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Predicting Intention to Complete and Learning Outcomes in a Sample of Adult Learners

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Authors' contributions

This work was carried out in collaboration between all authors. Authors CFC and DS conceptualized and designed the study. Author CFC supervised data collection and authors DS and SNH carried out data analysis. Authors DS and SNH drafted and finalized the manuscript and extensively reviewed and edited the manuscript. All authors contributed to the interpreting study results and writing the manuscript. All authors read and approved the final manuscript

Research Article

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ABSTRACT

Aims: This research investigates the relationship between Self-Esteem and completion/non-completion of tertiary qualifications for a sample of New Zealand adults, and explores the factors that may predict intent and learner outcome for these students.

Study Design: A descriptive and correlational research design.

Place and Duration of Study: Corporate Academy Group, a Private Training Establishment located in a low socio-economic area, Manukau City, New Zealand, between August 2009 and April 2010.

Methodology: The Theory of Planned Behavior was used to assess intent to achieve, and was extended to include the Rosenberg Self-Esteem Scale as a measure of Self-Esteem. Adult students ($n = 211$), 115 females and 96 males aged between 15 and 65, were assessed for intent to achieve and actual outcome (completers vs. non-completers).

Results and Discussion: Participant's reports of attitude, perceived behavioral control and subjective norm, within the Theory of Planned Behavior, sufficiently predicted their intention

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to complete the course of study, and this prediction was significantly improved with the addition of their reported Self-Esteem level ($P < .05$). Furthermore, Rosenberg Self-Esteem Scale scores successfully predicted actual learner outcome, that is, completion or non-completion of the course, and was the only variable to do so ($P < .05$). Additionally, individual's Self-Esteem levels were found to increase across two measurement points ($t_{(205)} = 4.59, p < .01$), upon first enrolment and at the terminus of the training program.

Conclusion: Results indicate the value of using Theory of Planned Behavior and Self-Esteem measures to predict a student's intention to complete their course of study and potentially their successful completion of that course. These findings offer an opportunity for future research into the prediction of learner outcomes using the Theory of Planned Behavior and Self-Esteem, and the ability of learning establishments to mitigate risk of non-achievement for the adult learner.

Keywords: Learner outcomes; adult learner; tertiary education; private training establishment; theory of planned behavior; self-esteem.

1. INTRODUCTION

The present research focuses on the adult learner, defined as anyone over the age of 16 who has left secondary school and is now continuing onto some form of tertiary study, other than that provided by universities or technical institutions. Broadly, these adult learners can be defined as those with no or very low qualification, and who enroll in tertiary courses with a vocational focus on typically low-skill occupations. In the New Zealand context, adult learners are often directed to a Private Training Establishment (PTE), as they do not meet the criteria for enrolment with a polytechnic or university, and can be considered the equivalent of Education Learning Providers in the United Kingdom, Vocational Education and Training (VET) providers in Australia, and Community Colleges in the United States. Private Training Establishments teach a range of qualifications, from foundation numeracy and literacy to degrees, however predominantly their focus is foundation education. Unlike their university counterparts, PTEs cater to the learner who comes with few qualifications, from disadvantaged homes, often with criminal convictions and with a deep suspicion and even antagonism towards learning. The usual PTE has small class sizes, no more than 16 to a tutor, and as such can provide the intensive and often extensive knowledge and skills that the learner needs to progress into either employment or further education. However, many of these adult learners are at risk of not completing their qualification, an issue concerning educational and government agencies, and typifying a trend in education throughout New Zealand [1]. Therefore, recognising barriers to completion is the first step to assisting adult learners, benefiting the educational facilities where they are enrolled, and ultimately benefiting society as a whole.

When youth or adults are not in employment, education, or training, there are costs to both the individual and society [2]. In the United Kingdom, the reported cost of youth aged 16-18 not in employment, not in education and not in training, is on average almost £100,000 per person over their lifetime [3]. Furthermore, the number of youth falling into this category in the UK is estimated at 1.3 million individuals, at an annual cost of £3.65 billion [4]. Besides economic costs, there are 'human' costs associated with non-completion, including a reduction in the individual's ability to maintain employment, financially support themselves, maintain reasonable health, and to avoid criminal activity and substance abuse [5-6]. In addition, it has been suggested that individuals who fail to complete secondary education,

and following this do not complete any tertiary qualification, are more likely to have relationship difficulties and raise children as single parents [2]. Though rarely documented, non-completion of courses incurs costs on the educational institutions themselves, negatively impacting resources, staff allocation, educational effectiveness, and allocation of funding both within the institution and within the broader educational sector [7].

Failure to achieve in any educational contexts has, for obvious reasons, attracted much investigation. The major reasons for failure or non-completion can be grossly grouped into four categories: 1) Social pressure and related stressors; 2) Self-efficacy in relation to being able to achieve; 3) General attitude toward achieving (which is often influenced by past experiences of education) and 4) Self-Esteem levels sufficient to enhance achievement [1,2,8]. Each will now be discussed in turn.

Social pressures are thought to have two components which interact towards behavioural intention; beliefs about how other people, who are some in way important to the person, would like them to behave (normative beliefs) and positive or negative judgments about each belief (outcome evaluations) [9]. There is significant literature that confirms the importance of social pressures affecting behaviour, specifically, indicating that social and parental influence is a dominant factor influencing educational achievement and course completion [10-14].

Self-efficacy is conceived of two components, the first being the perceived ease or difficulty in performing a behaviour, and the second component being an individual's perception of controllability around the task [15-16]. There is evidence to suggest that self-efficacious students participate more readily, work harder, persist longer, and have fewer adverse emotional reactions when they encounter difficulties than do those who doubt their capabilities [17].

Attitude is said to be one of the most important determinants of behaviour [18], and can be defined as "the disposition to respond with some degree of favourableness or unfavourableness to a psychological object", and describe attitudes as being acquired rather than innate with a direct influence on behaviour [19]. A number of studies have confirmed the importance of attitude in educational outcomes [10,20,22].

The fourth major contributor to educational achievement has been identified as Self-Esteem, which describes an individual's sense of worth, and the level of value and appreciation they place upon themselves [23]. This has been supported by many studies [24-29] with the understanding that Self-Esteem is implicit in academic achievement and reciprocally that achievement increases Self-Esteem. Alongside this, it has been found that emotional and social factors including stress and low Self-Esteem, can predict intention to 'dropout' of education [30]. These findings support the basis of this current study; that low Self-Esteem, unless addressed, will contribute to a poor outcome for the student.

The ability to identify adult learners at risk of non-completion and predict educational outcome would greatly enhance the student's potential in other areas of their life, as well as the provider's results and credibility, funding and future endeavours. However, scant literature is available discussing the ability to predict learning outcomes in this type of student, with the only similar study using the Theory of Planned Behavior to predict learning outcome in high school students [10]. The aforementioned influence of social pressures, the perception of being able to achieve, and attitude, on achievement, are *a priori* part of a theoretical framework known as the Theory of Planned Behavior (TPB) [31], which has

previously been applied in the educational context [10,32,33]. The TPB provides a model that encompasses an individual's attitude towards, and intention to perform the behaviour, and also accounts for the social context of the individual and the pressures they may feel in performing the behaviour [31]. Self-efficacy, which research has shown to have a large effect on behavioural change is also incorporated within the TPB as perceived behavioural control [34].

Current literature reveals a multitude of studies conducted to explore why learners do not achieve educationally [1,8,10,26,27,35], some exploring the relationship between the TPB components, self-efficacy and achievement [17,31,33,36-39]. Thus the use of the TPB has been validated in previous educational research, for example, as a tool to predict intention and consequently attendance for both high school students and university students [10,16]. One particular study using the TPB to identify students that were at high risk to fail, and concluding that early communication of the consequences of non-completion, if used positively in a remedial manner, could facilitate an improved outcome [10]. Despite there being some focus on achievement in secondary level students, predicting learner outcomes of tertiary level students, specifically those studying through a PTE, have not been explored.

It has been stated that the TPB model could also include additional predictors within the model to increase the model's predictive ability [31], and this has also been supported by other authors, suggesting the addition of factors such as Self-Esteem [16,32]. Our study extends the TPB to include the variable of Self-Esteem as a dominant factor of prediction, given its previously established relevance to educational performance. While Self-Esteem and components of the TPB have individually been identified as being important to predicting achievement, intent and outcome in varying educational contexts [24,31,40-42], little research can be found combining the two methods into a single predictive model, and exploring its relevance for a tertiary institute such as a PTE. Thus the central objective of this study is to determine if Self-Esteem, in conjunction with the factors of the TPB, can predict behavioural intent and educational outcome for an adult learner. To this end the following hypotheses were considered: 1) the Theory of Planned Behavior components and Self-Esteem will predict intention to complete; 2) the components of the Theory of Planned Behavior and Self-Esteem will predict educational outcomes, and 3) Self-Esteem levels will improve over the duration of a programme.

2. METHODOLOGY

2.1 Participants

The sample comprised two hundred and eleven individuals (115 females and 96 males) who were students of a Private Training Establishment (PTE) targeting low or non-achieving individuals in the south of New Zealand's largest city, Auckland. Participants ranged from 15 to 65 years of age ($M = 28.49$, $SD = 13.15$), with males being significantly older ($M = 30.92$, $SD = 13.24$) than females ($M = 25.57$, $SD = 12.50$), ($t_{(205)} = -3.01$, $p < .01$). The ethnic profile of the sample was 41.7% Pacifica, 38.4% Maori, 10.4% European, 8.5% Asian, and 1% other. Individuals in the sample ranged in their English language abilities, but all were required to have at least basic English skills to enrol in courses. The socio-economic status (SES) of individuals was not directly measured, but typically reflected the general SES of the enrolment catchment region (i.e., extreme deprivation, low SES).

2.2 Materials

In order to test the study's hypotheses, a questionnaire containing a Self-Esteem scale, and Theory of Planned Behavior scales, was developed. Demographic information (i.e., age, gender, ethnicity) was obtained from enrolment information contained in the PTE records. Additionally, final educational outcome (e.g., completed or non-completed) was obtained from the same source. Each will be described in turn.

2.2.1 Outcome classification

Participants were classified according to the Tertiary Education Commission's outcome requirements for Student Achievement Component Funding [43], where a positive outcome indicated participants completed the course, and a negative outcome indicated that they did not complete the course or withdrew.

2.2.2 Theory of planned behavior (TPB) questionnaire

To predict whether participants would complete their course of study, a questionnaire based on the Theory of Planned Behavior (TPB) was developed, based on the 'Theory of Planned Behavior manual' [9] providing stepwise methods to construct TPB questionnaires. The TPB is a model aimed at identifying an individual's intention to perform behaviours and relating this to likelihood that they will successfully engage in these actions [44]. In determining intention, the TPB captures three concepts: Perceived Behavioural Control, Subjective Norms and Attitudes [44].

The TPB questionnaire used in this study consisted of 26 Likert scale items grouped into four subscales. First, Behavioral Intention consisted of a single question encompassing motivation factors driving the behaviour [31], where participants selected a statement between 1 and 5, which best reflected their intention, for example, 1 = "I expect to complete this programme" and 5 = "I probably will not complete this programme". Second, the Perceived Behavioural Control subscale contained ten items relating to the volitional control of the behaviour and the perceived ease or difficulty of performing the behaviour. The scale asks questions such as, "Financial problems may mean that I will not complete this programme" (1 = *Agree* to 5 = *Disagree*). Third, the Subjective Norm subscale consisted of ten items indicating perceived social pressure to perform a behaviour, such as, "My friends think that I am doing the right thing" (1 = *Agree* to 5 = *Disagree*). Last, the Attitude subscale consisted of five items assessing the level of positive appraisal of a behaviour, such as, "I believe that I will enjoy this programme" (1 = *Agree* to 5 = *Disagree*).

2.2.3 Rosenberg self-esteem scale (RSES)

Self-Esteem was measured using the Rosenberg (1965) Self-Esteem Scale (RSES) [23], aimed at measuring an individual's general positive or negative attitude toward the self. The RSES assesses Self-Esteem using ten Likert scale items, with participants rating responses to items on a four point scale (1 = *Strongly Agree* to 4 = *Strongly Disagree*). Previous research has suggested a two factor structure to the RSES, reflecting either positive and negative weighted items, [45-46], and the two factor approach was adopted for this research due to the pitfalls associated with treating the RSES as a single structure [47]. Following a

Principle Components Analysis, the RSES was found to contain two factors reflecting either positively worded items (items 1, 2, 4, 6, 7) or negatively worded items (items 3, 5, 8, 9, 10), and this result was used to create two subscales, RSES(pos) and RSES(neg), respectively.

2.3 Procedure

A research assistant was employed to distribute the questionnaires to ensure anonymity of responses, along with an information sheet outlining the purposes and procedures of the study. Students were informed that participation was voluntary, and that they could withdraw from the study at any time without reason. To assist the return of completed questionnaires, the research assistant requested the students to complete the questionnaire once given the materials, and to return them immediately after completion, which was approximately ten minutes. Data was then entered into a spreadsheet and demographic information included for each participant's data. Following the entry of all data, participants' names were converted to participant numbers to ensure anonymity. The TPB questionnaire was administered once at the initiation of the course, and the RSES was administered twice; once at the initiation of the course (Time1), approximately 40 weeks duration, and at completion or point of withdrawal from the course (Time2).

2.4 Analysis

To test that Self-Esteem will predict Behavioural Intention above and beyond the components of the TPB, we created three models and then tested them using hierarchical linear regression analyses. The first model employed age and gender as co-variables (Model 1). Model 2 added the three TPB components (i.e., Subjective Norm, Perceived Behavioural Control and Attitude), while Model 3 included the two RSES subscales measured at the first time point. A comparison of R^2 change across the three models, and an examination of standardized regression coefficients, determined the relative contribution of each predictor. A further analysis was run to test the ability of the TPB and RSES scores to predict educational outcome. This analysis mirrored the first, but the use of a dichotomous outcome variable (i.e., completion vs. non-completion) necessitated the use of a binary logistic regression. Finally, paired samples *t*-test will be used to determine differences between mean RSES subscale scores at Time1 and Time2, in order to see if scores will improve over time, from initiation to termination of a course

3. RESULTS AND DISCUSSION

Prior to undertaking statistical testing, the data were assessed for their analytical fitness and explored to elucidate data structure. To this end, the psychometric properties of the data were obtained using conventional descriptive statistics (e.g., means and standard deviations), and internal consistency statistics (e.g., Cronbach's alpha) (Appendix A). Structure was tested for dimensionality using item-total correlations, and for some scales (e.g., RSES) structure was examined more rigorously using Principle Components Analysis (PCA) (Appendix B). Additionally, prior to regression analyses data were screened for normality, linearity, homoscedasticity, and independence of residuals graphically using residual analyses. Each of the major scales and subscales used in this study were found on all counts to be of sound psychometric character as gauged by current statistical criteria. All analyses were performed using the Statistical Package for the Social Sciences (SPSS v. 19).

3.1 Hypothesis 1: Self-Esteem Can Explain Additional Variance in Intention to Complete, Above and Beyond the Components in the Theory of Planned Behavior and Other Predictor Variables

Hierarchical Multiple Linear Regression analyses were undertaken in order to provide summary coefficients of the nature of the relationship between Behavioural Intention and: age and gender (Model 1); subjective norm, attitude, and perceived behavioral control (PBC) (Model 2), and between behavioural intention and Self-Esteem measured at the start of training (Model 3). The latter model, involving Self-Esteem as measured at the first time point (i.e., Time1), used the two summative scales consisting of positively and negatively worded items as extracted from a PCA. Note too that Model 1 is tested in Model 2, and Models 1 and 2 are both nested in Model 3 (see Table 2).

Table 1 presents statistics assessing the statistical fit of the three models. Note that the R values derived from Models 2 and 3 were significantly different from zero ($p < .05$), whilst Model 1 was not. This result indicates that the predictive power of Model 1 is no greater than using the mean of the behavioural intention scores, whilst Models 2 and 3 endowed greater predictive power than this average. The adjusted R^2 values contained in Table 1 show the three models explain between 1% and 17% of the variability in behavioural intention, and the change statistics (right-side, Table 1), show that while the change in adjusted R^2 from 0 to 0.01 (i.e., Model 1) is not significant, the changes between Model 1 and Model 2 ($\Delta R_{adj} = 0.12$) and between Model 2 and Model 3 ($\Delta R_{adj} = 0.05$) are significant. This result indicates that Self-Esteem predicts behavioural attention above-and-beyond the TPB.

Both un-standardised (B) and standardised (β) coefficients are reported, along with standard errors, the outcome of significance tests (via Students t -test), and regression equations in Table 2. Inspection of the t -values reveals that, for Model 1, age is a significant predictor of behavioural intention but gender is not. This negative association between age and behavioural intention is evident across all three models. For Model 2 all three predictors from the Theory of Planned Behavior have β coefficients significantly different from zero. As expected from theory, subjective norm had a negative correlation coefficient with behavioural intention, while PBC and attitude had positive correlations. These three predictors remain significant in Model 3, and are joined by an additional significant predictor, the negatively-worded RSES subscale. Additionally, an independent samples t -test was undertaken to probe for associations between behavioural intention and learner outcome (i.e., completion vs. non-completion), and no significance difference was found between the two groups ($t_{(205)} = -0.129$, $p = .90$).

Table 1. Summary of the MLR analyses when the ten-item RSES is decomposed into two five-item subscales representing positively and negatively worded items

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics				
					R^2 Change	F	df1	df2	Sig. F Change
1	0.17	0.03	0.01	0.17	0.03	1.88	2	180	.16
2	0.38**	0.15	0.11	0.16	0.12	6.08	3	177	.00**
3	0.45**	0.20	0.16	0.17	0.05	4.23	2	175	.02*

* $p < .05$ (2-tailed), ** $p < .01$ (2-tailed).

Table 2. Un-standardised and standardised coefficients for each of the hierarchical multiple linear regression analyses when the RSES is represented by its positive and negatively worded subscales

	<i>B</i>	Std Error	β	<i>t</i>
Model 1				
Constant	2.17	0.04	-	62.63**
Age	-0.00	0.00	-0.17	-1.93
Gender	0.02	0.03	0.06	0.64
Model 2				
Constant	1.33	0.23	-	5.80**
Age	-0.00	0.00	-0.17	-2.04*
Gender	0.01	0.03	0.03	0.40
PBC	0.09	0.03	0.26	2.77*
Subjective Norm	-0.05	0.03	-0.21	-1.96*
Attitude	0.12	0.05	0.24	2.21*
Model 3				
Constant	1.34	0.23	-	5.96**
Age	-0.00	0.00	-0.18	-2.16*
Gender	0.01	0.03	0.02	0.28
PBC	0.10	0.03	0.28	3.07*
Subjective Norm	-0.05	0.03	-0.21	-2.05*
Attitude	0.11	0.05	0.22	2.06*
RSES Positive	0.01	0.01	0.07	0.78
RSES Negative	-0.01	0.01	0.25	-2.88*

Note: Behavioural Intention is the dependent variable. * $p < .05$ (2-tailed), ** $p < .01$ (2-tailed)

3.2 Hypothesis 2: Self-Esteem Can Predict Course Outcome after Controlling for TPB Components and Other Predictor Variables

Self-Esteem scores should also contribute to course outcome, that is, participants with lower initial Self-Esteem would also be more likely to produce a negative outcome. The analysis and prediction of dichotomous outcomes such as not completed ($N = 167$) or completed ($N = 44$) is best undertaken using logistic regression analyses. Our analyses again comprised of three models, with Model 1 (age and gender), Model 2 (PBC, Subjective Norm, and attitude) and Model 3 (Self-Esteem subscales at Time1) being identical to those employed in the linear regression analyses.

Table 3 displays the effectiveness of the three models in accounting for the data. A battery of Hosmer-Lemeshow (H-L) tests returned non-significant chi-square values for the three models, suggesting that each model constituted an adequate fit to the data. The relative goodness-of fit of the three models is assessed by computing best-fitting parameter estimates using Maximum Likelihood Estimation (MLE). By employing MLE, model selection criteria such as the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) can be employed to adjust for model complexity (i.e., number of parameters). For all three models MLE was used to fit the logistic model (1) to data, and to provide maximum likelihood parameter estimates. The best-fitting parameters are found by minimizing the deviance, that is, the Log likelihood (LL) function multiplied by negative two [48]. The minimized deviance provides evidence in regards to which model most likely fits the data, but does so without respect to model complexity. Goodness-of-fit measures in themselves do not provide sufficient information with which to select a model, and an advantage of MLE

is that it can be used with the AIC and BIC selection methods, both of which account for differences in the number of parameters among the models with the model with the lowest value of AIC or BIC being preferred, with the difference between the two being that the BIC penalizes free parameters more strongly than the AIC. It is evident from the final two columns of Table 3 that the three models are comparable in their ability to account for the data, though Model 3, the least parsimonious, has the lowest AIC and BIC values.

Table 3. Summary of the logistic regression analyses when the ten-item RSES is decomposed into two five-item subscales representing positively and negatively worded items

	-2 Log likelihood	H-L Test	p-value	AIC	BIC
Model 1	49.06	9.01	.25	55.06	55.83
Model 2	41.77	6.63	.58	55.77	57.55
Model 3	35.01	5.52	.70	53.01	55.30

Table 4. Un-standardised and standardised coefficients for each of the hierarchical multiple linear regression analyses when the RSES is represented by its positive and negatively worded subscales

	<i>B</i>	Std Error <i>B</i>	Wald	e^b	95% C.I. for e^b
Model 1					
Constant	3.45	1.15	8.92	31.38	
Age	-0.01	0.03	0.11	0.99	0.93 - 1.05
Gender	-0.16	0.86	0.03	0.86	0.16 - 4.59
Model 2					
Constant	-1.66	7.22	0.05	0.19	
Age	0.01	0.03	0.17	1.01	0.95 - 1.08
Gender	-0.31	0.93	0.11	0.74	0.12 - 4.55
BI	3.41	2.66	1.65	30.20	0.17 - 54.49
PBC	-2.09	1.46	2.04	0.12	0.01 - 2.17
Subjective Norm	-0.68	1.09	0.39	0.51	0.06 - 4.25
Attitude	3.24	1.70	3.66	25.62	0.92 - 71.31
Model 3					
Constant	-1.24	7.18	0.03	0.29	
Age	0.01	0.04	0.09	1.01	0.94 - 1.09
Gender	-0.25	0.97	0.07	0.78	0.12 - 5.16
BI	1.98	3.08	0.41	7.25	0.02 - 30.77
PBC	-1.98	1.36	2.12	0.14	0.01 - 1.98
Subjective Norm	-0.60	1.20	0.25	0.55	0.05 - 5.76
Attitude	3.61	1.98	3.32	36.89	0.76 - 83.66
RSES Positive	-0.14	0.21	0.45	0.87	0.58 - 1.30
RSES Negative	-0.33	0.15	4.58*	0.72	0.54 - 97.30

Note: Outcome (completed/uncompleted) is the dependent variable. * $p < .05$ (2-tailed)

Maximum likelihood parameter estimates are displayed in Table 4, both in raw form as logits (i.e., B) and as odds ratios (e^b), the latter accompanied by 95% confidence intervals. Positive values of B indicate that the predicted odds increase as the predictor value increases (i.e., a pass is more likely), while a negative coefficient means that the predicted odds decrease as the predictor decreases (i.e., completion is less likely). The odds ratios, which are conceptually easier to work with, are estimates of the change in the odds of membership to

the target group (here completing) for a one-unit increase in the predictor. The maximum likelihood parameter estimates displayed in Table 4 show that the only significant predictor variable contained is the negatively-worded subscale of the RSES, where the odds of completing are 2.1 times greater for a student who has a negative RSES score one unit greater than another student.

3.3 Hypothesis Three: Self-Esteem Will Improve Over Time, From Initiation to Termination of a Course

It is suggested that Self-Esteem should increase over the period of the course; therefore initial RSES subscale scores should indicate lower Self-Esteem than final scores. When analysing the positive component of the RSES, mean scores at Time2 ($M = 12.35, SD = 2.31$) were significantly higher ($t_{(205)} = 4.59, p < .01$) than mean scores measured at Time1 ($M = 11.52, SD = 2.17$). The negative component of the RSES also showed this effect as means scores at Time2 ($M = 10.04, SD = 3.39$) were significantly higher ($t_{(205)} = 3.27, p < .01$) than at Time1 ($M = 9.25, SD = 2.99$).

3.4 Discussion

The ability of educational facilities to predict learner outcome would have a substantial impact on learning, especially in groups known for high rates of non-completion. Through this, the student would have the opportunity to be assessed for risk factors of non-completion and remedial steps could be put in place to mitigate these factors, improving the student's chance of achievement and leading to further employment or educational opportunities. The objective of this study was to identify those factors predicting both learner intention and educational outcome, and the results are now discussed with reference to those aims.

Findings supported the hypothesis that both the Theory of Planned Behavior (TPB) components and Self-Esteem predict intention to complete. After applying a hierarchical multiple linear regression analysis, the three components of TPB; Subjective Norm, Perceived Behavioural Control and Attitude had significant positive correlations to Behavioural Intent, above and beyond the covariates of age (also significant) and gender (not significant). Self-Esteem then proved itself an additional significant predictor, at least when the negative-worded subscale of the RSES was referenced.

In the TPB model, some have questioned the validity of the subjective norm component [16,19,31,49-50]. In the context of the current research, subjective norm, thought to be a major factor in these student's lives, was significant though not dominant. The attitude component is considered global in nature, and may be too general to predict specific intention [19]. However, in this study attitude was found to be a significant predictor of intent to complete education. Perceived Behavioural Control has been referred to as the most significant factor of the TPB for prediction of intent [10] and is confirmed as a dominant factor in this study.

Overall, the analysis showed Self-Esteem, combined with age, gender, and the TPB, provides predictive power above and beyond age and gender by itself, and age and gender combined with the TPB. These results justify the inclusion of Self-Esteem into the model of prediction of intent, and further support the work of Wang (2009), who suggested that extending the TPB with a more specific variable would result in a more detailed behavioural

prediction, the results of which outlined that the inclusion of Self-Esteem provided an improved model of intent to complete [42].

The hypothesis that the TPB and Self-Esteem would predict outcome was only partially supported, with only Self-Esteem predicting outcome. Using binary logistic regression the negatively phrased questions from the RSES emerged as significant predictors of outcome, although the positive RSES subscale did not. Those who responded strongly to the negatively worded questions of the RSES were 2.1 times more likely to achieve a positive outcome. Additionally, the inclusion of Self-Esteem into the variate produced a better model fit than when not included. Self-Esteem as a predictor of outcome has also been verified by Pepi et al. (2006), who found that Self-Esteem was influential in school achievement, especially significant in those groups of students who appeared to have consistently low Self-Esteem. They reported that Self-Esteem was related to socio-economic variables and correlated to academic achievement rate. Students in the study [27] faced similar social constraints and risks to those reported in the current study, thus offering convergent validity in relation to the importance of Self-Esteem and outcome in similar contexts.

Findings also supported the expectation that Self-Esteem will increase over the duration of the programme, with significant increases indicated by the ten item RSES scale and evidenced in both the negative and positively worded questions. Interestingly, individuals returned a clinically borderline level of Self-Esteem ($M=20.59$) when measured at the beginning of their programme, and a significantly higher level at completion ($M=22.36$), and we noted that there were no differences in Self-Esteem levels associated with age, gender or ethnicity. Results do, however, indicate a significantly low Self-Esteem overall with Self-Esteem at completion still only at a mean of 22.36. Indeed, the initial survey result indicated that 115 of the 211 learners had a score below the accepted clinical criteria (i.e., below 20) and at completion this had reduced to 104 learners. Further support of an overall low level of Self-Esteem has been established previously in first year university students in New Zealand, with these students producing the lowest mean score when comparing countries of similar independent cultural values [51]. This has been supported by other studies concluding that New Zealand, when compared to similar countries, has an overall low level of Self-Esteem [52]. The gratifying finding of this section of the study is that Self-Esteem did increase over the duration of the programmes, albeit a small but significant increase.

3.4.1 Limitations and future directions

All findings should be interpreted within the study's limitations. Statistically, the sample size of 211 students with only 37 failures may have elicited Type II errors due to insufficient power, restricting the ability to successfully predict the influence of TPB components and the RSES on outcome. However, with reference to Cohen and Cohen (1983), our sample size can be considered adequate given the number of variables that were included [53]. Additionally, students were only allowed to choose one item from a grouping of five categories to indicate intent to complete, which may have restricted the variability of this measure. Although this measure was supported by a previous study [9], other studies have successfully enlarged this scale [54]. A further consideration involves generalisability, with only one cohort of homogenous students researched, predominantly coming from the same geographical region and therefore with similar demographics, though age and ethnicity did vary.

This study supports further research into the use of Self-Esteem to predict outcome in education. Scales such as the RSES may be used by an institution to investigate risk to

completion, providing that facility with an opportunity of working with identified learners and assisting them to achieve their goal of a positive outcome from tertiary education. Future research could reveal other factors relevant to non-achievement in education and further directions to mitigate these issues. A concern would be that tools measuring Self-Esteem could be used as a screening mechanism prior to enrolment, reducing the risk to the institution of having poor outcome results. This would ultimately serve to limit the already challenged learner's options for advancement, and refusal of entry into a normally accepting institution may compound their already low Self-Esteem [51].

It is also interesting to note that the questions that were negatively phrased in the RSES have proved the most sensitive, which in itself is not a novel finding. Baranik (2008) suggested that collectivist cultures may respond more strongly to negatively worded questions [51], and this may be a factor in the current study. The ethnic groupings found in the catchment area of the PTE; the Pasifika, and Asian peoples can also be described as collectivist, therefore this explanation as to the dominance of the negative worded questions would be more than mere conjecture.

4. CONCLUSION

This research adds to the education literature by further exploring factors predicting both intent to complete training programmes and actual outcomes. Results showed that ratings on the components of the TPB; attitude, perceived behavioural control and subjective norm, were predictive of an individual's intention to complete their course of study. Our findings suggest that the use of a TPB based questionnaire could potentially be used by tertiary training institutes to anticipate a learner's intention to complete a programme, and may therefore prompt the identification and reduction of risk factors to non-completion. This research also identified that negatively worded items in the RSES sufficiently predicted intent to complete and learner outcomes; that is, individuals that strongly disagreed with the RSES negatively worded items, were more likely to identify positive intent to complete and to complete their course of study. This indicates that the use of self-esteem measures by tertiary training institutes may provide further information around the barriers to completion for an individual and provide a platform for possible intervention. Further studies are encouraged, as the ability to predict outcome in the adult learner would be a significant contributor to the individual, to the learning establishment, as well as to society.

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ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Appendix A

Means, Standard Deviations, Corrected item-total correlation, and Cronbach's alpha (α_c) if-item-deleted, for the RSES data obtained at two distinct time points (Time1 and Time2)

Item	N	\bar{x}	SD	Corrected Item-Total	
				Correlation	α_c if- Item-Deleted
Time1					
RSES 1	204	1.67	0.57	0.39	.75
RSES 2	209	1.68	0.56	0.40	.75
RSES 3	203	1.93	0.82	0.38	.75
RSES 4	209	1.83	0.68	0.33	.76
RSES 5	208	2.11	0.93	0.34	.76
RSES 6	210	1.60	0.60	0.50	.74
RSES 7	211	1.80	0.64	0.49	.74
RSES 8	209	2.54	0.98	0.38	.76
RSES 9	211	2.26	0.87	0.60	.72
RSES 10	210	1.99	0.88	0.57	.72
Time2					
RSES 1	172	1.45	0.60	0.49	.79
RSES 2	173	1.49	0.60	0.43	.80
RSES 3	172	1.86	0.86	0.49	.79
RSES 4	173	1.61	0.60	0.40	.80
RSES 5	173	1.94	0.91	0.45	.80
RSES 6	173	1.53	0.60	0.46	.80
RSES 7	173	1.58	0.66	0.48	.80
RSES 8	173	2.21	0.97	0.54	.79
RSES 9	172	2.07	0.87	0.60	.78
RSES 10	173	1.89	0.88	0.60	.78

Means, Standard Deviations, Corrected item-total correlation, and Cronbach's alpha (α_c) if item deleted, for components of the Theory of Planned Behavior questionnaire

	N	\bar{x}	SD	Corrected Item-Total Correlation	α_c if Item Deleted
Perceived Behavioral Control					
TPB 1	197	4.06	1.17	.27	.67
TPB 2	197	3.82	1.14	.36	.66
TPB 3	197	3.86	1.20	.29	.67
TPB 4	197	4.31	1.05	.44	.65
TPB 5	197	3.96	1.24	.35	.66
TPB 6	197	4.19	1.07	.27	.67
TPB 7	197	3.94	1.31	.39	.65

TPB 8	197	4.26	1.32	.30	.67
TPB 9	197	4.08	1.24	.37	.65
TPB 10	197	4.13	1.14	.42	.65
Subjective Norm					
TPB 11	206	4.58	0.92	.75	.90
TPB 12	206	4.49	1.01	.72	.90
TPB 13	206	4.46	1.07	.73	.90
TPB 14	206	4.50	1.06	.69	.90
TPB 15	206	4.08	1.30	.52	.91
TPB 16	206	4.32	1.09	.71	.90
TPB 17	206	4.49	0.99	.71	.90
TPB 18	206	4.44	1.04	.73	.90
TPB 19	206	4.33	1.06	.75	.90
TPB 20	206	3.80	1.42	.55	.91
Attitude					
TPB 21	211	4.76	.72	.74	.84
TPB 22	211	4.75	.68	.70	.85
TPB 23	211	4.68	.83	.73	.84
TPB 24	211	4.57	.86	.69	.85
TPB 25	211	4.59	.84	.68	.86

Appendix B

Rosenberg (1965) Self-Esteem Scale (RSES) communalities and factor loadings for two measurement time points (Time1 and Time2)

Item	Time1			Time2		
	Communality	Component 1 ($\lambda = 34.124\%$)	Component 2 ($\lambda = 18.205\%$)	Communality	Component 1 ($\lambda = 37.879\%$)	Component 2 ($\lambda = 18.694\%$)
RSES2	0.60	<u>0.77</u>	0.01	0.53	<u>0.72</u>	0.12
RSES1	0.56	<u>0.75</u>	0.03	0.62	<u>0.77</u>	0.15
RSES6	0.56	<u>0.72</u>	0.21	0.60	<u>0.77</u>	0.10
RSES4	0.45	<u>0.67</u>	0.00	0.49	<u>0.69</u>	0.11
RSES7	0.51	<u>0.67</u>	0.23	0.58	<u>0.75</u>	0.15
RSES8	0.59	0.06	<u>0.77</u>	0.67	0.04	<u>0.81</u>
RSES9	0.58	0.35	<u>0.68</u>	0.59	0.23	<u>0.74</u>
RSES3	0.46	0.02	<u>0.67</u>	0.51	0.09	<u>0.71</u>
RSES10	0.55	0.35	<u>0.66</u>	0.62	0.21	<u>0.76</u>
RSES5	0.38	0.01	<u>0.62</u>	0.45	0.09	<u>0.66</u>

Note: All loadings >0.40 are underlined.

Means, standard deviations, and Cronbach's alpha (α_c) for the RSES and its positive and negative subscales at Time1 and Time2

RSES	Time 2			Time 1		
	M	SD	α_c	M	SD	α_c
Ten-item	20.59	4.34	.76	22.36	4.67	.81
Positive	11.52	2.17	.76	12.35	2.31	.79
Negative	9.25	2.99	.74	10.04	3.39	.80

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