AOSIS

Perceptions of retirement adequacy in Lesotho: Behavioural and socio-economic influences

CrossMark
click for updates

Authors:
Tokiso Nthebe[1] ◉
Michelle Reyers[1,2] ◉

Affiliations:
[1]Department of Financial Management, University of Pretoria, South Africa

[2]School of Economics and Finance, Massey University, New Zealand

Corresponding author:
Tokiso Nthebe,
tokiso26@gmail.com

Orientation: Saving for retirement is complicated for employees because of the complexity of the financial decisions involved. Financial decision-making is believed to be associated with a number of behavioural and socio-economic factors, and these factors may in turn be related to whether employees perceive themselves to be adequately saving for retirement.

Research purpose: This study assesses which factors predict whether individuals working in both the financial and non-financial sectors in Lesotho perceive themselves to be adequately preparing for retirement. The main focus is on financial literacy (FL), financial risk tolerance (FRT) and future time perspective (FTP). As a secondary focus, the study looks at the potential differences between two sectors of employees that may be attributed to differing levels of FL.

Motivation for the study: This study focuses on Lesotho to provide an African context on retirement saving and hopefully lay the foundation for future research in the field of retirement saving.

Research approach/design and method: Data were collected from 200 participants using an online survey at three companies in Lesotho and analysed using bivariate and multivariate techniques, with a linear regression model used in terms of the multivariate analysis.

Main findings: This study finds that FL, FRT and FTP are all positively related to perceived retirement adequacy (RA) in the bivariate analysis. In the multivariate analysis, for those working outside the financial sector, objective FL, subjective FL and FTP were positively related to perceived RA, whereas for those in the financial sector, higher levels of FTP, higher household income and being older were all associated with higher levels of perceived RA.

Practical/managerial implications: The participants in this study are not representative of the broader Lesotho population; therefore, further research would be required before this conclusion is generalised.

Contribution/value-add: These findings provide insights to industry role players about the profile of individuals who are confident about retirement savings and how this contrasts with those who are not confident.

Introduction

The decision to save for retirement continues to be a struggle for many households who already have limited financial resources. The biggest challenge for individuals is to make the correct financial decisions to help them achieve what they perceive to be adequate savings. The complexity of making the correct financial decision has increased since the shift from defined benefit (DB) to defined contribution (DC) plans witnessed by many countries in the last 25 years (Poterba et al. 2007). According to Stewart and Yermo (2009), the popularity of DC plans is also on the increase in Africa, where countries such as Nigeria, Kenya, Ghana and Botswana have introduced individual DC accounts. The move towards DC plans has placed a lot of responsibility on the employee focusing the spotlight on his or her ability to make optimal saving decisions. This responsibility has been found to put individuals under pressure, where the consequences of incorrect decisions may result in inadequate savings, and employees facing retirement with insufficient funds to support themselves (Choi et al. 2002). Lesotho, like other African countries, has also moved towards the DC plan (CBL 2008).

The shift from DB towards DC plans was proposed by the Government of Lesotho when it realised that the DB scheme would reduce the pension benefit should there be unanticipated pension demands on the annual budget as pension funds are paid out from the current budget (CBL 2008). However, the challenge is that legislation in Lesotho has for many years focused on the social

security of public servants, as can be seen from the following acts, the *Public Officers' Defined Contribution Pension Fund (PODCPF) Act (No. 8 of 2008)*, *Public Service Act (No. 13 of 1995)* and the *Teachers' Pension Act (No. 9 of 1994)*. The private sector remained without specific legislation for many years, whilst public service legislation evolved. The lack of legislation in Lesotho's pension fund industry has had severe consequences where for many years retirement fund administrators such as Metropolitan Lesotho had to rely on the *Income Tax Act (No. 11 of 2012)* and the *Insurance Act (No. 18 of 1976)* for guidance (Metropolitan 2015).

Whilst generally the population of Lesotho may lack knowledge and education in financial matters related to retirement, there is a financial sector where employees would be expected to have higher levels of financial knowledge. Despite the lack of focused legislation governing retirement funds in Lesotho, many private sector organisations provide pension plans to their employees that are DC in nature, where members are responsible for their decisions (Metropolitan 2015). Members therefore need to have access to the right information to help them make correct financial decisions so that they set aside adequate savings for retirement. Financial literacy (FL) levels in Lesotho have been found to be low amongst students at the National University of Lesotho, where 53% of male students were found to be financially literate compared to 24% female students (Rasoaisi & Kalebe 2015). Furthermore, approximately 19% of the population is financially excluded and 58% use the formal financial services. Research findings indicate that 87% and 86% of the banked population in Lesotho used transactional banking products and saving products, respectively, whilst 75% of low-income earners who have access to the formal financial services lacked the skills and knowledge needed to make informed financial decisions (I-FES 2014).

Financial decision-making is a complex process where both behavioural and socio-economic factors are thought to play a role in the ultimate decision taken. In particular, the level of FL has been said to play an important role when people make retirement saving decisions, and financial illiteracy has been found to be related to inadequate savings for retirement (Kim, Kwon & Anderson 2005; Lusardi & Mitchell 2005, 2007; Van Rooij, Lusardi & Alessie 2012). Studies have generally found that those who have a financial background or education save more (Lusardi & Mitchell 2007). Psychological variables such as future time perspective (FTP) and financial risk tolerance (FRT) are also thought to influence financial decisions, where people postpone the decision to save for retirement or convince themselves that there is still time to save (Jacobs-Lawson & Hershey 2005). The decision to postpone savings for retirement is especially prevalent in emerging markets such as Lesotho where studies such as Selnow (2004) found that households are putting off saving for retirement because of limited financial resources.

As part of the research that has been undertaken to understand financial decision-making, particularly as it relates to retirement savings decisions, one area of research has focused on understanding the profile of individuals who believe they are adequately preparing for retirement to determine how this differs from those who are less confident about their retirement preparations. The intention of this research is to further understand the links between behavioural and psychological factors and financial decision-making. Previous studies are of the view that individuals' perceived saving adequacy is influenced by a number of psychological and socio-economic predictors of perceived retirement adequacy (RA), such as retirement goal clarity, FTP, the level of financial knowledge, trust in pension institutions and governments, and demographic predictors (De Bassa Scheresberg 2013; Lusardi & Mitchell 2011; Shambare & Rugimbana 2012; Van Dalen, Henkens & Hershey 2010). However, the bulk of research conducted in this field focused on continents such as America, Australia and Europe with little research carried out in developing economies such as in Africa and in particular Lesotho. This study attempts to fill that gap.

The aim of this study is to determine if there is a relationship between certain psychological variables, such as FRT, FTP and FL, and an individual's perception that they are adequately prepared for retirement in an African setting. In addition, the study will consider whether there are differences between those employees working in financial institutions and those working in non-financial institutions. More specifically, this study aims to achieve the following specific objectives:

- to determine whether employees in Lesotho perceive themselves to be adequately prepared for retirement
- to determine the relationship between FL, FRT, and FTP and perceived RA
- to determine whether there are differences in the predictors of RA when comparing those employed in financial institutions to those in non-financial institutions.

The study will also compare the results with the wider European and American literature to provide initial insights into the comparability of the characteristics of those in developed and developing nations, from the perspective of retirement preparedness.

This research will provide insights to financial planners, educators and policymakers about the profile of individuals who are confident about retirement savings and how this contrasts with those who are not confident so that they are perhaps able to tailor advice and policies to particular subgroups of the population. Furthermore, this research will lay the foundation for future research in the field of retirement saving in Lesotho and other African countries.

The first part of the study provides an outline and background of the factors influencing financial decision making and what is perceived to be adequate savings and how this relates to perceptions of retirement savings adequacy. This section is followed by a discussion of the method selected to collect the data. The last section of the paper focuses on the analysis and discussion of the results.

Theoretical framework

Neoclassical economic theory suggests that the level of savings is influenced by people's trade-off between spending today and putting money away for the future (Mitchell & Utkus 2004). According to Becker (1962) and Browning and Crossley (2001), traditional theory assumes that households choose the best collection of commodities consistent with the limited resources available to them. Therefore, the life cycle model of saving hypothesises that individuals are rational when it comes to their consumption and saving needs over their lifetimes (Malroutu & Xiao 1995; Mitchell & Utkus 2004; Skinner 2007). One view, expressed by MacFarland, Marconi and Utkus (2003), is that in an ideal world, rational participants should follow a process to ensure that they are adequately prepared for retirement. Employees would be expected to identify a retirement goal and calculate how much they need to save to achieve it by creating an optimal investment portfolio; however, this is not the case as often employees do not behave in the way that the rational model predicts.

Banks et al. (2002) refer to the 'consumption smoothing' concept that suggests that people should borrow money during their younger years when income is low, and increase savings during their middle age in order to prepare and build up savings for the future. Mitchell and Utkus (2004) describe employees as net dissavers during their younger years where they acquire debt to boost current consumption. Employees only become net savers during their middle age where they buy and acquire assets but later decumulate when income earned during employment reduces. Butler and Van Zyl (2012) suggest that some households experience consumption increases in retirement as a result of rising healthcare expenditure, whilst other households do not experience a change in consumption at retirement. This challenges the appropriateness of perceived RA goals that assume a reduction in consumption at retirement. Browning and Crossley (2001) argue that in the life cycle framework, smoothing does not mean keeping consumption or expenditure constant, but instead, smoothing means that agents try to keep the marginal utility of money constant over time.

Browning and Crossley (2001) allude to the challenges that the life cycle framework has that do not agree with the smoothing of consumption at different frequencies. They state that the life cycle framework intends to integrate many aspects of behaviour in a coherent and disciplined way; however, building a model that includes the different facets of behaviour is a discouraging task. Mitchell and Utkus (2004) argue that the life cycle theory failed to demonstrate the skill or competency expected from households to estimate their needs. Empirical research found that people were not as rational or as competent at planning and saving for retirement. Surveys found that fewer than 40% of US workers had calculated how much they would need to retire on, 30% had not saved anything for retirement and only 20% felt confident about having enough money to live comfortably in

retirement (Mitchell & Utkus 2004). However, other studies have found higher levels of retirement confidence. Van Dalen et al. (2010) found that half of their sample, both from the Netherlands and America, were confident about their retirement. Chou et al. (2015) and Malroutu and Xiao (1995) in their studies reported mean perceived RA scores of 2.81 and 3.9, respectively, on five-point scales, indicating reasonably high levels of retirement confidence.

Researchers, such as Jacobs-Lawson and Hershey (2005) and Hershey et al. (2007), are of the view that to promote retirement savings, interventions should target people on the basis of three psychological factors, namely: knowledge of retirement planning, FTP and FRT. FTP is described as a psychological variable that refers to an individual's outlook towards the future instead of the past or present. It has a direct influence on saving behaviour because people often have to make a trade-off between present consumption and spending in the future. Studies have found that employees are faced with a situation where they have the right intentions or beliefs to save for retirement, but lack the willpower to implement the behavioural changes necessary to achieve the desired action (Mitchell & Utkus 2004). The lack of willpower and a present, rather than a FTP, highlights people's limitation to execute their intentions and is seen as one of the key reasons for not preparing for retirement (DiCenzo 2007; Mitchell & Utkus 2004; Reyers, Schalkwyk & Gouws 2014). FTP is believed to be a predictor of perceived RA (Chou et al. 2015; Hershey et al. 2007; Jacobs-Lawson & Hershey 2005). Hershey and Mowen (2000) find that individuals who are future orientated and are financially knowledgeable are likely to plan for retirement. In a study by Van Dalen et al. (2010), FTP was also found to be related to perceived RA amongst American workers, but not amongst Dutch workers.

The second factor believed to affect financial decisions is the level of FL, where the assumption is that individuals with high levels of financial knowledge are more likely to plan, save and have a higher level of perceived RA (Chou et al. 2015). FL was found to significantly influence decision-making, where the consequence of illiteracy is inadequate savings (Agarwal et al. 2015). Segel-Karpas and Werner (2014) found that financial knowledge was significantly related to perceived financial preparedness for retirement. They argued that the most significant predictors of perceived RA were understanding financial matters and actively participating in financial activities.

In addition to the relationships between FTP and FL, and financial decision-making, studies have also found evidence of a relationship between the level of financial risk people are willing to take and financial decision-making. FRT, described as the total amount of uncertainty a person is prepared to accept when making a financial decision, is the third factor believed to influence financial decisions (Grable 2000). In terms of the relationship between FRT and financial decision-making with respect to retirement, Grable (2000) found that people with higher risk tolerance invested in equity saved

and achieved their retirement goal, whereas those with lower risk tolerance, did not. A household with low risk tolerance will most probably not invest in stocks and may therefore end up with inadequate retirement savings. The question that remains to be answered is whether all these variables, psychological and behavioural, are associated with adequate retirement savings or not.

Research has also found socio-economic factors to be predictors of RA. In their study, Malroutu and Xiao (1995) found that perceived RA was influenced by socio-economic factors such as income, age, gender and employment status. Their study found that younger respondents perceived themselves to be inadequately prepared for retirement. Jacobs-Lawson and Hershey (2008) found that better educated women expected less difficulty in funding their retirement than women with lower education. This was attributed to the fact that highly educated women were more likely to work in better positions offering better benefits than those less educated. Similarly, Jacobs-Lawson, Hershey and Neukam (2008) found that demographic factors were related to the perception respondents had about retirement and its importance. They found that the amount of time women spent planning for retirement was largely determined by age, income, FTP and their level of worry.

This study therefore sets out to explore perceptions of perceived RA in Lesotho and, in particular, determine what factors predict whether individuals perceive themselves to be preparing adequately for retirement. In addition, the study considers whether there are differences in these predictive factors for those working in financial institutions compared to those employed in non-financial institutions.

Methods

Research design and instrument

This study used an analytical survey, where a closed-ended questionnaire was designed to test and determine if there were relationships between the dependent and independent variables. A cross-sectional approach was adopted with data collected using a self-administered questionnaire that was electronically distributed.

Variables

The dependent variable for this study was perceived RA measured using a Likert-type scale where respondents were asked to rate their perceived RA using a seven-item scale where 1 represented 'strongly disagree' and 7 represented 'strongly agree'. The survey instrument used five self-assessment questions from a study by Jacobs-Lawson and Hershey (2005) where questions such as 'Relative to my peers, I made meaningful contributions to a voluntary retirement savings plan', 'I have saved a great deal for retirement' and 'Based on how I plan to live my life in retirement, I have saved accordingly' were asked. An average score for the five questions was calculated for each respondent, resulting in a continuous variable that was used in the statistical analysis.

These questions were previously developed and tested where researchers such as Segel-Karpas and Werner (2014), Malroutu and Xiao (1995) and Jacobs-Lawson and Hershey (2008) adopted similar questions in their studies.

Financial literacy

FL or financial knowledge was measured using a combination of basic and advanced FL multiple-choice questions from Lusardi and Mitchell (2009) to determine a FL score. To measure the basic scores, respondents were asked five questions on basic numeracy, compound interest, inflation, time value of money and money illusion, to determine the level of FL amongst participants. The five basic FL questions have been used in numerous studies such as those by Van Rooij et al. (2012), Agarwal et al. (2015) and Lusardi and Mitchell (2011). The eight sophisticated FL questions measure advanced financial knowledge such as the relationship between risk and return, the relationship between bond prices and interest rates, and concepts such as risk diversification. The advanced questions have been used in a number of studies both internationally (Van Rooij, Lusardi & Alessie 2011) and in an African context (Reyers, Van Schalkwyk & Gouws 2015). Both the basic and advanced questions were formulated with the same wording as in these studies; however, minor changes were made to the currency. This study used Loti (plural Maloti), which is the currency used in Lesotho. The percentage score was treated as a continuous variable in the statistical analysis and is referred to as objective FL in this study.

In addition to the objective test of financial knowledge, and in line with previous studies, a subjective measure of financial knowledge from Lusardi and Mitchell (2009) was also captured as participants were asked to rate their level of financial knowledge using a seven-item scale. The self-reported score for each respondent was used as a continuous variable in the statistical analysis and is referred to as subjective FL in this study.

Future time perspective

FTP was measured using six questions developed by Jacobs-Lawson and Hershey (2005) that required participants to select the best option from the seven-item scale, for example, 'I follow the advice to save for a rainy day' and 'The distant future is too uncertain to plan for'. An average score for the six questions was calculated for each respondent resulting in a continuous variable that was used for statistical analysis.

Financial risk tolerance

To measure FRT, this study used questions from Jacobs-Lawson and Hershey (2005), for example 'I prefer investments that have higher returns even though they are riskier' and 'I am willing to risk financial losses'. Five questions were asked to determine the participants' risk appetite. An average score for the five questions was calculated for each respondent, resulting in a continuous variable that was used for statistical analysis.

Demographic variables

The questionnaire also included demographic questions to collect information about participants' gender, age, marital status, level of education and income. Age was captured as a continuous variable. Gender and marital status were measured using the nominal scale, where marital status had four options: single, married, divorced or separated, to choose from. Other variables, such as level of education and income, were measured using ordinal scales.

Data collection

Sample

This study used non-probability sampling techniques where the focus was on employees working in the banking sector and the telecommunications sector, as this allowed the study to compare differences between those working in the financial and non-financial sectors in Lesotho. A convenience sample was used for this study where an e-mail with an electronic link to the survey was sent to employees at two banks and one telecommunication company in Lesotho that offer DC plans to their employees. The convenience sampling approach to data collection introduced limitations, and therefore, as a result of the sampling technique, findings are exploratory and are generalisable neither to the employees in these sectors throughout Lesotho nor to the general working population in Lesotho.

Data collection took place over a 3-month period. In total, 650 e-mails were distributed and data were collected from 200 participants, 107 participants were employees in the banking industry and 93 were from the non-banking company. To incentivise participants to complete the questionnaire, five

vouchers of M300 were provided. In the present study, low response rates were a challenge and the final response rate was 30%. Whilst the resulting sample was large enough to carry out the proposed statistical tests, the potential for non-response error was a potential limitation.

Data analysis

The data were analysed using different techniques to determine the relationship between FL, FTP and FRT (independent variables) and perceived RA (dependent variable) using Statistical Package for Social Sciences version 23 as shown in Table 1.

In the first instance, tests were conducted to establish bivariate relationships between each independent variable and the dependent variable, and secondly all independent variables were combined into a multivariate model to determine the relationship between a combined model that included all the independent variables and perceived RA.

For the multiple regression in this study, the forced entry model was used, which forces all predictors into the model at the same time. Forced entry is dependent on good theoretical reasons for including the chosen predictors, which is the case in the present study, and is a method followed by past studies. To assess the assumptions of the linear model related to independent errors, the Durbin–Watson score was used. To assess multicollinearity, collinearity diagnostics, like the variance inflation factor (VIF), were used.

Finally a hierarchical regression model was used to assess potential interactions amongst the behavioural variables (objective FL, subjective FL, FRT, and FTP), as interactions have been found in previous research (Jacobs-Lawson & Hershey 2005). In the hierarchical regression, two-way interactions, three-way interactions and four-way interactions between the variables were tested. In all cases, centred predictors were used in the analysis to reduce problems related to multicollinearity (Aiken & West 1991).

Ethical considerations

Ethical standards and procedures were adhered to in conducting this research. Ethical clearance was obtained from the University of Pretoria's Research Committee.

TABLE 1: Statistical techniques.

Independent variable and category type	Perceived retirement adequacy: Interval variable
Financial literacy (ratio scale)	Pearson's correlation
Future time perspective (interval)	Pearson's correlation
Financial risk tolerance (interval)	Pearson's correlation
Gender (nominal two categories)	t-test
Age (ratio scale)	Pearson's correlation
Marital status (nominal two categories)†	t-test
Education (ordinal two categories)†	t-test
Income (ordinal two categories)†	t-test

†, Categories were combined for the purposes of the statistical analysis as a result of the low frequency of responses in some of the original categories.

TABLE 2: Reported means of sampled variables.

Variable	Full sample (n = 200)		Banking employees (n = 107)		Non-banking employees (n = 93)	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Retirement adequacy	3.7410	1.47470	3.80000	1.3927	3.6731	1.5686
Financial literacy (Objective) (%)	62.8000	20.8700	63.12000	21.5300	62.5300	20.2100
Financial literacy (Subjective)	4.6900	1.19200	4.92520	1.1218	4.4194	1.2187
Financial risk tolerance	3.4535	1.05540	3.56360	1.0641	3.3269	1.0366
Future time perspective	4.7419	0.95175	4.74150	0.9628	4.7420	0.9440
Gender (male)	0.5200	0.50090	0.49530	0.5023	0.5484	0.5003
Age	31.8600	5.48100	32.53270	6.0240	31.0860	4.6942
Married	0.4500	0.55810	0.47660	0.5018	0.4194	0.4961
Postgraduate education	0.2800	0.45010	0.27100	0.4465	0.2903	0.4563
Household income > M10 000	0.6100	0.48890	0.62620	0.4861	0.5914	0.4942

Research findings

Table 2 provides descriptive statistics of variables. A total of 200 respondents participated in the study where 53.5% of the sample worked in the banking industry and 46.5% in the non-banking industry.

There were no statistically significant differences between the perceived RA mean scores of the banking and the non-banking subsamples. In addition, there were no statistically significant differences between the FL, FTP or FRT mean scores of the two subsamples. However, for self-reported levels of FL, banking employees reported higher scores (mean [M] = 4.925, standard error [SE] = 1.12183) than non-banking employees (M = 4.4194, SE = 1.21872) and the difference is statistically significant, t (188.617) = 3.038, p = 0.003. The objectively measured FL levels of this sample were higher than those found in a previous study in Lesotho that made use of student participants (Rasoaisi & Kalebe 2015).

Findings from bivariate analysis

For the bivariate analysis, hypotheses were constructed for the relationship of each independent variable to the dependent variable. Directional hypotheses were only used where prior literature had confirmed that a specific directional relationship exists between the dependent and independent variables. The first hypothesis related to the relationship between subjective FL and perceived RA. For the full sample (n = 200), this study found a significant positive correlation between subjective financial knowledge and perceived RA (r = 0.383, p < 0.001). For each of the subsamples (banking and non-banking), there was also a statistically significant positive relationship between subjective financial knowledge and perceived RA.

The second hypothesis related to the relationship between objectively assessed financial knowledge and perceived RA. Again for the entire sample (n = 200), there was a significant positive correlation between the perceived RA score and objectively measured financial knowledge for the full sample (r = 0.368, p < 0.001). For each of the subsamples, there was also a statistically significant positive relationship between objectively assessed financial knowledge and perceived RA. Therefore, those who had higher levels of objectively assessed financial knowledge had higher levels of perceived RA.

With respect to FTP for the entire sample (n = 200), there was a significant positive correlation between FTP and perceived RA (r = 0.366, p < 0.001). For each of the subsamples, there were also statistically significant positive relationships between FTP and perceived RA. Therefore, those who reported higher levels of FTP had higher levels of perceived RA.

To determine whether a relationship exists between FRT and perceived RA, for the entire sample (n = 200) there was a small but positive significant correlation between FRT and perceived RA (r = 0.153, p = 0.031). For the non-banking subsample, there was also a statistically significant positive relationship between FRT and perceived RA. Therefore, those who reported higher levels of FRT had higher levels of perceived RA. However, for the banking subsample the relationship was not significant.

Findings from multivariate analysis

Multiple regressions were used to determine if the independent variables were predictors of the dependent variable (RA) in a combined model for the full sample and then for the subsamples of banking and non-banking employees. Table 3 shows the parameters for the full sample model. Three predictors out of nine were statistically significant predictors of perceived RA in the model (p < 0.05), namely objective FL, subjective FL and FTP. All beta values for these variables were positive, indicating that higher levels of objective and subjective FL, as well as a higher level of FTP, were all associated with higher levels of perceived RA. To assess multicollinearity in the model, the VIF was used to determine if a predictor had a strong linear relationship with other predictors (Field 2009). Looking at the full sample, VIF values were all below 10 and tolerance statistics were above 0.2, indicating that multicollinearity was not a concern. The average VIF was calculated as 1.317, which is close to 1, indicating that there were no multicollinearity issues.

Looking at the banking subsample, as set out in Table 4, three predictors of nine are statistically significant predictors of RA in the model (p < 0.05): FTP, household income and age. All beta values for these variables were positive indicating that a higher level of FTP, a higher household income and being

TABLE 3: Linear model of predictors for full sample.

Variables	Beta	SE	Sig. (p)	Std Beta	95% Confidence level	
					Lower	Upper
Constant	-1.115	0.872	0.187	-	-2.874	-0.564
Financial literacy (Objective)	1.140	0.541	0.036	0.161	0.073	2.206
Financial literacy (Subjective)	0.245	0.096	0.012	0.198	0.055	0.435
Financial risk tolerance	0.102	0.097	0.292	0.073	-0.089	0.293
Future time perspective	0.365	0.105	0.001	0.235	0.158	0.571
Male	-0.196	0.190	0.304	-0.066	-0.570	0.179
Age	0.024	0.019	0.296	0.089	-0.014	0.062
Postgraduate education	0.077	0.217	0.723	0.024	-0.350	0.504
Married	0.102	0.220	0.645	0.034	-0.333	0.536
Household income >M10 000	0.362	0.209	0.085	0.120	-0.050	0.775

SE, standard error, Sig., significance; Std, standard.

TABLE 4: Linear model of predictors for the subsample of banking employees.

Variables	Beta	SE	Sig. (p)	Std Beta	95% Confidence level	
					Lower	Upper
Constant	-1.040	1.101	0.0347	-	-3.226	1.145
Financial literacy (Objective)	0.781	0.719	0.280	0.121	-0.645	2.208
Financial literacy (Subjective)	0.080	0.142	0.575	0.064	-0.202	0.361
Financial risk tolerance	0.096	0.130	0.462	0.073	-0.162	0.355
Future time perspective	0.349	0.138	0.013	0.241	0.074	0.624
Male	0.187	0.245	0.446	0.068	-0.674	0.299
Age	0.048	0.024	0.045	0.209	-0.001	0.095
Postgraduate education	0.406	0.283	0.154	0.130	-0.155	0.968
Married	0.0146	0.296	0.623	-0.053	-0.732	0.441
Household income >M10 000	0.708	0.275	0.011	0.247	0.163	1.252

SE, standard error, Sig., significance; Std, standard.

TABLE 5: Linear model for predictors – Non-banking employees.

Variables	Beta	SE	Sig. (p)	Std Beta	95% Confidence level	
					Lower	Upper
Constant	-0.494	1.428	0.730		-3.334	2.347
Financial literacy (Objective)	2.164	0.880	0.016	0.279	0.414	3.913
Financial literacy (Subjective)	0.395	0.142	0.007	0.307	0.113	0.677
Financial risk tolerance	0.143	0.143	0.320	0.095	-0.142	0.428
Future time perspective	0.327	0.160	0.045	0.197	-0.008	0.645
Male	0.001	0.297	0.997	0.000	-0.592	0.590
Age	-0.032	0.034	0.359	-0.094	-0.100	0.036
Postgraduate education	-0.205	0.335	0.541	-0.060	-0.872	0.461
Married	0.358	0.326	0.275	0.113	-0.290	1.005
Household income >M10 000	-0.134	0.325	0.681	-0.042	-0.782	0.513

SE, standard error, Sig., significance; Std, standard.

older were all associated with higher levels of perceived RA. VIF values were all below 10 and tolerance statistics above 0.2, indicating that there were no multicollinearity issues within the data. The average VIF was calculated as 1.460, which was close to 1, further confirming that there were no multicollinearity issues.

Looking at the non-banking subsample, as reported in Table 5, three predictors out of nine were statistically significant predictors of RA in the model ($p < 0.05$), namely objective FL, subjective FL and FTP. These three beta values were positive, indicating that higher levels of objective and subjective FL, as well as a higher level of FTP, were all associated with higher levels of perceived RA.

Table 6 describes the overall regression model where the correlation between the variables is 0.524 for the full sample ($n = 200$). R^2, which provides an indication of how much variability in perceived RA could be explained by the predictors in the model, was 27.8%. The Durbin–Watson statistic, which provides an indication of whether the assumption regarding independent errors was met, is also reported in Table 6. In general, values close to 2 indicate that the assumption was met. The Durbin–Watson statistic for the full sample was calculated at 1.919. Non-banking employees had a Durbin–Watson score of 1.869 compared to banking employees who had a score of 2.031. This indicated that the assumption had been met for the full sample and the subsamples.

Table 6 also includes analysis of variance results that predict whether the model is significantly better in determining the

TABLE 6: Regression model summary.

Description of samples	R	R^2	F-statistic	Sig value (F-statistic)	Durbin–Watson
Full sample ($n = 200$)	0.524	0.274	7.970	0.000	1.919
Banking employees ($n = 107$)	0.569	0.324	5.167	0.000	2.031
Non-banking ($n = 93$)	0.588	0.345	4.865	0.000	1.869

Sig., significance.

outcomes than using the mean as a best guess. Looking at the full sample, the F-statistic is greater than 1 ($p = 0.000$). Similarly for both the banking and non-banking subsamples, the F-statistic were greater than 1 ($p = 0.000$). In all cases, this indicates that the models significantly improved the ability to predict the outcome variable.

Interaction analysis

As previous research found significant interaction effects between FTP, FRT and FL, additional interaction analyses were carried out using hierarchical regression for the full sample as larger sample sizes are generally required to detect significant interaction effects (Shieh 2009). The hierarchical model tested two-way interactions (Level 2), three-way interactions (Level 3) and finally the four-way interaction (Level 4). Results are presented in Table 7.
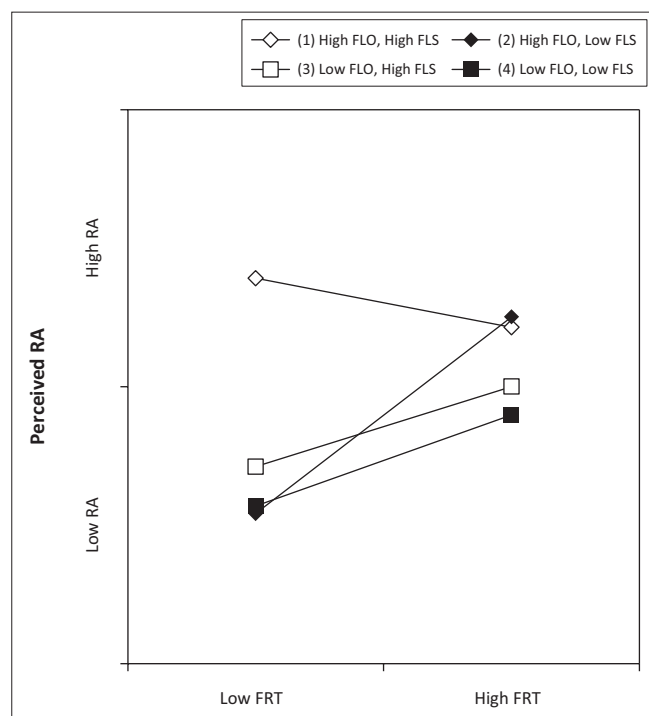
As detailed in Table 7, there was a significant two-way interaction between subjective FL and FRT in Level 2 of the regression model ($p < 0.01$). In addition, in Level 3, there was a significant three-way interaction between subjective FL, objective FL and FRT ($p < 0.05$). As the three-way interaction is the highest order significant effect, the remainder of the analysis focuses on analysing this relationship.

TABLE 7: Hierarchical regression analysis of perceived retirement adequacy for full sample.

Variable	Beta	T	Sig (p)
Level 1 (main effects)			
Financial literacy (objective) (FLO)	1.140	2.107	0.036
Financial literacy (subjective) (FLS)	0.245	2.538	0.012
Financial risk tolerance (FRT)	0.102	1.056	0.292
Future time perspective (FTP)	0.365	3.478	0.001
Level 2 (two-way interactions)			
FLO × FLS	0.843	1.938	0.054
FLO × FTP	-0.448	-0.795	0.428
FLO × FRT	0.062	0.111	0.912
FLS × FRT	-0.239	-2.801	0.006
FLS × FTP	-0.163	-1.790	0.075
FRT × FTP	-0.077	-0.878	0.381
Level 3 (three-way interactions)			
FLO × FLS × FRT	-0.793	-2.142	0.034
FLO × FLS × FTP	-0.089	-0.203	0.839
FLO × FRT × FTP	0.539	1.155	0.250
FLS × FRT × FTP	-0.113	-1.532	0.127
Level 4 (four-way interaction)			
FLO × FLS × FRT × FTP	0.653	1.825	0.070

Sig, significance; *T*, t-statistic.

Notes: All variables are mean centred. The original demographic control variables are included in the regression but are not reported for the sake of simplicity.

Source: Authors' own work based on Dawson, J.F., 2014, 'Moderation in management research: What, why, when, and how', *Journal of Business and Psychology* 29(1), 1–19. https://doi.org/10.1007/s10869-013-9308-7

RA, retirement adequacy; FLO, financial literacy (objective); FLS, financial literacy (subjective); FRT, financial risk tolerance.

FIGURE 1: Moderating effects of financial literacy on risk tolerance (three-way interaction).

The significant three-way interaction term indicates that the relationship between one of the variables and perceived RA is dependent on two other variables; however, the precise relationship cannot be specified; therefore post hoc analysis was carried out to determine the nature of the relationship by plotting slopes and carrying out slope difference tests (Dawson 2014; Dawson & Richter 2006).

Figure 1 illustrates the interaction effect by plotting simple slopes of the relationship between FRT and perceived RA at high and low levels of objective and subjective FL. Slope difference tests revealed significant differences between slopes 1 and 2 ($p < 0.01$) and slopes 1 and 4 ($p < 0.05$).

From Figure 1 it can be seen that in general higher levels of FRT were associated with higher levels of perceived RA, particularly for those with high levels of objective FL and low levels of subjectively assessed FL (slope 2). However, the exception to this was for those with high levels of both objective FL and subjective FL, where perceived RA decreased as FRT increased (slope 1). FL therefore appears to moderate the positive effect of FRT on perceived RA but only in the case where the individual has high levels of both objectively measured and subjectively assessed FL.

Discussion of findings

The first objective of the study was to assess whether employees in Lesotho perceive themselves to be adequately prepared for retirement. Perceived RA was measured on a seven-point scale and the descriptive results found a mean score of 3.74 and a standard deviation of 1.475 for perceived RA, indicating generally low levels of perceived RA as this score falls between 'neutral' and 'disagree to some extent' with respect to perceptions of perceived RA. Only 41% of respondents in this study reported scores of above 4, indicating that they were generally confident about their retirement preparations. However, comparing Lesotho to other countries, the perceived RA scores and percentage of those who believe they are adequately preparing for retirement for this study were lower than that found in prior studies (Chou et al. 2015; Malroutu & Xiao 1995; Van Dalen et al. 2010). This study also found that employees working in the banking sector reported higher scores for perceptions of RA than non-banking employees. However, the difference between banking and non-banking employees' perceptions of RA was not statistically significant.

When considering the results of the bivariate analysis, this study found that there was a positive correlation between subjectively assessed FL and perceived RA for the full sample. Looking at the results for each of the subsamples, banking and non-banking, there was a positive relationship between subjectively assessed FL and perceived RA, indicating that those with higher levels of subjectively assessed FL also demonstrated high levels of perceived RA.

In the multivariate context, this study found that subjectively assessed FL was a predictor of RA for the full sample. Similarly, subjectively assessed FL was found to be a predictor of RA for the non-banking sample. However, the results showed that subjectively assessed financial knowledge was not a predictor of perceived RA for the banking subsample. These findings are generally consistent with prior studies by Robb and Woodyard (2011), Babiarz and Robb (2013), De Bassa Scheresberg (2013), Lusardi and Mitchell (2011) and Bucher-Koenen and Lusardi (2011), who have found positive relationships between respondents' subjectively assessed FL

and various good financial behaviours, such as saving for retirement. In particular, the study confirms the findings of Van Dalen et al. (2010) that subjective financial knowledge is positively related with perceived RA. Robb and Woodyard (2011) found that financial knowledge was an important factor in financial decision-making and had a significant impact on financial behaviour, but they found that more than half of those who believed they had a fair amount of financial knowledge actually knew very little. Similarly, De Bassa Scheresberg (2013) found that respondents' subjective financial knowledge assessments did not mirror the objective FL measures. Many respondents gave themselves high scores, yet they did not demonstrate a high level of FL.

From a bivariate perspective, this study found a statistically significant positive relationship between objectively assessed FL and perceived RA. The same was found for each of the subsamples. Therefore, those who showed higher levels of objectively assessed financial knowledge had higher levels of perceived RA. In a multivariate context, similar results were found. Results from this study found objectively assessed financial knowledge to be a predictor of perceived RA for the full sample. For those in the non-banking subsample, objectively assessed financial knowledge was a predictor of perceived RA, but for those in the banking subsample it was not a significant predictor of perceived RA. The results above are generally consistent with prior studies conducted by Clark and d'Ambrosio (2002), Lusardi and Mitchell (2007), De Bassa Scheresberg (2013) and Bucher-Koenen and Lusardi (2011) who also found positive relationships between financial knowledge and various positive financial behaviours. In a multivariate context, the findings of this study appear to be consistent with research conducted by Babiarz and Robb (2013) who found that objective measures of financial knowledge were significant determinants of the propensity to save.

From a bivariate perspective, this study found that there was a statistically significant positive relationship between FTP and perceived RA for the full sample. A positive relationship was also found for each of the subsamples, where banking and non-banking employees' FTP score was related to higher retirement savings. The multivariate analysis also found FTP to be a predictor of perceived RA for the full sample and non-banking sample. However, the same was not found for the banking employee sample where FTP was not a significant predictor of perceived RA. Therefore, it can be concluded that for the full sample and the non-banking subsample there is a positive relationship between FTP and perceived RA, where higher levels of FTP were associated with higher levels of perceived RA.

These findings are generally consistent with studies conducted by Jacobs-Lawson and Hershey (2005), Chou et al. (2015) and Van Dalen et al. (2010) who have all found future time orientation to be positively associated with perceived RA. Jacobs-Lawson et al. (2008) also associated FTP with time spent planning for retirement, where the study revealed that FTP was positively related to time spent planning for retirement. Therefore, these findings associate higher levels of FTP with higher levels of perceived RA.

From a bivariate perspective, this study found that there was a statistically significant positive relationship between FRT and perceived RA for the full sample and for the non-banking subsample. The results for the banking subsample found that the relationship between FRT and perceived RA was not statistically significant. In a multivariate context, results did not point to FRT being a predictor of perceived RA both for the full sample and each of the subsamples. This finding is contrary to what Jacobs-Lawson and Hershey (2005) and Joo and Pauwels (2002) found, as their studies indicated that higher FRT was associated with higher RA scores. However, in the Joo and Pauwels (2002) study this finding only related to women, whereas there was no statistically significant relationship between these variables for men. Findings from Jacobs-Lawson and Hershey (2005) indicated that FTP and FRT interacted with one another to influence retirement saving. In the current study, no evidence was found of an interaction between FTP and FRT; however, subjective FL and objectively measured FL were found to interact with FRT. In particular, FL was found to moderate the relationship between FRT and perceived RA. In general, levels of perceived RA increased as FRT increased, which is in line with what has been found in prior studies. However, for those with high levels of both objectively measured and subjectively assessed FL, the relationship was negative as high levels of FRT predicted lower levels of perceived RA. Previous research has linked higher levels of risk tolerance with overconfidence related to retirement savings (Kim & Hanna 2015). Therefore, high levels of FL could be acting as a moderator of overconfidence, as individuals who are more financially literate may be more realistic about the extent to which they are adequately preparing for retirement, compared to others. It is important to note that this moderating effect only occurred when both objective and subjective FL levels were high, indicating that not only do individuals need to be financially literate but they also need to believe they are financially literate for this moderating effect to occur. Further exploration of the role that FL plays as a moderator of other behavioural variables may therefore be a fruitful area for further research.

This study also looked at the relationship between various demographic variables and perceived RA. From a bivariate analysis perspective, this study found that perceived RA scores for men and women were not significantly different and neither were there statistically significant differences in the scores of married and single respondents. There was also not a statistically significant relationship between age and perceived RA.

Another demographic variable tested to determine the relationship with perceived RA was education. Results from the bivariate analysis reported that there was a relationship between education and perceived RA, where the first-degree category reported significantly lower RA scores for the full sample and the banking subsample than those with postgraduate qualifications. The last relationship was between the perceived household income and perceived RA. This study found that there was a statistically significant difference between the perceived RA scores of those with higher

household income and those with lower household income for the full sample and the banking employees subsample. In the multivariate models for the full sample and the non-banking subsample, none of the demographic variables was a statistically significant predictor of perceived RA. However, in the banking subsample both age and household income were found to be significant predictors with those who were older, and those with higher incomes both being more likely to report higher levels of perceived RA.

Conclusion and recommendations

This study set out to achieve three objectives. The first objective was to determine whether employees in Lesotho perceived themselves to be adequately prepared for retirement. In addressing the first objective, this study considered the overall perceptions of perceived RA amongst a sample of employees in Lesotho. This study found that the full sample and both subsamples of employees in Lesotho had low confidence levels about retirement and their perceived RA scores were lower than those observed in other studies carried out in a variety of countries.

The second objective was to explore the link between FL, FTP, FRT and an individual's perception of their retirement preparedness. This study found relationships between FL, FTP, FRT and perceived RA for the full sample and each of the subsamples. In addition, interaction effects were found between FL and FRT, where the level of FL moderated the effect of risk tolerance on perceptions of RA. This highlights that the relationships between the behavioural variables themselves needs to be taken into account in research related to financial decision-making. Lastly, this study found that demographic factors such as age, household income and level of education are predictors of perceived RA. In the multivariate models for the full sample and the non-banking subsample, none of the demographic variables was a statistically significant predictor of perceived RA. However, in the banking subsample both age and household income were found to be significant predictors with those who were older and those with higher incomes both being more likely to report higher levels of perceived RA.

The assumption was that employees working in the banking industry might be more financially literate and as a consequence be better prepared for retirement than those working in the non-banking industry. This study found that banking employees' RA scores, FTP, FRT and objectively measured FL scores were not statistically significantly different from non-banking employees. Therefore, this study found that for this particular sample there were no significant differences between those working in financial institutions and those working in non-financial institutions, other than the fact that those in the banking sector subjectively assessed themselves as having higher levels of financial knowledge compared to non-banking employees. Further research would be required to determine whether this finding is more universal in the Lesotho context.

The findings of this study confirmed that there were differences in the predictors of RA when comparing those employed in financial institutions to those from non-financial institutions, where those employees in the banking industry who reported higher levels of FTP, higher household income and were older reported higher levels of retirement confidence. Similarly, this study concluded that those non-banking employees who reported higher levels of subjectively and objectively assessed financial knowledge and FTP had higher levels of retirement confidence. The findings and conclusions in this study were exploratory in nature and cannot be generalised to the broader working population of Lesotho.

This study provides insights to financial planners, educators and policymakers about the profile of individuals who are confident about retirement savings and how this contrasts with those who are not confident so that they are perhaps able to tailor advice and policies to particular subgroups of the population. The findings of this study indicate that many of the same behavioural factors that have been found to be related to perceptions of RA in developed countries, such as the United States, also play a role in Lesotho. Therefore, approaches to encourage retirement savings that have been successful in other parts of the world may also be successful in Lesotho. However, the participants in this study are not representative of the broader Lesotho population; therefore, further research would be required before this conclusion is generalised. Despite lacking specific legislation governing the pension fund industry, the financial sector in Lesotho is highly influenced by the Republic of South Africa (RSA). As a result, Lesotho might be able to adopt similar approaches and policies as those in RSA, to encourage individuals to prepare for retirement.

Therefore, this study has laid the foundation for future research in the field of retirement saving in Lesotho and other African countries. With respect to future research, the suggestion is to collect data from a more representative sample of employees in Lesotho, which might reveal new evidence that could contribute to a better understanding of the relationships between the various predictors in a broader Lesotho context. This will present an opportunity for the development of the literature in this field and also provide industry role players in Lesotho and across Africa to enhance their product offering.

Acknowledgements

Competing interests

Authors' contribution

T.N. made contribution to the design of the study, collection and analysis of data and writing up of findings. M.R. assisted with design of the study, interpretation of results and editing of the manuscript.

References

Agarwal, S., Amromin, G., Ben-David, I. & Chomsisengphet, S., 2015, 'Financial literacy and financial planning: Evidence from India', *Journal of Housing Economics* 27, 4–21. https://doi.org/10.1016/j.jhe.2015.02.003

Aiken, L.S. & West, S.G., 1991, *Multiple regression: Testing and interpreting interactions*, Sage, Newbury Park, CA.

Babiarz, P. & Robb, C.A., 2013, 'Financial literacy and emergency saving', *Journal of Family and Economic Issues* 35, 40–50. https://doi.org/10.1007/s10834-013-9369-9

Banks, J., Blundell, R., Disney, R. & Emmerson, C., 2002, 'Retirement, pensions and the adequacy of saving: A guide to the debate', *Fiscal Studies* 29, 1–40.

Becker, G.S., 1962, 'Irrational behavior and economic theory', *Journal of Political Economy* 70(1), 1–13.

Browning, M. & Crossley, T.F., 2001, 'The life-cycle model of consumption and saving', *The Journal of Economic Perspectives* 15(3), 3–22.

Bucher-Koenen, T. & Lusardi, A., 2011, 'Financial literacy and retirement planning in Germany', *Journal of Pension Economics and Finance* 10(04), 565–584.

Butler, M.B.J. & Van Zyl, C.J., 2012, 'Retirement adequacy goals for South African households', *South African Actuarial Journal* 12(1), 31–64. https://doi.org/10.4314/saaj.v12i1.2

CBL, 2008, *Introduction of government pension fund and its implication on inflation, savings and investment in Lesotho*, viewed 10 April 2018, from http://www.centralbank.org.ls/publications/MonthlyEconomicReviews/2008/Econ_Rev_Sept_2008.pdf

Choi, J.J., Laibson, D., Madrian, B.C. & Metrick, A., 2002, 'Defined contribution pensions: Plan rules, participant choices, and the path of least resistance', *Tax Policy and the Economy* 16, 69–113. https://doi.org/10.1162/089286402760173467

Chou, K.-L., Yu, K.-M., Chan, W.-S., Wu, A.M., Zhu, A.Y.F. & Lou, V.W.Q., 2015, 'Perceived retirement savings adequacy in Hong Kong: An interdisciplinary financial planning model', *Ageing and Society* 35(08), 1565–1586. https://doi.org/10.1017/S0144686X14000373

Clark, R.L. & d'Ambrosio, M.B., 2002, 'Financial education and retirement savings', paper presented at the Retirement Implications of Demographic and Family Change Symposium, 27–28th March, 2003, San Francisco, CA.

Dawson, J.F., 2014, 'Moderation in management research: What, why, when, and how', *Journal of Business and Psychology* 29(1), 1–19. https://doi.org/10.1007/s10869-013-9308-7

Dawson, J.F. & Richter, A.W., 2006, 'Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test', *Journal of Applied Psychology* 4, 917. https://doi.org/10.1037/0021-9010.91.4.917

De Bassa Scheresberg, C., 2013, 'Financial literacy and financial behavior among young adults: Evidence and implications', *Advancing Education in Quantitative Literacy* 6(2), 1–24.

DiCenzo, J., 2007, 'Behavioral finance and retirement plan contributions: How participants behave, and prescriptive solutions', *Employee Benefit Research Institute* 301, 1–19.

Field, A., 2009, *Discovering statistics using IBM SPSS statistics*, Sage, London.

Grable, J., 2000, 'Financial risk tolerance and additional factors that affect risk taking in everyday money matters', *Journal of Business and Psychology* 14(4), 626–630. https://doi.org/10.1023/A:1022994314982

Hershey, D.A., Jacobs-Lawson, J.M., McArdle, J.J. & Hamagami, F., 2007, 'Psychological foundations of financial planning for retirement', *Journal of Adult Development* 14, 26–36. https://doi.org/10.1007/s10804-007-9028-1

Hershey, D.A. & Mowen, J.C., 2000, 'Psychological determinants of financial preparedness for retirement', *The Gerontological Society of America* 40(6), 687–697. https://doi.org/10.1093/geront/40.6.687

I-FES, 2014, *Financial education interim strategy for the Kingdom of Lesotho*, FinMark Trust, Maseru.

Jacobs-Lawson, J.M. & Hershey, D.A., 2005, 'Influence of future time perspective, financial knowledge, and financial risk tolerance on retirement saving behaviors', *Financial Services Review* 14, 331–344.

Jacobs-Lawson, J.M. & Hershey, D.A., 2008, 'Perceptions of financial stability in retirement: Do Americans really know what to expect?', *Advances in Psychology Research* 22, 123–136.

Jacobs-Lawson, J.M., Hershey, D.A. & Neukam, K.A., 2008, 'Gender differences in factors that influence time spent planning for retirement', *Journal of Women & Aging* 16(3–4), 55–69.

Joo, S.-H. & Pauwels, V.W., 2002, 'Factors affecting workers' retirement confidence: A gender perspective', *Association for Financial Counselling and Planning Education* 13(2), 1–11.

Kim, K. & Hanna, S.D., 2015, 'Do US households perceive their retirement preparedness realistically?', *Financial Services Review* 24, 139–155.

Kim, J., Kwon, J. & Anderson, E.A., 2005, 'Factors related to retirement confidence: Retirement preparation and workplace financial education', *Association for Financial Counselling and Planning Education* 16(2), 77–89.

Lusardi, A., 2005, 'Saving and the effectiveness of financial education', in O.S. Mitchell & S.P. Utkus (ed.), *Pension design and structure: New lessons from behavioral finance*, pp. 157–184, Oxford University Press Inc., New York.

Lusardi, A. & Mitchell, O.S., 2005, *Financial literacy and planning: Implications for retirement wellbeing*, Working Paper 2005-108, University of Michigan Press, Michigan Retirement Research Center, Ann Arbor, MI.

Lusardi, A. & Mitchell, O.S., 2007, *Financial literacy and retirement planning: New evidence from the Rand American Life Pane*, Working Paper 2007-157, University of Michigan Press, Michigan Retirement Research Center, Ann Arbor, MI.

Lusardi, A. & Mitchell, O.S., 2009, *How ordinary consumers make complex economic decisions: Financial literacy and retirement readiness*, NBER working paper 15350, p. 91, viewed 02 Apr. 2018, from https://www.nber.org/papers/w15350.pdf

Lusardi, A. & Mitchell, O.S., 2011, 'Financial literacy around the world: An overview', *Journal of Pension Economics and Finance* 10, 497–508. https://doi.org/10.1017/S1474747211000448

MacFarland, D.M., Marconi, C.D. & Utkus, S.P., 2003, '"Money attitudes" and retirement plan design: One size does not fit all', in O.S. Mitchell & S.P. Utkus (eds.), *Pension design and structure: New lessons from behavioral finance*, pp. 97–120, Oxford University Press Inc., New York.

Malroutu, Y.L. & Xiao, J.J., 1995, 'Perceived adequacy of retirement income', *Financial Counseling and Planning Education* 6, 17–24.

Metropolitan, 2015, 'Time is a valuable tool for long-term investors', *Metrolive: Employee Benefits Newsletter*, 07 June, pp. 2–14.

Mitchell, O.S. & Utkus, S.P., 2004, *Lessons from behavioral finance for retirement plan design*, Oxford University Press Inc., New York, pp. 3–41.

Poterba, J., Rauh, J., Venti, S. & Wise, D., 2007, 'Defined contribution plans, defined benefit plans, and the accumulation of retirement wealth', *Journal of Public Economics* 91, 2062–2086. https://doi.org/10.1016/j.jpubeco.2007.08.004

Rasoaisi, L. & Kalebe, M.K., 2015, 'Determinants of financial literacy among the National University of Lesotho Students', *Asian Economic and Financial Review* 5(9), 1050–1060. https://doi.org/10.18488/journal.aefr/2015.5.9/102.9.1050.1060

Reyers, M., Van Schalkwyk, C.H. & Gouws, D.G., 2014, 'The rationality of retirement preservation decision: A conceptual model', *Journal of Economic Behavioral Studies* 6(5), 418–431.

Reyers, M., Van Schalkwyk, C.H. & Gouws, D.G., 2015, 'Rational and behavioural predictors of pre-retirement cash-outs', *Journal of Economic Psychology* 47, 23–33. https://doi.org/10.1016/j.joep.2015.01.005

Robb, C.A. & Woodyard, A.S., 2011, 'Financial knowledge and best practice behavior', *Financial Counselling and Planning Education* 22(1), 60–70.

Shambare, R., & Rugimbana, R., 2012, 'Financial literacy among the educated: An exploratory study of selected university students in South Africa', *Thunderbird International Business Review* 54(4), 581–590.

Segel-Karpas, D. & Werner, P., 2014, 'Perceived financial retirement preparedness and its correlates: A national study in Israel', *The International Journal of Aging and Human Development* 79(4), 279–301. https://doi.org/10.1177/0091415015574177

Selnow, G.W., 2004, 'Motivating retirement planning: Problems and solutions', in O.S. Mitchell & S.P. Utkus (eds.), *Pension design and structure: New lessons from behavioral finance*, pp. 43–51, Oxford University Press Inc., New York.

Shieh, G., 2009, 'Sample size determination for confidence intervals of interaction effects in moderated multiple regression with continuous predictor and moderator variables', *Behavior Research Methods* 42(3), 824–835. https://doi.org/10.3758/BRM.42.3.824

Skinner, J., 2007, *Are you sure you're saving enough for retirement? (NBER, 12981)*, National Bureau of Economic Research, Cambridge, MA.

Stewart, F. & Yermo, J., 2009, *Pensions in Africa*, OECD Working Paper on Insurance and Private Pensios No. 30, OECD Publishing, Paris.

Van Dalen, H.P., Henkens, K. & Hershey, D.A., 2010, 'Perceptions and expectations of pension savings adequacy: A comparative study of Dutch and American workers', *Ageing and Society* 30(05), 731–754. https://doi.org/10.1017/S0144686X09990651

Van Rooij, M., Lusardi, A. & Alessie, R.J.M., 2011, 'Financial literacy and stock market participation', *Journal of Financial Economics* 101(2), 449–472. https://doi.org/10.1016/j.jfineco.2011.03.006

Van Rooij, M., Lusardi, A. & Alessie, R.J.M., 2012, 'Financial literacy, retirement planning and household wealth', *The Economic Journal* 122, 449–478. https://doi.org/10.1111/j.1468-0297.2012.02501.x