F-ratio</b>	<b>p(F)</b>
Between groups	2251.533	2	1125.767	4.948	0.007
Within groups	188853.036	830	227.534		
Total	191104.569	832			

Table 4 indicates, firstly, that the culture groups differed statistically significantly with regard to their academic performance in this module, with the white group performing significantly better than the African and Coloured groups, but not the Indian group. Similarly, home language groups differed statistically significantly, with the Afrikaans group performing the best and significantly better than the Nguni and African language groups, but not significantly better than the English group. Lastly, it seems that in this sample, students working full time performed significantly more poorly than students studying full time. No statistically significant difference, however, was evident between students working part time, on the one hand, and students working full time or studying full time, on the other.

The correlations between the psychological well-being variables, on the one hand, and academic achievement, on the other, are indicated in Table 5.

Table 5: Correlations between the psychological well-being variables and academic achievement

Psychological well-being variable		Academic achievement
Academic achievement	Pearson correlation Sig. (2-tailed) N	1  840
Sense of coherence	Pearson correlation Sig. (2-tailed) N	0.018 0.608 817
Research self-efficacy	Pearson correlation Sig. (2-tailed) N	0.109* 0.012 541
Module self-efficacy	Pearson correlation Sig. (2-tailed) N	0.103* 0.016 547
Goal achievement	Pearson correlation Sig. (2-tailed) N	-0.031 0.476 544
Goal despondency	Pearson correlation Sig. (2-tailed) N	0.010 0.816 536
Goal ineffectuality	Pearson correlation Sig. (2-tailed) N	0.041 0.247 808
External locus of control	Pearson correlation Sig. (2-tailed) N	-0.041 0.247 808
Internal locus of control	Pearson correlation Sig. (2-tailed) N	
* Correlation is significant at the 0.05 level (two-tailed).		
** Correlation is significant at the 0.01 level (two-tailed).		

It is evident from Table 5 that research self-efficacy, self-efficacy with regard to passing the module (module self-efficacy) and goal achievement were statistically significantly related to academic achievement in this research methodology module.

### Psychological well-being variables as predictors of academic achievement

The multiple regression analysis, with biographical and psychological well-being variables as independent variables and academic achievement as the dependent variable, is depicted in Table 6.

Table 6: Regression analysis of biographical and psychological well-being variables as the independent variables and academic achievement as the dependent variable

Model	B	Unstandardised coefficients		Standardised coefficients	t	p	F	R	R <sup>2</sup>	ΔR <sup>2</sup>
		Beta	SE							
Biographical variables										
							10.624*	0.419	0.176	0.159*
1	Constant	46.261	3.092		14.959	0.000				
	Female vs male	-4.630	1.483	-0.130	-3.122	0.002				
	African vs Coloured	6.364	2.562	0.134	2.484	0.013				
	African vs Indian	6.857	2.412	0.163	2.842	0.005				
	African vs white	14.632	2.378	0.447	6.152	0.000				
	English vs Afrikaans	-7.064	2.090	-0.175	-3.379	0.001				
	English vs Nguni	-7.746	2.212	0.020	0.337	0.736				
	English vs African	-0.132	2.191	-0.004	-0.60	0.952				
	Full-time work vs full-time student	0.207	1.695	0.005	0.122	0.903				
	Full-time work vs part-time work	1.887	1.902	0.042	0.992	0.322				
	Age	-0.139	0.084	-0.073	-1.655	0.099				
Biographical and psychological well-being variables										
							9.008*	0.437	0.191	0.170*
2	Constant	40.846	6.647		6.145	0.000				
	Female vs male	-4.814	1.490	-0.135	-3.231	0.001				
	African vs Coloured	6.528	2.549	0.138	2.561	0.011				
	African vs Indian	6.276	2.418	0.149	2.595	0.100				
	African vs white	13.941	2.377	0.426	5.866	0.000				
	English vs Afrikaans	-6.849	2.088	-0.170	-3.281	0.001				
	English vs Nguni	1.181	2.227	0.032	0.530	0.596				
	English vs African	0.099	2.202	0.003	0.045	0.964				
	Full-time work vs full-time student	0.157	1.690	0.004	0.093	0.926				
	Full-time work vs part-time work	1.264	1.902	0.028	0.665	0.507				
	Age	-0.127	0.085	-0.067	-1.498	0.135				
	Research self-efficacy	0.192	0.081	0.111	2.359	0.019				
	Module self-efficacy	0.518	0.522	0.047	0.993	0.321				
	Goal achievement	-3.034	1.892	-0.077	-1.604	0.109				

\*p &lt; 0.05 – statistically significant

Table 6 indicates that 17.6 per cent of the variance in academic achievement is predicted by the biographical variables ( $F = 10.624$ ,  $p < 0.000$ ). The beta coefficients of five factors, namely female versus male ( $\beta = -0.130$ ), African versus Coloured ( $\beta = 0.134$ ), African versus Indian ( $\beta = 0.163$ ), African versus white ( $\beta = 0.447$ ) and

English versus Afrikaans ( $\beta = -0.175$ ) were statistically significant. Hence gender, culture group and English or Afrikaans as home language were statistically significant predictors of academic achievement in this research methodology module. The other home language groups as well as age and employment status were not statistically significant predictors of academic achievement even though they were statistically significantly related to academic achievement.

In the second step, the psychological well-being variables were entered with the biographical variables into the regression analysis. The results revealed that 19.1 per cent of the variance in academic achievement is predicted by the biographical and psychological well-being variables ( $F = 9.008, p < 0.000$ ). Cohen's (1992)  $f^2$  was found to be 0.24. The effect can therefore be seen as a medium effect. The beta coefficients of five factors, namely female versus male ( $\beta = 0.135$ ), African versus Coloured ( $\beta = 0.138$ ), African versus white ( $\beta = 0.426$ ), English versus Afrikaans ( $\beta = -0.170$ ) and research self-efficacy ( $\beta = 0.111$ ) were statistically significant. Although the results showed a statistically significant increase in the value of  $R^2$  ( $\Delta R^2 = 0.170, p < 0.024$ ) when the psychological well-being variables were entered into the regression analysis, this only added about 1.5 per cent to the variance explained.

## DISCUSSION

The objective of the current study was to determine the degree to which psychological well-being variables can predict the academic achievement of postgraduate students in a research methodology module in an ODL context, while controlling for the influence of biographical variables. Before constructing the prediction model, the researcher first determined to what degree the biographical and psychological well-being variables relate to students' academic achievement in this context. The results reveal that females tend to perform significantly better than males in this research methodology module. This seems to support the findings of Baker (2004), Beets et al. (2011) and Bemeke and Beeming (2011) who found that gender has a bearing on the academic performance of undergraduate students and specifically that females perform better than males. The findings of these studies therefore also seem to hold true for academic achievement in research methodology at postgraduate level. The findings of the current study, like those of other South African research studies on undergraduate academic performance, such as De Hart et al. (2011), Du Plessis et al. (2005) and Prinsloo et al. (2009), also indicate that younger students tend to perform statistically significantly better than older students. The findings further echo the findings of Müller et al. (2010), namely that culture groups tend to differ statistically significantly in their academic performance at undergraduate level. Bemeke and Beeming (2011) also reported that white students perform significantly better than black and Coloured students at postgraduate level. The findings of the current study, like those of the studies of Van Rooyen (2001) and De Hart et al. (2011), also reveal that students with Afrikaans or English as home language outperform the other home language groups including Nguni or African languages. Contrary to the findings of

Welman (2003), Du Plessis et al. (2005) and De Hart et al. (2011), it was found that students studying full time perform statistically significantly better than students working full time or working part time.

When determining the degree to which psychological well-being variables are related to academic performance, contrary to expectations, only research self-efficacy, module self-efficacy and goal achievement appeared to be associated with academic achievement in this research methodology module. Forester et al. (2004) acknowledge that research self-efficacy seems to be an important variable influencing students' interest and involvement as well as their productivity in research. The findings of the current study seem to suggest that research self-efficacy may also be associated with students' academic performance in a module teaching them about research, although only with a small effect. Similar to the findings of Maree et al. (2008b), a decrease in goal achievement resources seems to relate to an increase in students' academic achievement. Maree et al. (2008b) hypothesise that students may tend to be more energised and motivated in short-term bursts at the expense of developing more long-term problem-solving strategies while busy with their tertiary studies – hence the negative relationship in this regard.

Looking at the degree to which these psychological well-being variables could predict student's academic achievement in this research methodology module, while controlling for biographical variables, it seems that only research self-efficacy could be seen as a statistically significant predictor of academic achievement in this module at postgraduate level. Module self-efficacy and goal achievement did not emerge as significant predictors, even though they were statistically significantly related to academic achievement.

This academic achievement predictive equation is noteworthy for the lecturing staff of research methodology modules. Given the fact that the factors affecting the academic performance of students can be viewed as complex and multidimensional (Jama et al. 2008), it is therefore to be expected that pre-enrolment factors would only make up a segment of the bigger picture that affects students' academic performance in a research methodology module in an ODL context. However, taking only pre-enrolment factors into account, it seems that addressing students' research self-efficacy might make a difference. Not only in the way students approach the module, but also affecting their academic performance to some degree. Curricula could build in activities or interventions that could facilitate the development of students' research self-efficacy, namely, to include some mastery experiences on a small scale that would provide students with a sense of accomplishment on a specific aspect of conducting research, gradually building their confidence; to continually motivate and encourage students so that they can master the subject of research methodology; and to ask successful students to share their experiences and strategies with their fellow students, so that these students will believe that they too can succeed.

A central limitation of the study involves the sample used. Firstly, an availability sampling strategy was used, and secondly, only students enrolled for a specific module over a time period of three years were included in the sample. Hence, the

results of the study cannot be generalised to all postgraduate students enrolled for a module in research methodology.

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