
MSc IBM

Masters Dissertation

TITLE

Financial Literacy and Preparedness among Scottish First Time Buyers

AUTHOR

Supervisor

Declaration

I declare that the work undertaken for this MSc dissertation has been undertaken by myself and the final dissertation produced by me. The work has not been submitted in part or in whole regarding any other academic qualification.

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Financial Literacy and Preparedness among Scottish First Time Buyers

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Abstract:

Financial literacy is of increasing interest in the wake of the financial crisis of 2008 after financially illiterate individuals were lured into the property-owning dream with financial products of predatory nature in the form of subprime mortgages. Now almost a decade later it is still important to understand financial literacy among consumers as a way of limiting defaults and other negative micro or macro financial consequences. This dissertation studies the approach of Scottish first time homebuyers, their financial literacy and illiteracy. It also strives to investigate the correlation between awareness of one's own credit score, improvement of said credit score, raising capital for a deposit, awareness of 'hidden' fees related to obtaining a mortgage and its impact on financial literacy. This was done through a quantitative study with a snowball sampling strategy targeting citizens and residents in Scotland intending to buy property for the first time. The first section and financial literacy questions were borrowed from Gathergood and Weber's (2017) article investigating financial literacy among households in England and Wales as to utilise the previous research as a benchmark. The second part of the questionnaire was of the authors own making. The findings of the research were in line that early maths performance in primary school can be an indicator of the level of financial literacy an individual possesses. The research undertaken also showed that individuals who had a higher financial literacy score felt more prepared seeking a mortgage, while the financially illiterate overestimated their preparedness, which is a new concept in the field. The author had two hypotheses throughout the research. The first one stated that individuals with higher financial literacy would be more informed regarding the exact fees associated with taking out a mortgage, such as solicitors. This proved wrong and it became clear that there was a correlation that individuals with a high financial literacy would overestimate the costs and plan accordingly, whereas the participants with low financial literacy would underestimate and not prepare for the cost to the same extent. The second hypothesis regarded the participant's awareness of their individual credit score and its correlation to financial literacy. This was not proven by the data. However, there was a correlation between the length of time as to improve ones own credit score before seeking a mortgage and financial literacy. The financially literate expressed a longer timeframe as to improve their credit score, whereas the financially illiterate stated shorter time periods.

Financial service providers and policymakers can use the findings in the study as to better understand the reasoning of the consumer. It could also help pinpoint where the effort in the education system should be put as to generate more financially literate and 'prepared' consumers. It also highlights that further information needs to be made available to the public about what a lengthy process increasing ones credit score is asto make people prepare for financial products and services earlier on after making financial mistakes.

Keywords: Financial Literacy, Financial illiteracy, mortgage, first time buyers, Scottish first time buyers

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List of Abbreviations

FI	Financial Illiteracy
FL	Financial Literacy
STDEV	Standard Deviation

Chapter 1. Introduction

1.1 Introduction

This chapter will layout the base of why this topic is important to study, why it was selected by the author the aims and objectives, before giving a brief introduction to each individual chapter.

1.2 Background

Anthes (2004) considers that the steady increase of complexity in consumer financial products and services together with a growing shift from external decisions from experts to the average consumer with limited financial literacy was creating the “perfect storm”. Soon predatory lenders targeted borrowers with complex and expensive loans and mortgages, which was a contributing factor of the financial crash of 2008 (Lusardi & Mitchell, 2014; Rutledge, 2010). The financial crisis is over and it increased an interest in the field of financial literacy, whereas the average level of financial literacy (FL) among consumers has stayed the same. Key researchers such as Lusardi, Mitchell (Lusardi & Mitchell, 2007 & 2011 & 2014), Gathergood (2012; Gathergood & Weber, 2017), Anthes (2004), Gerardi, Goette and Meier (2010 & 2013) have broadened and expanded the field.

The UK government have promoted first time buyers to seek out loans to acquire their first home and property through various schemes (Spencer, 2011). One of these schemes is the 5% deposit for first time buyers purchasing a newly built home (Safieddine & German, 2016). The housing market has steadily increased in price as of late resulting in reduced affordability; the 5% deposit scheme makes the dream of climbing the property ladder possible. However, mortgage borrowers are exposed in this market due to lack of knowledge and experience. For mortgage applicants, selecting an appropriate mortgage can be a tricky task, which will impact a households finances through what is commonly the largest credit obligation and security (Collins, 2011). However, are Scottish first time buyers financially literate enough to make informed decisions regarding mortgages? Television programmes such as Channel 5's

“Can’t pay? We’ll take it away!” highlight the consequences of acquiring property and loans with limited financial literacy can have on a consumer (Channel 5, 2017). Several authors and studies in the field have shown that low financial literacy has a high correlation and in some cases causation for mortgage defaults (Collins, 2012; Duca & Kumar, 2014; Gerardi & Goette & Meier, 2010; Gathergood, 2012; Gerardi & Goette & Meier, 2013; Lusardi & Tufano, 2009; Smyczek & Matysiewicz, 2015). It is also suggested that financially literate individuals will explore the mortgage market and make comparisons for the best offer compared to those who are financially illiterate or possessing low financial literacy (Lee & Hogarth, 2000).

1.3 Beneficiaries

As financial products and services are growing more complex, the decisions are shifted more to the individual and the household (Anthes, 2004; Rutledge, 2010; Singh, 2014). Therefore understanding the financial literacy level among Scotland’s first time mortgage borrowers for the lenders could be a vital area as to predict future loan defaults and loan risks, and serves as an investigation of a niche subject in a large area. It also could bring an insight to how complex financial products and services are seen and understood by consumers as to cater information to their level of understanding rather than the other way round. This information could prove useful for fellow academics, banks, education bodies, regulators, policymakers and other organisations or individuals interested in financial literacy among Scottish first time buyers.

1.4 Rationale of the Research

The selection of this topic in particular is rooted in the author’s ambition to later work in the financial service industry, where complex notions and market statistics need to be presented to clients, both internal and external, in a manner which is appropriate. Researching this topic has given the researcher insight to an often-overlooked aspect of finance. Furthermore, understanding how financial information is communicated and understood will help in future meetings and presentations as to improve the accuracy of such endeavours.

1.5 Research Aim and Objectives

The principal aim of this research is to investigate various components and its relationship with financial literacy among Scottish first time buyers. This will include:

- Potential behavioural and personal background components and its relationship with financial literacy;
- The influence of individual awareness of one's own credit score and its correlation with financial literacy
 - The timeframe of individual credit score plan of improvement before seeking a mortgage and its potential as a financial literacy level indicator;
- The consumers raise capital for a deposit, awareness of fees while seeking a mortgage and any potential relationship with financial literacy levels.
- It also seeks to find relationship between feeling prepared for seeking a mortgage and financial literacy.

1.6 Chapter Introduction

1.6.1 Literature Review

The literature review intends to establish the currently available literature regarding financial literacy and the components researched. It also aims to critically evaluate previous research and its methods.

1.6.2 Methodology

This research utilised both primary and secondary research and the methods will be presented within this chapter as to explain the rationale of the research process. The secondary research was utilised as to give a greater understanding of the current body of knowledge in the field and the necessary information to understand where the primary research is coming from. The primary research consisted of a quantitative survey with 22 question utilising fixed answers, Lickert scale and agree or disagree statements. The analysis of the primary data was used as to evaluate the author's hypotheses.

1.6.3 Data Analysis

This chapter will present and analyse the data from the quantitative research undertaken and evaluate how it compared to the author's hypotheses. This will be done with the methods presented in the methodology chapter.

1.6.4 Conclusion, Limitations, and Future Research Recommendations

The findings will then be summarised in a conclusion, before the author presents limitations of the research and future research recommendations that refer to the findings or shortcomings in current literature.

2. Literature Review

2.1 Introduction

This chapter will provide information from the literature in the field as to understand what financial literacy/financial illiteracy is, its potential foundation and components before moving on to the historical background, current impact of financial literacy on society and future direction of the field. The last subcategory discusses the aspects of financial literacy and the financial market affecting Scottish first time buyers seeking out a mortgage.

2.2 Definition of Financial Literacy and Illiteracy

Financial literacy is not a new field in academia, however, the field has been expanding rapidly as of late and there has been a shift in how it is perceived and researched. As of yet there is no set formal definition of financial literacy and the definitions tend to change depending on the vantage point of the author. Earlier contributors in the field approached financial literacy from an anthropological vantage point. This is reflected in Melitz's (1970, p. 1022) definition of FL being "money as a system of symbols organised according to an elaborate code of rules concerning the correct way of employing the symbols and general rules applicable to all symbols". This is in contrast to modern, post-millennium scholars who are strongly leaning towards numerical understanding and knowledge (Disney & Gathergood, 2012; Lusardi & Mitchell, 2014; Smyczek & Matysiewicz, 2015; Lusardi & Mitchell, 2011; Gerardi, Goette, & Meier, 2013; Collard, Finney, Hayes, & Davies, 2012). OECD INFE defines FL as "a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing" (OECD INFE, 2011, p.3), combining both soft and hard aspects. The modern FL definition has support from several authors and contributors in the field (OCED, 2005; Yzaguirre, 2009; Huston, 2010; Lamdin, 2011). Moreover, other authors discuss financial illiteracy rather than low FL (Yzaguirre, 2009), Lusardi, one of the key authors in the field, and Mitchell (2007, p.37) define financial illiteracy "as being unfamiliar with the most basic economic concepts needed to make sensible saving and investment decisions, affecting saving,

retirement planning, retirement itself, mortgage, and other financial decisions”. This is in line with the definition from Al-Tamimi and Kalli (2009) of financial illiteracy as an individual’s complete lack of understanding of money, finances and its transactions. In an effort to bring clarity to the undefined field, Remund (2010) categorised FL definitions into five categories:

1. “Knowledge of financial concepts
2. Ability to communicate about financial concepts
3. Aptitude in managing personal finances
4. Skill in making appropriate financial decisions
5. Confidence in planning effectively for future needs”

(Remund, 2010 as found in: Bay, Catasús, & Johed, 2014, p. 38)

In Remund’s effort to categorise FL definitions we coincidentally end up with a neat, broad definition of FL itself in a bullet point form.

2.3 Potential Reasons for Financial Literacy and its Impact

The anthropological and numerical approach both has value in its approaches, however, as to evaluate individual’s relation with finance and services such as mortgage, the numerical viewpoint provides comparable figures easy to obtain and compare. Authors in the academic field have indicated various factors which may lead to low FL or financial illiteracy (FI) among individuals, such as: education, socioeconomic background (Calvet, Campbell, & Sodini, 2007; Campbell, 2006; Lusardi & Mitchell, 2007; Lusardi & Mitchell, 2011), self-control (Gathergood, 2012), previous and current housing situation (Gathergood & Weber, 2017; van Ooijen & van Rooij, 2016), patience (Dohmen et al, 2010), attitude towards risk (Dohmen et al, 2011), and age (Gathergood & Weber, 2017; van Ooijen & van Rooij, 2016; Lusardi & Mitchell, 2007) to mention a few. However, there is a slight divide in the FL approach in the field. For instance, Gerardi, Goette and Meier (2013) emphasise the relevance and correlation of verbal IQ and FL, a study, which utilised a combination of qualitative research in the form of telephone interviews and quantitative surveys with a convenience sampling of a database of subprime mortgage borrowers during the 2008 financial crisis. The findings gave a weak to no correlation of verbal IQ and FL. Moreover, popular mainstream media outlets further segments financial IQ as common

knowledge regarding financial literacy through quizzes and reporting (Marte, 2016; Financial Times, 2016), which could be damaging as a connotation between IQ and FL can be established among individuals, making people, falsely, believe that only individuals with a high IQ can be financially literate.

Possessing a low FL impacts an individual's financial health and has shown correlation with; illogical financial decisions (Smyczek & Matysiewicz, 2015; Singh, 2014), over-indebtedness (Elliot, 2005; Kim, Garman, & Sorhaindo, 2003; Gathergood, 2012), lower household savings and earnings (Smyczek & Matysiewicz, 2015), higher costs of financial services and individuals are less likely to plan ahead for future financial needs (Miller et al, 2009). However, Gerardi (et al, 2013) argues that there is no causation between low FL and the previously mentioned outcomes, but rather stems from behavioural problems. These behavioural components and its impact will be discussed later on within this chapter. Furthermore, other authors acknowledge behaviour problems as a component in financial decisions but FLs importance cannot be dismissed of individuals' financial health and decision (Japelli & Padula, 2013; Gathergood, 2012; Gathergood & Weber, 2017), which all utilised quantitative research methods when the subject was of a subjective nature. A qualitative approach could have generated richer data as to better understand the reasoning behind the answers provided. The following subsections of this part will discuss some key components, which are age, primary school maths performance, emotions, attitude towards risk, consumer patience, and their relationship with FL levels.

2.3.1 Age

Fewer adults buy property now before turning 30 in comparison to baby-boomers at the same age (Gathergood & Weber, 2017; van Ooijen & van Rooij, 2016). The market has changed, financial service products grown more complex and the financial threshold for Scottish first time buyers to acquire property has increased. Moreover, low FL is a global developed economy occurrence as i.e an Australian study in 2000 suggested that 46% of Australians possessed "unsatisfactory low levels of literacy and 15% being 'functionally illiterate'" (Worthington, 2009, p. 349). A later study highlighted that even if younger Australians had some financial education they lacked the understanding to

make informed decisions and where to turn to seek financial guidance, this was especially true among youth from low socioeconomic backgrounds. This is in contrast to a US study of early baby-boomers, which indicated that well educated baby-boomers have successfully accumulated personal wealth and maintain high FL (Lusardi & Mitchell, 2007). Both these findings could indicate socioeconomic background has a larger impact on FL rather than age alone. Furthermore, 60% of seniors are less likely to know their mortgage terms by comparison to 30% of younger mortgage borrowers, which could indicate a FL failure over time (Bucks & Pence, 2008). This is in line with Jappelli and Padula's (2013) research showing a 0.5% decrease in FL per year in correlation with aging. The authors argue that as one ages, one's financial investments are more set and requires less attention leading to a cognitive stagnation in regards of FL practise. The authors came to such a conclusion through quantitative statistic analysis of available various financial literacy and international population databases and reports. Decreased FL will not impede the mortgage holder to remortgage, it would instead make the process more cumbersome and timeconsuming (Collins, 2011). Furthermore, this has made pensioners and older people victims of vindictive and predatory financial service products as some of them do not comprehend the potential consequences (Collins, 2011). However, young people are not excluded from making financial mistakes and miscalculations. Gathergood (2012) found that 18-25 year olds were more likely to be behind on payments ranging from one to three months compared to older consumers. The likelihood of being behind on payments decreased significantly with age. Gathergood's (2012) research method was a quantitative survey distributed through the market research company YouGov, as such the research provides well analysed numerical data that takes numerous respondents background into consideration such as household type, income, employment situation, living conditions, social status etc. The data is therefore well rounded but fails to consider individual experiences that could have shaped the respondent. A potential explanation as to why young people are more in debt could be attributed to young people living more unstable lives with more uncertainty that can lead to greater pitfall than older individuals who have had time to get 'life sorted' and generated savings to pay off unexpected expenses. This explanation is in part supported by Collins' (2011) research.

It is clear that age does play a part in financial health, financial decisions and financial literacy. However, variables such as socioeconomic background, financial engagement, etc. seem to play a critical part. This precludes the possibility to make any definite generalisations regarding a correlation between age and FL.

2.3.2 Early Maths Performance

FL links together with cognitive reasoning, particularly in the field of mathematics. Amerikas, Chaplin and Leahy's (2003) quantitative survey and research was in favour of early maths educations but claimed that as to generate future individual financial wealth, planning instruments tuition was needed in addition to maths education. Further research shared the assumption of early maths performance as a precursor and predictor of high(er) FL. Research undertaken by Herd, Holden and Su (2012) continued this notion and showed a strong correlation between early-life cognition, schooling, and FL at later stages in life. Jappelli and Padula (2013) make further claims in favour of mathematical education and FL, by showing analysis of secondary data of PISA scores from 15 year old students. In nations where the average students PISA maths scores were uniformly low, it correlated with FL levels. Mathematical education and individual performance in primary school (age 10) has been argued to be a precursor of future financial literacy levels in both Jappelli and Padula's (2013) and Gatherwood (2012), Gathergood and Weber's (2017) work. The work of Gathergood (2012) and Weber (2017) asked the participants of a survey to recall their mathematical performance in primary school on a scale ranging between above average to below average, which was later analysed in correlation with FL. The findings indicated that there is some correlation, but no clear causation, between such statistical backgrounds. However, asking participants to recall memories and events from primary school at age 10 brings the risk of cognitive biases and incorrect memory recall (Kay, Mahoney, & Shaw, 2017; Tran, Hertel, & Joormann, 2011) skewing the data. Moreover, even if such data would be skewed, this potential weakness was not brought to the readers attention by the authors. It is also established that FL benefits from previous education is lost once the consumer becomes a homeowner and the FL levels become more uniform between households and is only relevant before the individual acquires property (Japelli & Padula, 2013). Furthermore, asking respondents to evaluate their previous

performance might skew the data as the individual could favour to answer in such a manner that is viewed more favourable by society (Bryman & Bell, 2015) giving a slight margin of error.

2.3.3 Financial Literacy and Emotions

The theory of *Homo Economicus* implies that individuals are rational creatures that can make sound economic decisions to maximise profit and efficiency. *Homo Economicus* as a theory implies that people follow:

1. "A stable set of preferences or wants or desires;
2. Perfect knowledge of alternatives relevant to a choice problem;
3. The ability to forecast the expected consequences of particular choices in the present and into the future even when the future is highly uncertain;
4. The ability to make use of this knowledge to maximize personal economic well-being or happiness
5. Rapid updating of behaviour based on new information
6. Consistency in the choices made by the individual
7. The insubstantial role of emotions and intuition in decision-making."

(Simon, 1987, p. 221)

Herbert A. Simon criticised this notion, as there is no such thing as perfect understanding or knowledge and therefore individuals cannot rationally predict macroeconomics, which are clouded in uncertainty (Simon, 1987). Simons reasoning and *Homo Economicus* would extend as such that individuals without an appropriate level of FL would not be able to make economical rational decisions as a clear understanding and knowledge in the matter is needed. Furthermore, the underlying assumption of *Homo Economicus* suggests that humans are capable of making rational financial decisions objectively without the influence of emotions. However, humans are flawed beings deceived and corrupted by subjective emotions that cannot be exclusively rational and/or objective without being on the anti-social (psychopath) spectrum (Boddy, 2011). Furthermore, qualitative research made in the field counters the previous point by indicating that the average person needs emotions to make rational decisions (Damasio, 2006). This, in combination with previously stated factors

towards FL, assumes that there is no solely rational human and that decisions, even FL ones, are influenced by emotions.

2.3.3.1 Consumer Patience

Academic research made in the field of patience and its relation to FL by Gathergood (2012), Gathergood and Weber (2017), Japelli and Padula (2013) supports Spencer (2011), Safieddine and Zaharovs' (2016) recommendations of patience being a part of healthy financial decisions. People with low self-control were more likely in Gathergood's (2012) empirical quantitative research of 3041 UK households to make use of expensive payday loans, credit cards and other financially questionable loans than their patient counterparts. Lack of patience was one of the key factors towards household overindebtedness and such households had a 15.4% lower average of FL in the study. Furthermore, as impatient consumers were more likely to make impulse expenditures and less likely to save money, they were therefore more exposed to suffer the effects of financial shock than those with a higher level of patience (Gathergood, 2012). Patience remained an aspect of Gathergood's further research in the UK housing market together with Weber in 2017. In the analysis of the data it showed that, the participants did not strongly self-identify as either impatient or patient with an average of 5.7 on an 11-point scale with 10 being 'very patient'. Furthermore, an interesting contrast emerged from the data set as homeowners being roughly 4% more impatient but also 29% more risk averse than renters (Gathergood & Weber, 2017). This could be a statistical abnormality or an indication that homeowners impatience manifests itself as to acquire property to minimise situations of uncertainty such as renting. Moreover, renting is more rigid and as of late more favoured towards landlords with six month leases being the norm, not attractive for a family household (Spencer, 2011). However, further research would be needed as to make a conclusive statement in the matter.

2.3.3.2 Attitude towards Risk

Purchasing property involves seen and unforeseen risks, such as e.g. future employment situation, macroeconomic changes, acts of god(s), housing market, to only mention a few. The financial crisis highlighted how quickly an asset could be rendered

financially 'useless' to the consumer who then would be in possession of a mortgage exceeding the current worth of said property (Lewis, 2011), if the household earnings were sufficient as to retain the property then this was not an issue. However, households whose earnings dropped could have been forced to sell the property at a loss and be put in debt in such a situation. Researchers Bucher-Koenen and Ziegelmeyer (2014) argue that the financial crisis of 2008s impact on the financially illiterate went beyond monetary loss, as it caused them to sell their most valued asset. Households often had to sell their property at a loss to cover debt and had to resort to renting or other living accommodations (Lewis, 2011). Households with low FL are financially fragile (Campbell & Cocco, 2003; Gathergood, 2012; Rutledge, 2010) and the recuperation period was prolonged as the crisis scared off the financial illiterates from investing in financial markets (Bucher-Koenen & Ziegelmeyer, 2014; Bucher-Koenen & Ziegelmeyer, 2011). The British housing market did not suffer the same harsh consequences as the US housing market. However, the pattern might repeat itself as the consumers are warned regarding the uncertainty of the BREXIT, its impact on the housing market (Davidson, 2017; Evans & Pickford, 2017), warnings of a potential burst of the UK housing bubble (O'Grady, 2016) and the decrease of UK house prices (Monaghan, 2017). As Simon (1987) argued there is no such thing as perfect knowledge and consumers will enter the market with various understanding and FL. Research undertaken in the US concerning FL, mortgage preference and risk level highlights that it will influence what mortgage type and rate the consumer will select (Campbell & Cocco, 2003; Coulibaly & Li, 2009). Furthermore, Hullgren and Söderberg's (2013) research of 505 households in the Swedish housing market were in favour of Campbell, Cocco (2003), Coulibaly and Li's (2009) claims. Hullgren and Söderberg (2013) further expanded that household's with low FL are more risk averse in the selection of mortgage choice, which is in line with Gathergood and Weber's (2017) findings. However, the studied households in Sweden do not share the same concept of 'property ladder' as the UK market found in UK and US based work, which could result in a larger predisposition towards less aggressive methods of seeking a mortgage. Further research in the field by Gathergood and Weber (2015) shows that financially literate people are more likely to select an adjustable rate mortgage than their counterparts and as such avoid the term premium of a fixed rate mortgage. In accordance to the research mentioned it is argued that risk aversion in combination with

FL influences the decision of what type of mortgage the household selects and at what cost.

2.4 Historical background and direction

Before the financial crisis of 2008, FL was a narrow field with few contributors and of low importance outside of academia. Before 2008, authors such as Anthes (2004) believed the low average financial literacy and increasing complexity of financial services and decisions made by consumers was the perfect storm for a financial crisis. Furthermore, the absence of financial education has its impact and Americans now view debt as a lifelong liability (Anthes, 2004). This in combination with the increasing shift of financial decisions such as pension, insurance, larger variety complex financial services, and minimal consumer protection laid the foundation for the 2008 crisis in the US (Lusardi & Mitchell, 2014; Rutledge, 2010). Anthes (2004) predicted that the financial industry would exploit the situation with predatory services and loans aimed towards the vulnerable consumers. The prediction was made through analysis of secondary data and market trends alone rather than obtaining primary data. The predictions laid out in Anthes' (2004) work was to be proven right by the financial crisis of 2008. Subprime loans targeted towards low income, uneducated and minority demographics (Phang, 2013), all groups associated with low FL (Lusardi & Mitchell, 2014; Lusardi & Mitchell, 2007; Rutledge, 2010) in a predatory manner that was a part of the financial collapse in 2008. Financial literacy was not the cause of the financial market to crumble but it was a vital part in its downfall.

2.4.1 Current Direction

In the wake of the financial crisis of 2008, an interest in FL was awoken as either a precursor of future potential financial crisis (Anthes, 2004; Smyczek & Matysiewicz, 2015), predict mortgage defaults (Lusardi & Mitchell, 2014; Gerardi & Goette & Meier, 2013), as a preventive measure through regulation and customer protection e.g. Dodd Frank Act (Hastings, Madrian, & Skimmyhorn, 2013; Smyczek & Matysiewicz, 2015), or even as to hold individuals partly responsible (Stewart & Annibale, 2013). Whatever the reason for the growing interest in the narrow academic field, it is now a hot topic in politics, banking and media discourse (Hastings, Madrian, & Skimmyhorn, 2013;

Smyczek & Matysiewicz, 2015; Stewart & Annibale, 2013) making it more relevant than ever before.

2.4.2 Current Impact

Anthes (2004) argued that private financial retirement consists of three legs of a stool, social security, pension, and personal savings, which was a part of his market predictive analysis. In the US the accumulation of wealth in the 1930s began at the age of 20 until the late 60s with retirement seldom lasting longer than 20 years. In contrast, today's generation in the new millennia have less time working up capital as they start from the age of 25 to 65 and stay retired for 35 years (Anthes, 2004). The longer life expectancy has an impact (Anthes, 2004) but also the shift in how debt is used and the expenses of the new generation of adults, (Elliot, 2016) i.e. student loans. If one agrees with Anthes (2004) predictive components and the relevance of financial education as a tool to battle a future financial dent or even crisis, then one could look at the UK's household economy statistics. In recent years the household savings and pension savings has gone down significantly in the UK (Trading Economics, 2017; Bingham, 2016) with the average personal savings reduced by 8.38% in the first quarter of 2017 compared to the same period in 2016 (Trading Economics, 2017). Households have less disposable income, receive less return on investments, and pension than in the past (Bingham, 2016). Furthermore, the UK government's previous actions and cuts to public pension and increased state retirement age will have an impact on the average saver and household (Brodbeck, 2016; Kentish, 2016; Stewart & Mason, 2017) as it will put pressure on individuals to privately save for their pension. Therefore, the average citizen and household will have to navigate the financial market and select the appropriate financial services for the future with or without the appropriate knowledge.

2.4.3 Financial Literacy Education

Financial education is a divided subsection of FL in regards to its benefits. Some authors argue that FL education could be key to battle the previously mentioned trends and turn them around (Collins & O'Rourke, 2010; Hathaway & Khatiwada, 2008; Lo, 2009; Singh, 2014), but also in regards to financial confidence (Collard, et al, 2012) and as to reduce overindebtedness (Miller, Godfrey, Levesque, & Stark, 2009; Collard, et al,

2012). This is in line with the rationale that providing financial education to the masses will stabilise the micro and macro level of the financial market (Lusardi, 2008; Lusardi & Tufano, 2009; Lo, 2009; Rutledge, 2010; Singh, 2014). However, as of yet there is no long-term data or studies as to support these claims that has been verified outside of small test groups. Lusardi and Mitchell (2014) argue that financial education needs to provide tools that focus on special demographic groups rather than a blanket approach. This line of thinking is more common among American academics and would be borderline impossible in regards of practical implement on a grander scale with the US and the UK's education budgets. Furthermore, some argue that it is difficult to provide educational tools that are easy to comprehend (Lusardi & Mitchell, 2014) and to keep up with an ever increasingly complex financial environment. Even if there is some evidence as to the benefits and impacts of financial education, it is difficult to establish a clear causation (Hastings, Madrian, & Skimmyhorn, 2013). However, Yzaguirre (2009) highlights that in a similar manner of language literacy; FI could trickle down and improve FL on future generations. The assumption is that parents and guardians will, with various degree of frequency, impart financial knowledge with their offspring and child of guardianship. Whereas the trickledown effect of language literacy is established naturally through interaction in majority, if not all, cultures, the same cannot be said about FL. Certain nations cultures such as in the UK (Boren, 2015) and Sweden (Kwintessential, 2017) have a widespread ingrained cultural taboo in regards to discussing financial matters both publically and within the family, making discussions about financial topics less likely. Yzaguirre (2009) and current literature has not regarded this as a flaw in why trickling down effect of financial literacy has not been present as of yet.

Furthermore, financial education is a costly matter and Rutledge (2010), Lusardi and Mitchell (2014) highlight that the effectiveness of such measures could not justify the price of such endeavours. Especially when there is little long-term proof of its positive impact on people and society over all. Therefore Deevy, Lucich, Beals (2012), Lusardi and Mitchell (2014) argue that protecting consumers would be more efficient through regulatory and legal procedures in comparison to undertaking financial literacy educational efforts. The short-term benefits of financial education have been difficult to prove as have long-term effects so far. However, Japelli and Padula (2013) conclude in

their research that financial literacy education is the investment of “human capital” and that such measures will help accumulate personal wealth for the individual in the future. The authors do acknowledge the costs and propose models as to make a suitable trajectory of future increase of populous FL and net spending. This is in contrast to the hybrid of qualitative and quantitative work of Gartner and Todd (2005) whose study showed no effect on credit balance after improving financial literacy among students compared to a control group, which repeated previous studies methods without yielding the same claimed long-term results.

2.5 The Road to a Mortgage and Household Preparedness

Pinpointing and defining household or individual financial preparedness is a difficult if not an impossible task. With that said it is clear that a mortgage will most likely be the biggest financial service that an individual and household will partake in throughout their lifetime (Spencer, 2011; van Ooijen & van Rooij, 2016). The obtained property will be an asset to the individual and can later be used as an underlying asset or collateral for other loans or business ventures (Safieddine & Zaharovs, 2016; Spencer, 2011). Therefore, it is important that the consumer is knowledgeable as to make informed decisions, be financially prepared and have a suitable life style as it will potentially have a long-term impact on their financial life. This section will try to establish some additional factors at play to prepare for the path to obtaining a mortgage.

2.5.1 Mortgage Market Research

While in search of a product or service, it is proposed that the consumer needs to:

1. Collect information regarding the service or product.
2. Evaluate the information gathered.
3. Comprehend its meaning and impact.

(Jobber & Ellis-Chadwick, 2013).

In the mortgage market, this demands that the individual or household possesses FL and cognitive ability as to successfully follow these three stages. Gibler and Nelson’s (2003) claim that the mortgage market is a weak information market as the information required is not easily available to the average consumer, which further complicates the topic. Some of the information weaknesses were through regulations such as the Dodd

Frank Act 2010 (The Dodd-Frank Wall Street Reform and Consumer Protection Act, 2010) in the US and the mortgage credit directive (Directive 2014/17/EU, 2016) in the European Union introduced to improve the availability of information. However, research still indicates a need for financial mortgage advisors to provide information and navigate the market (Gathergood & Weber, 2017; Hullgren & Söderberg, 2013; Spencer, 2011). For households and individuals to research the market and learn about types of mortgages, terms and its fees is both time consuming and costly (Collins, 2011). Moreover, research indicates that people who are more likely to be rejected by banks spend less time researching the mortgage market and available financial products (Lee & Hogarth, 2000). The UK has a tradition of well-established mortgage adviser service market available at either a fee or for free (Spencer, 2011), which is a clear advantage if the mortgage market indeed is a weak information market. Some UK banks even perceive mortgage advice as imperative enough to offer to add the additional advice costs on top of the mortgage as to make sure the households receive the proper guidance and information (Safieddine & Zaharovs, 2016). This is in accordance with van Ooijen and van Rooij (2016) finding that the participants in their study considered “the advice of the mortgage lender (49.4%) or an independent mortgage broker (54.4) as the most important source of information when purchasing a house” (p.9). Van Ooijen and van Rooij (2016) sent out a questionnaire to 2184 household members and received 1464 completed surveys, a 67% response rate, a so-called quota sampling (Bryman & Bell, 2015). This is done to gain a proportionate view of the populous, but van Ooijen and van Rooij’s work is slightly skewed as a higher rate of homeowners completed the questionnaires than renters to truly represent the Dutch housing market. Moreover, seeking and receiving financial advice does not equal internalisation of guidance given. Mitchell and Smetters’ (2013) survey based research found that two thirds of people seeking financial advice from professionals were only willing to proceed according to guidance if it was in line with their preconceived ideas and individuals with a lower FI were more likely to rely on the advice of friends and family than a professional. This research fails to gather the potential individual and subjective reasons as to why this is how the respondents respond to financial advice. Moreover, mortgage advisors can still mislead the consumer with their advice due to brokers own interests, such as bank incentives, (Collins, 2011) or the broker being inexperienced. Such risks are low in the UK as the mortgage brokers and advisers are

well certified and regulated in the EU (Directive 2014/17/EU, 2016) and UK (Spencer, 2011). Research in the field argues that a more vital issue is that households and consumers who are financially illiterate and have low FL are significantly less likely to seek professional financial guidance (Hullgren & Söderberg, 2013; Japelli & Padula, 2013; Lee & Hogarth, 2000; Lusardi & Tufano, 2009; Mitchell & Smetters, 2013; Phang, 2013), they are however, more likely to rely on information from friends and family regarding financial services and option (van Rooij, Lusardi, & Alessie, 2011). Furthermore, the research process of mortgages has become easily available to the consumer due to online mortgage comparison sites such as, Compare the Market (Comparethemarket.com, 2017), Money Super Market (Money Super Market.com, 2017) and Experian (Experian, 2017). These online services ask you to provide the necessary information and will obtain the consumers credit score and will generate available mortgage loans and its information (Comparethemarket.com, 2017; Experian, 2017; Money Super Market.com, 2017). This makes the search easier for the consumer but FL would still be needed as to comprehend and compare the options. Research showed that 27.4% of the participants considered the Internet as an important source of information regarding purchasing a house (van Ooijen & van Rooij, 2016). Little research exists regarding these online services and how it relates to financial literacy, a potential field for further studies. It is the hypothesis of the author that Scottish first time buyers with low financial literacy will have done less financial research and plan on seeking professional financial advice ahead of acquiring a mortgage and will subsequently fail to consider costs of advice, solicitors, lawyers and other fees.

H1. A low awareness of 'hidden' costs associated with a mortgage and failure to save for such expenses correlates to low financial literacy.

2.5.2 Current Challenges Facing Scottish First Time Buyers

To acquire a mortgage for first time buyers in Scotland several key conditions need to be met; a stable income, a healthy credit rating, money for deposits, being a UK resident or citizen, and to some extent a clean criminal record (Spencer, 2011; Safieddine & Zaharovs, 2016). A good credit rating takes years to build up and only a few moments to destroy. It could be the difference between a high mortgage interest

and a low one (Spencer, 2011). Furthermore, first time buyers when investing in a newly built home need a minimum of 5% deposit as security for the bank, which can be obtained through savings, family loans or for some risky buyers through credit cards (Safieddine & Zaharovs, 2016). Miller (et al, 2009) highlighted that people with low FL seldom prepare for future expenditures and fail to save money. People with a low FL are therefore more likely to fail to pay bills, credit cards and budget their daily expenditure and life according to their financial situation (Smyczek & Matysiewicz, 2015; Singh, 2014; Miller, Godfrey, Levesque, & Stark, 2009), all actions that seriously damage an individual's credit rating (Safieddine & Zaharovs, 2016). This in combination with low FL households having lower earnings and less healthy credit ratings (Disney & Gathergood, 2012; Lusardi & Mitchell, 2007; Lusardi & Mitchell, 2014) puts them at a disadvantage in obtaining a favourable mortgage.

Millennials are the majority of first time buyers and belong to "generation rent", meaning that accommodation is consuming large parts of their wages more so than previous generations (Elliot, 2016) limiting the amount of savings that can be put towards a deposit each month. Fewer of the millennials own property before turning 30 in comparison to baby-boomers at the same age (Gathergood & Weber, 2017; van Ooijen & van Rooij, 2016) and barely half of all families in Britain own their own property (Elliot, 2016). Arguably, the current generation of first time buyers are at a disadvantage of buying property and even more so are those from said generation with lower FL and who are FI.

2.5.3 Credit Score

Consumer credit has been a part of the human experience for the past 3000 years with its first record in Babylonia. Consumer credit lending has expanded in the past 750 years leading up to the Dark Ages, industrial revolution (Thomas, Oliver, & Hand, 2005) and especially in the post-modern information age. The current credit score used in the UK by the likes of Equifax (Equifax, 2017) and Experian (Experian, 2017) are a few of a multitude of consumer credit models that can use up to 1000 variables in its algorithm (Thomas, Oliver, & Hand, 2005). A consumer credit model is an algorithm, or model, which calculates with perceived vital information regarding the consumers financial

history as to project the risk of the individual paying back future credit owed (Thomas, 2009). For instance the credit score service provider Equifax (2017) takes:

- The number of accounts in the consumers possession;
- The types of accounts;
- The consumers used credit compared to available credit;
- The length of the consumers credit history;
- Consumer payment history

into account within the algorithm. Furthermore, the various aspects have different weighting to them:

- “Payment history: 35%
- Used credit vs. available credit: 30%
- Type of credit used: 15%
- New credit: 10-12%
- Length of credit history: 5-7%”

(Equifax, 2017). As showcased in previous research, FI and low FL consumers are more likely to be behind on payment (Gathergood, 2012), overindebted (Elliot, 2005; Kim, Garman, & Sorhaindo, 2003; Gallery & Gallery, 2014; Gathergood, 2012), fail to maintain savings (Disney & Gathergood, 2012), obtain more expensive credit options (Gathergood, 2012; Miller, et al, 2009), be unprepared for economic changes leading to further indebtedness and expensive credit (Gallery & Gallery, 2014; Klapper, Lusardi, & Panos, 2012; Singh, 2014), make illogical and unhealthy financial decisions and lifestyle (Singh, 2014; Smyczek & Matysiewicz, 2015) in combination with a lower than average household earnings and savings (Disney & Gathergood, 2012; Smyczek & Matysiewicz, 2015; van Ooijen & van Rooij, 2016; van Rooij, Lusardi, & Alessie, 2011). This will make individuals with a low FL and who are FI score low and be perceived as a riskier investment to lend credit to and did find it difficult to improve said score. However, i.e Experian has lately altered the algorithm so as to not score down consumers in debt, and how debt is managed is a factor of importance, whereas late payments and results goes on record for the next six years (Kubiak, 2015). This means that it is now easier to improve one’s credit score through Experian’s consumer credit model if ones background is of a financially negative nature. However, the climb will take time to

reach a favourable credit score position for even the financially literate. Especially since the individuals with low credit scores have a limited access to financial products and solutions to help them at an affordable rate or fee (Lusardi & Tufano, 2009; Miller, et al., 2009; The Money Advice Service, 2017; Thomas, 2009). This leads to a situation where poor people with low FL and FI with the best intentions can spiral downwards financially (The Money Advice Service, 2017; Thomas, 2009). This is one of the drawbacks of a strict consumer credit model algorithm (Thomas, 2009), however, the future of AI in “fintech” could potentially help distinguish and help those willing to improve their situation (Byrnes, 2017).

This section highlighted the importance of preparation for a mortgage years prior to approaching such financial service products so as to gain a mortgage at a reasonable interest rate and fees. With this section in mind, the author of the dissertation hypothesises that Scottish first time buyers with low FI will have spent little time and effort into increasing or maintaining their credit scores before applying for a mortgage and fail to grasp the period for credit score improvement.

H2: Individuals with low financial literacy among Scottish first time buyers fail to keep track of their personal credit score and will be unwilling to improve their credit score and will underestimate the timeframe needed to increase their credit score before seeking a mortgage.

Chapter 3. Methodology

3.1 Introduction

The appropriate research methods and methodology are necessary to achieve data, which will accurately represent the participants and achieve the goals of the study that is undertaken. This chapter will outline the primary research, pilot study evaluation and secondary data and how it was gathered and why. The chapter will then continue to declare how biases and ethical issues have been avoided and/or acknowledged, how the research will be validated and its reliability increased.

3.2 Research Method Evaluation

3.2.1 Primary Research

3.2.1.1 Data Gathering

This dissertation and research will focus on the modern interpretation valuing numerical ability and its measure. Obtaining a FL score is a 'similar' process to that of an IQ test as it will provide a number easy to compare and analyse. The appropriate measure to obtain this primary data would be through quantitative research methods such as questionnaires (Bryman & Bell, 2015). Key authors in the area have strongly relied on quantitative research to expand and explore the field of FL. For instance, Lusardi (Lusardi & Mitchell, 2007; Lusardi & Mitchell, 2011; Lusardi & Tufano, 2009), Mitchell (Mitchell & Smetters, 2013; Lusardi & Mitchell, 2014), Gerardi, Goette, Meier (Gerardi, Goette, & Meier, 2010; Gerardi, Goette, & Meier, 2013), and Gathergood (Disney & Gathergood, 2012; Gathergood, 2012; Gathergood & Weber, 2017) have all relied on quantitative methods to conduct their research. This was also the case for the data gathering method within this study, which selected a quantitative questionnaire.

3.2.1.2 Sampling

As the author does not have access to a database to seek respondents, the study will rely on snowball sampling as to generate participants (Bryman & Bell, 2015). While conducting the survey it became clear to the researcher that the participants reached by the first three self-promotion campaigns had a high demographic currently in or finished

some form of higher education. The snowball sampling spread through the word of mouth or in this case through “reposts or share” social media. Therefore there is a risk that people who already had an interest in finance, mortgage, or buying property are more likely to participate and share it, skewing the data from truly reflecting the populous (Bryman & Bell, 2015). This was observed by the researcher as all but one who shared and reposted the questionnaire link were people with business, finance and maths degrees, with the majority of their friends hailing from academia. Therefore, the researcher approached other sources with a larger demographical diversity to avoid the data being bias and skewed. Efforts were made to self-promote the study in other social circles, which was met with lukewarm interest and participation stream. Furthermore, the access to promote in other social media groups with other demographics was largely denied by admins, minimising the expected participant outcome. This may have skewed the data and not been representative of the first time buying citizens and residents of Scotland. Moreover, there is a lack of control regarding the participants with the anonymous quantitative questionnaire snowball sampling approach, there is little guarantee that people will answer truthfully, that they are indeed first time buyers or are even relevant for the study. Furthermore, while asking individuals to evaluate their own performance then the answers might be affected by the Dunning-Kruger effect. The Dunning-Kruger effect is the theory that poor performers and unskilled are not aware of their own shortcomings and hence will over-evaluate themselves (Kruger & Dunning, 1999), which will impact the data.

3.2.1.3 Qualitative and Quantitative Research

“Generalizable” differences between quantitative and qualitative research

Quantitative	Qualitative
Numbers	Words
Point of view of researcher	Point of view of the participants
Researcher distant	Researcher close
Theory testing	Theory emergent
Static	Process
Structured	Unstructured
Generalisation	Contextual understanding
Hard, reliable data	Rich, deep data
Macro	Micro
Behaviour	Meaning
Artificial setting	Natural setting

Table 1

(Bryman & Bell, 2007, p. 426)

There are many differences between qualitative and quantitative research. They both have different strengths and weaknesses and cater to different types of research in favour of their strengths. The strengths of quantitative research are that it; builds on data, numbers, and is ‘generalizable’ to mention a few. Furthermore, a questionnaire has the potential to reach more participants with little time investment besides promotion and data analysis from the researcher compared to qualitative research that is, by comparison, time consuming (Arthur et al, 2012). However, Bryman and Bell argue that qualitative research draws its data from the participants point of view rather than the researchers, giving richer and deeper data with meaning from the natural setting of the participants in contrast to the researchers quantitative artificial setting (Bryman & Bell, 2015). The author disagrees, as a well-researched quantitative approach needs to be anchored in ‘reality’ and reducing the gathered data to polar opposites is a strong claim. The paradigm reality of the flawed human differs from the objective reality skewing the findings, a notion similar to the postmodern view of perceived ‘reality’ (Guba & Lincoln, 2005). It is therefore the job of the researchers to try to keep the influence on the data and its interpretation to a minimum (Bryman & Bell,

2015), which is easier with quantitative studies grounded in numbers and statistics. Furthermore, Guba and Lincoln (2005) argue that one of the controversies of qualitative research is control of the study. This is due to the fact that the researchers are the ones interpreting and giving the data meaning but also the ones deciding what is to be made public and what is to be hidden/censored. This aspect of controlling the data can be either intentional or unintentional and can significantly alter the findings.

The questionnaire has provided static information regarding current FL level, some personality traits and behaviours, loan preparedness, nurturing of credit score etc. but fails to provide information on the complex background behind the participants answers.

3.2.1.4 Hypothesis Testing

The questions within the questionnaire need to reflect the concepts and the aims of the study, however, the analysis methods must be appropriate while working the gathered data (Bryman & Bell, 2015). There are numerous approaches to analyse quantitative data (Bryman & Bell, 2015). This dissertation will utilise standard methods of descriptive statistics such as average, mean and standard deviation to analyse and describe the data collected from the respondents. These methods are common and well represented within the field of quantitative research (Bucher-Koenen & Ziegelmeier, 2014; Calvet, Campbell, & Sodini, 2007; Campbell & Cocco, 2003; Disney & Gathergood, 2012; Gathergood, 2012; Gathergood & Weber, 2017; Gerardi, Goette, & Meier, 2013; Japelli & Padula, 2013; Lusardi & Mitchell, 2007). Average (Mean) is simply the sum of the numbers divided by the set number of factors. The median is identifying the middle number of all values in the data (Bryman and Bell, 2015). Standard deviation is a mathematical method used to determine how the value of the group differs from the mean average, an important tool used to evaluate a set of data. A high standard deviation indicates that the data are diverse whereas a low standard deviation shows that the numbers are closer to the average. The formula used for standard deviation is:

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2}$$

(Library Surrey, 2017)

Furthermore, as this study researches the correlation between different factors it is imperative to have the appropriate methods to evaluate correlation between indicators (Bryman & Bell, 2015). This dissertation will use two different correlation formulae as to confirm the value presented in the data analysis and make it more reliable. First, a Pearson correlation coefficient (Pearson R):

$$r = \frac{nn(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[nn\Sigma x^2 - (\Sigma x)^2][nn\Sigma y^2 - (\Sigma y)^2]}}$$

(Statistics how to, 2017)

It produces a value from an x and y column ranging from -1 to 1. Minus 1 indicates that there is a negative correlation, 0 equals no correlation and 1 implies a positive correlation between the data (Graham, 2013).

This method has been used and is common while presenting findings in previous research in the FL field (Campbell & Cocco, 2003; Gartner & Todd, 2005; Gathergood, 2012; Gathergood & Weber, 2017; Gerardi, Goette, & Meier, 2013; Japelli & Padula, 2013; Hullgren & Söderberg, 2013; Kim, Garman, & Sorhaindo, 2003; Lusardi, 2008; Lusardi & Tufano, 2009; Mitchell & Smetters, 2013; Rutledge, 2010; Smyczek & Matysiewicz, 2015; Yzaguirre, 2009; van Ooijen & van Rooij, 2016).

So as to further analyse the data a linear regression model will be applied to find the correlation and predictions. Regression model is a statistical analysis tool used to find the relationship between variables in combination with one or several predictors (independent variables) so as to use the gathered data to make future predictions (Graham, 2013). Regression analysis is a method used by the likes of Gathergood (2012), Weber (2017), Singh (2014), Duca and Kumar (2014), van Ooijen and van Rooij

(2016). The initial stages of linear regression model are similar to that of the Pearson correlation coefficient, which establishes rank.

$$r = \frac{nn(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[nn\Sigma x^2 - (\Sigma x)^2][nn\Sigma y^2 - (\Sigma y)^2]}}$$

(Statistics how to, 2017)

Once this is established the linear regression model is applied.

$$a = \frac{(\Sigma y)(\Sigma xx^2) - (\Sigma x)(\Sigma xy)}{nn(\Sigma xx^2) - (\Sigma x)^2}$$

$$b = \frac{nn(\Sigma xy) - (\Sigma x)(\Sigma y)}{nn(\Sigma xx^2) - (\Sigma x)^2}$$

(Graham, 2013)

The data gathered gives indicators and predictors regarding future trends, and will produce a value between 0 to 1, where 0 is negative correlation and 1 is perfect correlation. However, statistical elements and methods rely on large sample size to be reliable (Arthur et al., 2012; Bryman & Bell, 2015; Graham, 2013). Unfortunately, fewer participants were gathered to make full use of such statistical tools, which becomes more accurate with more data (Bryman and Bell, 2015), as the author originally intended. The author will nonetheless use previously mentioned statistical methods but also utilise a more descriptive method to present the data, which is still a valid form of quantitative data analysis (Bryman & Bell, 2015). The respondent's answers will all be analysed in the previous mentioned fashion. Individual question data will be compared with FL to find potential statistical correlation. Moreover, some cross-reference such as preparedness will be undertaken with other data besides financial literacy, what data is being used within the analysis will be presented in the headings of the tables for clarification.

3.3 Ethics, Validity, Reliability and Researcher Bias

3.3.1 Ethics

There are several ethical issues while conducting any form of research. Diener and Crandal (1978; found in Bryman & Bell, 2015, p. 128) argued that there are four areas of ethical risks in research:

1. Harm to participants
2. Lack of informed consent
3. Invasion of privacy
4. Deception

In order to minimise any risk of unethical behaviour, the author needs to have transparency in the methods and processes used open for scrutiny and presenting potential biases (Arthur, Waring, Coe, & Hedges, 2012). Precautions need to be taken for participants; they should remain anonymous, and understand the purpose and intent of the research undertaken. Therefore information of the purpose of the study was shared, participation was voluntary, withdrawal from the study was possible up until completion without any consequences, and efforts were made so that no one could be identified from the information given and no IP address was collected. The research has some indirect ethical issues regarding retrieving information involving the participant's background. However, all participants are anonymous and none of the information the participants provide is enough to backtrack individuals. Moreover, guidance from the university supervisor Paul Langford, Edinburgh Napier University's ethical guidelines and literature was used to make sure the research remained ethical throughout its process.

3.3.2 Validity

Validity concerns the integrity of the conclusions drawn within the research and consists of four categories according to Lincoln and Guba (1985). To increase the validity of the research it needs to reflect:

- "Credibility, which parallels internal validity – i.e. how believable are the findings?"
- Transferability, which parallels external validity – i.e. do the things apply to other contexts?

- Dependability, which parallels reliability– i.e. are the findings likely to apply at other times?
- Confirmability, which parallels objectivity – i.e. has the investigator allowed his or her values to intrude to a high degree?”

(Lincoln & Guba, 1985 cited in Bryman & Bell, 2015, p. 43)

In order to make the research credible transparency of the research methods used before the analysed data is presented, which is what this current chapter intends to highlight. The transferability of this work can be possible in similar topic or field, and is highly susceptible to context and individual case. It is therefore important that a foundation was laid in the literature review and in what manner this study fits into the field and existing body of knowledge to highlight the underlying assumptions. Moreover, the confirmability is in regards of the researchers own bias and will be discussed later in this chapter. Lastly, dependability share similarities to reliability as it refers to the possibility to redo the research at a later date with similar or same results, which will be expanded upon in the next subsection. However, as the human experience alters the perspective and underlying paradigms throughout nations, cultures and individuals (Guba & Lincoln, 2005) it is difficult to recreate any research in the same conditions at a later date even if these include the same previous participants.

3.3.3 Reliability

It is important that consistency of the measures undertaken is reliable while conducting research. Bryman and Bell (2015) argues that there are three different connotations to the term reliability, which are stability, internal reliability and inter-observer consistency. Firstly, stability is regarding the data and research findings can remain true in future studies with a different set of participants with little to no fluctuation in the new data (Bryman & Bell, 2015). Some of the questions in the survey undertaken was borrowed from other journals and questionnaires. Repeating the process in such a manner is one way of testing the stability of one’s own and other people’s work (Cohen, Manion, & Morrison, 2011; Arthur, Waring, Coe, & Hedges, 2012). However, as previously mentioned the setting and paradigm might change slightly or drastically altering the result of the repeated study even if it was ‘perfectly replicated’ (Guba & Lincoln, 2005). It is the goal of this chapter in its entirety to provide enough information that future

researchers can redo this dissertation and, hopefully, arrive at the similar conclusions. Secondly, internal reliability is whether the data and answers from participants are consistent and can be correlated with indicators in the data (Bryman & Bell, 2015). The methods mentioned in the previous subchapter 3.2.1.4 Hypothesis Testing are all a part of testing the data and finding correlations between respondents answers, indicators and proof that the data is coherent, which aims to increase the internal reliability (Cohen, Manion, & Morrison, 2011). However, no method of analysis of data can provide ultimate truths (Guba & Lincoln, 2005). Thirdly, inter-observer consistency regards subjectivity regarding the data, through either interpretation, translation or other ways of bringing the data into context. This is an issue when the questions answered by the participants can be interpreted differently depending on the individual subjective view in both qualitative and quantitative research (Bryman & Bell, 2015). It is therefore important for the researcher to make the distinction and presentation between the participants and the researchers 'voice' clear within the study (Guba & Lincoln, 2005). To minimise such impact on the questionnaire the researcher undertook a pilot study and corrected it according to the feedback from pilot participants and the supervisor Mister Langford. Furthermore, it is the intention of the author to be transparent when presenting other researchers findings, participant data and the author's own interpretations.

3.3.4 Researcher Bias

The trustworthiness of any research needs to be validated by providing honest information in regards of the author's background (Cohen, Manion, & Morrison, 2011) also referred to as reflexivity, a self assessment of the researcher as a human instrument of data interpretation (Guba & Lincoln, 2005). Whereas the data might be objective, the researcher is not and highlighting potential biases makes the reader and the author aware of them and what underlying assumptions might be present (Arthur et al., 2012; Guba & Lincoln, 2005). As to minimise such liabilities and negative impact on the work, the researcher will in this section present relevant biases.

The author hails from Sweden and has been a resident in Scotland for the past five years. The researcher's socioeconomic background is that of upper middleclass with a

family that all score high on FL tests. As with all cultural aspects there is always risk of ethnocentrism, however, being aware of one's own culture and being able to set aside such notions can lower such impact (Hofstede, Hofstede, & Minkov, 2010). The researcher's undergraduate in *International Business Languages with Management* was highly focused on how to study other and one's own culture more successfully as to limit ethnocentrism in anthropological work and studies, which hopefully will reduce said biases. Furthermore, while undertaking pre-research by reading and exposing oneself to secondary data are assumptions and hypothesis formed. This affects the interpretation of the primary data as there are cognitive biases as to what the results will present, this is known as the halo effect (Bryman & Bell, 2015). To minimise any of these biases and potential "unknown unknowns" (Rumsfeld, 2011) there are measures to be made. Statistical elements will be used to work the data in order to provide valuable information. However, as the interpretation of said data can be exposed to biases, peer debriefing will be used. Peer debriefing is a qualitative method where one's data and interpretation are presented to a or multiple peers for scrutiny to minimise misinterpretation and skewing through biases (Lincoln & Guba, 1985). However, the researcher thinks this method can be utilised in quantitative research as well, as to minimise ethnocentric and halo effect interpretations of the objective data and the description of it.

3.4 The Questionnaire Pilot

An initial questionnaire pilot was undertaken to provide feedback and improve the questionnaire and subsequently the future gathered data. The participant number was limited to 10 who all agreed to provide feedback and be interviewed further if needed in regards to the pilot and pilot alone.

The first version of the pilot had the four financial literacy questions found in Gathergood and Weber (2017) at the beginning after the age, citizen or resident and potential property buyer. According to five participants, this had a "daunting" affect, which made some participants dread the complexity of the next 14 questions after this particular feedback from participants, the decision was made to move questions relying on maths to the very end to lessen the risk of initial dropout rate due to a perceived

technical questionnaire. Further feedback from a participant suggested that depending on the answers the participants could be sent to a different section where the questions are the same yet reworded to be more accurate. This increases the complexity of the data but also the data analysis, as it would significantly diversify the potential answers. The positive aspect of such a change would be richer data but the decision was made to keep a uniform questionnaire due to two factors. Firstly, the time available to the researcher is limited and such added complexity would be a factor that could lead to critical failure to meet the deadline of the project. Secondly, the researcher has previously only dealt with qualitative research, and intricacy in the data will increase the analysis difficulty level, which could create errors in the deduction of the data. Furthermore, a participant's feedback highlighted a wording bias in some of the questions and alterations were made to the phrasings of certain questions. For instance:

Do you intend to buy a property in Scotland for the first time in the near future?

Was changed to:

Do you intend to buy a property in Scotland for the first time in the future?

This decision was made as the word "near" added a connotation and interpretation issue. As a result confusion could arise as a participant not perceiving three years as in the near future, whereas the researcher would. This would exclude precious and vital participants due to a connotation disagreement. The questionnaire pilot and its feedback highlighted weaknesses, strengths and the author's, unintentional, bias and were dealt with accordingly so as to reduce such liability in the research and subsequently the gathered data.

3.5 Questionnaire Description

The questionnaire in its entirety is located in the appendix 7.1. Two sections questions 5 to 8 and 19 to 22 were borrowed from Gathergood and Weber's (2017) questionnaire. These questions are useful in this study as they recently were used to study England

and Wales providing a good benchmark to compare the Scottish data result with English and Welsh data. However, Gathergood and Weber (2017) gathered respondents for their research from YouGov 'debt tracker' with access to 350,000 households and a sample size of 2000 participants in their set of data. The author's participant count was 43 and nowhere near Gathergood and Weber's respondents. This questionnaire also deviates from Gathergood and Weber's (2017) research as the participants were not asked, which sex, sexual orientation, status, and socioeconomic background were excluded due to it either not being relevant to the aims and objectives of this research or to avoid ethical liabilities.

Question one is a standard in similar surveys used to find out the age demographic (Campbell & Cocco, 2003; Collins, 2011; Disney & Gathergood, 2012; Gartner & Todd, 2005; Gathergood & Weber, 2017). As this survey investigates FL among Scottish first time buyers the average age was expected to be lower than in other studies studying the market as a whole. The question also highlights that participants under the age of 18 were not accepted.

Question two to four served as the filter for the study. If the participants had no intent to buy their own property, in Scotland, for the first time and were not citizens/residents or a person looking to invest in Scotland then they were kindly excluded from continuing to fill out the survey.

Questions five to eight, and 19 to 22, are borrowed from Gathergood and Weber's (2017) research and are in regards to personality traits and behaviour; those in previous studies proven or claimed to have some impact on FL and FL questions (Gathergood, 2012; Gathergood & Weber, 2017; Gerardi, Goette, & Meier, 2013; Hullgren & Söderberg, 2013; Japelli & Padula, 2013; Lee & Hogarth, 2000; Lusardi & Mitchell, 2007; Lusardi & Tufano, Debt Literacy, 2009; Remund, 2010; Smyczek & Matysiewicz, 2015). Furthermore, the flaw about maths performance in primary school in question five was discussed in the literature review and since the research is studying first time buyers it is an important question in regards of its impact on FL. Moreover, there are flaws with asking these types of questions in a quantitative study. Quantitative study is limited in regards to probing questions that are on a broad spectrum subjected to

subjectivity among individuals, such as personality, even with the use of a Likert scale (Arthur, et al, 2012). This kind of research is more suited to qualitative research methods, and the results will therefore be limited i.e. Question eight is asking the participant evaluate how risk aversion or risk taking they are by placing themselves on an 11 point scale between 0 as totally risk averse and 10 being fully willing to take risks. The question fails to communicate what a risk is and even how an individual should place themselves in such a scale. Therefore, risk can be interpreted as smoking, jaywalking, skydiving, robbing banks, hacking the Pentagon and everything in-between. Furthermore, the reasoning behind the answers to this and the other questions are therefore lost in numbers. There is also a risk that the participant is answering in a manner, which would be viewed more favourable by the researcher or society as a whole (Bryman & Bell, 2015). However, the questions do bring important vantage points and elements to the study even with such risks and weaknesses. Furthermore, it is the intention of the researcher to compare the findings to that of the previous studies results, hence using the questions verbatim despite their flaws.

Questions nine to eighteen are of the authors own devising and are created in an attempt to investigate potential Scottish first time buyers *preparedness* for taking out a mortgage. These questions are in regards of the participants, credit scores and how often they are monitored, the time frame of preparing for a mortgage, mortgage deposits and potential 'hidden' costs of obtaining a mortgage. Question nine was purposely put at the beginning of this section as having it in the end might have skewed the data by altering the participants own perception of their individual preparedness.

Furthermore, questions 10 to 12 are probing about credit score and how closely the participants monitor their own personal score. Credit score is the result of their past and current financial situation and in part their FL. As a continuation of the previous questions in this section the participants were asked if they were willing to make efforts to improve their credit score and if so, during what time frame. All people will benefit from increasing their credit score before obtaining a mortgage to gain more favourable rates and interests from the bank or lenders (Safieddine & Zaharovs, 2016; Spencer, 2011). Moreover, having a mortgage and successfully paying it off will increase most individuals credit scores (Thomas, 2009). Part of the author's hypothesis is that the

research will highlight that individuals with low FL or FI will be willing to improve their credit score but will underestimate how long it takes to increase it.

Questions 15 and 16 ask the participants regarding the deposit and savings in preparation for a mortgage. The percentage expected for a deposit from a lender can range from 5% to percentile in double figures in the UK and needs to be available before the lender can make an offer to the household (Spencer, 2011). Saving up for the deposit takes time (Safieddine & Zaharovs, 2016), especially for the current generation (Elliot, 2016). The hypothesis is that the estimated time to save money will differ between the various end of the FL spectrum, however, the question is how much will it differ, if at all. The questions also ask the individual how such funds will be raised. The question aims to reflect the available literature, which claims that people with high FL can successfully save their own money and people from a higher socioeconomic background tend to have higher FL and have access to private funds raised from family members and close friends (Calvet, Campbell, & Sodini, 2007; Campbell, 2006; Lusardi & Mitchell, 2007, 2007; Lusardi & Mitchell, 2011). Whereas people with low FL and FI tend to have to resort to expensive credit options to gain additional funds (Elliot, 2005; Gathergood, 2012; Miller et al, 2009) as budgeting and financial situations tend to be more challenging to save money continuously (Gathergood, 2012; Miller et al, 2009; Smyczek & Matysiewicz, 2015). The last two questions in this section were 17 and 18 and were about 'hidden' costs, from fees, solicitors and other sources that emerge when one takes out a mortgage. This is not based on any academia or literature but rather the average estimated fees by various mortgage help guides (Andrew, 2017; Roberts, 2016; The Money Advice Service A, 2017; Safieddine & Zaharovs, 2016; Spencer, 2011), which approximately became between £850 to £1,500. The goal of this question was not to have the consumer know exactly the average but it is the authors prediction that individuals with a higher FL will be more informed in financial matters and will therefore be more likely to be right, whereas participants with low FL and who are FI will be more likely to select either end of the extremes of the options.

There are numerous methods used to evaluate individuals FL (e.g. Calvet, Campbell, & Sodini, 2007; Campbell, 2006; Campbell & Cocco, 2003; Collins, 2011; Cox, Brounen, & Neuteboom, 2015; Disney & Gathergood, 2012; Gallery & Gallery, 2014; Gathergood

& Weber, 2017; Hullgren & Söderberg, 2013; Lusardi & Mitchell, 2007; Lusardi & Tufano, 2009; van Ooijen & van Rooij, 2016). These four questions were selected from Gathergood and Weber's (2017) as they do not demand the need of a calculator and are a good benchmark for the Scottish data as previously mentioned. The possible financial score within the current research ranges between zero to four, where zero and one are considered financially illiterate, two to four being financially literate. However, there is a problem with question number 22. The questions underlying assumption is that the mortgage is paid off annually and hence the mortgage will never be paid off. However, depending on the structure of the repayment of the mortgage it is possible that the mortgage will be repaid in 63 years time. With that said few would make such judgement who are not very informed on financial matters and particularly with mortgages so the author does not believe that it will cause disruption among participants or skew data.

3.6 Secondary Data

Secondary data is needed to provide a background and to improve the understanding of the field for the reader. The data was obtained from the Edinburgh Napier University library search and other material available from its resources. Furthermore, news articles, media, bank information, books, etc. available either online or offline were utilised to give flesh to several of the dissertation chapters.

Chapter 4. Data Description

4.1 Introduction

This chapter will present a table with the overall answers together with a break down of key facts and figures of the findings. It will then continue to present the response and data of the questionnaire and evaluate the hypothesis.

4.2 Data Description

Participants	43						
Age:	18-25: 34	26 to 30: 3	31 to 35: 3	36 to 40: 2	41 to 49: 1		
Own property:	No: 43						
Intend to buy property in Scotland	Yes: 38	No: 5					
Status in Scotland:	Citizen: 28	Resident: 15					
Primary maths performance:	Well above average: 8	Above average: 23	Average: 12	Below average: 0	Well below: 0		
Patience:	Average: 4.95		Median: 5				
Impulsive:	Strongly agree: 5	Agree: 6	Neither agree or disagree: 8	Disagree: 15	Strongly disagree: 9		
Risk taking:	Average: 5.28		Median: 5				
Feeling prepared to buy property:	Average: 4.74		Median: 4				
Credit score awareness:	Yes: 35		No: 8				
Awareness of current credit score:	Yes: 12	Roughly: 14	No: 17				
Check credit score:	Once: 12	A few times: 7	Regularly: 6	Never: 18			
Improve credit score before seeking a mortgage:	Strongly agree: 17	Agree: 18	Neither: 7	Disagree: 0	Strongly disagree: 1		
Time measure of improving credit score:	6 months to a year: 9	1 to 3 years: 20	3+ years: 3	Don't know: 3	Not applicable: 8		
Measure to obtain deposit:	Personal savings: 22	Personal savings; Family and/or friends: 8	Personal savings; Specific loan for deposit: 7	Personal savings;, Specific loan for deposit;, Family and/or friends; 2	Specific loan for deposit; 2	Family and/or friends; 1	Other: Saving up student loan: 1
Time frame to save money for a deposit:	More than 3 years; 12	1 to 3 years; 19	6 months to a year; 6	Less than 6 months; 2	Don't know: 4		
Savings include fees?	Yes: 20		No: 14				
Perceived average price of 'hidden' fees:	£0: 0	Less than £850; 1	Between £850 and £1,500; 15	Between £1,500 and £3,200; 19	More than £3,000; 4	Don't know: 4	
FL question 1:	Right: 32	Wrong: 8	Don't know: 3				
FL question 2:	Right: 30	Wrong: 7	Don't know: 6				
FL question 3:	Right: 17	Wrong: 17	Don't know: 9				
FL question 4:	Right: 14	Wrong: 15	Don't know: 14				

Table 2

The snowball sampling started by posting in various online forums that the researcher was a part of with the request of friends to share the link to the survey. Over a period of 25 days it generated 81 participants, 28 participants did not qualify for one or multiple of the three filtering questions in the questionnaire and were exempted. Furthermore, six participants did not complete the survey once they reached the FL questions and five were excluded from the final data as they only answered, "Don't know" on the FL section. This reduced the final eligible participants down to 43. This number is low compared to other data sources in the field; however, the author is under tight time constraint and had to close the questionnaire by a certain date. Furthermore, all numbers have been rounded to the two decimal points, unless a zero follows it, i.e. 1.60 would be 1.6.

79% of all participants were in the youngest age bracket of 18-25 as would be expected in a survey targeting Scottish first time buyers, even if the author anticipated a larger number of 26 to 30 year olds in the demographic split. Furthermore, the majority of the participants were citizens of Scotland with 34.8% being residents. This is an overrepresentation of the Scottish populous as the National records of Scotland (2016) estimates that 7.4% are residents in Scotland. However, the survey only included non British individuals, hence not considering English, Welsh, Northern Irish etc. residents but rather as citizens in Scotland. The factor to this overrepresentation could be that most of the participants were generated from the Edinburgh area, which has a higher representation of residents than the rest of Scotland (The National Records of Scotland, 2016).

The average FL of the study was mean 2.16 and a median of 2 on a scale from 0 to 4. As seen in the table above it became progressively less likely that the respondent provided a correct answer with each question from one to four. There was naturally an increase in wrong answers per question but also in the amount of participants selecting "Don't know".

4.3 Data Analysis

4.3.1 Age and Financial Literacy

Financial Literacy and Age			
Age:	FL Average	FL Median	STDEV
18 to 25	2.03	2	1.15
26 to 49	2.67	3	1.25
Total	2.16	2	1.2

Table 3

As the breakdown of respondents above the age of 26 were too few to make any statistical generalisations, the four groups were turned into two categories. As seen in the table above the average FL for 18 to 25 is 2.03 compared with 26 to 49 with an average of 2.67 out of 4. The total FL was on average 2.16 throughout the respondents, compared to Gathergood and Weber (2017) FL average of 1.97 overall. Gathergood and Weber's (2017) research included property-owning households and not merely renters, which should according to research increase the FL average (Lusardi & Mitchell, 2007; van Rooijen & van Rooij, 2016). The renters had an overall FL average of 1.69 which is significantly lower than the data provided in this dissertation questionnaire. The findings in this questionnaire therefore goes against Jappelli and Padula's (2013) claim that FL decreases by 0.5% per year as an individual ages and to some extent the findings by Gathergood (2012) and Weber (2017). The findings in this research therefore indicates that the participants of Scottish first time buyers are more financially literate than households in the south and that individuals holding off making their first purchase are more FL than their younger counterparts.

4.3.2 Early Maths Performance and Financial Literacy

Maths and Financial Literacy			
Maths:	FL Average	FL Median	STDEV
Well above average	2.44	3	1.17
Above average	2.09	2	1.20
Average	2.08	1.5	1.19
<i>Pearson's r</i>	<i>0.10</i>		
<i>Regression Multiple R</i>	<i>0.87</i>		
<i>Regression R Square</i>	<i>75%</i>		

Table 4

All respondents of the survey, including the rejected, considered themselves average, above average or well above average in primary school maths performance. This could be the fault of individuals who were below average are less likely to fill out finance surveys, or answering the question to be seen in a more favourable light, or a signal of a skewed snowball sampling (Bryman & Bell, 2015), or faulty memory and nostalgia (Kay, Mahoney, & Shaw, 2017; Tran, Hertel, & Joormann, 2011). Out of the 43 participants, 20.9% answered well above average, 27.9% selected above average and 51.2% claimed being average. The data agrees with Gathergood (2012), Weber (2017), Jappelli and Padula (2013) that maths performance in primary school can be used as a precursor and predictor of FL scores as both the average and median lessens in value from well above average to average. Furthermore, a Pearson's r analysis was made which indicated that there was a weak to no correlation between maths performance and FL, whereas a linear regression model proved a positive correlation with a 75% coefficient of determination. An explanation given is that if the regression model was undertaken without a zero inflation calculation then it did produce 0.1, exactly the same as the Pearson's r correlation coefficient calculation. It is clear that the zero inflation line in the linear regression model caused a different outcome after the correlation coefficient ranking from the Pearson's r . Statistical methods such as these require a high number of input to be accurate, and 43 participants data is in this case not strong enough for the formulas to make accurate predictions. However, the data does in this case have a low standard deviation indicating that the numbers are not massively

spread out from one another but rather clustered closer to the average, which can clearly be seen in the lack of a strong difference between average, above average, and well above average.

4.3.2.1 Early Maths Performance and Feeling Prepared

Early Maths Performance and Preparedness Average			
Maths:	Prepared Average	Prepared Median	STDEV
Well above average	5.11	7	3.00
Above average	4.95	4.5	2.64
Average	4.08	3.5	2.06
<i>Regression Multiple R</i>	0.87		
<i>Regression R Square</i>	74.5%		

Table 5

The researcher decided to test whether primary school maths performance could also be utilised as a predictor of the Scottish first time buyers feeling prepared for a financial product such as a mortgage. The preparedness was based on a Likert scale where zero was 'totally unprepared' and ten 'fully prepared' and the average of all respondents was 4.74. The participants who claimed to have been well above average and above average in primary school maths felt slightly more prepared than the entire study whereas the ones selecting average were lower than the average. The linear regression model presented that there was a strong correlation between early maths performance and the average feeling of preparedness to take out a mortgage with a coefficient of determination of 74.5%. The well above average mean and median is still low compared to the high end of the Likert scale but still higher than the overall average of feeling prepared.

4.3.3 Behavioural Characteristics

4.3.3.1 Patience and Financial Literacy

Patience and Financial Literacy			
Patience	FL Average	FL Median	STDEV
Average	4.95	5	2.87
FL 4	5.13	5.5	3.02
FL 3	4	3.5	2.86
FL 2	4	3	2.67
FL 1	5.76	7	2.67
<i>Pearson's R</i>	-0.15		
<i>Regression Multiple R</i>	0.74		
<i>Regression R Square</i>	55%		

Table 6

The average reported patience level in Gathergood and Weber's (2017) questionnaire was 5.7 on a scale from zero to 10, where 10 is 'very patient'. Furthermore, homeowners, 5.62 were slightly less patient than the renters, 5.85 within the study (Gathergood & Weber, 2017). The data from Scottish first time buyers is lower than Gathergood and Weber's (2017) results. The researcher decided to see if there was any correlation between FL one to four and the average level of patience within the data. As seen in the table above, FL 1 and FL 4 is slightly higher than the overall patience average with FL 2 and 3 being below it. Moreover, the Pearson's r and linear regression model yields little clarification of correlation between the data as they deviate from one another to a strong degree. Therefore, any correlation between patience and FL is inconclusive within this study.

4.3.3.2 Impulsivity and Financial Literacy

Impulsivity and Financial Literacy			
Impulsive	FL Average	FL Median	STDEV
Average	-0.40	-1	1.28
FL 4	-0.75	-1	1.20
FL 3	0.10	0	1.30
FL 2	-0.29	-1	0.88
FL 1	-0.53	-1	1.38
<i>Pearson's R</i>	0.04		
<i>Regression Multiple R</i>	0.28		
<i>Regression R Square</i>	8%		

Table 7

The section asking the respondents to self-evaluate their impulsiveness ranged between (% of participants in brackets) strongly agree (11.6%), agree (13.9%), neither agree or disagree (18.6%), disagree (34.9%) and strongly disagree (21%). It is clear that most respondents, 55.9% did not identify as impulsive with 18.6% not identifying either way. So as to statistically analyse the data the data was given numerical values, with strongly agree being 2, neither agree or disagree being 0 and strongly disagree being -2. This generated an average of -0.4 and a median of -1, with a relatively low standard deviation. This clearly indicates that the average participant did not consider themselves impulsive but leaning more towards neither agree or disagree with the statement. This is in line with Gathergood and Weber's (2017) finding that only a small portion of 14% of the respondents put themselves at either end of the extreme. The average impulsivity reported for each potential FL score gave no clear intuitive correlation. Further analysis in the form of Pearson's r and linear regression model was done as to see correlation between impulsivity and FL score, which highlighted no such correlation.

4.3.3.3 Patience and Impulsivity

Patience and Impulsivity			
	Pearson's R	Regression Multiple R	R Square
Patience and Impulsive	-0.37	0.44	19%

Table 8

As patience and impulsivity are similar behavioural concepts or at least within the same spectrum of behaviours, a Pearson's r and a linear regression model was made to see if there was any correlation between the two questions. As the table above shows, no such correlation exists.

4.3.4 Risk and Financial Literacy

Risk and Financial Literacy			
Risk	FL Average	FL Median	STDEV
Risk	5.28	5	2.43
FL 4	6	7	2.40
FL 3	5	5	2.37
FL 2	5.14	5	2.59
FL 1	5.12	5	2.42
<i>Regression Multiple R</i>	0.8		
<i>Regression R Square</i>	65%		

Table 9

The respondents self-evaluated themselves on a Likert scale with 0 being totally risk averse and 10 being fully willing to take risks. The data ended with a mean average of 5.28 and a median of 5 overall. The participants were therefore somewhere between risk averse and willing to take risks, which is in contrast to Gathergood and Weber (2017) whose respondents generated a mean average of 4.42 making them more risk averse. Risk taking and FL is a well-studied area (Campbell & Cocco, 2003; Coulibaly & Li, 2009; Gathergood, 2012; Rutledge, 2010), which indicates that risk is indeed a factor of financial wellbeing. In regards of FL score within this survey and average of the respondents risk behaviour was averaged for each possible FL score. Surprisingly the

participants with full FL score were on average more risk taking than the average with 6 compared to 5.28. This tendency lowered with a single point at FL3 and increased slightly for FL 2 and 1. A regression analysis indicated a positive prediction of the data with a coefficient of determination of 65%. Furthermore, respondents evaluating themselves 6 to 10 on the risk scale had an average of 5.43 in feeling prepared for a mortgage compared to the overall mean average of 4.74. It is the researchers interpretation that individuals with full FL score are more risk taking as such, however, as discussed in the previous chapter it is not clear if this includes all risk or financial risk alike.

4.3.5 Feeling Prepared and Financial Literacy

Feeling Prepared for a Mortgage			
Prepared	Prepared Average	Prepared Median	STDEV
Prepared	4.74	4	2.61
FL 4	7.50	7.5	2.18
FL 3	4.80	5	2.52
FL 2	3.57	4	2.19
FL 1	3.88	4	2.08
Pearson's R	0.44		
Regression Multiple R	0.86		
Regression R Square	0.74		

Table 10

Evaluating what is needed to be financially literate and financially knowledgeable to be prepared for financial endeavours is a broad and disputed field, which is difficult to give a clear definition. In this questionnaire the participants were simply asked the subjective question how prepared they felt in regards of becoming first time buyers on a Likert scale of 0 being 'totally unprepared' and 10 being 'fully prepared'. The mean average resulted in a 4.74, median of 5 and a 2.61 standard deviation. The average is therefore neither unprepared nor prepared for a mortgage. Moreover, self-evaluation of one's own preparedness compare does not ensure high FL. Each potential score of FL was laid out and the average of the self-assessed feeling of preparedness was done. This

generated some interesting data. Individuals with perfect FL had an average of 7.5 in preparedness whereas FL 3 individuals reported to an average of 4.8. Both FL 4 and 3 are above the overall average. The respondents scoring 2 or 1 on the FL test had an average lower than the overall average with FL 1 being surprisingly higher than FL 2 with 0.31 mean average. A possible explanation of the financially illiterate (FL 1) evaluating themselves as more prepared than the financially literate (FL 2 and above) could be down to the Dunning–Kruger effect (Kruger & Dunning, 1999). Furthermore, as to evaluate if there was a correlation between self-assessing mortgage preparedness and FL Pearson’s R and linear regression model was applied. The Pearson’s r model implies that there is a weak positive statistical correlation, whereas the regression model indicated a semi-strong positive statistical correlation with a coefficient of determination of 65%. The researcher therefore would make a modest claim that self- assessment of feeling prepared for a mortgage correlates with the FL.

4.3.6 Deposit, Savings, Fees, Financial Literacy and Hypothesis

Measure of Raising Mortgage Deposit and Financial Literacy		
Measure	FL Average	FL Median
Personal savings:	2.27	2
Personal savings; Family and/or friends:	2.5	2
Personal savings; Specific loan for deposit:	1.91	1
Personal savings;, Specific loan for deposit;, Family and/or friends;	2	1
Specific loan for deposit;	1.5	1
Other: Student loans	1	

Table 11

Raising capital for a deposit is needed for a mortgage and there are multiple ways to do so. In this questionnaire the participants were asked to select option that applied to them in regards of how such funds would be raised. The most common practise was personal savings being the single source of deposit with 49%. Furthermore, personal savings was included in 82% of the respondents planned deposit stream. 21% of the participants stated that deposit funds would be generated through personal savings

together with money from family and friends. It has been indicated by sources that this option is, mostly, available for individuals with a more stable financial and socioeconomic background (Gallery & Gallery, 2014; Safieddine & Zaharovs, 2016; Spencer, 2011). This could potentially be why this category has the highest mean average FL of 2.5. 24% of participants mentioned that the deposit either in full (5%) or in part (19%) would be raised by specific deposit loans. Research and literature in the field indicates that individuals with a lower FL will turn to loans and more expensive debt to gain access to credit (Gallery & Gallery, 2014; Gathergood, 2012; Miller, et al, 2009; Safieddine & Zaharovs, 2016; Spencer, 2011). Within this study respondents stating deposit loans as the single source of deposit had an average FL of 1.5. Furthermore, participants stating deposit loans as one of multiple potential source for the deposit had an FL average of 1.91, which is low in comparison to the overall FL average 2.16. The current research undertaken therefore is in agreement with previous findings that the source of credit is an indicator of FL, even more so in the planning process of seeking a mortgage.

Estimated Timeframe of Raising Deposit Compared with Financial Literacy Average			
Timeframe	FL Average	FL Median	STDEV
Less than 6 months;	2.5	2.5	
6 months to a year;	1.33	1	
1 to 3 years;	2.32	3	
More than 3 years;	2.42	2.5	
Less than a year;	1.63	1	0.99
More than 1 year	2.36	3	1.23
Pearson's R	0.24		
<i>Regression Multiple R</i>	0.60		
<i>Regression R Square</i>	36%		

Table 12

A part of FL is household budgeting and planning. The researcher therefore asked the participants to estimate how long it would take them to raise the capital. As the table above indicates that individuals that estimate their deposit raising would take more than a year had overall a higher FL average, 2.36, than the ones stating less than one year, 1.63 compared to the studies overall average of 2.16. The standard deviation is low;

moreover, Pearson’s r and Regression analysis indicate that any positive statistical correlation is weak at best. Therefore, no strong correlation can be determined besides intuitive observation of the mean and median average.

4.3.6.1 Hypothesis, Expected Fees and Financial Literacy

Deposit savings Including Fees	
Measure of Raising Deposit	Savings Include Fees Average
Personal savings:	0.26
Personal savings; Family and/or friends:	0.2
Personal savings; Specific loan for deposit:	0.56
Personal savings;, Specific loan for deposit;, Family and/or friends;	-1
Specific loan for deposit;	1

Table 13

The participants were asked if their deposits would include fees for solicitors and other fees in relation to obtaining property. This is to answer the author’s hypothesis;

H1. A low awareness of ‘hidden’ costs associated with a mortgage and failure to save for such expenses correlates to low financial literacy.

In order to make statistical analysis of yes and no statements these were given numerical values, yes being 1 and no -1. The result highlights that the individuals with low FL and seeking deposit loans to raise capital for a deposit were slightly less likely to have had fees in mind with 0.19 compared to higher FL with 0.23. The conclusion is therefore that there is no difference between high and low FL, making the first stage of the hypothesis erroneous.

Expected Price of Fees and Financial Literacy			
Expected Price of Fees	Number out of 43 Participants	FL Average	FL Median
More than £3,000; (3)	4	2.75	3
Between £1,500 and £3,200; (2)	19	2.63	3
Between £850 and £1,500; (1)	15	1.6	1
Less than £850; (0)	1	1	1
Don't know	4	1.75	1.5
<i>Pearson's R</i>	0.41		
<i>Regression Multiple R</i>	0.88		
<i>Regression R Square</i>	78%		

Table 14

Continuing to answer the hypothesis the participants were asked how much they expected the solicitor and other fees to be when acquiring a property and mortgage. The average solicitor and other fees when acquiring a mortgage and property add up to an estimate of £850 to £1500 (Andrew, 2017; Roberts, 2016; The Money Advice Service A, 2017; Safieddine & Zaharovs, 2016; Spencer, 2011). It was the hypothesis of the author that respondents with a high FL would be aware of these prices, which according to the survey undertaken was not the case. Instead a different trend can be seen in the data. Individuals with high FL are more likely to overestimate costs whereas participants with low FL underestimate it. 'More than £3,000' had an FL mean average of 2.75 and 'between £1,500 and £3,200' 2.63, which not only is significantly higher than 'between £850 and £1,500' (1.6) and 'less than £850' (1), it also is higher than the overall FL mean average of 2.16. So as to evaluate if there were any significant statistical correlation to the findings the different answers were given numerical values (More than £3,000: 3; Between £1,500 and £3,200: 2; Between £850 and £1,500: 1; Less than £850: 0). Pearson's r analysis indicates that there is a weak positive relation between the data, whereas the linear regression model highlights a semi-strong correlation.

The conclusion of the data in regards to the hypothesis is as such that awareness of 'hidden' fees is about the same on both ends of the FL spectrum. Furthermore, actual awareness of the fees combined price is not a predictor of FL, hence the data not giving

any support to the author’s hypothesis. However, the findings do argue that underestimating the price of fees of acquiring a mortgage and property could be an indicator of low FL, whereas overestimating the fees is an indicator of higher FL scores.

4.3.7 Credit Score, Financial Literacy, Feeling Prepared and Hypothesis

This sub-section will analyse the data regarding credit score and investigate the hypothesis:

H2: Individuals with low financial literacy among Scottish first time buyers fail to keep track of their personal credit score and will be unwilling to improve their credit score and will underestimate the timeframe needed to increase their credit score before seeking a mortgage.

Aware of Credit Service Services and Financial Literacy		
	FL Average	Feeling Prepared Average
Yes	2.2	5.142857
No	2	3
<i>Regression Multiple R (FL)</i>	0.56	
<i>Regression R Square (FL)</i>	32%	
<i>Regression Multiple R (prepared)</i>	0.62	
<i>Regression R Square (prepared)</i>	39%	

Table 15

81% of the participants were aware of the existence of publically available credit score services such as Experia and Equifax. These credit services are the first step towards becoming aware of ones own credit score and being knowledgeable of such services is what would be necessary to possess financial “common sense”. An FL average indicates that people aware of such services had slightly higher FL. Moreover, the same can be seen with awareness of these services and respondents subjective feelings of being prepared for mortgages. However, linear regression analysis of awareness of credit score services, FL and preparedness yield little to no correlation

Aware of individual CS Score, Financial Literacy and Feeling Prepared				
Aware of Individual CS Score	Number out of 43 Participants	FL Average	FL Median	Feeling Prepared Average
Yes	12	2.42	2.5	5.17
Roughly	14	2.14	2.5	4.86
No	17	2	2	4.35
<i>Pearson R (FL)</i>	0.14			
<i>Pearson R (Prepared)</i>	0.13			
<i>Regression Multiple R (FL)</i>	0.68			
<i>Regression R Square (FL)</i>	46%			
<i>Regression Multiple R (prepared)</i>	0.69			
<i>Regression R Square (prepared)</i>	48%			

Table 16

Being aware of the credit score services is not the same as knowing one's credit score, which is important before approaching lenders as a first time buyer. The participants therefore were asked if they were aware of their credit score. The spread between the three options were fairly even with a slight majority not being aware of their credit score. It is noteworthy that the mean and median average has a curve downwards with being aware of one's own credit score at a higher than average credit score, going down with having a rough idea, to having a lower FL for not knowing. The same gradual decline can be seen when the awareness is compared to the feeling of preparedness. However, the Pearson's r and linear regression analysis presents the fact that the correlation between the data is trivial at best.

Checking Credit Score, Financial Literacy, Feeling Prepared		
Checking CS	FL Average	FL Median
Regularly (3)	2.33	2.5
A few times (2)	2.71	3
Once (1)	1.92	1
Never (0)	2.06	2
Checked it	2.24	2.5
Never	2.06	2
<i>Pearson R</i>	0.14	
<i>Regression Multiple R</i>	0.64	
<i>Regression R Square</i>	41%	

Table 17

The author anticipated that individuals who checked their own credit score regularly or a few times would have had a higher FL overall. The data supports this in part, as respondents who at some point had researched their credit score had a slightly higher mean, 2.24, and median, 2.5, average than those who had never researched it, 2.06 and 2. However, the data is overall inconclusive and cannot support such claims. Furthermore, statistical correlation and predictive analysis is clear that no strong correlation exists at either end of the spectrum.

Moreover, 58% of the participants indicated that they have at least once checked their own credit score, which is lower than expected by the author. Therefore, the findings shows that a small minority of the respondents do in fact research their credit score.

Improve Credit Score before Seeking Mortgage and Financial Literacy			
Improve CS before mortgage	Number out of 43 Participants	FL Average	FL Median
Strongly agree	17	2.18	2
Agree	18	2.56	3
Neither agree nor disagree	7	1.29	1
Strongly disagree	1	1	1
<i>Standard deviation</i>	0.86		
<i>Pearson R (spectrum)</i>	0.22		
<i>Regression Multiple R (spectrum)</i>	0.76		
<i>Regression R Square (spectrum)</i>	57%		
<i>Pearson R (grouped)</i>	0.36		
<i>Regression Multiple R (grouped)</i>	0.86		
<i>Regression R Square (grouped)</i>	74%		

Table 18

It is clear that the vast majority of the participants, 81%, would seek to improve their credit score before seeking a mortgage with an overall mean FL average of 2.37, where participants that strongly agreed had a mean FL average of 2.18 (median 2) and respondents answering agree had a higher mean, 2.56 and median, 3, FL average. Neither agree nor disagree had a significantly lower FL average even compared to the studies overall FL mean average of 2.16. The potential answers were first given numerical values on a spectrum for each answer so as to analyse the correlation between the different ranks, yielding no correlation. The decision was then made to make the same analysis with Pearson's r and linear regression on a binary scale with 'strongly agree' and 'agree' (1) and on the other end, 'neither agree nor disagree' and 'strongly disagree' (0) was given the same value. This generated a semi-positive correlation between the data. The author would argue that the data is in slight favour for participants who plan on improving their credit score before seeking a mortgage will have a higher FL than those who will not. However, more participants and data would be needed to make a stronger more generalisable claim.

Credit Score Improvement Timeframe and Financial Literacy		
CS Timeframe	FL Average	FL Median
More than 3 years;	3.33	4
1 to 3 years;	2.55	3
6 months to a year;	1.50	1
Less than 6 months; (-2)	1	1
More than 1 year	2.65	3
Less than 1 year;	1.44	1
<i>Pearson R</i>	0.48	
<i>Regression Multiple R</i>	0.82	
<i>Regression R Square</i>	66%	

Table 19

The questionnaire further probed into the matter of improving one's own credit score before seeking a mortgage by asking the participants at what timeframe they would be improving it before applying for a mortgage. The options ranged from 'More than 3 years', '1 to 3 years', '6 months to a year' and 'Less than 6 months'. Each response was analysed with the mean and median average of FL. By examining the numbers it is clear that the longer the respondent intends to spend on improving their individual credit score the higher their FL is. More than 3 years had an FL mean average of 3.33, with its polar opposite 'Less than 1 year' having 1 in FL mean average. The data was then gathered in two ranks, 'More than 1 year' and 'Less than 1 year' and the mean and median average still indicates that respondents spending more than a year had an average FL of 2.65 (median 3) compared to the overall studies 2.16. Furthermore, the respondents indicating that they would spend a year or less on improving their credit score had an average FL of 1.44 (1), which is significantly lower than above a year and the studies overall FL average. A partial explanation as to why this is could be that the FL are aware that improving ones own credit score is a long process that takes years, a fact FI might not be aware of (Thomas, 2005; Thomas, 2009). The intuitive with the Pearson's r yielded a moderate positive correlation of the statistical elements. Furthermore, a linear regression model generated the positive correlation value 0.82 which is in agreement of the Pearson's r-value. Therefore, the data is in part in support

of the authors' hypothesis, which hypothesised that there is a correlation between the individuals planned timeframe of improving their own credit score and FL.

4.4 Summary

This chapter introduced an overview of the findings in the form of a table together with some short information regarding key aspects of the questionnaire and its respondents. The chapter then analysed each individual question within the survey in comparison to FL or other aspects of the survey and investigated the hypotheses posed by the author.

Chapter 5. Conclusion

5.1 Introduction

This chapter will present the key findings of the questionnaire within a conclusion section; present the limitations of the research undertaken; recommendations, before suggesting further research to expand on gaps in the academic field of financial literacy.

5.2 Conclusion

The gathered original sample was 81, but after excluding ineligible participants the final sample size was 43 potential Scottish first time buyers with an average financial literacy score of 2.16 out of 4. The aim of studying potential behavioural and personal components and its relationship with FL was fulfilled by investigating primary school maths performance, patience, impulsivity, risk attitude and feeling prepared to take out a mortgage. While analysing the respondents' answers it became clear that this quantitative research through the form of a questionnaire is in agreement with Gathergood (2012), Jappelli and Padula (2013), Gathergood and Weber (2017) regarding primary maths performance being a predictor of financial literacy performance. The respondents who self-assessed themselves to have been above or well above average in primary school maths had higher mean FL average. The study also indicated individuals who felt more prepared for a mortgage were more likely to be on the higher than average in primary school maths. Further analysing the data in search of a correlation between patience, impulsivity and financial literacy yielded inconclusive results, which goes against other findings throughout the academic literature (Gathergood, 2012; Gathergood & Weber, 2017; Jappelli & Padula; 2013). Moreover, the data within the study indicated a positive correlation between higher levels of FL and willingness to take risks, which is in line with other research in the field (Campbell & Cocco, 2003; Coulibaly & Li, 2009; Hullgren & Söderberg, 2013; Japelli & Padula, 2013). However, the question regarding risk was posed in a general manner as in Gathergood and Weber's (2017) questionnaire and it is unclear how the participants interpret risk such as risk of financial nature or overall. Nonetheless, a correlation

between willingness to take risk and a higher level of FL was established through analysis of the data.

Furthermore, a new aspect of the field, not present within the current literature, included in this research was the aspect of the individual 'feeling prepared' to seek a mortgage. As the definition of what makes an individual prepared to seek financial services and products is difficult to pinpoint (e.g. Gathergood & Weber, 2017; Lusardi & Mitchell, 2014) this research focused on the subjective and intrinsic perspective of the individual. The understanding of the individual feeling of preparedness of seeking a mortgage could be of importance so as to understand what concepts are needed to motivate people and households to expose themselves to financial services and products and decrease the feeling of insecurity. Which could lead to the individuals seeking professional financial help and advice rather than relying on other less reliable sources. Statistical analysis of the research data indicated that individuals possessing a higher FL felt more prepared to seek a mortgage. However, individuals who were financially illiterate, FL score 0-1, were more likely to feel prepared for a mortgage than the lowest end of the financially literate, FL score 2, with a possible explanation being the Dunning-Kruger effect. Dunning-Kruger effect refers to the notion that the unskilled or unknowledgeable are not aware of what they do not know and hence self-assess themselves as more competent than they truly are (Kruger & Dunning, 1999). Even with the financially illiterate over assessing their preparedness there was a positive correlation efficiency between feeling prepared for a mortgage and the financial literacy score, hence a research area worthy of further research.

The author of this research had two hypotheses, which also were a part of the main aims and objectives structuring this research. The first hypothesis being that there was a correlation between FL, knowing one's own credit score and timeframe of improving one's credit score before seeking a mortgage would be a predictor for financial literacy and illiteracy. The first aspect of this hypothesis had little to no statistical proof and Scottish first time buyers keeping track of their credit score only had a slightly higher financial literacy score with low positive statistical correlation, and was hence disproven. However, the study went on to prove with a positive statistical analysis that individuals with high financial literacy were more likely to spend longer on improving their credit score (FL mean average; more than one year, 2.65; More than 3 years, 3.33). Whereas

respondents intending to spend less than one year improving their credit score were more likely to be financial illiterate, with a mean FL average of 1.44. This finding is similar to Lee and Hogarth's (2000) conclusion that individuals more likely to be rejected by banks spend less time researching products and services. The same could be attributed to the intent to improve one's own credit score, as those with lower FL are less likely to spend time improving their credit score. This could be attributed to lack of understanding of how long it takes to improve one's credit score when it is low (Thomas, 2009) by individuals with low FL and that there is a need to inform the public of this to a larger extent than it currently is. The first hypothesis first part was therefore disproven, while the latter was proven with a positive statistical correlation coefficient.

The second hypothesis theorised that being aware of the 'hidden' fees while seeking out a mortgage would be a predictor of higher financial literacy. This was not proven as there was only a slight difference with low correlation coefficient between respondents being aware and saved for fees in their deposit compared to those who did not. The respondents that selected the correct average of fees while seeking a loan had a lower FL (mean) score, 1.6, than the studies average, 2.16. This goes against *Homo Economicus*, which states that perfect knowledge of alternatives is needed as to make rational financial decisions (Simon, 1987) and by extension being financially literate. However, the study revealed with positive correlation coefficients and regression model that participants with high financial literacy would overestimate the fees involved whereas the financially illiterate would underestimate the fees. These findings are comparable to some of Simon's (1987) criticism to the theory of *Homo Economicus*. The research was also in favour of individuals seeking more expensive sources of raising capital and was in correlation with low financial literacy and financial illiteracy (Gallery & Gallery, 2014; Gathergood, 2012; Miller, et al, 2009; Safieddine & Zaharovs, 2016; Spencer, 2011). Respondents answering that they would be raising funds for the deposit through deposit loan schemes were more likely to be financially illiterate (mean FL score of 1.91) than individuals raising deposits from more financially healthy options.

5.3 Limitations

As with all works, there are limitations with the research undertaken. The researcher would like to highlight three main limitations affecting this dissertation, some of which has been addressed prior to this sub section. Firstly, the snowball effect seems to have skewed residents to be overrepresented in the data compared to Scotland's actual demographic. The reasons could be many, such as Edinburgh being a multicultural city with people from various backgrounds and that participants from the rest of UK living in Scotland might consider themselves residents in Scotland rather than citizens; a view that differs from the perspective and statistics collected by The National Records of Scotland (2016). Secondly, the data collected from the 43 participants can be analysed with advanced statistical elements and methods, however statistical analysis gains its strength from a large pool of data for its analysis. Thirdly, the number of participants is sufficient for a master dissertation and initial market investigation but is not enough to make generalisable claims or fully utilise the strength of the statistical methods and analysis. This does not make the findings insignificant but rather an initial look into the field and topic studied that could be used as a starting point for further potential research.

5.4 Recommendations

The overall financial literacy of this study, 2.16 out of 4, which is higher than the 1.97 average household financial literacy in England and Wales in Gathergood and Weber's (2017). 2(.16) in FL is enough for the Scottish first time buyers to seek out and acquire mortgages. However, it will make the process more complicated as more time needs to be devoted to it and could make them seek the 'easiest' route, which may be unfavourable and affect their future finances significantly (Collins, 2011; Lee & Hogarth, 2000; van Ooijen & Rooij, 2016). Furthermore, some researchers would argue that the lower end of being financially literate would lead to a higher debt (Disney & Gathergood, 2012; Elliot, 2005; Kim, Garman, & Sorhaindo, 2003; Gallery & Gallery, 2014; Gathergood, 2012; Klapper, Lusardi, & Panos, 2012; Singh, 2014), selecting a more expensive and risky mortgage type (Campbell & Cocco, 2003; Coulibaly & Li, 2009; Hullgren & Söderberg, 2013; Japelli & Padula, 2013) or relying on financial recommendation from nonprofessional sources (Japelli & Padula, 2013; Lee & Hogarth,

2000; Lusardi & Tufano, 2009; Mitchell & Smetters, 2013; Phang, 2013; van Ooijen & Rooij, 2016). It is clear that both education and financial service providers need adapted to improve this situation. Education could potentially be a powerful tool to counteract a stagnating or even decreasing FL (Collard, et al, 2012; Collins & O'Rourke, 2010; Hathaway & Khatiwada, 2008; Miller et al., 2009; Lusardi, 2008; Lusardi & Tufano, 2009; Lusardi & Mitchell, 2014; Lo, 2009; Rutledge, 2010; Singh, 2014). Low financial literacy and illiteracy will have costly impact on both the individual and by extent society and finding a solution is therefore important within education, the financial services and further academic research. However, there is little consensus within the academic literature as how to increase FL long-term (Hasting, et al., 2013; Lusardi & Mitchell, 2014) and at an affordable rate (Lusardi & Mitchell, 2014; Rutledge, 2010). It seemsthat early maths performance is a clear predictor for the UK's populous financial literacy level, but also their intrinsic feeling of being prepared for financial products such as a mortgage, which is in favour with some of the research in the field (Amerikas et al., 2003; Gathergood, 2012; Herd et al., 2012; Jappelli & Padula, 2013). The author does not believe that primary maths performance is the only correlation for financial literacy. However, even if primary maths would not increase FL on its own, it could potentially make an individual more likely to approach financial products and gain experience so asto increase their FL. This could be one of many explanations as to why the successful primary maths students felt more prepared for a future mortgage within this study. Financial service providers and lenders need to provide easier to understand productsto cater to the actual level of the consumer rather than its current form. Other research argues that legislation and regulation would be a more effective measure (Deevy et al., 2012; Lusardi & Mitchell, 2014). The author of this research would argue and recommend that there should be a middle ground were both education and regulatory efforts are improved in order to promote financial literacy and not to cripple the development of financial products and services.

5.5 Further Research Suggestions

The intrinsic preparedness of the individual respondent for a mortgage is low. Further research into maths education and the correlation or contributing correlation of feeling prepared for financial products could be a potential future research area as it could lead to benefits to society by raising the level of financial confidence, confidence in approaching financial products and services, and by extension financial literacy among consumers. Moreover, there is a gap in the current field of financial literacy education in the subsection trickledown effect of financial literacy. Current literature has touched on the topic but failed to consider the impact of social taboos such as discussing financial matters in public and even within the family in countries such as the UK, Sweden, and Ireland. Further understanding how this taboo impedes or even prohibits the trickledown effect of financial literacy to the next generation is vital so as to further tackle the problem on a cultural but also educational level.

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7. Appendix

7.1 Appendix. Questionnaire

1. Age:

- 18 to 25
- 26 to 30
- 31 to 35
- 36 to 40
- 41 to 49
- 50+
- Don't want to say

2. Do you own property?

- Yes
- No

3. Do you intend to buy a property in Scotland for the first time in the future?

- Yes
- No
- Maybe Don't know

4. I am a:

- Citizen of Scotland
- Resident in Scotland
- Neither but intends to buy property in Scotland
- None of the above

5. When you were at primary school age 10, how did you perform in maths compared to other children in your class?

- Well above average
- Above average
- Average
- Below average
- Well below average

6. How do you see yourself: are you generally an impatient person, or someone who always shows great patience?

Scale 0-10 with 0 being Very impatient and 10 being Very patient

7. How well does this statement fit you: I am impulsive and tend to buy things even when I can't really afford them.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

8. How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?

Scale 0-10 with 0 being Unwilling and 10 being Fully prepared

9. While considering your current knowledge, financial understanding and other factors of importance, how prepared do you feel about becoming a first time property buyer?

Scale 0-10 with 0 being Totally unprepared and 10 being Fully prepared

10. Are you aware of credit score services such as Experian and Equifax?

- Yes
- No

11. Are you aware of your current credit score?

- Yes
- Roughly
- No

12. Do you check your credit score?

- Regularly
- A few times
- Once
- Never

13. "Before seeking a mortgage I will take, or have taken, measures as to improve my credit score in an effort to receive more favourable terms and interest."

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

14. Please indicate the time frame of such measures:

- Less than 6 months;
- 6 months to a year;
- 1 to 3 years;
- More than 3 years;
- Not applicable
- Don't know

15. How will you obtain the deposit for a mortgage? Please tick the boxes that fits you:

- Personal savings;
- Specific loan for deposit;
- Family and/or friends;
- Credit card(s);
- Other

16. How far in advance will, or did, you start saving for a mortgage deposit?

- Less than 6 months;
- 6 months to a year;
- 1 to 3 years;
- More than 3 years;
- Don't know

17. Does your savings for future property purchase include the additional costs of mortgage advisor, mortgage brokers, solicitor, lawyers and legal/mortgage/settling fees?

- Yes
- No
- Don't know

18. How much do you think the average property buyer needs to spend on additional costs as to finalise the purchase of a property?

- £0;
- Less than £850;
- Between £850 and £1,500;
- Between £1,500 and £3,200;
- More than £3,000;
- Don't know

19. Suppose a 15 year mortgage and a 30 year mortgage have the same Annual Percentage Rate and the same amount borrowed.

- The total amount repaid will be:
- Higher for the 15 year mortgage;
- *Higher for the 30 year mortgage;*
- The total amount repaid on both mortgages will be the same;
- Don't know

20. Suppose you owe £50,000 on a mortgage at an Annual Percentage Rate of 6%.

If you didn't make any payments on this mortgage how much would you owe in total after one year?

- Less than £50,000;
- £50,000 - £54,999;
- £55,000 - £59,999;
- £60,000 - £64,999;
- More than £65,000;
- Don't know

21. Suppose you owe £100,000 on a mortgage at an Annual Percentage Rate of 5%.

If you didn't make any payments on this mortgage how much would you owe in total after five years?

- Less than £120,000;
- Between £120,000 and £125,000;
- *More than £125,000;*

- Don't know

22. Suppose you owe £200,000 on a mortgage with an Annual Percentage Rate of 5%.

If you made annual payments of £10,000 per year how long would it take to repay the whole mortgage?

- Less than 20 years;
- Between 20 and 30 years;
- Between 30 and 40 years;
- *The mortgage would never be repaid;*
- Don't know