Exploring the Impacts of Financial Education on Behaviour Change in Personal Finance Management: Evidence from the PUFin Educational Programme "Managing My Money"

Thesis

Exploring the Impacts of Financial Education on Behaviour Change in Personal Finance Management: *Evidence from the PUFin Educational Programme "Managing My Money"*

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List of Abbreviation

FSBC: “Five Stages of Behaviour Change”

FWB: Financial Well-Being

Abstract

The impacts of educational interventions towards behaviour change have been disputed in previous studies (Hensley, 2015; Collins & Holden, 2014; Hopley, 2003). This study investigated whether financial interventions result in a change in financial behaviour. It also examined the role of educational interventions in contributing to the financial well-being (FWB) of citizens through obtaining desirable behaviour change and strengthening financial capability. The participants in the study have taken part in the “Managing My Money” course (MMM). This study examined if they had made a change in their behaviour, as a result of taking part in this course.

The literature review covers the theories explaining the relationship between educational interventions, behaviour change, financial capability and FWB using a range of behaviour change models, such as the “Five Stages of Change” model (Prochaska et al., 1992; Prochaska & DiClemente, 1983). A positivist approach was chosen to measure behaviour change. A survey method was applied and enriched with data from open-ended questions (Easterby-Smith et al, 2008). The deductive analysis of the open-ended responses provided a clearer picture of actual behaviour change and financial capability of students before and after the course.

This research makes an empirical contribution to the behaviour change literature. It provides evidence showing the effect of financial education towards behaviour change in personal finance (Prochaska & Di Clemente, 1992; Collins & Holden, 2014; Darnton, 2008). This research also supports previous studies that an educational intervention does not always result in behaviour change (SeiLing and Shockey, 2006), but helps to prepare people to make a change. In addition, it uncovered factors that constrained people in making a change, such as knowledge and low-income (Bell & Lerman, 2005; Lyons, 2005). A conceptual framework of the relationship between educational intervention; behaviour change, financial capability and well-being is outlined. The study has implications for social marketers, where a programme of personal financial education, should be developed to promote positive behaviour change, in particular for low-income individuals to encourage an improvement in the FWB of society.

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Chapter 1: Aims and Objectives

The impacts of education on financial behaviours have been debated; does an increase in knowledge result in positive behaviour change (Hensley, 2015)? Due to the limited measurements of impacts of community-based financial education to change behaviour, educational programmes face the challenge of proving that, without education, the changes in knowledge and behaviour would not have occurred (Collins & Holden, 2014).

The aim of this research is to identify the impacts of educational intervention, one of the factors in an environmental context that can influence individual behavioural change in personal finance. Furthermore, the role of education in encouraging people to make or maintain behaviour change is being explored. This research also investigates how educational interventions contribute to improve financial capability through behaviour change. While understanding the roles of educational interventions in improving FWB of society is crucial. As a result, the relationship between financial education, behaviour change, financial capability and FWB are being explored.

The result of this research seeks to have implications for social marketers and educators, to think about what we can do for students to help them make an action and maintain their positive change. For instance, the educators are informed to design educational programmes that meet the demands of students at different stages of behavioural change. While the social marketers and the industry, employ educational intervention to change the unhealthy behaviours of target audiences. It also seeks to raise the attention of the upstream legislative environment in the need for public financial education.

In order to achieve these aims, there are key research questions to be answered, including:

1. What impact does an educational intervention have on personal financial behaviour?

   In order to answer this question, three sub-questions need to be answered;

   a) What changes do students make to their financial behaviour?
   b) What are the factors that influence students to change their financial behaviour?
   c) What barriers prevent students from making changes?
2. What impact does an educational intervention have on FWB?

   In order to answer this question, the relationships between financial education, behaviour change, financial capability and FWB will be explored.

In order to answer these research questions, a case study of financial education programmes in the personal finance management of The True Potential Centre for the Public Understanding of Finance (PUFin) was selected. The MMM course is one of the free educational programmes founded by a collaboration between The Open University Business School and True Potential. This course is in response to the public demand for accessible financial education. The educational programmes aim to improve public understanding of personal finance through research and free online courses in personal finance (OPEN, 2016).

In summary, this study aims to *explore the impacts of financial education on behaviour change in personal financial management: evidence from the PUFin educational programme "Managing My Money".* It draws on data from questionnaires designed by the PUFin team, which includes three questions (Q.2, Q.4, Q.15) designed by the researcher of this study as presented in part 3.3.1 and appendix 5.

This paper has five chapters: (1) Aims and Objectives; (2) Literature Review; (3) Methodology; (4) Data Analysis and (5) Discussion and Conclusions.

Chapter 2: Literature Review

2.1. Introduction

This chapter will explore the theories in social marketing; personal financial education and personal finance to analyse the relationships between four variables: behaviour change, financial education, financial capability and financial well-being. This study seeks a contribution in using these theories in practice. There are four parts in this chapter as seen in table 2.1.1:

Contents of chapter	Theories	Reference
Reviewing the links between desirable financial behaviour, financial capital and financial well-being	Financial well-being refers to happiness or general satisfaction with the financial situation.	Porter and Garman, 1993.
	"Being in control" of personal finance is one of important drivers financial satisfaction.	Vlaev and Elliott, 2014; CFEB, 2010.
	Financial capability refers to the ability to apply appropriate financial knowledge and perform desirable financial behaviours to achieve financial well-being.	Jian Xiao and O'Neill, 2016, p.1; Xiao et al., 2014b.
	The five components of financial capability with related desirable behaviour change are (a) Making ends meet; (b) Keeping track of your finances; (c) Planning ahead; (d) Choosing financial products; (e) Staying informed about financial matters.	CFEB, 2010.
	Self-efficacy refers to people's beliefs in their capabilities to produce given attainments such as making a change in behaviour where "can do" is considered as a statement of efficacy.	Bandura, 2011, p.15; Bandura, 2006b.
Reviewing the links between desirable financial behaviour, financial capability and financial well-being	Debates on the links between financial education and financial behaviour change that demand more evidence in measurement of the impacts of financial education towards financial behaviour change. Reviewing various studies on financial education and behaviour change.	Hensley, 2015; Collins & Holden; 2014; Lyons et al., 2006; SeiLing and Shockey, 2006; Lyons & Scherpf, 2004.
	Demands on financial education for an improvement of financial capability.	Bucks & Pence, 2008; Campbell, 2006; Bell & Lerman, 2005; Lyons et al., 2006; Lyons & Scherpf, 2004.etc.
	Financial education as a social marketing product offering financial well-being benefits. Reviewing social marketing product theory: financial education is considered as an augmented product that involves the educational services accompanies the desired behaviours to help facilitate a financial behaviour change for a better financial well-being outcome.	Hastings and Domegan, 2014; Thackeray et al., 2012; Kotler and Lee, 2008; Brown, 2006.
	Five stages of behaviour change model in exploring students' insights by examining the changes in progress and readiness of students in making and maintaining behaviour change after the course.	Darnton, 2008; SeiLing and Shockey, 2006; Prochaska et al., 1992; Prochaska & DiClemente, 1983.
Conclusion	This study is contributing to existing debates by adopting the reviewed theories used as indicators in this study to measure the changes in financial behaviour, financial capital, financial capability and financial well-being of target audience after an educational intervention.	

Table 2.1-1: A summary of contents in literature review chapter

2.2. The Links between Desirable Financial Behaviour, Financial Capability and Financial Well-being

The concept of FWB was originally defined as happiness or general satisfaction with the financial situation (Porter and Garman, 1993). According to Strumpel (1976), people perceive FWB when they feel satisfied with their income and savings, ability to "make ends meet" or a sense of material security. While Garman and Forgue (1991) found that people who had undesirable financial behaviours perceived a decrease of FWB. In addition, Joo and Grable (2004) found that people who had high levels of knowledge and financial skills had desirable financial behaviours leading to higher levels of financial satisfaction. These findings show the links between financial education, financial behaviours and FWB where desirable financial behaviours result in improving FWB and vice versa.

Recently, Vlaev and Elliott (2014) found that people perceive financial satisfaction when they have a greater sense of overall control over money; less worry about money; have savings for the unexpected and save regularly. Especially, “being in control” of personal finance was found as the most important driver of financial satisfaction (CFEB, 2010; Vlaev and Elliott, 2014). At this point, we can see “being in control” of personal finance links between financial satisfaction and “self-efficacy”’ (Bandura, 1997).

As per Consumer Financial Education Body research reports (CFEB, 2010), improving financial capability should lead to changing self-beliefs and a greater confidence to engage with financial decisions. A link between behaviour change, financial capability and FWB were assured. CFEB referred to the five components of financial capability (a) Making ends meet; (b) Keeping track of your finances; (c) Planning ahead; (d) Choosing financial products; (e) Staying informed about financial matters. These were used in The Financial Capability Baseline Survey published by the Financial Services Authority (FSA) in 2006. Each component of financial capability was embedded with desirable financial behaviours had statistically significant relationship with financial well-being in previous studies (CFEB, 2010).

It is believed that a population that keeps track of its money, makes ends meet and plans ahead, creates a strong foundation for economic growth (CFEB, 2010). Consequently, they are fundamental components of financial capability (see figure 2.4.1). While “making ends meet” will be an important element of financial capability for many people on lower incomes, “planning ahead” becomes important with those with slightly higher incomes.

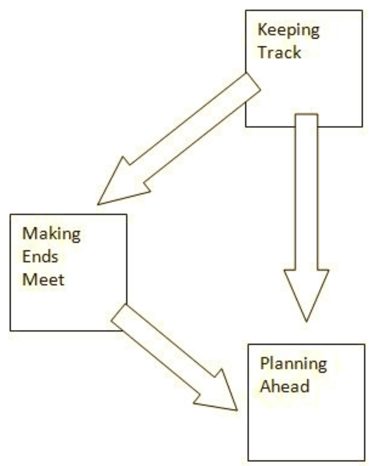

Figure 2.2-1: The fundamental components of financial capability (CFEB, 2010)

In order to explore the impacts of the MMM course on the financial capability and FWB of students, the five components of financial capability with related desirable behaviour change will be explored. This will be done by reviewing the key financial behaviours that students changed and whether these new patterns of financial behaviour fit in five components of financial capability, resulting in an improvement of FWB (CFEB, 2010). Student’s feelings about personal finance is another indicator that will be used to measure the impact of the MMM course on FWB. The key feelings about personal finance and whether students felt satisfied with their financial circumstances after the MMM course, such as being in control of personal finance, less worried about money or a sense of material security will be explored.

2.3. The Links between Financial Education, Financial Capability and Financial well-being

The links between financial education and behaviour change revealed in previous studies where an improvement in financial capacity and FWB were examined as an outcome of financial education through desirable changes in financial behaviour. However, due to the limitations in evidence found, there are debates on the impact of financial education towards the changes of financial behaviour or evaluation of its outcomes on financial capacity and FWB. These debates call for a new approach from designing an educational intervention to measuring its impact on behaviour change as well as financial capacity and FWB. This study adopts the theories of the social marketing to help further understand and explain the links between financial education and behaviour change, financial capacity and FWB.

2.3.1. Debates on the Links between Financial Education and Behaviour Change

A link between financial education and behaviour change has been found in recent literature (Lyons et al., 2006). Many researchers agree that financial education results in positive behaviour change based on the studies of diversified target populations such as employees, students and financial counselling clients (Lyons et al., 2006). For instance, education has been found to impact long-term financial behaviours (Cole, Paulson & Shastry 2012; Willis, 2009, 2011). It was also found that there is a positive relationship between education and savings behaviours and the contribution to retirement plans (Gutter et al. 2007; DeVaney & Chien, 2001; Elder & Rudolph, 2000). Moreover, financial information and education tend to work best on those who are most open to being informed and educated (Dolan et al. 2012).

However, some authors are more critical of the impacts of education on financial behaviours (Hensley, 2015). According to SeiLing and Shockey (2006), an educational intervention does not always result in behaviour change. This is due to constraints on behaviour change that do not link with individuals' levels of knowledge of financial management, such as income (SeiLing and Shockey, 2006).

The previous studies have shown financial interventions to be less effective among low-income populations (Collins & Holden; 2014, Lyons et al., 2006). Lyons & Scherpf (2004) found in low-income groups, some financial behaviours cannot be changed, no matter how much financial education is received because the overall financial position had not changed, for instance, some low-income individuals simply do not earn enough to save for the future. Therefore, they suggested that the best way to measure the success of a financial education programme should rely on whether the participants received the skills that were needed and applicable to their financial situation.

The impacts of financial education on behaviour change have been challenged due to limited evaluation measurements that have been used. According to Hopley (2003), there is a lack of integration of the evaluation components into the design and delivery of financial education programmes. Some evaluations use data from a single source, such as a pre-test or post-test, which is inadequate for data comparison in pre and post intervention (Lyons et al., 2006). In addition, a high drop-out rate during the educational programmes and low survey response rates also cause problems (Anderson, Zhan, & Scott, 2004; Lyons et al., 2006). Seeking continuous evidence of the impact of an educational programme on behaviour, knowledge and having confidence in the subjects or where improvements need to be made, are vital (Hensley, 2015).

These debates do not deny the links between financial education and behaviour change, but they do suggest that more theoretical and evaluation design work is required (Collins & Holden, 2014). Many educational programmes in personal finance do not use any specific theory to frame the link between financial education and behaviour change from the design of the educational intervention to the evaluation of its impacts on behaviour change (Collins & Holden, 2014). Schuchardt et al. (2007) suggested that the theoretical underpinnings for financial education must be understood when designing evaluations.

Currently, some practical frameworks are used to evaluate the outcomes of financial education which focus on the specific achievements rather than capture the complex factors that influence the impacts of financial education on behaviour change. For instance, Sebstad, J et al. (2006) focused on the indicators of financial literacy including knowledge, skills and attitudes, financial behaviours, financial outcomes. Meanwhile, Atkinson (2008) evaluated the attainment of participants in financial knowledge and changes in behaviour or attitudes after an educational intervention. Green (2013) reviewed financial capability, FWB or the mentoring relationship that applies to a single educational programme. These practical frameworks are similar in that they express the pre and post evaluation needs of financial education programmes in order to assess its outcomes objectively and reliably.

The arguments also focused on the methods of collecting and analysing data (Collins & Holden, 2014, Lyons et al., 2006). There are two major approaches. One approach is to evaluate the impact of an intervention using a control group study that compares two groups of people, one that received the intervention and one that did not (Collins and Holden, 2014). Another approach is to evaluate the intensity of an intervention. Following this method, the impacts of an educational intervention on students are examined through the number of lessons they completed and the impacts on overall financial behaviours; the changes of specific behaviour and comparison in behaviour changes of students in a post-test (Lyons et al., 2006). This approach brings additional insight into the relationship between the amounts of financial education students received and their actual and anticipated financial behaviours through their self-reported improvement.

In summary, these debates bring challenges to a researcher in approaching a new hypothesis in drawing the relation between financial education and behaviour change. Referring to this research, the MMM course had some limitations as discussed in the literature. This course did not use any specific theory to frame the link between financial education and behaviour change or design the course to evaluate its impacts on behaviour change (Collins and Holden, 2014). A traditional control group study was not used to measure the changes of students pre-the course. Consequently, this research is using data from a post-test or a “follow-up survey” to measure the impacts of the

MMM course by evaluating the intensity of an intervention instead (Lyons et al., 2006). A set of specific changes of unhealthy behaviours is being examined such as over-borrowing; over-spending; under-saving; lack of forward planning and irrational choices of financial products.

2.3.2. Demands on Financial Education for an Improvement of Financial Capability

While there are debates on the relationship between financial education and behaviour change, it is useful to review their links through the view of market demands and social marketing theories. In the context of the UK personal finance market, there are gaps in the financial capability of UK households that threaten the FWB of society. For instance, amongst working-age people in the UK, there is a lack of forward planning. 27 million do not have sufficient savings; 12 million are not saving enough for their retirement; 8 million have problems with debt; while 19 million have an ineffective approach to budgeting (FINCAP, 2015).

These issues are commonly considered a result of low financial literacy levels in the ability to use knowledge and skills to manage financial resources effectively (Collins & Holden, 2014). The lack of adequate financial skills is also a cause of low personal saving rates; high levels of consumer debt; and increases in personal bankruptcy filings (Bell & Lerman, 2005; Lyons et al., 2006; National Endowment for Financial Education, 2004). It is suggested that gaining financial knowledge is at the core of positive FWB (Bucks & Pence, 2008; Campbell, 2006; Mandell, 2004).

According to Lyons et al. (2006), all households need basic financial management skills, but they are critically needed by low-income populations. These groups are overwhelmed, particularly with the burdens of low-income and social disadvantages. Most low-income and disadvantaged populations who have a lack of adequate financial education are more likely trapped by unfair lenders and financial fraud (Lyons & Scherpf, 2004).

Consequently, there is a need for accessible financial education in the UK to improve financial capability and FWB Additionally, these demands show the links between financial education, financial capability and FWB. As a behaviour change product, the MMM course will be examined to see how it meets these market demands.

2.3.3. Financial Education as a Social Marketing Product Offering Financial Well-being Benefits

The links of financial education and behaviour change also have been endorsed in theories in social marketing and best practice in the social marketing industry. The idea that marketing tools and techniques could be used to promote social good and to help address social problems developed in the late 1960s and early 1970s. Social marketing involves the social application of product planning, pricing, communication, distribution and marketing research (Kotler and Zaltman, 1971) to bring about positive social change at global, national, community or individual level. Social marketers are in the business of behaviour change (Dibb, 2014), with social marketing used to build public awareness and change undesirable behaviour (Hastings; 2007) or influence voluntary behaviour (Andreasen, 1994:110). Social marketers pursue outcomes to improve individual and societal wellbeing in an array of problems and populations; targeted at global, national, community or individual level.

The existing behavioural models and theories of change reveal that learning is fundamental to the process of change and bringing about lasting change (Darnton, 2008). Educational programmes are often used to promote positive behaviour change that falls within the remit of social marketing (Dibb & Carrigan, 2013). Marketing tools and techniques that are employed in commercial settings to build brands or promote products can be used in education programmes to promote social change (Kotler & Lee, 2007; Kotler & Roberto, 1989). In this study, social marketing theories will be used to help understand how the financial educational course, MMM changes consumer behaviours.

In social marketing, there are varied approaches to the term “product. Kotler and Lee (2008) suggested that the social marketing product consists of three product levels including the actual product (i.e., the behaviour); the core product (i.e., the benefits) and the augmented product (i.e., tangible items and services) (Thackeray et al., 2012, p.85). Adopting the Kotler and Lee (2008) approach, this study views financial education as an augmented product that involves the educational services that support behaviour change towards the desired behaviours (Brown, 2006) (Thackeray et al., 2012). Social marketing product in this study refers to the MMM course where the actual products are desired behaviours in managing personal finance such as making ends meet; keeping track of your finances and planning ahead etc. The augmented product was knowledge and skills delivered through the modules of the MMM course to support the change in unhealthy behaviours such as over-borrowing; over-spending; under-saving; lack of forward planning and irrational choices of financial products. The core product is considered as the improvements of financial capability and financial well-being as the core benefits.

While the “consumers” are students who took part in the MMM course over 8 weeks. In this context, the value of this product was expected to bring about positive behaviour change in personal finance of students. This product is expected to encourage students to adopt the desirable behaviour patterns as a long-term result. While this research investigates the impacts of the MMM course on behaviour change, it also seeks the evidence to prove the benefit of a social marketing product. The improvement in financial capability and FWB in the long-term are core benefits that “consumers” obtained by consuming a “product” of financial behaviour change.

2.3.4. Five Stages of Behaviour Change Model in Exploring Students' Insights

The five stages of behaviour change (FSBC) (Prochaska et al., 1992; Prochaska & DiClemente, 1983) has been one of the main theories of behaviour change used in social marketing campaigns (Logie-MacIver et al., 2012). This theoretical framework is used to segment target audiences based on their readiness to change behaviour and their associated needs. In practice, the framework was used to underpin the design of financial education programmes (Xiao et al., 2004), for instance, Money2000, an extension programme on financial education of United States Department of Agriculture (USDA) in the US. It was also used to evaluate the impacts of educational interventions to change student's behaviour change (SeiLing and Shockey, 2006). According to Prochaska et al., 1992; Prochaska & DiClemente, 1983), there are five major stages of behaviour change, (1) *Pre-contemplation*, (2) *Contemplation*, (3) *Preparation*, (4) *Action*; (5) *Maintenance* which were adopted in previous studies (see Table 2.3.1).

Stages	Progresses of Behaviour Change
Pre-Contemplation	People are not intending to change or take action (Darnton, 2008) as they feel that there is no reason to change. They haven't recognised the problems that their unhealthy behaviours bring to their life (SeiLing and Shockey, 2006) so they will rarely look for help, seek information, or re-evaluate their behaviours and sometimes are being pushed by others to do so.
Contemplation	This is the information-gathering stage. People begin to recognise that they need to change and will seek information and help (Seiling and Shockey, 2006). The concerns on the pros and cons of making a behaviour change may postpone people to take action at this stage (Darnton, 2008).
Preparation	People are very aware of the costs and benefits of change and some behaviour change may already have been made or having a plan of action. Different strategies are being considered and information is being sought so that they are intending to take action in the next month (Seiling and Shockey, 2006)
Action	Most of behaviour change is executed. People need to feel confident that they can succeed (Seiling and Shockey, 2006).
Maintenance	People have been making change for at least six months and are actively working to prevent a relapse to the old behaviour. They become more confident that they the change can be maintained (Seiling and Shockey, 2006)

Table 2.3-1: Five stages of behaviour change (sourced in various studies)

In this study, financial education is potentially important in 'nudging' behaviour change through the stages of *pre-contemplation*, *contemplation a*nd *preparation* towards a positive change. People who have more confidence in their ability to manage money may be better able to move into the *action* and *maintenance* stages, in particular behaviours such as setting goals, spending plans, tracking spending, and saving money (Seiling and Shockey, 2006). This is in line with the concept of self-efficacy

(Bandura's, 1977) as a key factor in moving participants into the *action* stage in the FSBC (Prochaska et al., 1992; Prochaska & DiClemente, 1983).

However, previous studies have found limitations in this theoretical framework (Logie-MacIver et al., 2012). For example, some studies use six-month and 30-day periods cut-off points to divide the change stages in financial behaviours. However, using strict cut-off periods can be problematic as individuals behave differently in different circumstances. This framework also has less to say about why individuals may take longer or never reach various decision-making stages. Under a qualitative approach, in-depth information is collected that may explain why some people made a behaviour change but others did not make any change (Logie-MacIver et al., 2012). However, without the timing cut-off points, it is more difficult to categorise people into different stages.

Despite the limitations in applying the stages of behaviour change in a qualitative way, the framework still has its advantages in this research. It will therefore be used to categorise the stages of behaviour change among students based on qualitative data collected from their open-ended responses. As discussed, an educational intervention does not always result in behaviour change (SeiLing and Shockey, 2006) for various reasons such as low-income levels, life experience, culture or social context or lack of available mainstream financial services and products (Bell & Lerman, 2005; Lyons, 2005). The FSBC (Prochaska et al., 1992; Prochaska & DiClemente, 1983) provides insights into the end-users or students. The FSBC will also be used to explore what prevented students from making behaviour change and their associated needs after the course. Lastly, it examines if this framework is applicable for measuring the links between financial education and behaviour change within the MMM context. This may influence PUFin in their choice of a theoretical framework in designing and evaluating the impacts of the MMM course on behaviour change.

2.4. Conclusions

In summary, there is no one-size-fits-all approach to an educational intervention in personal finance. Education alone is not the single answer to “nudge” people to make a behaviour change but is an essential factor instead. This study seeks to prove that that the MMM course had a positive impact on financial behaviours, leading to improved financial well-being. As shown in figure 2.4.1, a financial education programme, which is a social marketing product, potentially impacts the changes of financial behaviour and therefore has a relationship with financial capability and financial well-being thanks to those changes. The data analysis of this study seeks to prove these propositions.

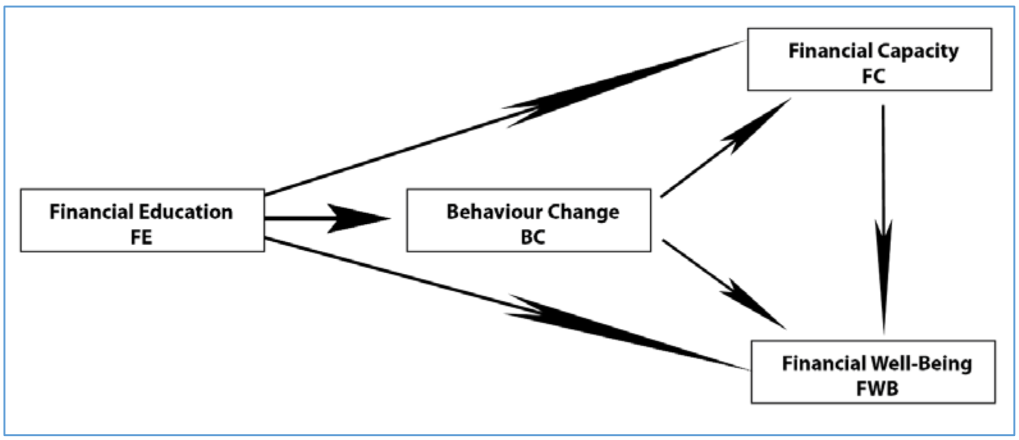

Figure 2.4-1: *The links between financial education, behaviour change, financial capability and FWB in literature*

Chapter 3: Methodology

3.1. Introduction

Research methodology is the research strategy that includes a plan of actions, research process or research design that lies behind the choice and the use of specific methods to achieve the expected outcomes (Crotty, 1998). This chapter discusses the methodology adopted in this study that includes the research philosophy, research design, data collection and data management strategies. The choice of research methods in collecting and analysing data to seek the evidence of the links between the MMM course and financial behaviour change, financial capacity and financial well-being of students after the course is shown in figure 3.1.1.

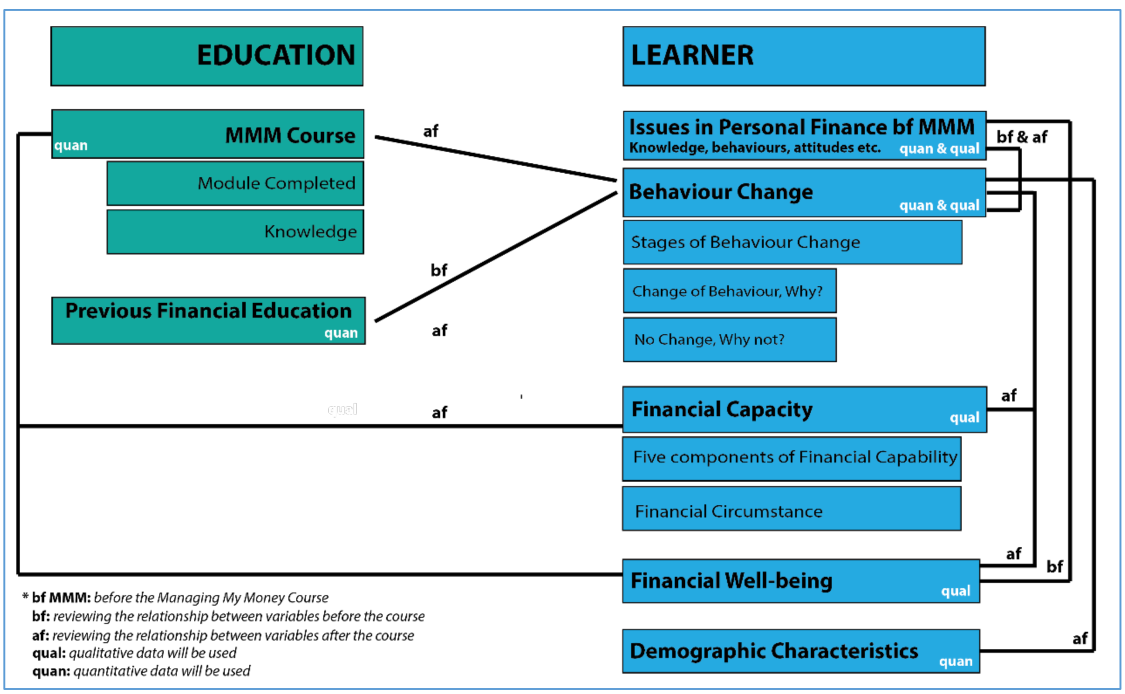

Figure 3.1-1: A summary of the research questions and data collection

3.2. Research Approach

This research adopts a positivist paradigm where both quantitative and qualitative data were used. The rationale for the choice is based on the context of the research, the complexity of the research topic and research questions. Understanding the context of the research helps explain why the choice of methodology is a pragmatic approach.

Firstly, this is a complex research topic that investigates the theories of education, personal finance and social marketing areas. The educational intervention which is relevant to educational theory is based on factual scientific knowledge and associated with positivist research paradigm (OPEN, 2016). The positivist approach is also employed dominantly in financial research. In a scientific methodology, a comparison of variations across samples is made to identify the common regularities in the relationship between educational interventions and human behaviour (Easterby-Smith et al., 2008). This research seeks to explore the relationship between educational interventions and human behaviour through an objectively measured empirical inquiry (Crotty, 1998). It also pursues the identification of the cause and effect and fundamental laws that explain their relationship; captured in a theoretical framework that is applicable and stable across contexts and people (Easterby-Smith et al., 2008).

On the other hand, research in human behaviour is under the spectrum of social marketing. When investigating a large homogenous market, a segmentation approach is normally used. The target audiences are segmented based on sociodemographic, cultural, and behavioural characteristics which are associated with intended behaviour change. By exploring the common regularities and measuring these variables quantitatively, the audiences are subdivided into the identifiable segments consisting of people who have similar needs, wants, or demand characteristics (Dibb, 2014). This approach is adopted by social marketers and captured in the FSBC (Prochaska et al., 1992; Prochaska & DiClemente, 1983) in which people are categorised into broad segments based on similar progress towards behaviour change (Logie-MacIver et al., 2012). Recently, the FSBC has been used to target behaviour change interventions in social marketing (Darnton, 2008). Furthermore, segmentation enables different variables to be used to enable intervention strategy to be tailored to the target segment (Dibb, 2014).

In the context of this study, it used the data that was collected in the “follow-up” survey in the first quarter of 2016 from students who took part in the online MMM course since 2014. Prior to this survey, this course had two surveys: (1) “before” students started the course; (2) “after” students completed the course. The third survey “follow-up” was carried out, at least six months after students completed the course. However, this study did not use any existing data from surveys 1 and 2 as these did not include measurements on behaviour change. Moreover, the researcher was not involved in these surveys, but involved partly in the last stage of data collection; the “follow-up” survey. Therefore, a pre and post method in measuring the impact of an educational intervention (Lyons et al., 2006) was not applicable in this study.

Furthermore, the researcher was not involved in the questionnaire design as the initial questionnaire for the “follow-up” survey was designed by the PUFin team before the researcher gained access. It was scheduled to be delivered in February 2016. There was no chance for the researcher to conduct another separate survey on the same population in the following months. However, the researcher was offered access by PUFin to use the existing follow up questionnaire, which included some measurements of behaviour change. Moreover, the researcher was allowed to add three more questions (Q.2; Q.4; Q.15, appendix 5) before the final questionnaires were sent out (see part 3.3.1). Even though the initial questionnaire had questions to measure the changes of behaviour, it was not designed to collect data specifically for this study. It is arguable that the data in this study is secondary data due to the initial questionnaire being designed originally to collect data for PUFin research rather than specifically for the research questions of this study. Data did not exist before this study, however, as Hox and Boeije (2005, p.593) describe, this data could be considered as secondary data because *“secondary data is data originally collected for a different purpose and reused for another research question”.* While this study adopts a few theories in behaviour change such as the stages of behaviour change (Prochaska et al., 1992; Prochaska & DiClemente, 1983) and personal finance such as fundamental components of financial capability (CFEB, 2010), however, the questionnaire was not specifically designed to use these theories. It should be noted that the three additional questions were not adequate to provide quantitative data to answers for the research questions, therefore, qualitative data from open-ended responses were also needed.

Qualitative data provides the range of meanings through which human beings experience the world (Hammersley and Atkinson, 2007; Serrant-Green, 2007). This research seeks to explain why education might influence some students in making or maintaining change but might not for others. Individuals will have their own experience during their behaviour change progression, so the researcher needs to explore the insiders' views by asking them to share their own thoughts. Otherwise, the structured variables designed and employed by a researchers' experience becomes biased and unreliable.

3.3. Research Design

3.3.1. Data

As the MMM course is an online educational programme, the connections between educators and students are established and maintained through an online platform. Therefore, an online survey was considered the best choice to approach students and collect data for this research project. The “follow-up” survey investigated students who took part in the course from 2014 to 2015. Survey questionnaires are one of the most popular positivist methodologies. These are considered a reliable method to obtain structured data that can be easily coded and analysed (Marsh et al., 2013). The questionnaire for this survey collected both quantitative and qualitative data.

The measurement scales of this survey focused on two variables; financial education (the MMM course) and behaviour change. As there were different types of data needed, the questionnaire combined a wide range of format measurement scales with constructed items such as Likert scale, categorical items, ordinal items or simple binary “yes/no” formats (Sapsford, 2007). In order to validate the measurement, different formats of scales were used to single variables such as behaviour change with four questions (Q.11; Q.12; Q.13; Q.14, appendix 5). In addition, most questions and response scales were designed to carry out a regression or correlation to examine the relationship between variables (Easterby-Smith, M. et al., 2008).

The “follow-up” questionnaire combined the questions designed by PUFin and three questions designed by the researcher of this study. These addition questions were:

(1) “Was there any particular issues that prompted you to enrol on Managing My Money?” (Q.2, appendix 5)
(2) “Thinking back to before you took part in Managing My Money, which of the following financial activities did you do regularly?” (Q.4, appendix 5)
(3) “Do you regularly do any of the following financial activities?” (Q.15, appendix 5)

These questions were added to collect the data on student’s behaviours before and after the MMM course and developed based on the literature review. The literature showed that people had issues in managing their personal finance, such as low personal saving rates and high levels of consumer debt (Bell & Lerman, 2005; Lyons et al., 2006; National Endowment for Financial Education, 2004) due to low financial literacy levels (Collins & Holden, 2014). This suggests that there is a demand for financial education programmes to help improve financial capability. Based on this, the first question (Q.2, appendix 5) was designed to explore the financial issues relevant to students’ financial well-being that prompted them to take part in the MMM course. Multiple-choice questions were used to accommodate the fact that people may have more than one reason to take a financial educational course.

Furthermore, according to Lyons et.al.(2006), the changes of specific behaviour and comparison in behaviour changes of students needs to be evaluated after completion of the course in a post-course test. The initial PUFin questionnaires had no questions to measure the changes of behaviours before and after the course, therefore, two questions with repeated response items were created (Q.4 & Q.15, appendix 5). These two questions were created as an attempt to construct baseline data, by asking participants about their habits before the course (Q.4, appendix 5), and later asking them about their habits after the course (Q.15, appendix 5). The responses were then compared to find out if there was a change in their financial behaviour. Multiple-choice questions were also adopted in these questions. This research used the multiple-choice tests which largely applied in the design of research questionnaires in educational programs (Considine et.al, 2005). These tests outline a number of constructed possible answers which are seen as a reliable, valid and efficient way to examine learning outcomes (Marsh et al., 2007). It has been used as a tool to evaluate pre and post educational contexts (Considine et al., 2005).

In addition, the open-ended questions (Q.6 and Q.12, appendix 5) collected in-depth qualitative data of students' experience with the course and how the knowledge was translated to students' behaviour after the course. It enabled the students to share their progress in making a change in their own frames of reference rather than suggested items from the researcher (Allen and Potkay, 1983; Salancik, 1979). The thoughts of individual perspectives are collected and used to develop the theoretical models in a scientific inquiry (Gray, 2014).

In summary, questionnaires were designed in four parts as seen in appendix 5.

(1) The background information of the prior personal financial situation of students and the activities they undertook to manage their personal finance before the course.

(2) The structured questions were used to measure the differences or changes in managing personal finance of students after the course.

(3) The open-ended questions were used to collect in-depth details that had not been covered in the structured questions, which students may want to share.

(4) Structured demographic questions relating to gender, age, country of living, education, employment and disability.

3.3.2. Sampling

A representative research sample, is a sample that contains the key characteristics of the entire population (Sapsford, 2007). The "follow-up" survey was sent to the whole population of 27,666 students who took part in the courses from May 2014 to October 2015. Of the 27,666 students, 822 participants (3.1%) responded to the survey, see table 3.3.1 for statistics of the sample.

	Demographic Characteristics	Responses	
		Responses	Percent
1	**Year of Registration**		
	May 2014	148	18.0%
	Jan 2015	154	18.7%
	Oct 2015	144	17.5%
	Registered but can't remember when	378	46.0%
	No, I can't remember	17	2.1%
	Total	841	102.3%
2	**Gender**		
	female	462	56.2%
	male	330	40.1%
	Prefer not to say	13	1.6%
	Total	805	97.9%
3	**Age**		
	16-18 years	4	0.5%
	19-25 years	24	2.9%
	26-35 years	78	9.5%
	36-45 years	102	12.4%
	46-55 years	159	19.3%
	56-65 years	263	32.0%
	Over 65 years	156	19.0%
	Prefer not to say	18	2.2%
	Total	804	97.8%
4	**Living Country**		
	UK	16	1.9%
	Ireland	15	1.8%
	Europe outside the UK and Ireland	22	2.7%
	North America	4	0.5%
	South America	33	4.0%
	Asia	82	10.0%
	Africa	16	1.9%
	Australia, New Zealand or the Pacific Islands	615	74.8%
	Total	803	97.7%
5	**Highest educational qualification**		
	No formal qualification	11	1.3%
	School-leaving qualification (16 years)	32	3.9%
	School-leaving qualification (18 years)	30	3.6%
	Vocational qualification (i.e. practical, trade-based)	37	4.5%
	College diploma or certificate	114	13.9%
	Undergraduate or Bachelors university degree	292	35.5%
	Postgraduate or Graduate school university degree	244	29.7%
	Doctorate	18	2.2%
	Other	25	3.0%
	Total	803	97.7%
6	**Employment status**		
	Full-time employed or self-employed	284	34.5%
	Part-time employed or self-employed	134	16.3%
	Full-time voluntary work	2	0.2%
	Part-time voluntary work	10	1.2%
	Full-time student	17	2.1%
	Part-time student	3	0.4%
	Unwaged and seeking employment	20	2.4%
	Unwaged with domestic responsibilities	13	1.6%
	Disabled and not able to work	6	0.7%
	Retired	275	33.5%
	Prefer not to say	18	2.2%
	Other	21	2.6%
	Total	803	97.7%

Table 3.3-1: Demographic Characteristics

57.4% of students were female and 41% were male. The largest population were in the age range 56-65. Those in younger populations was critically lower, with 3% in the age range 19-25 and only 0.5% in the age range 16-18. Furthermore, most of the participants had high educational qualifications: 32.6% had higher education degree; 36.4% had an undergraduate degree and only 1.4% had no formal qualification. Most participants were from the UK with 76.5%. Amongst the highest numbers of people in each category, the number of students who were in full-time employed and self-employed or retired was about the same with 35.4% and 34.2%. This was followed by part-time employed and self-employed, 16.7% and other categories added up to 13.7%.

3.4. Data Handling

3.4.1. Data Analysis

3.4.1.1. Statistics analysis and SPSS

The quantitative data was imported, coded and analysed using IBM's statistical data analysis software, SPSS 20.0. Data analysis used the techniques described below:

a. Descriptive Statistics: Frequency calculation is used to count the occurrences of the variables (Kinnear and Gray, 2009) and crosstabs statistics compute the variables in two-way tables. Crosstabs helps to raise the veil of layers of relationships among variables.
b. Non-parametric test: McNemar test which is normally used to measure the differences between pre-test and post-test of an intervention (statistics.laerd.com). This method will be used to measure the change in behaviours/attitudes before and after the MMM course in two related samples.
c. Correlation and linear regression are used for linear modelling that draw the relationship between dependent variables and independent variables that can be explained by a straight-line (Sapsford, 2007). This test will be used to assess if the

dependent variable - behaviour change after the MMM course correlated with the independent variables such as education, demographic characteristics etc.

3.4.1.2. Thematic Analysis and NVivo

Thematic analysis is considered as a suitable method to identify the patterns and interpret the data from interviews or open-ended responses (Lynass et al., 2012; Hartman & Conklin, 2012). This study adopted a thematic analysis method to analyse the qualitative data in the writings/text of students. The analysis reviewed their perceptions or feelings regarding the differences in their personal financial situation and the changes they have made. It helps explore students' perspective beyond the questions designed by a researcher.

A theoretical or deductive approach was used to identify the themes within the data in this study (Boyatzis, 1998; Hayes, 1997). According to Braun and Clarke (2006, p.87) a 'theoretical' thematic analysis tends to be analyst driven, led by the researcher's theoretical or analytic interest in specific the area. Accordingly, the codes were developed based on selected theories used within the literature review prior to analysis, such as the stages of behaviour change (Prochaska et al., 1992; Prochaska & DiClemente, 1983). In addition, the codes were mapped to answer the specific research questions such as "why students have made a change in financial behaviour".

Braun and Clarke (2006) proposed six phases of thematic analysis need to be applied flexibly to fit the research questions and data (Patton, 1990). This study adopted these six phases and used NVivo software to analyse qualitative data as seen table 3.4.1. This software is useful to code text into specific themes and explore the links across these themes (Easterby-Smith et al, 2008). Themes or codes were developed using the existing theories of behaviour change. The codes used to analyse the data from questions 6 and question 12 can be seen in appendix 4.

Phase	Description of the process	Details
1. Familiarizing with data	+ Printing all the responses (Q.6 & Q.12) with their ID number for tracking back later + Approaching the data with specific theoretical frameworks (table 2.1 1) + Reading through the entire data set and noting down initial ideas that match with these theories.	+Write down the common words that many students used repeatedly that relevant to the selected theories +Taking notes or marking ideas for coding for each theory + Importing data into Nvivo software and exploring the data with query tools such as word frequency and text search to mind map the ideas and explore what the common changes or differences in personal finance of students after the course.
2. Generating initial codes	+ Approaching the data with specific theoretical frameworks (table 2.1 1) and code data around them + Coding performed through Nvivo software with the node hierarchies + Coding interesting features of the data in a systematicway across the entire data set and collating data relevant to each node/code.	There are three levels of node hierarchies: + First level: Categories of individual theories + Second level (Parent nodes): Codes as elements or components of individual theories + Third level (Child nodes): Matching data extracts that demonstrate that code or element.
3. Searching for themes	+ Identifying repeated patterns (themes) across the data set + The relationships between codes, between themes, and between different levels of themes were captured.	The key themes were found after the course: + Knowledge improvement + Changes in cognitions + Changes in behaviours + Improvements in financial capability and financial well-being.
4. Reviewing themes	+ Checking if the themes work in relation to the coded extracts and the entire data set + Generating a thematic 'map' of the analysis in relationship between four variables financial education, financial behaviour change, financial capability and financial well-being.	The key themes revealled the relationships between four variables in two way as discussed in the part 5.1, figure 5.1 and figure 5.2.
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.	The relationships of four variables were captured in figure 5.4 1.
6. Producing the report	+ Presenting the results of analysis into sections of individual theories + Selection of key quotes for elements of individual theories that supporting the analysis to the research question and literature + Discussions on the themes had found + Producing a scholarly report of the analysis.	The themes were presented in this paper: + Part 4.4 + Part 4.5.2 + Part 5.1; 5.2; 5.3.

Table 3.4-1: Six Phases of Thematic Analysis (Adapted Braun and Clarke, 2006)

3.4.2. Data Quality

The two major aspects to evaluate the quality of data are reliability and validity. It is crucial for the researcher to take in to account the reliability and validity when conducting research. According to Sapsford (2007), the validity of a survey concerns the logic of the evidence in drawing conclusions. In order to convince the reader to believe in the research arguments or conclusions, a survey should have a test of validity.

There are three aspects to test the validity of a survey (Sapsford, 2007). Firstly, the validity of measurement requires accurate choices of which data is needed to answer the research questions and what is being measured and how it is being measured. Secondly, the validity of population concerns who is being measured and whether the samples are accurate representatives of the whole investigated population. Thirdly, the validity of design, in which the questionnaires are designed to collect data for comparison. The comparison is important to establish arguments on the differences or changes in data collected across samples or periods (Sapsford, 2007).

In addition, reliability is another aspect of validation that shows the stability of the measures (Sapsford, 2007). The measurements of data are expected to be reliable so that if anyone repeats the analysis they would obtain consistent results or single reality of knowledge. To some extent, the research needs to prove that the measurements are collected accurately and for what was needed for the argument.

In order to test the reliability and validity of data, this research analysed multiple questions that were used to collect the same answer and compared whether the same results come out. For example, to confirm if there was any behaviour change among students, there were a few questions (Q.11, Q.12, Q.13 and Q.14) used. Lastly, the justification on the validity and reliability of arguments will be made in the conclusions of the research.

3.5. Ethical Considerations

The concept of ethics is used in social science research, using codes of ethics as guidance on how to conduct research. This is to accommodate the changing ethos, values, needs and expectations of various involved stakeholders, such as participants, researchers or sponsoring organisations (Kumar, 2014). The major ethical considerations relate to participants including informed consent, confidentiality of personal information, providing incentives and seeking sensitive information. After collecting data, the researcher has an ethical responsibility in using it. Good ethical practice includes anonymity, confidentiality and privacy where requested, to retain the trust between the researcher and the subject (Novak, A., 2014). On the researcher side, ethical issues are using an inappropriate research methodology, correct reporting etc.

In this study, formal consent procedures were adopted. Consequently, ethical issues in collecting data were minor, as the questionnaires were only given to the participants who agreed to take part in the course surveys when they registered. As the research project was sponsored by PUFin, gaining access to gatekeepers was not an issue. Formal ethics approval was obtained following the code of ethics developed by Human Research Ethics Committee in The Open University (see appendix 6).

3.6. Limitation of Research

There are some limitations to this research. Firstly, as discussed in part 3.2, it is arguable that the data in this study is secondary data. This threatens the adequacy and availability of data in explaining these theories quantitatively. Secondly, the measurement scales of these theories in previous studies were not used, nor for timing reasons was a pilot study conducted. This limits the ability to test whether instruments (Teijlingen and Hundley, 2001) used in the "follow-up" survey are adequate to collect the data needed to answer the research question. Consequently, the validity of measurements in this research could be challenged.

Thirdly, the attempt to construct "before" and "after" data by asking participants about their habits before and later in the same questionnaire of a post-test may threaten the validity and reliability of arguments on the impacts of the course on behaviour change. This is not as good as having a separate before and after survey as people's memories may not be reliable, but it is better than simply asking people if they have made any changes. In addition, it was not practical to have a control group which may challenge the validity of this research.

Finally, the "follow-up" questionnaire was sent to 27,666 students in total but approximately only 3.1% responded (822 people). The very low survey response rate limits the strength of evidence or arguments. As a result, the validity of population is weak as it is unsure whether 822 samples accurately represents the whole investigated population (Sapsford, 2007). Consequently, the generalisability of research findings may be less reliable on what the impacts of financial education on behaviour change were.

3.7. Conclusions

In summary, this project employs surveys which are a quantitative method in collecting data. The open-ended questionnaires are used to collect both quantitative and qualitative data. Moreover, the questionnaires have been sent via email to 27,666 participants who took part in the course. This study uses a primarily quantitative approach but takes the advantage of both quantitative and qualitative data from the survey as summarised in figure 3.7.1.

Methodological level Positivism

- Quantitative approach

Technical level Quantitative method

- Survey

Data Quantitative and qualitative data (open-ended responses)

- Quantitative data: statistics
- Qualitative data: enriching quantitative data

Figure 3.7-1: A summary of research methodology

Chapter 4: Data Analysis

4.1. Introduction

The data collected from 822 responses was analysed for evidence of the relationships between financial education and capability, FWB and behaviour change as laid out in the research aims. The changes students have made as a result of the course have been evidenced through structured questionnaires and their self-report post course. The quantitative data was analysed using SPSS while qualitative data was analysed via NVivo. This chapter presents the key works of the data analysis, split into six major parts as follows:

(P.1) Examining the impacts of the MMM course by analysing structured questions to identify the number of people having made an action of behaviour change; the changes of specific behaviour in a post-test (Lyons et al., 2006) and the trends of these changes. To some extent, identifying these trends is important as they influence the relationship between behaviour change and financial capability.

(P.2) Examining the relationship between changes in financial behaviour in (P.1) by testing the correlation between behaviour change variables and those related to the MMM, such as “MMM modules completed” or “Knowledge improved”. These tests help to find out whether the changes in students’ financial behaviour was as a direct impact of the MMM course.

(P.3) Examining the changes in the stages of behaviour by applying the framework of Prochaska and DiClemente (1982, 1992). As found in the literature review, an educational intervention does not always result in behaviour change (SeiLing and Shockey, 2006). The thematic analysis is used to explore whether the MMM course had an impact in helping students improve their readiness to make a change.

(P.4) Examining the relationship between behaviour change and financial capability by testing changes in financial behaviour and financial circumstance. Moreover, the new patterns of financial behaviour were interpreted with reference to the five components of financial capability (CFEB, 2010). This helps to define the relationship between financial education, capability and behaviour change.

(P.5) The findings from the analyses (P.2) and (P.3) help understand the factors that have motivated behaviour change and the barriers that have prevented students from making a change. The findings from the analyses (P.2); (P.3); (P.4) help form the relationship between financial education, financial capability, FWB and behaviour change.

In addition, the related analyses of the factors that have intervened in the impacts of the MMM course towards behaviour change, such as demographic factors and financial education demands are reviewed. These two analyses are presented in appendix 2 and appendix 3. The key questions used in data analysis are presented in the table 4.1.1.

Questions	**Response Rate**		**Results of Data Analysis**	**Materials of Key Parts of Data Analysis**
	Response	Percent		
Q.2	804	98%	* Appendix 3 - Table 4	
Q.3	822	100%	* Table 4.3 2 * Appendix 3 - Table 4	* P.2
Q.4	822	100%	* Table 4.2 2 * Table 4.2 3 * Table 4.2 4:	* P.1
Q.6**	361	44%	* Part 4.4 * Part 5.5.2	* P.3 * P.4 * P.5
Q.7	822	100%	* Table 4.3 1	* P.2
Q.9	745	91%	* Table 4.3 3	* P.2
Q.11	805	98%	* Table 4.2 1 * Table 4.3 1 * Table 4.3 3 * Table 4.5 1	* P.1
Q.12**	520	63%	* Part 4.4 * Part 5.5.2	* P.3 * P.4 * P.5
Q.13	822	100%	* Appendix 1 - Table 1	
Q.14	822	100%	* Appendix 1 - Table 2	
Q.15	822	100%	* Table 4.2 2 * Table 4.2 3 * Table 4.2 4:	* P.1
Q.16	801	97%	* Table 4.5.1	* P.4

** Open-ended questions

Table 4.1-1: The key questions used in data analysis

The key variables analysed in this chapter are summarised in the table 4.1.2.

	Variables	Description of Instruments	Type of Data	Codes
I	**Behaviour change**			
1.1	Making an action of change (MAC)	Whether students state they have changed their financial behaviour following MMM	Binary	Yes/No
1.2	Changes in stages of behaviour change	An impact on the progression or improvement in the stages of behaviour change among individual students through their self-report (applied the model "stages of behaviour" of Prochaska, DiClemente and Norcross (1994, 1992b)).	Categorial	Fives stages of behaviour change
1.3	Changes in specific financial behaviours	The specific financial behaviours that were designed to collect data on the changes of these behaviours pre and post course. There are different variables show the changes in specific behaviour as followings:		
1.3.1	Specific behaviour changed	Specific behaviours that students have been changed that described in question 13	Categorial	6 categories
1.3.2	Financial products switched	The financial products that students have been switched	Categorial	7 categories
1.3.3	Specific behaviour changed in a post test	Specific behaviour change that students have been done that described in question 4 & 15	Categorial	8 categories
II	**Financial Education**			
2.1	MMM modules completed (MMC)	The number of modules in the "MMM" course that each student completed.	Quantitative	Score (0-8)
2.2	Knowledge improved (KI)	How much students have reported the knowledge as having increase	Ordinal	Scale (0-3)
2.3	Previous financial education (PFC)	How many types of financial education students had prior the course	Ordinal	Scale (0-6)
2.4	Financial education strategies	Four keys elements of educational interventions strategies (as defined in Monroe. et al. 2007).	Qualitative	Four elements
III	**Financial capability**	There are different variables show the changes in financial capability as followings:		
3.1	Change in financial capability (CFC)	Whether and how much students report their financial circumstance having improved following MMM.		
3.1.1	Financially a lot better (FLB)	Students reported they financially a lot better off than they were before	Dummy	0/1
3.1.2	Financially no better (FNB)	Students reported they were no better off than they were before	Dummy	0/1
3.2	Five components of financial capability	The changes in financial behaviours reported by students were constructed into five components of financial capability (CFEB, 2010).	Qualitative	Qualitative
IV	**Financial-wellbeing**			
	The financial well-being components	A sense of overall control of money, no worries about money (Vlaev and Elliott, 2014) or general satisfaction with the financial situation (Porter and Garman, 1993) that students reported	Qualitative	Qualitative
V	**Demographic factors**	Demographic characteristics of samples.		
5.1	Gender	Gender of samples	Binary	0/1
5.2	Age	Ages of sample	Categorial	8 categories
5.3	Education	Highest qualifications that students had	Categorial	8 categories

Table 4.1-2: The key variables analysed in data analysis

4.2. The Impacts of the MMM Course on Behaviour Change

4.2.1. Changes in Financial Behaviour

It is crucial to start by defining the scales used to measure the changes in personal financial behaviour as a result of the MMM course. According to the Online Oxford Dictionary (Oxford Dictionaries, 2016), "change" is "an act or process through which something becomes "different" and "a new or refreshingly different experience". In this research, the changes students have made as a result of the course can be evidenced through the differences in their perceptions, knowledge, attitudes, feelings and behaviours after the course. Consequently, the impacts of the MMM course on behaviour change will be analysed by measuring the changes in financial behaviours of students post the course. Several questions were designed to collect evidence to show whether students have made any action of change in managing their personal finance. The data shows that the following changes in financial behaviour had been made:

4.2.1.1. Making a Change in Financial Behaviour

A closed question (yes or no) was used to check whether students had made any changes after the MMM course (Q.11). Among the 805 participants responding to this question, 44.5% of students claimed that they had made changes in managing their money, as seen in table 4.2.1. This is a statistically significant result (p<000.1).

As a result of taking part in Managing My Money, did you make any changes to the way you manage your money day-to-day?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	447	54.4	55.5	55.5
	yes	358	43.6	44.5	100.0
	Total	805	97.9	100.0	
Missing	System	17	2.1		
Total		822	100.0		

Table 4.2-1: Making an action of change after the course

4.2.1.2. Changes in Specific Financial Behaviours

A post-test of change was conducted to examine the changes in specific financial behaviours before and after the course. The changes were categorised into two groups of positive and negative behaviours, listed in two questions (Q.4 & Q.15, appendix 5). The first group consists of the positive attitudes towards the financial activities, including “Saving”, “Investment” and “Spending”, while the second includes negative behaviours with attitudes towards “Debt” and in “Feelings” towards personal finance. The descriptive analysis in table 4.2.2 shows that there were changes in the values (%) of all variables after the course. The changes were highest among the “Feelings” category. Fewer students felt stressed about their financial situation (18% vs 31.2%) or confused about a financial product (19% vs 40.9%). Unhealthy behaviours reported in the “Debt” category decreased by 27.2% and 79.5% respectively which was a positive result. Additionally, the students claimed their spending was wiser, with better budgeting planning and more proactively seeking better deals for a financial product. All above were statistically significant ($p<0.05$). In contrast, the differences in “Saving” category were insignificant (1.3% more people saved and 8.1% fewer people invested).

		Behaviours before the course		Behaviours after the course		Change	
		Responses	%	Responses	%	% of total sample	% increase
Positive Behaviours							
Savings	Put money into a savings account	599	74.80%	607	76.00%	1.20%	1.34%
	Put money into an investment fund	285	35.60%	262	32.80%	-2.80%	-8.07%
Spending	Set a budget	350	43.70%	413	51.70%	8.00%	18.00%
	Shopped around for a better deal on a financial product	423	52.80%	475	59.40%	6.60%	12.29%
Negative Behaviours							
Debt	Borrowed on a credit card	250	31.20%	182	22.80%	-8.40%	-27.20%
	Missed payments on a loan, credit card or mortgage	39	4.90%	8	1.00%	-3.90%	-79.49%
Attitudes							
Feelings	Felt stressed about your financial situation	250	31.20%	144	18.00%	-13.20%	-42.40%
	Felt confused by a financial product	328	40.90%	152	19.00%	-21.90%	-53.66%

Table 4.2-2: Specific behaviour changed in a post-test

A McNemar test was carried out to explore the significance of changes in those financial behaviours as seen in table 4.2.3. These results support the above analysis that MMM had a significant effect on participants’ feelings/psychology; spending and debts behaviours. In fact, the asymptotic McNemar's test suggests the significance is much higher ($p<0.001$). Moreover, it suggests the change in the number of people putting money into an investment fund is also moderately significant as it looks at changes made by individuals rather than aggregate data.

Test Statistics[a]

	Positive behaviours/attidudes				Negative behaviours/attidudes			
	Savings	Investment	Spending		Debts		Feelings/Psychology	
	Put money into a savings account (after) - (before)	Put money into an investment fund (after) - (before)	Set a budget (after) - (before)	Shopped around for a better deal on a financial product (after) - (before)	Borrowed on a credit card (after) - (before)	Missed payments on a loan, credit card or mortgage (after) - (before)	Felt stressed about your financial situation (after) - (before)	Felt confused by a financial product (after) - (before)
N	822	822	822	822	822	822	822	822
Chi-Square[b]	.314	4.137	16.786	12.042	35.627	24.324	70.673	140.482
Asymp. Sig.	.575	.042	.000	.001	.000	.000	.000	.000

a. McNemar Test

b. Continuity Corrected

Table 4.2-3: McNemar test

Other specific behaviour changes of students also are presented in appendix 1.

4.2.2. Trends of Changes in Financial Behaviour

In order to break down the details concerning whether new patterns of adopted financial behaviour were desirable or undesirable, we can use the crosstabs in table 4.2.4. These highlight the changes in behaviours/attitudes, before and after the course. The table shows there were two trends of change after the course, which can be categorised into positive and negative trends. For those people who had negative behaviours/attitudes before the course (Yes), who did not have these behaviours after the course (No), we describe this as a "Yes-No" positive trend. In contrast, for those who did not have positive behaviours/attitudes before the course (No), but who behaviour became so after the course (Yes), we describe this as a "No-Yes" positive trend.

The "Yes-No" positive trend reveals that there were 97 people (11.80%) who "Borrowed on a credit card" and 34 people who "Missed payments on a loan, credit card or mortgage" before the course, report having changed these behaviours after the course. This trend is most pronounced in relation to the changes of feelings. 197 people

(23.96%) who “Felt confused by a financial product” and 131 people (15.94%) who “Felt stressed about financial situation” before the course reported that they did not feel like that after the course.

The “No-Yes” positive trend reveals that 82 people (10%) who did not “Put money into a savings account” and 47 people who did not “Put money into an investment fund” (5.7%), regularly do so following the course. Similarly, this trend is found highest in relation to changes in spending, with 146 people (17.76%) who did not “Set a budget” and “Shopped around for a better deal on a financial product” 134 (16.30%) deciding to continue doing so after the course.

Categories	Behaviours/Attitudes	Changes after the course		Net of Swing	Net of Swing as % of total
		“No-Yes”	“Yes-No”		
Positive Behaviours					
Savings	Put money into a savings account	82	74	8	0.97%
Investment	Put money into an investment fund	47	70	-23	-2.79%
Spending	Set a budget	146	83	63	7.66%
	Shopped around for a better deal on a financial product	134	82	52	6.32%
Negative Behaviours					
Debts	Borrowed on a credit card	29	97	-68	-8.27%
	Missed payments on a loan, credit card or mortgage	3	34	-31	-3.77%
Attitudes					
Feelings	Felt stressed about your financial situation	25	131	-106	-12.89%
	Felt confused by a financial product	21	197	-176	-21.41%

Table 4.2-4: McNemar test - crosstabs

On the other hand, the “Yes-No” negative trend shows that 74 people (4%) who “Put money into a savings account” and 70 people who “Put money into an investment fund before the course, 83 people who “Set a budget” or “Shopped around for a better deal on a financial product”, confirm that they did not keep doing so after the course.

Overall, the positive trends were higher than negative trends in the same category, with the exception being the “Investment” category. For instance, in the “Set a budget” category, the total number of peoples who had the No-Yes positive trend (146 cases) was 1.76 higher than for those who had the Yes-No negative trend (83 cases). However, in the “Investment” category 70 people stopped investing while only 47 people started. There are different ways to interpret this figure. It is possible that after the course and having reviewed their current investments, students decided they were not worthwhile. Alternatively, it is possible that people who stopped using an investment fund chose to transfer the money to their pension or to pay off debts instead. Such changes should be interpreted as positive changes rather than a negative trend. It should be noted that data is not available to support these theories but it is an important possibility to consider.

In summary, the analysis shows an increase in positive financial behaviours and a decrease in negative financial behaviours after the course. Especially, the change was significant in relation to positive behaviours/attitudes of “Spending” and negative behaviours/attitudes on “Debts” and “Feelings”. While the fall in investment was statistically significant using the McNemar test, the effect was small. There are different ways to approach this: it could be a negative effect of people cutting their investment; it could be positive if people are moving money from what they perceive to be bad/risky investments to other things such as savings they view as more worthwhile or moving money out of investments to paying off debts; or it could be a spurious result.

4.3. The Relationship between Changes in Behaviour and the MMM Course

4.3.1. Changes in Financial Behaviour and Modules Completed

In order to assess the impact of MMM on students’ personal financial behaviour, it is important to explore how well they engaged with the course. There are a few indicators available, such as the number of modules they completed. This is used to test whether it had an impact on the changes in behaviours of students.

A linear regression in the form $Y = a + bX$ is carried out to find out the relationship between dependent variable Y= “Making an action of change” (MAC) and independent variable “MMM modules completed” (MMC). As seen in table 4.3.1, there was a positive and significant relationship between the variables MAC and MMC with $p<0.001$. Therefore, the education from the MMM course is statistically significant correlated with students' behaviour change after the course. It is likely that the more modules they complete the greater the possibility that they change their behaviour.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.210	.034		6.261	.000
	MMM Modules Completed	.058	.007	.275	8.113	.000

a. Dependent Variable: Making an action of change

Table 4.3-1: A regression: MAC and MMC

The role of previous personal finance education and the MMM course on the behaviour change of students was evaluated. A multiple linear regression in the form $Y = a + b_1X_1 + b_2X_2$ was carried out to find out the relationship between dependent variable Y= MAC and independent variable or the predictor value X = "Education" with X_1= "Previous financial education" (PFE) and X_2 = MMC.

As seen in table 4.3.2, there was a positive and highly significant relationship between the variables MAC and MMC with $p<0.001$ while it significant with PFE of students with $p<0.05$. This result shows that the number of modules taken was statistically highly significant correlated with students' behaviour change. In addition, the financial education prior to the course also had a minor effect on behaviour change of students. This result provides evidence of the impact of the course on behaviour change among students. The result is the same if the regression is repeated with PFE is measured as a binary (yes/no) variable.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.243	.037		6.628	.000
	MMM Modules Completed	.058	.007	.276	8.160	.000
	Previous financial education	-.029	.013	-.074	-2.199	.028

a. Dependent Variable: Making an action of change

Table 4.3-2: Regression: MAC & financial education

4.3.2. Changes in Financial Behaviour and Financial Knowledge Improvement

In order to explain the ways in which the MMM course influenced students, the relationship between the improvement in financial knowledge and the changes of behaviour was explored. In this analysis, a proposition is tested to confirm if students who have an improvement in their knowledge after taking the course tend to make changes in managing their money. If the proposition is true, the role of the course in improving knowledge that transferred to behaviour change will be supported.

A linear regression in the form Y= a + bX is carried out to find out the relationship between dependent variable Y= MAC and independent variable “Knowledge improved” (KI). As seen in table 4.3.3, there was a positive and significant relationship between the variables MAC and KI with $p<0.001$. Therefore, the improvement in knowledge is statistically significant correlated with students’ behaviour change after the course. This finding suggests that the more students improved their knowledge as a result of the MMM course, the greater the possibility that they would change their behaviour. This effect remains the same if the regression is repeated with dummy variables about how much knowledge participants have gained.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.336	.071		-4.741	.000
	Knowledge improved	.323	.027	.396	11.768	.000

a. Dependent Variable: Making an action of change

Table 4.3-3: A regression: KI and behaviour change

4.4. Changes in the Stages of Behaviour Change

As reviewed in the literature, the FSBC (Prochaska et al., 1992; Prochaska & DiClemente, 1983) is used to measure the readiness of people to make a change in behaviour. This model is used as an instrument to examine whether the MMM course had an impact on the progression in the stages of behaviour change among individual students.

There are different approaches to categorising the five stages of behaviour change, including a quantitative approach. This measures the stages of audiences, often using a staging algorithm, with specific periods of time, such as six months (Curry et al., 1992), as a basis for tracking behaviour pre and post intervention.

However, the fact that the questionnaires for MMM were not designed to quantitatively measure students' behaviour change status is a limiting factor to using the FSBC. To address this problem, the thematic analysis uses the content and meaning of the qualitative data to assess the stages that have been reached. For instance, there were cases which can be categorised in *contemplation* stage. Those fitting this stage might have stated they knew that they needed to change, had started to make a move, but still needed to gain more knowledge so that they could potentially be ready to make an action of change:

"I search some web tools of how to do a proper monthly budget and which bank to start my savings. It is still a learning process" (Participant 519, female, 26-35 years, vocational qualification, UK).

4.4.1. The Complexity in Stages of Change in Individual Behaviour

Assessing the status of behaviour change of students proved to be complicated, not least because of the multiple behaviours being examined in this study, such as saving, spending, investment etc. This meant that individual students might have different statuses for different areas of behaviour change. For instance, participant 243 was maintaining “putting money into an investment fund” pre and post the MMM course. As he kept doing this for an extended amount of time, the status of investment behaviour change could be set at *remain* stage. Additionally, he claimed that the MMM course brought a big difference to his personal finance but he had not made any other behaviour change after the course apart from switching utility account. He enrolled on the course out of general interest but later recognised that he needed to learn more about other financial areas. Consequently, he was still at the learning stage or *contemplation* stage for other behaviours, as the following quote explains:

“*Now realize that I do have a lot more to learn in certain financial areas. Because in certain areas much of the financial terminology that is used in the course text is also unfamiliar to me*” (Participant 243, male, over 65 years, undergraduate degree, UK).

Moreover, some students had constraints on changes such as being “stressed” or feeling *“overwhelmed”* regarding what they should do. For instance, a student who found it “*still somewhat overwhelming”* might still have made some behaviour change such as a cut back on spending, or putting money into a savings account (Participant 399, Female, 36-45 years, postgraduate, UK).

4.4.2. Changes in Stages of Behaviour Change

4.4.2.1. Pre-Contemplation

After reviewing the qualitative data, there were no cases that could be found at this stage. As people at this stage rarely look for help or seek information, students who took part in the MMM course were already positively seeking information to help them improve their personal finance.

4.4.2.2. Contemplation

This category seems to fit with most cases when they signed up to the course. By attending the course, people acknowledged that they needed to gather information and knowledge on managing their money. There was no qualitative data to suggest that they were pushed to take part in this course. Moreover, the MMM course was a start of their learning process on personal finance:

"I am confident I am now fairly up to date in relation to my knowledge of personal finance. I have also used it as a 'stepping stone' to undertake other courses through Future Learn" (Participant 126, female, 56-65 years, School-leaving qualification (18 years), UK).

With better knowledge, they felt more confident, but those that felt they needed to learn more were not yet ready to make changes:

"I feel more confident to organise my own finances, but I also feel I am barely scratching the surface!" (Participant, 461, female, 26-35 years, Postgraduate, UK).

Apart from what they learnt from the MMM course. Many students found they needed to learn more about the issues this course brought to their attention for the first time. This cognition is considered as a fundamental step in an action of behaviour change:

"I need to improve on my pensions knowledge and saving" (Participant 116, female, 56-65 years, College diploma).

"I subscribed to online newsletters about finance; have regular talks with colleagues who are interested in, and knowledgeable about finances and economics; created dummy portfolio online, to learn how the stock market works" (Participant 513, male, 56-65 years, postgraduate degree, UK).

It was assumed that people were at the *contemplation* stage when they enrolled on this course. Therefore, if people did not move to the next stage but stayed at this stage, their behaviour change was not strong.

4.4.2.3. Preparation

People are very aware of the costs and benefits of change and some behaviour change may already have been made or a plan of action may be in place at this stage. There were many cases in this study that stated they were "*more informed*" and had *"better understanding"* on what might be the pros and cons of behaviour changes. Moreover, they felt *"confident"* and *"self-assured"* that they could deal with it from what they have learnt. Furthermore, at this stage, people were trying to overcome their constraints on behaviour change such as *"confused", "worried", "insecure"* or *"uncertainty"*:

"I feel more informed and more confident in planning and setting budgets and managing my finances" (Participant 435, male, over 65 years, undergraduate, UK).

"Before, I was very confused, insecure and worried about every single aspect of my financial life. Now I have more confidence that as long as I do a bit of planning, there isn't that much to worry about. I also felt reassured by some of the examples used in the course that featured people on low budgets" (Participant 379, female, 36-45 years, college diploma, UK).

After constraints were decreased, students realised that they really needed to take action, that they were ready for it and it was worth making an effort. They started to consider different strategies and information was sought so that some actions have been made step by step:

"I know that I need to take action and am more confident to seek advise" (Participant 101, female, 46-55 years, school-leaving qualification (18 years), Europe outside the UK and Ireland).

"I try to put a little away each month, and delay on making purchases until I can afford to avoid using a credit card" (Participant 29, female, 36-45 years, postgraduate, UK).

"I make a list of purchases, and when I go daily shopping, I stick to the list and try to buy items on sale" (Participant 305, female, 26-35 years, doctorate, Europe outside the UK and Ireland)

4.4.2.4. Action

Most of the behaviour change was executed for a certain time in this stage. In particular, when their behaviour change brought them rewards from "more savings" or "paying off debts" people feel confident that they can succeed and develop a "can do" attitude. Their self-efficacy was very high, the more their financial situation improved, the greater the changes they made, often in diversified areas of personal finance, such as spending, savings, mortgage pensions etc.:

"I feel more confident with all elements of my money. Being able to budget, being able to plan for the future - involving paying off debts and setting up savings accounts. In the past 2 months I have got to the end of the month with some money to spare for the first time ever and I am paying off my debts by following a strict repayment plan that is affordable. I check my bank almost daily, and I have control over every aspect of my spending, saving and debt repaying throughout the month" (Participant 741, female, 26-35 years, undergraduate, UK).

"I set up a budget. I created an 'emergency' saving fund as the course advised and I have created a set of savings accounts to keep different pots of money in (holidays, saving for a car, help to buy ISA etc). I have started thinking about interest accounts and I've started (though I'm not perfect yet) reducing my spending on things I don't need (coffees, meals out etc). I feel more in control of my finances now. Now I'm looking at saving rather than spending. I feel more confident in taking out a mortgage" (Participant 784, female, 46-55 years, postgraduate, UK).

An important theme found in people who were at the action stage was that they had the feeling of confidence and being in "control". Students shared their experience in both contexts pre and post the course where there was a significant improvement in both "confidence" and "being in control". This theme also was found for people at the *maintenance* stage:

I have felt more confident and in control. I have paid off my mortgage, bought added pension, applied for a state pension statement, sorted out my building society accounts, engaged with an independent financial advisor over substantial saving which currently earning nothing" (Participant 788, female, 46-55 years, undergraduate, UK).

4.4.2.5. Maintenance

People had made a change in behaviour at least six months previously and were actively working to prevent a relapse to their old behaviour. Little was available in the qualitative data regarding how many months they have been practicing new patterns of behaviour. However, frequently-used words give some ideas of timing with some students repeating phrases such as “monthly” (50 times), “regular” (37 times) and “keep” (48 times). At this stage, students had set up routines such as daily, monthly, quarterly and yearly in managing their money which they were maintaining over a prolonged period of time:

“I keep a daily household budget, which I am still regularly keeping to twelve months later” (Participant 23, male, 56-65 years, undergraduate, UK).

This stage also included over twenty people who have been showing healthy behaviours in managing their personal finance before the course and kept practicing it after that.

“Even more in control. I was basically doing everything we studies/discussed in the forums” (Participant 64, male, 56-65 years, postgraduate, UK).

“More confidence that I am doing the right thing. Before, I took financial decision based on common sense/self-information with no real theoretical nor practical knowledge” (Participant 370, female, 36-45 years, postgraduate, Europe outside the UK and Ireland).

Moreover, before the course, there were over twenty cases who have been managing their finances well, but they still gained new and useful knowledge to better understanding how to effectively manage their personal finance. They also become aware of issues that they did not take into account before:

"Confirmed that I had been taking the right approach so helped me feel a little more confident to deal with some of the things I was a little unsure" (Participant 222, female, 56-65 years, postgraduate, UK).

It made me realise I already am doing a good job of managing and to keep going. I need to improve on my pensions knowledge and saving (Participant 116, female, 56-65 years, College diploma).

4.4.2.6. Relapse and Action

The qualitative data offered no information regarding relapses in behaviour change after the course. However, there was one case who used to have healthy savings behaviour but relapsed before the course. After the course, this individual *"started a savings plan again"* (189, male, over 65 years, college diploma, African).

In summary, the qualitative data captures four out of five of the stages of behaviour change that are found amongst students after the MMM course. As most of the students were assumed to be at the *contemplation* stage before the course, following the course they were found to be one of the following three stages: *preparation*, *action* or *maintenance*. This suggests that their stage of behaviour change had progressed and had been influenced by the MMM course. However, it also shows unclear evidence that individual students went through all stages. Moreover, for individual students they had different stages of change for individual behaviours. Those who were at the stage of *action* and *maintenance* found that they had more confidence in their ability to manage their money, showing behaviours such as setting goals, creating spending plans, tracking spending, and saving money (Seiling and Shockey, 2006). This is in line with the concept of self-efficacy as a key factor in moving participants into the *action* stage (Prochaska et al., 1992; Prochaska & DiClemente, 1983).

4.5. Changes in Financial Behaviour and Financial Capability

4.5.1. Changes in Financial Behaviour and Financial Capability Improvement

In order to explore the relationship between behaviour change and financial capability, a regression analysis is carried out. This regression is in the form Y= a + bX with Y= “Change in financial capability” (CFC) and X = MAC. In the CFC, two items “Financially a lot better” (FLB) and “Financially no better” (FNB) were tested. As seen in table 4.5.1, there is a positive and significant relationship between the variables FLB and MAC ($p<0.001$). Consequently, behaviour change after taking the MMM course is significantly correlated with an improvement in the financial capability of students. Those who have made a change in behaviour enjoy better financial circumstances.

In contrast, there is a negative significant relationship between the variables FNB and MAC with $p<0.001$ and a=-0.507. Consequently, who did not make a change in behaviour, were less likely to make an improvement in financial circumstance.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.405	.018		22.778	.000
	Financially a lot better	.458	.059	.265	7.769	.000

a. Dependent Variable: Making an action of change

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.664	.020		33.177	.000
	Financially No better	-.510	.031	-.507	-16.623	.000

a. Dependent Variable: Making an action of change

Table 4.5-1: Regression: MAC and change in financial capability

In conclusion, the MMM course motivates changes in behaviour which result in improved financial circumstances for the students. When people have a good financial education, such as provided by MMM, they are motivated to change their behaviour, which, in turn, brings about an improved financial situation.

4.5.2. Changes in Financial Behaviour Translated to Fundamental Components of Financial Capability

The qualitative data was used to examine how the personal finance intervention, MMM, helped to transform the student's behaviours to more desirable behaviours that enhance financial capability. These desirable behaviours are categorised into five components of financial capability (CFEB, 2010) as follows:

4.5.2.1. Making ends meet

This is a healthy behaviour that was found among students after the MMM course, with people keeping up with bills and other financial commitments. Moreover, many had adopted the attitudes of a saver rather than a spender:

"Making a monthly list of bills and outgoings has stopped me over spending at the month start and having to use credit cards to pay things at the end of the month" (Participant 250, female, 46-55 years, undergraduate, UK).

"I started saving more by spending less" (Participant 690, female, 36-45 years, undergraduate, UK).

Additionally, students are trying to live within their means so they are not running out of money at the end of the month/week. As a result, they are less likely to get into financial difficulty and therefore feel less stressed, as they save more and are able to manage their expenditure:

I have a special household fund. I put a set amount in each week and I can only spend what is in the household budget (Participant 282, female, 56-65 years, postgraduate, Australia, New Zealand or the Pacific Islands).

"Before, I was very confused, insecure and worried about every single aspect of my financial life. Now I have more confidence that as long as I do a bit of planning, there isn't that much to worry about. I also felt reassured by some of the examples used in the course that featured people on low budgets. I do no longer spend mindlessly, but I make a plan ahead what is really important to me to spend my money on in a more considered way. It means I worry a lot less - and can in the end afford more. I have also opened two different savings accounts - one for short term and one for long term savings" (Participant 379, female, 36-45 years, college diploma, UK)

4.5.2.2. Keeping track of your finances

This was found to be a new pattern of behaviour among students that included checking current accounts; checking receipts against bank statements and setting budgets to ensure sufficient funds are available to tackle uneven expenditures.

"Strict obligation to write down everything i spend and earn and each week analysis of both" (Participant 730, female, 46-55 years, doctorate, Europe outside the UK and Ireland).

"I constantly track all income and expenditure on a money app, and am aware of how I spend and save" (Participant 738, female, 26-35 years, postgraduate, UK).

There is a relationship between keeping track of finances and making ends meet, where making ends meet is an outcome of tracking of finances. Many students when talking about their behaviour change mentioned their cognition about the importance of tracking their finance and maintaining the practice:

"I budget for all of my expenses and I'm saving more money. I no longer have to wonder what I did with my money. I know exactly how money is allocated and I no longer spend money on unnecessary things" (Participant 258, 19-25 years, college diploma, Australia, New Zealand or the Pacific Islands).

4.5.2.3. Planning ahead

This is an important preparation for the long-term, where people can make ends meet for a long period (12 months) to allow for unexpected expenditure or a drop in income. This involves people thinking of money in “pots”, whereby they hold insurance, pension and savings that prepare them for a rainy day or a change in financial circumstances. The findings suggest people are willing to consider trade-offs in their current living standard for retirement, for example. This desirable behaviour change was found among students:

“Savings accounts to keep different pots of money in (holidays, saving for a car, help to buy ISA etc.)” (Participant 784, female, 46-55 years, postgraduate, UK).

“Have started putting what I can away for an emergency fund” (Participant 128, female, 26-35 years, school-leaving qualification (18 years), UK).

4.5.2.4. Choosing financial products

Rational choice in relation to financial products was another healthy behaviour found among students after the course. Both qualitative and quantitative data show the financial products such as pensions, insurance, mortgage etc. that students considered purchasing or changing provider. The findings suggest that students spend more wisely by shopping around for better value based on features and price rather than on brand:

“I now shop around more for better deals, save a small amount every month in an ISA and pay more into my company pension” (Participant 418, female, 46-55 years, college diplomat, UK).

“Before I shopped merely on what I wanted for services or products. Now I more closely examine costs” (Participant 291, female, 56-65 years, undergraduate, North America).

Moreover, with the knowledge obtained from the course, students were more confident to justify the information from a seller and compare products from multiple sources. They knew where to seek advice when needed from a professional advisor and took care to read terms and conditions to protect themselves:

"Shop around a bit more for insurance products. Still haven't moved my electric utility which I am thinking of doing much better at shopping around. Have changed banks, as investigation showed my current bank wasn't giving me the best deal" (Participant 156, male, over 65 years, ONC and RAF Electronic Engineering Apprenticeship, UK).

"I feel I have more information to make informed decisions and I also know where to go for better advice" (Participant 200, female, 36-45 years, undergraduate, UK).

"*More thorough in assessing financial terms offered by financial institutions*" (Participant 305, female, 26-35 years, doctorate, Europe outside the UK and Ireland.

4.5.2.5. Staying informed about financial matters

It is important to keep up to date with financial matters in order to respond quickly with financial decision making when needed. To do so, people need to regularly monitor and check financial indicators. This desirable attitude was found among students after the course:

"More regular assessment of my position, not just letting things carry on in the same way" (Participant 43, female, 46-55 years, postgraduate, UK)

I make sure that I review my investments at least yearly and take action accordingly (Participant 546, female, 46-55 years, postgraduate, UK).

Moreover, at a high level of applied financial literacy, students changed their approach about how they thought or dealt with financial matters such as savings or debts. They found their own way to make themselves financially better off:

I look at the savings as an expense like rent/lease. That way I'm always saving instead of saving what's left at the end of the month (Participant 79, male, 36-45 years, undergraduate., North America).

"*I feel much more confident when looking for a financial product, or making plans for my financial well-being in the future, that I will make better decisions relating to those things*" (Participant 123, male, 46-55 years, college diploma, UK).

Overall, students learnt new desirable behaviours from the course which helped them improve their financial capability. Not everyone had all these desirable behaviours, as each individual's progress was different. However, there was strong evidence that the MMM course does contribute to improving financial capability in students. Additionally, people changed desirable attitudes/ behaviours that help improve their financial capability and FWB.

4.6. Conclusions

In summary, a rigorous data analysis process that used both quantitative and qualitative forms of analysis was applied. The statistical analysis found the changes of financial behaviours among students were as a result of the MMM course. Moreover, a regression conducted reveals a significant relationship between these changes in behaviours and the MMM course. Thematic analysis was used to create an in-depth understanding of the context behind the stories of behaviour changes after the MMM course. These analyses found the evidence to draw the relationship between financial education, behaviour change, financial capability and FWB for both student and educator.

Chapter 5: Discussion and Conclusions

This chapter will discuss the main findings from the data analysis. The findings are explored using theoretical frameworks identified in the literature review to answer the research questions. The validity and limitations of the research are also explored.

5.1. Personal Financial Issues and Financial Education

In order to determine how educational interventions impact to behaviour change in personal finance, it is crucial to understand the undesirable behaviours that need to be changed and how they are overcome to bring about behaviour change. The financial management issues that resulted in those undesirable behaviours before the course will also be examined. The personal financial education and financial issues were discussed in chapter 4 and appendix 3.

There were key themes found to be issues among students before undertaking the MMM course. The stress of personal finance was found to be greater for those on low-income in relation to making ends meet or planning ahead. These findings reveal the FWB components such as a sense of overall control of money and no worries about money (Vlaev and Elliott, 2014) was low among students. Consequently, a relationship was found between low financial knowledge, financial capability and lack of FWB among students. This relationship might be interpreted as those having less financial knowledge, and financial capability, also had less FWB before the course in figure 5.1.

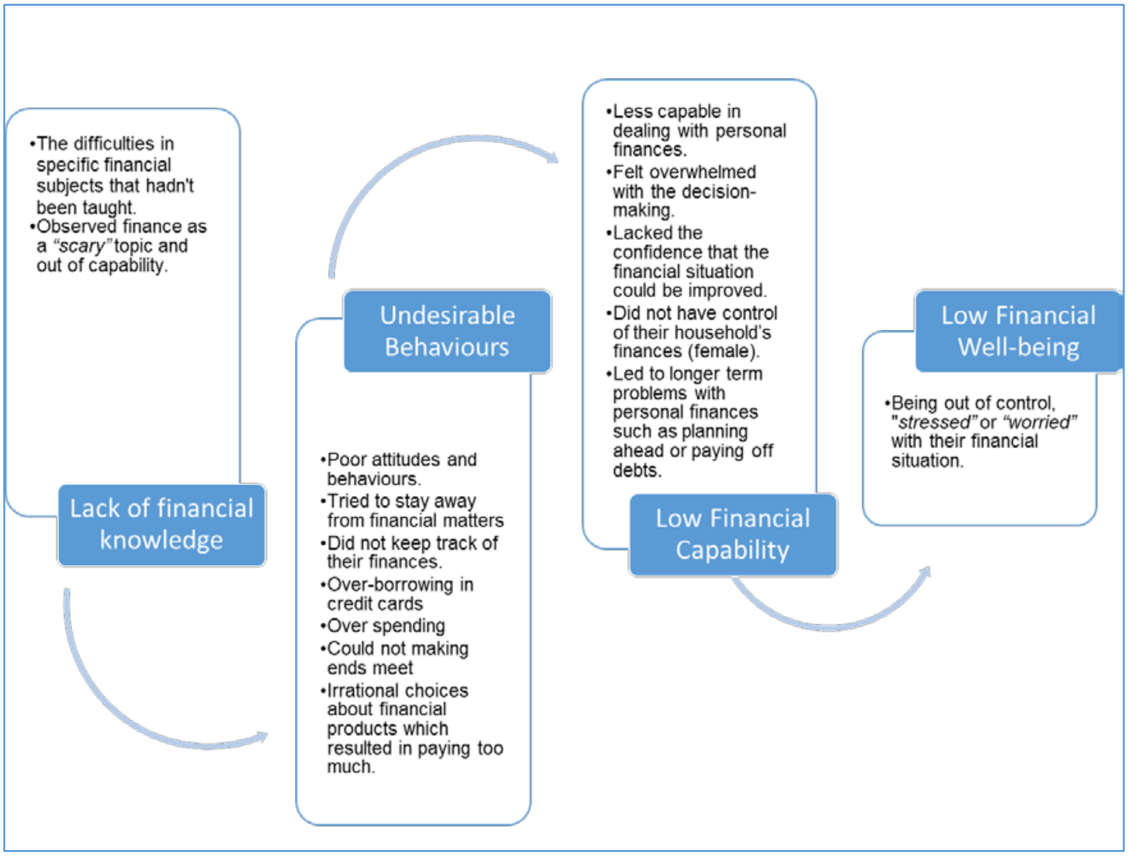

Figure 5.1: Financial issues and the relationship between financial knowledge, behaviour change, financial capability and FWB

The above financial issues were resolved as an outcome of behaviour change or a result of the MMM course captured in figure 5.2. Most students reported that their financial knowledge improved and built up "*can do*" and *"proactive"* attitudes. This result supports the previous study of Dolan et al. (2012), which shows education works best on those who are most open to being informed and educated. As students saved more, evidence of the positive relationship between education, saving and the contributions to retirement plans (Gutter et al. 2007; DeVaney & Chien, 2001; Elder & Rudolph, 2000). Their overall control of money had improved and their worries about money were reduced (Vlaev and Elliott, 2014).

This research found the vital evidence required by Hensley (2015) in explaining how an increase in knowledge results in positive behaviour change while assessing the impacts of an educational programme. This could be explained as an improvement in financial knowledge that increases the self - efficacy (Bandura, 2011; Bandura, 2006b) of students to make a change. People recognised their financial issues were consequences of their undesirable behaviours or attitudes. Therefore, the changes of behaviour they made after the course tend to be positive and desirable. Positive changes in behaviour were found to lead to an improvement in financial capability which leads to an improvement in FWB.

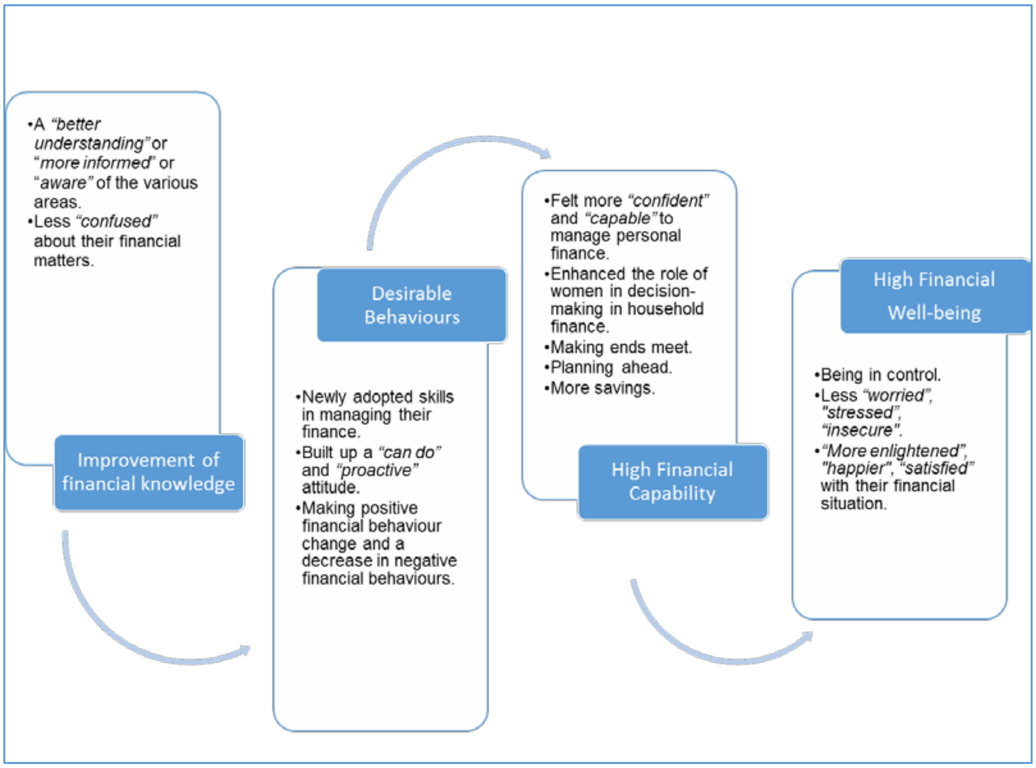

Figure 5.2: Improvement in financial knowledge and the relationship between financial education, behaviour change, financial capability and FWB

5.2. Limitations in Measuring the Impacts of the MMM Course towards Behaviour Change

This study found evidence linking financial education and behaviour change as reviewed in the literature (Lyons et al., 2006). However, there are some limitations in evaluating the impact of the MMM course in changing financial behaviours.

Firstly, as in other studies (Lyons et al., 2006) the survey response rates were low. A follow-up survey was sent, but only 3.1% the survey population responded. Among these respondents, 358 people stated they had changed their behaviour, which is 1.3% of total survey population. Using the data analysis on 3.1% of the population to assess the impacts of the MMM course on the whole population is inadequate and limited. This means that the generalisability of research findings is limited.

Secondly, this research uses the qualitative data to address potential issues of self-report bias (Bauhoff, 2011) such as over-reporting the positive results and under-reporting the negative results (Bauhoff, 2011). This issue could mislead the programme evaluation. As the study used both constructed variables and open-ended responses (a form of self-report), cross checking the validity of the collected data pre and post the course was possible. However, some measurement variables were not repeated pre and post the course. This inconsistency in the instruments have made it difficult to adequately compare the differences (Lyons et al., 2006). This is a limitation that may threaten the validity of the method and the reliability of the results. This research agrees with other authors (Hopley; 2003, Lyons et al., 2006) that an integrated evaluation component is needed which is designed into measures for financial education programmes.

This research supports the approach to measure the attainment of students rather than a control group method. Some people took part in the course but did not complete it or study it seriously so the impact of the course may be limited. There were students who stated that they did not spend enough time on the course so their knowledge or skills did not improve and they did not make a change. In this case, the engagement of students with the course and their attainments as a result of the course could be more important indicators than just relying on whether they took part in the course or not (Lyons et al., 2006).

This research agrees with Lyons & Scherpf (2004) that the assessment of the impacts of financial education programmes should rely on whether the participants received the skills needed that are applicable to their financial situations. Similar to Lyons et al., (2006), the impact of the MMM course on low-income populations was limited. Some low-income students reported that they did not find what they learnt applicable to them. They recognised the financial problems raised in the course but they were not able to change their behaviour due to their income constraints. This result supports the point made by SeiLing and Shockey (2006) that an educational intervention does not always result in behaviour change. As there are constraints on behaviour change that do not link with an individual's level of knowledge (SeiLing and Shockey, 2006) and cannot be overcome purely through financial education. Therefore, evaluating the impact of educational intervention on behaviour change alone without considering other factors will be insufficient (Darnton, 2008).

In addition, the research found a link between financial education, behaviour change, financial capability and FWB. However, this finding was extracted from the self-report of students after the educational programme and could not be benchmarked against data from before the programme. The validity of measurement requires the ability to compare the changes of the four variables financial education, behaviour change, financial capability and FWB pre and post educational programme (Sapsford, 2007). The instruments used to measure FWB, such as confidence, being in control, and satisfaction in personal finance (Vlaev and Elliott; 2014), should be designed and collected repeatedly pre and post an educational programme. Consequently, the conclusion about the relationship between the four variables has its limitations.

In summary, future research should consider mitigating these limitations. The link between four variables should be established as a hypothesis in order to test and validate the conclusion.

5.3. Limitations in Applying the Stages of Behaviour Change Model

The FSBC (Prochaska et al., 1992; Prochaska & DiClemente, 1983) is useful in this research. It provides a framework to assess the impacts of the MMM course based on measuring the changes in the stages of behaviour change. For example, this research found students moved their stage of behaviour change from *contemplation* to *preparation, action* and *maintenance* stages post the course. This model can be used to help explain why students did or did not make a change in behaviour following the course. Those who were still at *contemplation* stage were not ready to make a change. Behaviour change takes longer during this stage, as it takes time to gain confidence to break old habits or take risks (see part 4.4.2). Some people were already at the *maintenance* stage and had desirable behaviours in place prior to the course. This research found behaviour change does not happen on a fixed timescale and varies between individuals, which shows the limitations in previous studies that used a six-month timescale to evaluate change.

This research supports the previous studies' claim that education is important to students in different stages of change (Sandman and Weinstein, 1993). Different cognitions are important at different stages of behaviour change. For instance, in the earlier stages such as *contemplation* and *preparation*, students need to recognise their issues, solutions, the costs and benefits in making a change to solve their problems. While in the later stages such as *action* and *maintenance,* cognitions are more focused on the development of plans of action and maintenance of behaviour. Consequently, the role of educational interventions in changing cognitions of students in different stages of behaviour is crucial.

This research found those who were at the stage of *action* and *maintenance* had more confidence in their ability to manage their money, practicing new behaviours such as setting goals, creating spending plans, tracking spending, and saving money (Seiling and Shockey, 2006). This is in line with the concept of self-efficacy, a key factor in moving participants into the *action* stage (Logie-MacIver et al, 2012; Seiling and Shockey, 2006). However, the measurement of confidence levels in different stages of behaviour in all samples was not clear, it was based on limited qualitative data.

Critically, there is a lack of evidence that individual students went through all five stages of behaviour change. This finding supports the critics on the limitation of the FSBC in measuring behaviour change (Brug et al., 2005). This model has been criticised because it fails to reflect the fact that human behaviour is too multifaceted and multi-determined to be categorised into a few stages (Bandura, 1997). Other behaviour change theories have been suggested to integrate with the FSBC. For instance, the degree of confidence in self-efficacy theory (Bandura, 1977, 1982) or a decisional "balance sheet" of comparative potential gains and losses in decisional balance theory (Janis and Mann, 1977). Prochaska and Norcoss (1994) recognise the limitations of the "stages of behaviour change" and integrated ten processes of change in order to explain further factors that influence human behaviour in different stages of change.

Lastly, while assessing the impacts of the MMM course, it is important to assess the stages of individual behaviours. The stages of change for all the behaviours that were relevant to the taught modules in the course such as budgeting, debt and pensions, were reviewed. This research found that students were in different stages of change for different behaviours after the course (see part 4.4.1). For instance, after the MMM course, one student was at the *action* stage of 'making ends meet' but at the *contemplation* stage of 'planning ahead'. Therefore, using the FSBC to evaluate the impacts of financial education should be based on individual behaviours in individual students. It may provide clearer evidence on specific behaviours that the financial education had, be it high or low impact on students making a change of that behaviour. This is a limitation of this research in measuring the progression through the stages of individual behaviours among students.

5.4. Conclusions and Recommendations

In this part, research conclusions, recommendations for educational intervention strategies and suggestions for future research will be proposed. In summary, this study investigated the impacts of the educational intervention MMM, to change the behaviours of students. It seeks to find if *"change in behaviour results as a by-product of learning"* (Darnton, 2008).

In order to answer the first research question about the impacts of financial education on behaviour change, both quantitative and qualitative data were analysed. The findings suggest that the financial education had an impact towards changing the personal finance behaviour among the students. This research found that most of behaviours had been changed in a desirable way, there were greater positive changes to feelings and attitudes and smaller but still significant changes to behaviours in spending and debt. However, there was no major impact on saving and investment.

Applying the FSBC, most students were found to be at the *contemplation* stage before the course. After the course, many students were found to be at the *preparation, action* and *maintenance* stages, which meant that their stage of behaviour change improved after the course. However, it is unclear whether these students went through all stages of behaviour change.

Accordingly, the factors influencing students to change their financial behaviour were explored. The number of modules completed which resulted in improvements in knowledge, skills and confidence were factors influencing students to change their behaviour. Age is another factor influencing behaviour change. The educational intervention was shown to work better for people who were younger, as the financial education was found to have a higher impact on the younger population (see appendix 2, table 3).

From the qualitative data, it was possible to identify the barriers that prevented students from changing behaviour. Low-income; few improvements in knowledge and skills; and low confidence are barriers. The data showed that those who were still at the *learning* or *contemplation* stage, were not ready or confident to make a change. They may need further education. Some had low-income which prevented them from making long-term behaviour changes, limiting their ability to save, put money aside for pension or other investments.

In order to answer the second research question on the relationship between educational interventions and FWB, qualitative data were analysed and five components of financial capability (CFEB, 2010). The MMM course modules and the changes in behaviours made were found to contribute to the improvements in the financial capability of students. There was evidence that the new patterns of behaviour were adopted by students in line with five components of financial capability (a) Making ends meet; (b) Keeping track of your finances; (c) Planning ahead; (d) Choosing financial products; (e) Staying informed about financial matters. Consequently, obtaining desirable behaviours improved financial capability of students. This research found that an improvement in financial knowledge increased the control and confidence in managing finance or “can do” of students in making a behaviour change. Bearing in mind the limitations of this study, there is evidence to show there was a direct relationship between four variables financial education, behaviour change, financial capability and FWB. Educational interventions result in desirable behaviour change; desirable behaviours result in financial capability improvement and financial capability improvement results in FWB improvement.

This relationship is described in the two-way framework of positive and negative effects in figure 5.4.1. In this framework, financial education is shown to be an environmental/external factor while behaviour change, financial capability and FWB is an internal individual factor. The factors constraining behaviour change are included. This framework describes that low financial knowledge leads to undesirable behaviours and low financial capability results in low FWB. In contrast, high financial knowledge leads to desirable behaviours and high financial capability which results in improved FWB. Therefore, in order to improve FWB, educational interventions are a foundation step that should be used in interventional strategies. The educational intervention should not only involve improving the knowledge of students but should also be involved in their processes of behaviour change, to help them know how to make it happen or overcome their constraints. The links between the four variables financial education, behaviour change, financial capability and FWB are not new as reviewed in the literature. However, the links between the four variables was not found in a single study, but from different studies and theories. For instance, CFEB (2010) measured and found the links between behaviour change, financial capability and well-being but did not measure the impacts of financial education. Linking these factors together is a novel contribution that this research has made. For instance, knowledge improvement is key indicator in financial education. This may help for future research in designing the measurements of the variables or establishing hypothesis to test the links between them quantitatively.

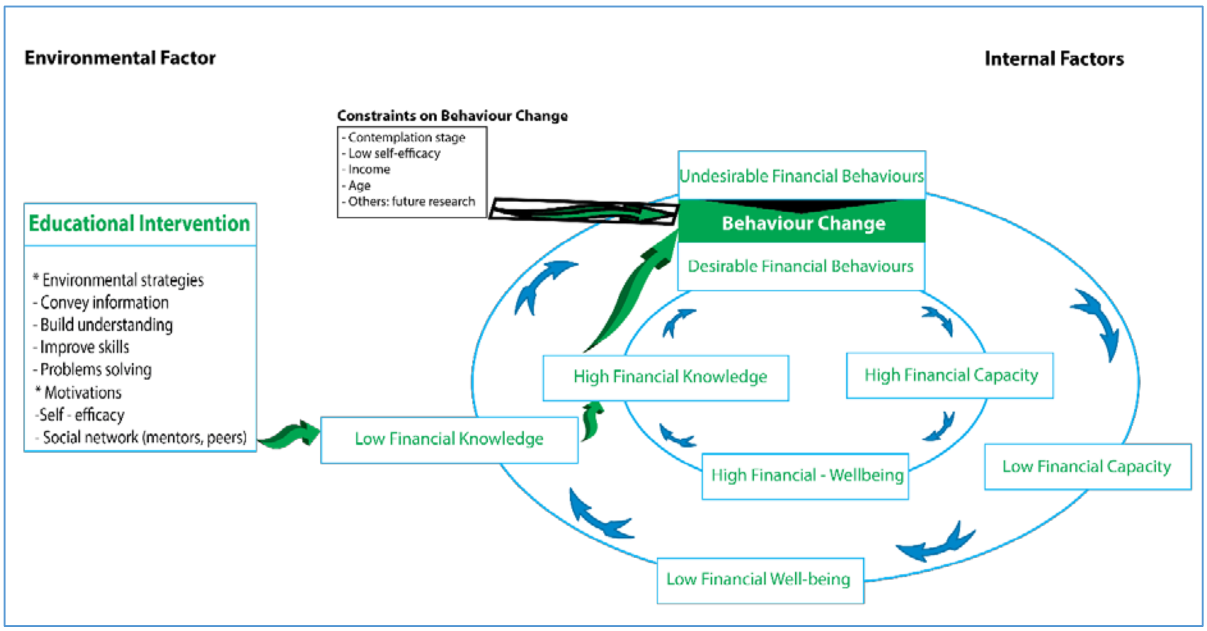

Figure 5.4-1 : The relationship between financial education, behaviour change, financial capability and FWB

While the research found that the course impacted behaviour change and FWB, generalisability of the findings was limited by such a low response rate. In order to mitigate these criticisms on measuring the impacts of educational intervention, some suggestions are made for future research.

Firstly, educators should define if behaviour change is their target outcome of the educational intervention. Educational interventions could play a role in helping people who have undesirable behaviours understand that making a change could help solve their financial issues. This cognition is important at the *pre-contemplation*, *contemplation* and *preparation* stages (Sandman and Weinstein, 1993).

Programmes should add in tutorials to support behaviour change in the existing modules. Educators also should encourage students to learn and act by setting goals and steps to help them make the desirable changes. More tools and information showing real examples of people from different backgrounds, such as those on low-income and the youth, who have made positive steps forward. Encouraging students to be involved and engaged with the course to make it useful and applicable to them is crucial. Interventional product development in which there is the choice of a basic course and advanced course(s) for different levels of knowledge or different stages of behaviour change may be warranted. Additionally, specific courses or different ways of attracting people from different segments, such as for low-income individuals, pensioners or the youth, may be appropriate. The behaviour change sessions also should be designed for different behaviours. Collecting data on the factors that limit the impact of financial education towards behaviour change should be considered in the future. Restricting factors such as low-income that cannot be overcome purely through financial education. Such research could help social marketers and educators gain insights to develop programmes that better meet the demand of their target audience. Further interventional strategies may be added to help students overcome their constraints and make a change.

The method of collecting data on the impacts of educational interventions and measuring the levels of changes, needs to use similar instruments at all stages of data collection. Moreover, the measurement of change should collect the impact of the financial education on individual financial behaviour such as spending, savings, debts etc. Financial education is likely to work best when it precipitates a change in behaviour or makes students ready to make a change. An independent and objective measurement on the impact of financial education towards behaviour change and financial capability should be considered. For example, assessing data from bank statements of students to reveal spending on utilities, savings, investments, pensions etc, would be useful, although this would need the full consent of students and appropriate ethical approval. In addition, more qualitative data on factors that impact their ability to practice the skills of new patterns of desirable behaviour should be collected such as social network, social capital etc. It is worthwhile exploring how social networks or helping relationships with family, relatives or friends influence the process of making a change.

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Appendix

Appendix 1: Changes in Specific Financial Behaviours

The changes made in specific financial behaviours relating to the day-to-day managing of money by students was also explored (Q.13, Q.14). The analysis in table 1 shows that “Cut back on spending” behaviour was at the top of the actions taken (312 cases), following by “Prepared household budget” (284 cases) and “Adjusted savings plan to provide more money for later life” (271 cases). In contrast, there were 260 cases that did not make any of the listed behaviour change. This is a statistically significant result (p<000.1).

$SpecificBehaviourChanged Frequencies			
		Responses	Percent
Specific Behaviour Changed[a]	Prepared household budget	284	35.4%
	Started contributions to a pension	47	5.9%
	Increased contributions to a pension	64	8.0%
	Consulted a financial advisor	71	8.9%
	Cut back on spending	312	38.9%
	Adjusted savings plan to provide more money for later life	271	33.8%
	None of the above	260	32.4%
Total		1309	163.2%

a. Dichotomy group tabulated at value 1.

Table 1: Specific Behaviour Changed

Table 2 shows the respondents who switched financial products. There were 651 examples of people having switched financial products after the course. Those who switched, most of them switched utility (231 cases) and insurance (176 cases) products.

$FinancialProductsSwitched Frequencies			
		Responses	Percent
Financial Products Switched[a]	Mortgage	22	2.8%
	Insurance (home, motor, pet or travel)	176	22.2%
	Utility (broadband, electricity, gas, mobile or landline)	231	29.1%
	Current account	93	11.7%
	Credit card	83	10.5%
	Unsecured loan	13	1.6%
	Pension	33	4.2%
	None of the above	431	54.4%
Total		1082	136.4%

a. Dichotomy group tabulated at value 1.

Table 2: Financial Products Switched

Appendix 2: Other Factors that Influence Behaviour Change

After examining that the MMM course does play a role in behaviour change in managing money of students, it is interesting to examine what other factors, such as demographic features, influenced these changes. Moreover, it is important to explore if the background in personal finance education before the course impacts on the outcomes of individual behaviour changes.

According to the statistics on a population of participants in this survey, the largest population of student belongs to the age range 46-55 with 32.7% while the combination of three groups of a younger population between 26-55 were 42.2%. The range of the youth at age range between 19-25 was nearly 10% lower in comparison to age range over 65. The teenagers were only 0.5% among total 822 participants. Furthermore, females are 16.4% higher than male in the gender structure of a population. Regression analysis will be carried out to investigate the potential audiences of public education in behaviour change which segmented students into demographic factors.

To begin with the proposition “there is a relationship between demographic characteristics and behaviour changes in personal finance. A multiple regression is carried out to explore if behaviour change can be predicted by factors of demographic characteristics. In this regression, the predicted variable of change is Y = “Making an action of change” and X = the predictor variables of demographic characteristics include “Gender” (X1); “Age” (X2); “Highest educational qualification” (X3). The form of this multiple regression is $Y= a + b_1X_1 + b_2X_2 + b_3X_3.$

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.006	.099		10.187	.000
	What is your gender?	-.058	.027	-.077	-2.190	.029
	What is your age?	-.077	.012	-.222	-6.337	.000
	What is your highest educational qualification?	-.007	.011	-.022	-.629	.529

a. Dependent Variable: Making an action of change

Table 3: Regression: Making an action of Change and Demographic characteristics

The result shows in table 3, there was a negative and significant relationship between variables "Making an action of change" and "Age" with $p<0.001$. The negative relationship reflects that the younger students were the higher possibility that they would make a behaviour change. In contrast, there was no significant relationship between the variable "Making an action of change" and other demographic factors "Gender" or "Highest educational qualification". Therefore, age was a single demographic factor highly correlated with "making an action of behaviour change" among students after the course.

Appendix 3: Demands in Financial Education

Understanding the background information on audiences is important to review their progress on behaviour change before and after the course. It also is important to know who and why these audiences took part in the MMM course. In this study, there were a few questions used to collect data on their previous education in personal finance and their ability to manage specific areas of their personal finance and the reasons that prompted them to take part in the course.

Prior to the MMM course, 38.6% of students had never had personal finance education. Most students were self-taught from major sources such as “…from media articles” (32.6%) and “…from personal finance books” (22.1%) or “internet forums” (15.2%). They also learnt it from “family/friends” (18.1%). However, only 13.4% students had personal finance education from school or at university or college which was low. Furthermore, most students had no specific issue and they took part in the course as a general interest with 46.5% of cases. Only 2.6% of students had debt problems or 5.5% had a lack of savings and 8.1% was worry about budgeting.

A crosstabs was carried out to explore the responses on the personal financial education and financial issues, in particular savings, debts and budgeting. As seen in table 4, 2.6% of students had debt problems, 52.4% had no education in personal financial education. Similarly, amongst 5.5% of students who had a lack of savings, there was 45.5% who had no personal financial education and 8.1% of whom were worried about budgeting. There were 56.9% who had no personal financial education. In summary, people who had no financial education had more issues in personal finance rather than people who had a financial education.

$education*$Issues Crosstabulation

			Issues[a]								
			Debt problems	Concern about a lack of saving	Thinking about retirement	A change in personal circumstance s	Wanting to buy a house	Worries about budgeting	No specific issue/a general interest	Other	Total
$education[a]	No education	Count	11	20	69	21	9	37	125	17	309
		% within $Issues	52.4%	45.5%	46.9%	35.0%	40.9%	56.9%	33.5%	25.0%	
	From family/friends	Count	3	15	23	12	6	14	58	14	145
		% within $Issues	14.3%	34.1%	15.6%	20.0%	27.3%	21.5%	15.5%	20.6%	
	At school	Count	0	3	0	5	0	4	15	4	31
		% within $Issues	0.0%	6.8%	0.0%	8.3%	0.0%	6.2%	4.0%	5.9%	
	At University/College	Count	2	4	10	7	2	3	40	8	76
		% within $Issues	9.5%	9.1%	6.8%	11.7%	9.1%	4.6%	10.7%	11.8%	
	From employer	Count	2	1	13	5	0	4	51	12	88
		% within $Issues	9.5%	2.3%	8.8%	8.3%	0.0%	6.2%	13.7%	17.6%	
	Self-taught from media articles	Count	2	8	55	20	8	11	131	26	261
		% within $Issues	9.5%	18.2%	37.4%	33.3%	36.4%	16.9%	35.1%	38.2%	
	Self-taught from internet forums	Count	0	5	19	7	4	7	71	9	122
		% within $Issues	0.0%	11.4%	12.9%	11.7%	18.2%	10.8%	19.0%	13.2%	
	Self-taught from personal finance books	Count	2	5	32	13	6	9	90	19	176
		% within $Issues	9.5%	11.4%	21.8%	21.7%	27.3%	13.8%	24.1%	27.9%	
	Other education	Count	1	0	9	2	0	0	22	7	41
		% within $Issues	4.8%	0.0%	6.1%	3.3%	0.0%	0.0%	5.9%	10.3%	
Total		Count	21	44	147	60	22	65	373	68	800

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

Table 4: Crosstabs in responses of students on specific issues in personal finance and their back ground in financial education pre the MMM course

Appendix 4: Coding of themes in qualitative data

CATEGORIES OF CODES	DIFFERENCES (RESPONSES OF QUESTION 6)		CHANGES (RESPONSES OF QUESTION 12)	
	Sources	References	Sources	References
Components of Financial Capability (CFEB)				
Making ends meet	1	103	1	49
Planning ahead	1	38	1	63
Staying informed about financial matters	1	19	1	6
Choosing financial products or shopping around	1	31	1	86
Keeping track of your finances	1	5	1	118
Theories of Behaviour Change				
Stages of Behaviour Change				
Pre-contemplation	0	0	0	0
Contemplation	1	10	1	3
Preparation	1	156	1	59
Action	1	220	1	205
Maintenance	1	24	1	31
Confirming they are doing right	1	21	1	3
A mix of Action but some Contemplation	1	5	1	1
Relapse back to Action	1	1	1	1
Confirming they are doing right but also learnt something	1	21	1	3
Self-efficacy				
The means and ways get what I want	1	2	1	6
Solve difficult problems	1	3	1	6
Stick my aims and goals	1	3	1	29
Confidence to deal with unexpected events	1	4	1	1
Handle unforeseen situations	0	0	1	2
In control	1	26	1	17
Financial Well-being				
In Control	1	118	1	16
Confidence	1	35	1	13
A mix of both + less stress + more satisfaction	1	161	1	29
Other themes				
Achievement	1	24	1	35
Action	1	58	1	258
Attitudes	1	55	1	84
Cognition	1	148	1	66
Constraints on changes	1	29	1	4
Emotions	1	43	1	5
Level of changes	1	53	1	23
Subjects-Skills	1	151	1	265
Unhealthy Behaviours-Attitudes before the MMM course	1	20	1	18
Overall evaluation of the MMM course	1	21	1	3

Table 5: Coding of themes from the responses of questions 6 and question 12

Appendix 5: Research Questionnaires

Future Learn follow-up survey with MMM learners: Draft questions

You have been sent this survey because you registered for The Open University course *Managing My Money* on Future Learn in May 2014, January 2015, or October 2015.

QA1. Do you remember registering for The Open University course *Managing My Money* on Future Learn in May 2014, January 2015, or October 2015?

Yes – May 2014
Yes – January 2015
Yes – October 2015
Yes – I remember registering but I can't remember when it was
No

CONTINUE IF ANSWERED YES AT QA1, ELSE THANK AND CLOSE
To help us develop our online courses, we would like to ask you some questions about your experience of Managing My Money. The survey should take no more than 10 minutes to complete. Please answer the questions as fully and honestly as possible, as we really value what you think.

The information you provide in this survey will only be used by The Open University. No personal information about you (e.g. your name or date of birth) will be passed to The Open University by Future Learn.

ASK ALL
Q1. (PRN) How would you rate your ability to manage the following areas of your own/your family's personal finances (Rate 1-High ability to 5 – No ability)?

1. Financial Planning for the future
2. Household budgeting
3. Consumer credit and borrowing
4. Mortgages/home loans
5. Savings
6. Pensions
7. Insurance

ASK ALL
Q2. Was there any particular issues that prompted you to enrol on Managing My Money? If so, please tick the closest option.

1. Debt problems
2. Concern about a lack of saving
3. Thinking about retirement
4. A change in personal circumstances (e.g. unemployment, a new child, an inheritance)
5. Wanting to buy a house
6. Worries about budgeting
7. Other (write in)
8. No specific issue/a general interest

ASK ALL

Q3. (PRN) Prior to the Managing My Money course had you ever received any personal finance education? (Tick all that apply)

1. No [single select]
2. Yes, from family/friends
3. Yes, at school
4. Yes, at University/College
5. Yes, from employer
6. Yes, self-taught from media articles
7. Yes, self-taught from internet forums
8. Yes self-taught from personal finance books
9. Yes, other (write in)

ASK ALL

Q4. Thinking back to before you took part in Managing My Money, which of the following financial activities did you do regularly? (Tick all that apply)

1. Put money into a savings account
2. Put money into an investment fund
3. Borrowed on a credit card
4. Missed payments on a loan, credit card or mortgage
5. Set a budget
6. Felt stressed about your financial situation
7. Shopped around for a better deal on a financial product
8. Felt confused by a financial product
9. None of the above

ASK ALL

Q5. As a result of taking part in Managing My Money, do you feel any differently about your personal finances?

Yes

No

Ask Q6 if Yes at Q5. Else skip to Q7

Q6. Please tell us how you feel differently about your personal finances [free response]

ASK ALL
Q7. When you took part in Managing My Money, which of the following subjects did you learn about? Please tick all that apply

1. Financial Planning
2. Household budgeting
3. Consumer credit and borrowing
4. Mortgages/home loans
5. Saving
6. Pensions
7. Insurance
8. Some other subject (please give details)
9. None of these

Ask Q8 if more than one response at Q7 (codes 1-8), else skip to Q9
Q8. And which one of these subjects did you find most helpful? Please tick one only

1. Financial Planning
2. Household budgeting
3. Consumer credit and borrowing
4. Mortgages/home loans
5. Saving
6. Pensions
7. Insurance
8. Some other subject (please give details)

ASK ALL
Q9. Which of the following statements about your knowledge of this subject/these subjects best applies to you? Please tick one only

As a result of taking part in Managing My Money, I consider myself an expert in this subject/these subjects
As a result of taking part in Managing My Money, I know a lot more about this subject/these subjects
As a result of taking part in Managing My Money, I know a little more this subject/these subjects
As a result of taking part in Managing My Money, my knowledge of this subject/these subjects has not changed

ASK ALL
Q10. How much difference has taking the course Managing My Money made to you personally? Please tick one only [ideally the order of the statements would rotate]

No difference at all
A small difference
A big difference

ASK ALL

Q11. As a result of taking part in Managing My Money, did you make any changes to the way you manage your money day-to-day?

Yes

No

Ask Q12 if Yes at Q11. Else skip to Q13

Q12. Please tell us what changes (if any) you made as a result of taking part in Managing My Money [free response]

ASK ALL

Q13. (PRN) As a result of taking part in Managing My Money, which of the following have you, or your partner, done? (Tick all that apply)

- prepared household budget
- started contributions to a pension
- increased contributions to a pension
- consulted a financial advisor
- cut back on spending
- adjusted savings plan to provide more money for later life
- None of the above [single select]

ASK ALL

Q14. (PRN) As a result of taking part in Managing My Money, which of the following products have you, or your partner, switched? (tick all that apply)

- mortgage
- insurance (home, motor, pet or travel)
- utility (broadband, electricity, gas, mobile or landline)
- current account
- credit card
- unsecured loan
- pension
- None of the above [single select]

ASK ALL

Q15. Do you regularly do any of the following financial activities? (Tick all that apply)

1. Put money into a savings account
2. Put money into an investment fund
3. Borrow on a credit card
4. Miss payments on a loan, credit card or mortgage
5. Set a budget
6. Feel stressed about your financial situation
7. Shop around for a better deal on a financial product
8. Feel confused by a financial product
9. None of the above

ASK ALL

Q16. Which of the following statements about Managing My Money best applies to you? Please tick one only [ideally the order of the statements would rotate]

As a result of taking part in Managing My Money, I am financially a lot better off than I was before

As a result of taking part in Managing My Money, I am financially a little bit better off than I was before

As a result of taking part in Managing My Money, I am no better off than I was before

ASK ALL

Q17. Are there any other comments you would like to make about Managing My Money? [free response]

ASK IF RESPONDED AT Q17, ELSE SKIP TO Q18

Q17A. Are you happy for us to use your comments when we publicise Managing My Money?

Yes

No

ASK ALL

Q18. Have you shared any learning from Managing My Money with anyone else, like a family member, friend or colleague?

Yes

No

ASK ALL

Q19. Have you recommended Managing My Money to anyone else, like a family member, friend or colleague?

Yes

No

ASK ALL
Q20. Managing My Investments is another personal finance module produced by The Open University and presented on Future Learn. Have you taken part in Managing My Investments?

Yes
No
Not yet, but I've registered interest

ASK ALL
Q21. Are you willing to be contacted by The Open University Business School, with regards providing comment on the MMM course that can be included in the media (newspaper, radio or broadcast)?

Yes (please confirm how you would like to be contacted – telephone, email)
No

Finally, we would like to know a bit more about you.

Q22. What is your gender? Please tick one box only

Male
Female
Other
Prefer not to say

Q23. What is your age? Please tick one box only

Under 16 years
16-18 years
19-25 years
26-35 years
36-45 years
46-55 years
56-65 years
Over 65 years
Prefer not to say

Q24. Which country do you live in? Please tick one box only [abridged precodes]

UK
Ireland
Europe outside the UK and Ireland
North America
South America
Asia
Africa
Australia, New Zealand or the Pacific Islands

Q25. What is your highest educational qualification? Please tick one box only

- No formal qualification
- School-leaving qualification (16 years)
- School-leaving qualification (18 years)
- Vocational qualification (i.e. practical, trade-based)
- College diploma or certificate
- Undergraduate/Batchelors university degree
- Postgraduate/ Graduate school university degree
- Doctorate
- Other (please specify)

Q26. What is your employment status?

- Full-time employed or self-employed
- Part-time employed or self-employed
- Full-time voluntary work
- Part-time voluntary work
- Full-time student
- Part-time student
- Unwaged and seeking employment
- Unwaged with domestic responsibilities
- Disabled and not able to work
- Retired
- Prefer not to say
- Other (please specify)

Q27. Do you consider yourself to have a disability?

- Yes
- No
- Prefer not to say

Thank and close

True Potential PUFin
7 January 2015

Appendix 6: Ethical Approval of the Research

Human Research Ethics Committee (HREC)
Project Registration and Risk Checklist

The Open University

If you are planning a research project that involves human participants (data and/or biological samples), you should complete and submit this checklist so that the HREC Chair can decide the level of ethics review that is required. If you have not already done so, refer to the ***OU Ethics Principles for Research involving Human Participants***.

Once you have completed the checklist, save it for your records and email a copy to Research-REC-Review@open.ac.uk, with any relevant documents e.g. a questionnaire, consent form, publicity leaflet and/or a draft bid. You should receive a response within 7 working days as to whether your research will need full HREC review (please indicate if you require a more urgent decision). No potential participants should be approached to take part in any research until you have submitted your checklist and, where required, obtained a HREC review.

Section I: Project Details

Project title	Assessing the impact of Managing My Money
Brief description (100 words maximum)	Managing My Money (MMM) is a MOOC launched by PUFin in 2014. This project re-contacts learners who completed MMM in the past with a questionnaire in order to assess what impacts taking MMM has had on their financial capability and behaviour.
Is your research part of an application for external funding?	N/A
If so, please provide the name of the funding body and your Awards Management System (AMS) reference	Funding body: AMS ref:
Will your research proceed if external funding is not awarded?	N/A
Is your research being assessed by the Student Research Project Panel?	N/A

Section II: Applicant Details

Name of Primary Investigator (or research student) Other researcher(s)	Sharon Collard Will Brambley, Tam Nguyen
Status	Staff
Email address	William.brambley@open.ac.uk
Academic unit	FBL/PUFin
Telephone number	01908652852
Date	8/2/2016

Section III: For students only:

EdD/MA/MPhil/MRes/MSc/PhD	N/A
Supervisor's name	
Supervisor's email address (Your supervisor will need to email their brief endorsement, before, or at the same time this checklist is submitted)	

Section IV: Risk Checklist

Please assess your research using the following questions and click yes or no as appropriate. If there is any possibility of significant risk please tick yes. However, even if your list contains all "no"s you should still return your completed checklist so your proposed research can be assessed and recorded by the HREC.

		Yes	No
1	Does the study involve participants who are particularly vulnerable or unable to give informed consent? (e.g. children, people with learning disabilities)	☐	☒
2	Will the study require the co-operation of a gatekeeper for initial access to the groups or individuals to be recruited? (e.g. students at school, members of a self-help group, residents of nursing home) *(FutureLearn acting as gatekeeper as MMM is offered on that platform)*	☒	☐
3	Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (e.g. covert observation of people in non-public places)	☐	☒
4	Will the study involve discussion of sensitive topics (e.g. sexual activity, drug use)?	☐	☒
5	Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedure of any kinds?	☐	☒
6	Is pain or more than mild discomfort likely to result from the study?	☐	☒
7	Could the study induce psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life?	☐	☒
8	Will the study involve prolonged or repetitive testing?	☐	☒
9	Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?	☐	☒
10	Will the study involve recruitment of patients or staff through the NHS or the use of NHS data?	☐	☒
11	Will the study involve the collection of human tissue or other human biological samples?	☐	☒

If you answered 'yes' to questions **10** or **11**, you will also have to submit an application to an appropriate National Research Ethics Service ethics committee).

Please note that it is your responsibility to follow the University's ***Code of Practice for Research*** and the ***Ethics Principles for Research involving Human Participants***, and any relevant academic or professional guidelines in the conduct of your study. Also, to provide appropriate participant information sheets and consent forms, and ensuring secure storage and use of data. FAQS offering advice and guidance on these issues are available on the Research Ethics website.