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# **Financial Literacy in a Diverse World: Investigating the Influence of Migration Backgrounds**

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## **Abstract**

Financial literacy is a concept related to many significant economic outcomes. Despite its relevance, not much is known about the financial literacy of migrant groups. More specifically, the question of how youth with a migration background may differ from domestic youth is discussed. Using quantitative data analysis, this paper tries to explore how having a migration background is related to financial literacy and its relationship with a few economic outcomes. Based on existing literature, these economic outcomes were chosen to be financial attitude, financial behaviour, and financial well-being. Using a total of 94 responses from a survey that operationalizes the economic outcome variables, self-reported financial literacy, and demographic control variables, the findings suggest lower financial literacy, financial well-being, and financial behaviour among youth with a migration background. No significant findings are made surrounding the effect that migration status has on the individual relationships between financial literacy and the outcome variables. Despite uncertainties of generalizability due to sample size and measurement error concerns, this paper contributes to the literature by taking the first steps in an area that has remained mostly untrodden in the financial literacy literature.

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# 1 Introduction

Financial literacy (FL) is and has been a relevant topic throughout the years. According to Doloh & Redzuan (2023), “financial literacy implies the capacity to understand and examine options for funding, preparing for the future, and responding adequately to the situations”. The definition of Sutter et al. (2020) is that “financial literacy is generally understood as an individual’s capability to handle financial aspects of everyday life and to make meaningful and informed decisions regarding investments, savings, and consumption”. Abdullah et al. (2017) give the following description: “in a simple word, financial literacy can be defined as a competency to know, understand, and evaluate information about the finance”. Sometimes also known as financial knowledge, FL thus encompasses all the know-how and capabilities of people concerning finance used for everyday choices. Be it an influx of people making bad decisions on investment markets during the covid pandemic (Semenova et al., 2024), or American households getting involved and losing money on the stock market due to the introduction of three Economic Impact Payments (EIM) for these households (Jung et al., 2023), the frequency at which these complex and sometimes wrong decisions are made seem only to increase.

This brings us to the importance of educating FL which enhances the decision-making capabilities of people, leading to better outcomes. An extensive amount of research has been invested in the relationship between education and FL. Organizations like the Dutch “Nationaal Instituut voor Budget voorlichting” (NIBUD) concern themselves with analysing the level of FL and educating people from all ages on financial matters, for instance by promoting FL after discovering a link between high student debts and a lack of knowledge on the Dutch loan system (Groen & Houtsma, 2021). The NIBUD also pays attention to FL education at an early age, conveying the sentiment that financial education at an early stage in life is crucial, if not the most important and effective, a sentiment shared by the literature (Abdullah et al., 2017; Drever et al., 2015; Erner et al., 2016; Furnham, 1999; Kim et al., 2017; Pintye and Kiss, 2016; Walstad et al., 2010b).

Although research focused on FL of youth exists, it remains in minority with flaws and gaps. One such flaw and gap is the lack of consideration for youth with a migration background. Even when youth (0-25) in the Netherlands with a migration background has risen from 23.5% to 29% between 2010 and 2022 (NJI, 2023), no time is invested in discovering the level of FL of this

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population and its implications for society. Some literature that does look at FL and migration does so in relation with remittance, which is the act of sending money back to the country of origin (Doi et al., 2014; Gibson et al., 2012), but here too the focus on youth is missing.

Besides remittance, questions on other outcomes of FL for migrant youth persist. On top of that, if we consider better FL education of youth to be desirable, more should be known about the FL of youth with a migration background. Based on this uncertainty, the following research question was formulated: should current Dutch education change to accommodate for potential differences between youth with and without a migration background when it comes to financial literacy?

Answering this question is expected to have a multifaceted relevance. On a scientific scale, it would contribute towards research on migration and remittance. Research in this area needs more examples from different contexts (Doi et al., 2014), and the findings could support the process of enhancing the financial outcomes of remittance. Additionally, the target group of youth with a migration background allows us to look at FL through a multicultural lens, giving us a chance to observe multiple nationalities and cultures simultaneously. Lastly, findings on FL of youth adds to the overarching strand of literature that concerns itself with FL, because foreign youth has not been the focus of most literature before. On a social scale, this research will be useful for both teachers and policymakers when designing FL programs. Especially teachers that work with foreign kids will gain a starting ground from which they can evolve their teaching programs towards a new standard that appeals to all their students.

The rest of this paper is divided into 9 sections. In section 2, an overview will be given on the relevant literature after which the hypotheses will be formulated. In section 3, the methodological approach taken and the sample used to answer the research question will be discussed. Section 4 will present the results from the data analysis and varied set of tests. The results of the data analysis will be discussed in section 5. Section 6 will be used to discuss the limitation of the study. The recommendations and conclusion of this paper will be given in section 7 and 8 respectively. Lastly, section 9 provides the bibliography, and all tables, graphs, survey questions, and the form of consent are included in the appendices in section 10.

## 2 Literature Review

### 2.1 Financial Literacy and economic outcomes

In the two examples of financial markets discussed during the introduction, FL played a role in determining the monetary outcomes of the choices made. Besides monetary outcomes, there are other concepts linked to FL. To illustrate, low financial literacy, or financial illiteracy, is found to be related to financial stress and many health-related issues like anxiety, depression, and obesity (McLean-Meynsse et al., 2018). Three other concepts will be discussed in the following sections where these concepts will be defined and their relationships with FL made clear. After these sections, we dive into empirical evidence to support these claims.

#### 2.1.1 Financial Attitude

Attitudes, in the general sense, can be seen as the favourable and unfavourable opinions and assessments of people, objects and contexts (Azidzul et al., 2023). Attitudes can be both favourable and unfavourable towards something, and they can be formed at any point. Both encountering a specific object or learning about it beforehand could influence a person's attitude about it. Every person has attitudes, and what these attitudes are can influence how one sees the world and acts in it. When speaking in financial terms, financial attitudes (FA) are the opinion and assessment of money, how they feel about personal financial matters, and how look towards certain financial decisions (Suka et al., 2022). Suka et al. (2022) further notes that forming attitudes can be influenced by family and school, where FL education can play a part, and that the financial behaviour of a person for a given situation is often determined by the financial attitude towards that specific situation.

#### 2.1.2 Financial Behaviour

Behaviour is related to the actions a person takes, often subject to a person's identity and preferences. When talking about financial behaviour (FB), we refer to the decisions and actions of a person taken with respect to financial matters (Suka et al., 2022). In classical economic theory, think about the works of Adam Smith and John Stuart Mill, individuals were often seen as rational agents who acted in their self-interest (Smith, 1776; Mill, 1844). This view would lead to

the belief that financial decisions are made by well-informed individuals and that the outcomes justly serve the desires of these individuals. However, observations in the real-world show that people are often un-informed, make certain decisions not out of self-interest, and make mistakes. These observations have led to new movements in economic theory, like behavioural economics, where irrational agents are assumed in opposite to classical economic theory. Within these modern movements, “Financial behaviour is a new field that seeks to combine behavioural and cognitive psychology theory with conventional economics and finance to provide an explanation for why people make irrational financial decisions” (Suka et al., 2022). How well-informed people are is an important factor of financial behaviour, which makes the role of FL obvious. Based on FB, people take actions which, in the end, determine their new situation. Whether this new situation is good or bad, which can be expressed as a person’s well-being, is thus strongly linked to an individual’s behaviour (Hwang & Park, 2022).

### **2.1.3 Financial Well-Being**

Well-being can be defined by many things, different for every person, which makes it a tough concept to measure. When you think of financial well-being (FWB), you would think that it can be best expressed in terms of money, where having a lot of money means you are financially well. However, this classification has been questioned as it fails to capture the how people see and experience their current financial situation (Collins & Urban, 2019). To better understand these situations, Collins & Urban (2019) created a measure of FWB that defines it as: “(1) having control of day-to-day and month-to-month finances; (2) having capacity to absorb a financial shock; (3) being on track to meet financial goals; and (4) having the freedom to make choices that allow enjoyment of life”. They hope this and other new measures can support traditional measures like income to better understand the financial situations of people. As these situations are also a results of the financial choices that were made, we can say that FL has an indirect effect on FWB through FB (Hwang & Park, 2022). On top of that, FL has also been used as a proxy for FWB (Collins & Urban, 2019), further supporting the link between these concepts.

## **2.2 Financial Literacy in the field**

Following the definitions and links discussed in the previous sections, it is time to look at how these translate to the actual observations made in the field. This is useful for both confirming the

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theories and to provide a baseline from which we can form our expectations on the relationships found within this study. To start off, Hwang & Park (2022) investigate financial knowledge, FB, and FWB. They make a distinction between objective knowledge as actual financial knowledge and subjective knowledge as the assessment of an individual's own knowledge, or their confidence. They indicate that subjective knowledge has a direct positive effect on FWB, and that subjective and objective knowledge have an indirect positive effect on FWB through positive FB.

Switching to the marketplace context, Viswanathan et al. (2021) identify marketplace literacy as similar to FL but with a specific focus on knowledge and skills required to participate on the marketplace as both consumer and entrepreneur. They find that marketplace literacy enhances the capabilities of both consumers and entrepreneurs to participate on the marketplace, resulting in higher overall well-being because of an improvement in their confidence and decision-making skills.

Taylor (2010) seeks to find a way to measure the financial capabilities of people and comes up with a measure that consists of two parts: making ends meet, and money management. Taylor (2010) describes the measure as novel but flawed in the sense that no direct measures of financial knowledge and financial management skills are included. The measure does, however, allow for nationally representative data that can be tracked over time. It also allows for the inclusion of unobserved factors associated with the financial capability of individuals, which is why their findings still warrant attention. With their measure, and with a sample of 16 and older, they find that financial capabilities are influenced greatly by personal characteristics like age, household structure and employment status of the individual and that of their household members. Single unemployed young males living with unemployed unrelated others seem to have the lowest financial capabilities.

In another study, Pintye and Kiss (2016) split FL into three parts: financial knowledge, financial behaviour (FB), and financial attitude (FA). They then compare how economics and business students (age 19 to 27) differ from "average" people from the same age in each of these three sub-categories. Surprisingly, only more positive FB can be found among the economics and business students compared to average people from the same age. In both their FA and knowledge, these students are still lacking. Their study does find that there is a positive relationship between economic and financial knowledge gained in high school and FL of students.

Moving on to research with a younger population, Furnham (1999) looks at how kids from the

ages 11 to 16 behave with their money. How much they received, spent, and saved were all predictors of how these kids saved and how much. An interesting finding was that habitual behaviour, when it comes to money, might be set at an early stage, thus implying that what kids learn at an early age they will likely take with them in their behaviour when they get older. An additional finding is the difference between sex, with females being more economically conservative and less active while males are more interested in economics and are more assertive.

Blaschke (2022) discusses the existing gender gap in FL, where men are commonly more literate than woman, and tests the FL of high school students while looking at gender differences and the effect of confidence. Blaschke (2022) finds that increasing the confidence of woman can be enough to bridge this gap. However, Blaschke (2022) distinguishes between a basic and a sophisticated literacy domain. Confidence only seems to bridge the gap in the basic domain while the gap in the sophisticated domain remains even after the inclusion of confidence. Erner et al. (2016) also make a distinction between basic and sophisticated literacy. They found that German high school students (aged 15 to 16) were lacking in both basic and sophisticated FL.

As these findings seem to indicate, FL is often found to be lower than expected. On the relationships between FL and the economic outcomes, we see that there generally exists a positive relationship between FL and positive FB and FWB, and between FB and FWB themselves. The relationships with FA are less clear. In a military setting, Ab Rani et al. (2022) find a significant positive relationship between FA and financial knowledge, but also a negative relationship with FB. Considering that FA has also been found to have a positive relationship with financial management behaviour (Sumantri et al., 2024), it paints a picture that the effects of FA are not well-defined, and that FA could react differently depending on the specific context.

### **2.3 Foreign Financial Literacy**

Knowing the importance of context for determining FA and possibly also for FL, FB, and FWB, we continue the discussion by switching to an international setting. To arrive at the goal of our study, we first need to get a solid look at literature on FT within foreign contexts, after which we can discuss literature that is specifically related to migration. This is not an easy subject, as these “foreign” contexts include many different cultures, values, beliefs, and religions, each of which could have an individual effect on FL and the economic outcomes. To illustrate, Falicov (2001) showcases how the value and perception of money is subject to cultural differences. Falicov (2001)

looks at differences between Latinos and Anglo-Americans and finds a difference in a collectivistic and individualistic ideology towards money respectively. Additionally, more traditional gender roles amongst Latinos and a religious believe that the circumstances in life are less under one's own control led to very different perceptions in the meaning of money.

On the aspect of religion, Spaenjers and Renneboog (2012) study how religion affects FA of households in the Netherlands and find that Catholics and Protestants are more trusting and have a longer planning horizon than non-religious people. Catholics are also found to be more risk averse while Protestants seem to have a greater sense of responsibility. There is also a difference found in FB, but the authors note that this difference could be affected through a difference in FA.

More on FB and religion, Shakeel (2015) found in a study on Muslims in India that these two aspects are strongly linked. For Muslims, financial decisions are guided by Islamic principles, which is why a focus on equity-based investments and avoidance of unethical sectors can be seen. Their findings also include the influence of religion in shaping attitudes and values. Shakheel (2015) also highlights the importance of gaining a deeper understanding on the impact of religion on consumer behaviour.

Sarofim et al. (2020) regard FB as being critical to FWB because well-being can be achieved through acting in a way that aligns with the core values of that which you believe in. On how different religious groups act, Sarofim et al. (2020) find that Christians behave disciplined, make purchases within their financial capabilities to avoid debt, and save a lot. Buddhists prioritize making meaningful purchases like on personal growth and spirituality. Muslims avoid investments that are not halal, are sceptic towards institutions using religion as a marketing ploy, and they adhere to Zakat which is a type of mandatory charity.

Returning to FL, Doloh & Redzuan (2023) study the FL of Islamic students in a school in Malaysia while investigating the relationship between FL and financial stress, FB, and FWB. They find high FL among the students. They also find a positive relationship between Islamic financial literacy and FWB, in accordance with their expectations. The negative relationship between FB and FL and the positive relationship between financial stress and FL were not according to their expectations. Abdullah et al. (2017), on the other hand, find relatively low FL among the students in their research. An additional finding from Abdullah et al. (2017) is that gender, education, employment status, and attitude are significant in determining the level of FWB, FB, and FL within their sample. In another study, FA was found to act as a positive mediator between Islamic financial

knowledge, Islamic financial behaviour, and internal locus of control (Indana & Pambekti, 2022).

All these examples show that positive relationships between FL and the economic outcomes are also present within foreign literature, although the negative relationship between FB and FL found by Doloh & Redzuan (2023) makes this position dubious. Most literature does, however, suggest a positive relationship, which is why these results will not be accepted in full. This disagreement in the literature does further increase the value of retesting the relationship within the current study. Another important takeaway from these examples is how differences in FL and the economic outcomes are subject to differences in demographic characteristics and religion.

### **2.3.1 FL and migration**

We know from the previous sections that the positive relationships between FL, FB, FWB, and FA mostly also exist when looking at foreign countries, but that different cultures can also lead to differences in the level of FL and these economic outcomes. Regardless of this knowledge, it is important to note that people with a migration status might be subject to differences due to culture, but that these differences might also originate from the unique position that they have as migrants. Where they came from, where they went, and why are all possible factors that could have large implications for who these people are when it comes to FL and the economic outcomes. Sadly, literature on migration status in relation to the specific financial subjects that we are interested in is scarce. A few related studies will now be discussed.

On migration status, Erner et al. (2016) included integration as an independent variable in their analysis. They used a dummy variable which indicates whether a student is German born and speaks that language with their parents or not. Students with low levels of integration scored lower on both basic and sophisticated literacy compared to other students. Erner et al. (2016) noted that this inconsistency can be partially attributed to a language barrier.

Another interesting study related to migration comes from Kim et al. (2017). They investigate differences in FL between south Korean residents and north Korean refugees. North Korean refugees have a lower FL than the south Korean residents. This difference holds even when controlling for cognitive abilities. The difference is lower for refugees who have stayed longer in south Korea. This indicates that a longer period of settlement leads to more assimilation of the refugees, where their FL increases the longer they are settled in south Korea. Additional findings show that age is not a good predictor of FL. Instead, the results indicate that FL is formed during the early stages of someone's life. With these results in mind, the authors stress the importance of

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increasing the FL of youth.

Gibson et al. (2012) study migration and remittance and note that there are costs associated to remittance. They therefore study the impact of educating migrants on remittance in the hope of lowering these costs. They find that teaching migrants about remittance does increase their financial knowledge, although their behaviour when it comes to remittance level and frequency is not significantly altered. Doi et al. (2014) tests how the impact of FL education on remittance and saving is affected by whether the sender or receiver of the remittance is educated. Their findings suggest that only training both the migrant and their family abroad significantly affects financial knowledge and savings behaviour.

## **2.4 Literacy Interventions**

The interest of this paper lies in analysing FL, FA, FB, and FWB in the hopes of supporting the improvements of education programs. This goal is thus based on the assumption that FL can be significantly affected through education. Luckily, there is a lot of extant research supporting the assumption that interventions in education influence FL. A few of these studies will be discussed in this section.

Gill & Bhattacharya (2019) did a study with 1128 12th- and 11th grade high school students (16 to 18 years) where they applied two treatments. One treatment focused on money management while the other treatment focused on financial investment. The financial knowledge of the treatment groups increased compared to the control group who received no intervention, regardless of the type of treatment.

Walstad et al. (2010b), after focusing much time on applying the correct evaluation and measurements, found a positive effect of financial education on high school student's financial knowledge of personal finance. This even holds when controlling for factors like gender, education level, and type of high school.

Drever et al. (2015) try to find the most effective interventions to apply during a person's different life-stages from age 3 to 21. For the adolescents and young adults (13 to 21), they find that education programs which play into experience and practicality are most effective in teaching money management skills. They also find that, regardless of age group, parents play a vital part in the process of ensuring the FWB of their children. Additionally, repeated practice seems to be a good way of developing positive financial habits.

Kim and Chatterjee (2013) discuss the importance of early financial socialization during childhood to help develop the financial management of young adults. Childhood savings accounts, teaching about credit at an early age, and a trusting relationship between child and parent all support this development. According to Kim and Chatterjee (2013), financial education in school should act as a supplement when financial socialization at home falls short.

Some researchers fear that the effects of FL education lie only in the short run (Drever et al., 2015; Kim & Chatterjee, 2013). Sutter et al. (2020) did an intervention with high school students with an average age of 16 and found that their FL intervention influences financial decisions through its effect on risk and time preferences. More importantly, their findings seem to hold both in the long and short run, driving away the fear that only the short run is affected. Another voice of criticism on FL education comes from Alsemgeest (2015), who names a few arguments against it. These include the fact that most individuals are different from each other and, because of this, a “one-size-fits-all” approach generally taken in financial education will be ineffective.

Additionally, Alsemgeest (2015) says that financial education fails to incorporate the non-cognitive aspects of a person that also influence their FB (although Sutter et al., (2020) would debate against this idea). The psychological and personal traits of a person could override the cognitive abilities gained through FL education. The author uses these arguments to bring over the point that FL education alone is not sufficient in combating the ongoing personal financial management crisis. It is important to note that this does not mean that FL education is without merit. Good FL education can still exist if it can adapt to differences in context and audience, the availability of financial specialists, and if it were to include both financial and psychological components. Whilst, according to Alsemgeest (2015), more complicated issues in finance should be left to the specialists, FL education is still necessary to create a knowledge baseline that is needed for everyday financial decisions and FWB.

## **2.5 Parents**

A last but necessary subject to discuss, which is frequently mentioned in the literature, is the role parents play and its link to FL. Throughout the literature, parents are claimed to play an important role in forming the FL of their children. Kim and Chatterjee (2013) talk extensively about the role of parents in the financial socialization of children. For one, the experience and knowledge of parents can be passed down to their children, directly affecting FL. Such a discussion with

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parents also seems to boost the confidence of children in terms of their self-perceived financial knowledge. Children who received an allowance from their parents and whose spendings were monitored were all less worried about their finances and were ultimately more likely to report themselves as being good at managing money. For all these reasons, Kim and Chatterjee (2013) perceive financial education in school as a supplement to the financial education received at home.

In terms of behaviour, students choosing at which bank to open a savings account is heavily influenced by the recommendation of parents (Pintye and Kiss, 2016). Parents also encourage positive habitual FBs (Furnham, 1999). Drever et al. (2015) also discuss the role of parents, naming their influence as significant in formation of FA, behaviour, and values of their children. Parents also play a major part in ensuring the FWB of their children. Another important takeaway from these papers is that the role of parents is also dependent on the FL of the parents themselves. Of course, good financial knowledge and behaviour can only be taught by those who possess it themselves.

## 2.6 Hypotheses

Existing literature discussed in the previous sections suggests we can expect to find an existing relationship between FL and FA, FB, and FWB. Based on the discussion surrounding foreign FL and migration status, we expect there to be a difference for each of these variables when comparing the two groups present in our study: students with and without a migration background. Knowing that there are differences between cultures, people with a migration background must adjust to a new environment that is for a large share dissimilar from their own. This position can be seen as disadvantage compared to youth living in their own country. Based on this disposition, we expect FL and the economic outcomes to be lower for people with a migration background. This gives us the following set of hypotheses:

**H1a: FL is significantly larger for students without a migration background than for those with a migration background.**

**H1b: FA is significantly larger for students without a migration background than for those with a migration background.**

**H1c: FB is significantly larger for students without a migration background than for those with a migration background.**

**H1d: FWB is significantly larger for students without a migration background than for those with a migration background.**

On top of that, the findings have also shown that factors like the role parents play, period of settlement and differing religious values all influence the outcomes. For youth with a migration background, we expect these factors to be a hurdle to the FL and, by extension, the economic outcomes. In this case, we expect migration status to act as a moderator between FL and the economic outcomes, weakening their relationship. This brings us to the following set of hypotheses:

**H2a: Migration status weakens the relationship between FL and FA.**

**H2b: Migration status weakens the relationship between FL and FB.**

**H2c: Migration status weakens the relationship between FL and FWB.**

## **3 Methodology**

### **3.1 Research methodology**

To answer the research question and to test the hypotheses, this study opts to utilize quantitative analysis. In our study, we both test existing theory and propose our own theory in the form of migration status. The literature generally makes a separation between quantitative and qualitative research where qualitative research is used to create new theories and quantitative research is used to test these theories, but there are also voices arguing for the use of quantitative research in developing new theories (Janiszewski & Van Osselaer, 2021). Additionally, to answer our research question, it is important that we get a grasp of descriptive information about the

population that we are interested in. For these reasons, it was decided to make use of a survey for the collection of data. In the next sections, we will discuss how the survey operationalizes all relevant concepts and demographic information, where and how the data collection will proceed, and how the data analysis will proceed.

### **3.2 Survey design**

The survey that is created for the purpose of answering our research question and hypotheses has the challenging task of balancing a diverse set of question with a formulation that is not too difficult to understand for foreign youth yet retains the core of what it is trying to measure. The first variable we are interested in is FL, our dependent variable. Based on the criticism of Alsemgeest (2015), the goal of the survey is to measure basic FL instead of sophisticated FL. That is where we encounter the first obstacle. Even when looking at the big three from Lusardi and Mitchell (2011), arguably the shortest and simplest form of the FL measure, concerns that the foreign youth could not understand the questions persisted. Therefore, it was decided to reshape the question in such a way that the respondents are asked to rate their own knowledge on a 5-point likert scale for each of the three topics tackled in the questions from Lusardi and Mitchell (2011). These are interest, inflation, and stocks.

The next survey questions concern our independent variables. The FA measure is taken from Pintye and Kiss (2016) and consists of three items with a 7-point likert scale. Pintye and Kiss (2016) code these items as negative and positive attitude, ranging from -3 to 3. To ensure consistency between the measures, it was decided to code these items as ranging from 1 to 7, adding the scores of the three items and then dividing them by 3.

For FB, three items were taken from Zhu (2020b) and put on a 7-point likert scale for consistency with the measure of FA. The measure of Zhu (2020b), using questions on healthy FB, originally consisted of 6 items but 3 of these were removed because they were considered inappropriate for the target group. The scores for these items are also added up and divided by 3.

The measure of FWB provides the next challenge. Our sample consists of a highly diverse group with many different backgrounds, cultures, and norms. Existing measures of FWB fail to capture the unique position many within this demographic have, which is why a different measure was created. This new measure gives the option to answer yes, no, and does not apply on a set of 5 questions that are more relevant for foreign and non-foreign youth within the Netherlands. These

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answers are coded as 1, 2, and 0 respectively and then added up and divided by the number of questions.

Lastly, the survey includes demographic questions to be used as control variables. There are questions on gender, age, nationality, siblings, religion, and employment status. On top of that, the period that education in the Netherlands was received is used to create the control variable “integration time” and living situation with parents is used as a control variable for the effect of “parents”. “Position family” is a control variable created by comparing the ages of the respondents with that of their siblings to determine their position within the family. The final control variable was a measure to test the cognitive capabilities of the respondents, used by Frederick (2005), which consists of three questions, the answers of which are added up and then divided by 3.

Migration status was not operationalized in the survey. Instead, the location at which the survey was conducted allowed for an easy separation between students with and without a migration background, noted down as a binary value of 0 and 1 respectively during data processing.

### **3.3 Data collection**

For the data collection, physical surveys were created and handed out a high school consisting of regular classes and at three schools that consist of ISK classes, which are international transition classes, in the city of Apeldoorn in the Netherlands. The identity of these schools will remain anonymous as to ensure full anonymity of the respondents. The age of all the students in both types of classes falls somewhere between 12 and 21 years, which is an appropriate age for research focused on adolescents. Given ethical concerns surrounding informed consent of minors, it has been decided to only include responses from those aged 16 and higher. An informed consent form was also created for that purpose. On the high school there are about 8 classes with a minimum of 20 students in them, giving us approximately 160 potential respondents. For the schools with ISK classes, total classes with ages 16 and older are around 9 with a minimum of 15 students each, making for approximately 145 potential respondents.

After contacting the schools, teachers were approached and informed about the goal of the study and were given the surveys and informed consent forms. The teachers were then asked to inform their students and hand out the survey and informed consent forms during one of their lessons. For the teachers with international students in their classes, extra attention was drawn to the importance of having the students fill out the survey themselves without getting any help from

their teachers as a possible result of a language barrier. To further limit the possible influence teachers could have on the results, the survey and informed consent forms were translated to English, Dutch, Arabic, Turkish, and Tigrinya with the help of employees of these schools. These languages were determined to be the most common among the students.

The teachers from all school were asked to gather the filled in surveys and consent forms at the schools' receptions where they could be collected. The surveys were distributed to the schools around 20<sup>th</sup> of May and were collected up till the 14<sup>th</sup> of June. In the end, 102 surveys and informed consent forms were collected.

### **3.4 Data analysis**

Data collected was processed through excel to the statistical program R where data analysis would take place. After a process of ordering, renaming, and cleaning the data, summary results were produced to give us information about the descriptive statistics that we were interested in, after which we performed Mann-Whitney tests to answer H1a, H1b, H1c, and H1d. Next, we use Cronbach's alpha to look at the items of our survey. A MANOVA test is used to see which of the control variables are significant and should be included in the model. With this model, linear regression analysis is performed both with and without interaction terms between migration status and the economic outcomes FA, FB, and FWB. This is done to answer H2a, H2b, and H2c. Besides these tests, the OLS assumptions were tested using plots, a Breusch-Pagan Test, a Boxcox transformation, a Shapiro-Wilk test, variance inflation factors (VIF), and pearson correlation test. Lastly, a power test was performed.

## **4 Results**

### **4.1 Descriptive statistics**

After removing the responses that were incomplete from the 102 responses we had, we are left with a total of 94 survey responses. 54 of these were collected from regular classes and 40 from the international transition classes. Ages ranged from 16 to 20. With 45 respondents being 16, this was the most common age. This was closely followed by 39 respondents being 17. From the

remaining respondents, 9 of them were 19 years and only a single respondent was aged 20. 52 respondents were male and 42 were female. Approximately every 2 out of 3 respondents were religious with 34 respondents not being religious. Of those being religious, 31 were Islamic, 27 were Christians, 1 was a theist, and 1 was Yazidis. 54 of the respondents had a job and 40 did not. It was also found that 19 respondents had requested family reunification and that 16 respondents had some form of financial responsibility for their family.

TABLE 1

<b>descriptive statistics</b>					
Statistic	N	Mean	St. Dev.	Min	Max
FL	94	2.684	0.840	1.000	5.000
FWB	94	1.843	0.276	1.000	2.400
FA	94	4.450	1.288	1.000	7.000
FB	94	5.213	1.432	1.000	7.000
Cogni	94	0.500	0.423	0.000	1.000

TABLE 2

<b>descriptive statistics migration background</b>					
Statistic	N	Mean	St. Dev.	Min	Max
FL	40	2.375	1.013	1.000	5.000
FWB	40	1.645	0.331	1.000	2.400
FA	40	4.450	1.399	2.000	7.000
FB	40	4.683	1.601	1.000	7.000
Cogni	40	0.150	0.282	0.000	1.000

TABLE 3

<b>descriptive statistics non-migration background</b>					
Statistic	N	Mean	St. Dev.	Min	Max
FL	54	2.914	0.598	1.000	4.000
FWB	54	1.989	0.046	1.800	2.000
FA	54	4.451	1.213	1.000	7.000
FB	54	5.605	1.158	1.000	7.000
Cogni	54	0.759	0.307	0.000	1.000

Table 1 gives the descriptive statistics of the dependent variable, independent variables and of the control variable cognitive capabilities. The descriptive statistics when separated based on migration background can be seen in table 2 and 3. Looking at FL, the average score was 2.684, on a scale ranging from 1 to 5. This score can be considered low as it indicates that most of the time respondents reported that there was more they did not know than they did know about the financial topics included in the survey question. When comparing this statistic between different

demographic groups, we can see that there is some variance. Namely, there is a difference between those with and without a migration background. Those without a migration background scored 2.914 while those with a migration background scored 2.375 which indicates a lower self-reported FL among respondents with a migration background compared to those without a migration background. Average FWB, a score between 1 and 2, was a high 1.843. This score shows that most of the respondents currently live in a stable financial condition. Among respondents with a migration background, this score was 1.645 compared to the score of 1.989 of those without such a background. FA was on average 4.450 on a scale from 1 to 7, indicating a slight overall positive FA of the respondents. The scores were 4.451 and 4.450 for those with and without a migration background respectively. The average score for FB, again ranging from 1 to 7, was a high 5.213 which shows that positive FB is common among the respondents. The score for respondents with a migration background was 4.683, a score of 5.605 for those without a migration background. Lastly, average score on the questions measuring cognitive capabilities, a score between 0 and 1, was exactly 0.500. A significant difference can be seen when making a comparison based on migration background. Those without a migration background score a 0.759 while those with a migration background scored a 0.150.

## 4.2 Reliability, validity, and OLS assumptions

Following the basic descriptive statistics of the previous section, we now continue to the preparation of the data for regressions. The first step in this process is to look at the individual items of the survey question. Using Cronbach's alpha, we can measure the internal consistency between the survey items. A high internal consistency would indicate that each of the survey items is measuring the same thing. A low internal consistency would indicate that some of the survey items might not fit well within the survey and their removal should be considered. The acceptable level of Cronbach's alpha is generally considered to be 0.70 or higher (Miečinskienė et al., 2023), although 0.6 is seen as an acceptable level for exploratory studies in another case (Rahman et al., 2021). The items for FL had an alpha of 0.68, the items of FB had an alpha of 0.78, and the items testing cognitive capabilities had an alpha of 0.8. Each of these items thus show an acceptable level of internal consistency, although the alpha for FL would preferably be somewhat higher. This alpha could be increased to 0.81 if the last item were to be removed but given the low number of items, this decision was not made. Cronbach's alpha of the measure for FWB was 0.64. Although this

could be considered acceptable, a level closer to that of 0.70 is still preferred. For that reason, and because this measure consists of 6 items, item 1 of the measure of FWB was removed, raising Cronbach's alpha to 0.69. The measure for FA had an alpha of 0.57, a level even lower than the acceptable level for exploratory studies. However, removing any item of this measure would not increase the alpha of this measure and it would also further decrease the size of an already small measure. Being close to 0.6, this measure might still be considered satisfactory which is why it is still included in the model. However, considering the notion that a higher alpha would have been preferred, this measure will be watched with a bit of suspicion.

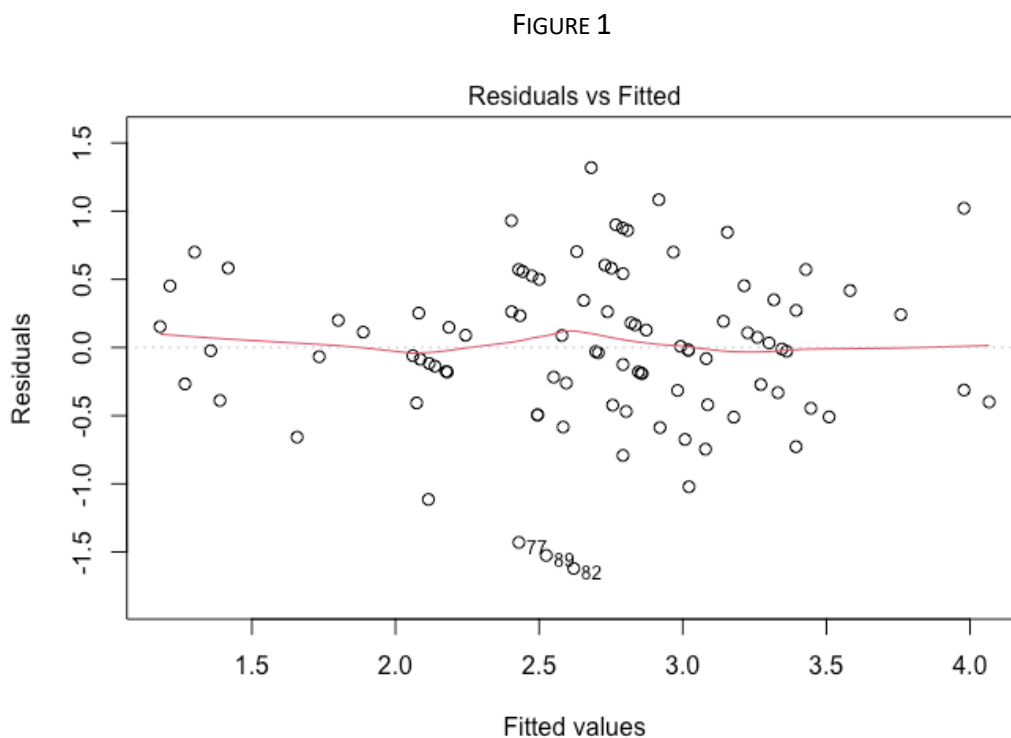
Having assessed the items in the survey, we then move on onto the control variables. Using a MANOVA test where we take the variables that we are mainly interested in as dependent variables, we can investigate which of the demographic questions included in the survey create a statistically significant control variable. The variables we are mainly interested in are FL, FB, FA, and FWB. If a control variable is at least statistically significant at the 10% level it will be included in the model used for linear regression. Additionally, it is tested if migration status is significant for any of these variables. The significances found in this test can be seen in table 4 below.

TABLE 4

	Df	Pillai approx	F num	Df	den Df	Pr(>F)					
data\$M_status	1	0.52562	21.6065	4	78	5.027e-12	***				
data\$employ	1	0.05065	1.0404	4	78	0.391895					
data\$gender	1	0.15938	3.6971	4	78	0.008274	**				
data\$age	1	0.10191	2.2128	4	78	0.075192	.				
data\$Integration_time	1	0.10144	2.2013	4	78	0.076481	.				
data\$Parents	1	0.16041	3.7257	4	78	0.007930	**				
data\$Sibling	1	0.04497	0.9182	4	78	0.457718					
data\$Position_Fam	1	0.08294	1.7637	4	78	0.144639					
data\$Reli	3	0.25892	1.8891	12	240	0.036329	*				
data\$Cogni	1	0.04245	0.8644	4	78	0.489222					
Residuals	81										
---											
Signif. codes:	0	'***'	0.001	'**'	0.01	'*'	0.05	'.'	0.1	' '	1

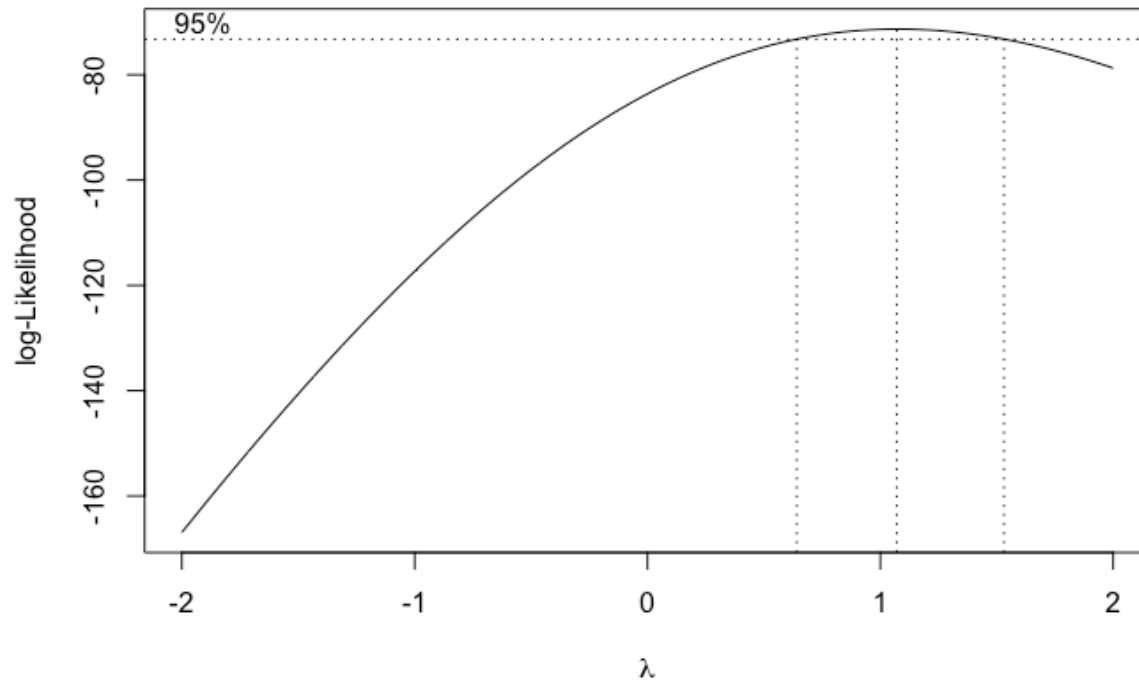
According to these results, “migration status”, “gender”, “age”, “integration time”, “parents”, and “religion” qualify and should be considered. With these control variables and with the independent variables, an initial model taking FL as the dependent variable is created.

The following part is determining whether this model follows the standard OLS assumptions. With the use of diagnostic plots, we can test the model for things like linearity, normality, homogeneity, and independence. Besides visually assessing these assumptions, we accompany the plots with statistical tests to ensure justified interpretations. First, we look at the residuals vs fitted values plot seen in figure 1.



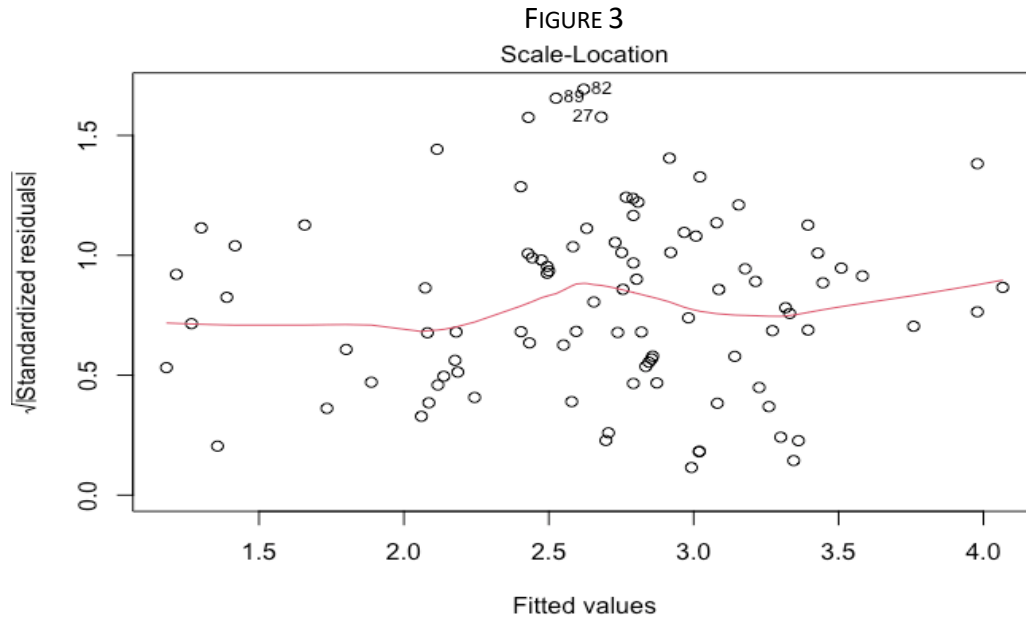
A red line that is, somewhat, horizontal at 0 would indicate that the model is linear given that the residuals follow no distinctive pattern. For this model, we can see that this is the case. Although it must be noted that more data points seem to be clustered towards higher fitted values. To further test the linearity assumption, and to see if we need to transform our model, a Box-Cox transformation is performed which is shown in figure 2.

FIGURE 2

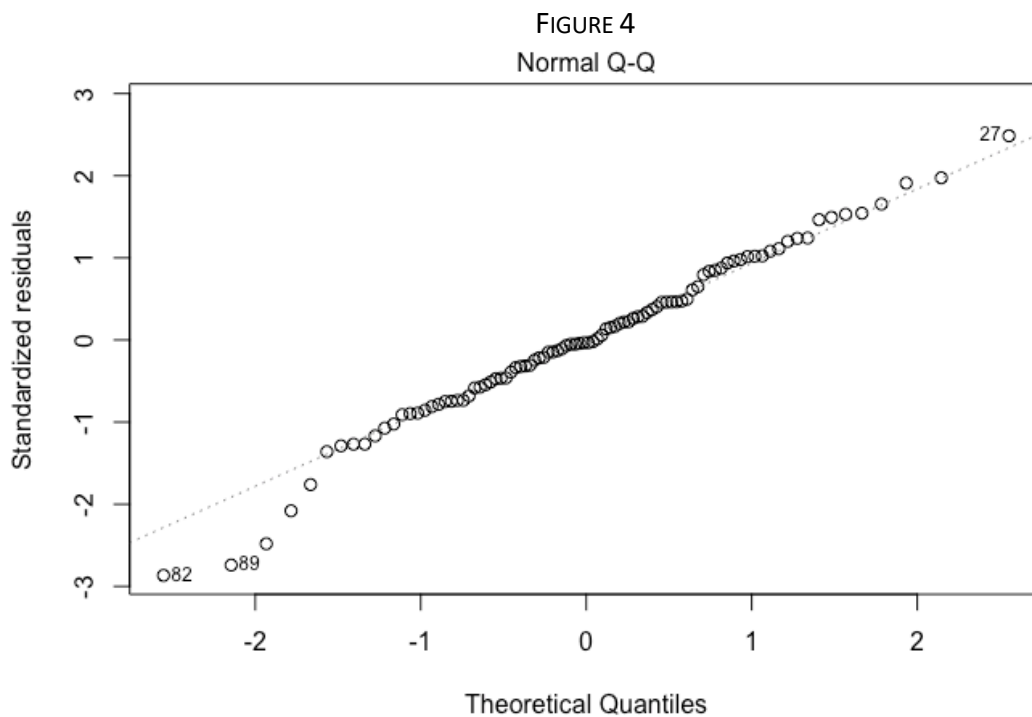


The 95% confidence interval for lambda in this transformed model sits around the value of 1 (1.071), which indicates that the data is approximately normally distributed. This means there is no transformation of the model needed as it can be considered linear.

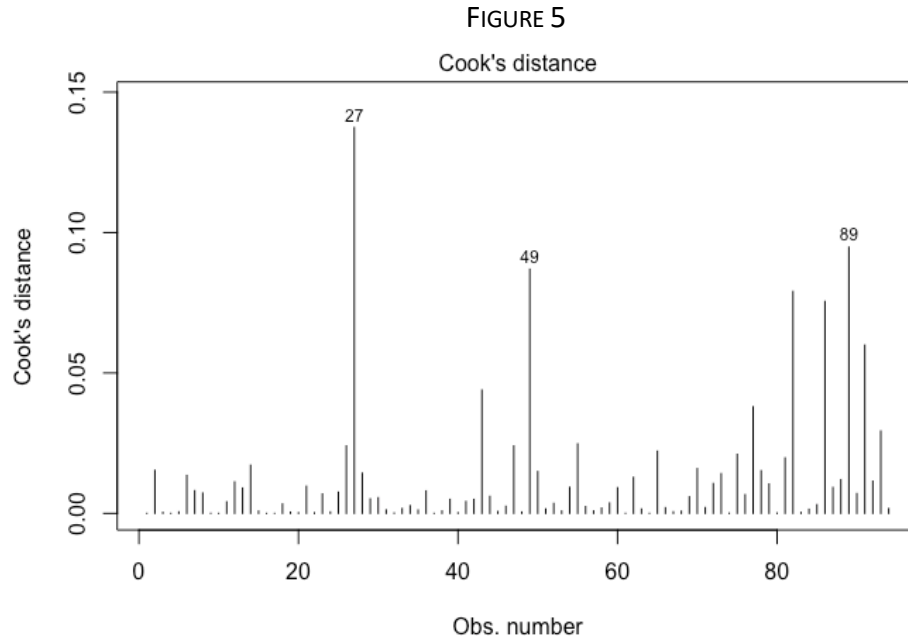
The scale-location plot is used to look at the homogeneity of the variance. A somewhat straight red line and equally spread residuals would again indicate homogeneity. The plot, shown in figure 3, does seem to show this, although the data gives the impression that it behaves strange after the midpoint of the fitted values. We further test for the potential problem of heteroscedasticity using the Breusch-Pagan Test. Heteroskedasticity would indicate that the variance of the error term is non-constant and might be so in a systematic way. The p-value for this test was 0.203, which means we can accept the null hypothesis that there is homogeneity in the model.



Continuing, we now look at the normality of residuals using the QQ plot. If the residuals follow a straight line, we can assume that they are normally distributed. Most of the residuals on this plot do follow this straight line. The tails of the straight line, however, have a few data points deviating from the straight line. The Shapiro-Wilk test is used to confirm if the residuals follow normal distribution. The result is a p-value of 0.302, which is insignificant showing that no normality is present.



Next up we use a plot for cook’s distance to look for any influential datapoints which could be potential outliers. The highest data point has a cook’s distance just below 0.15, showing us that there are no influential cases.



Finally, we check for multicollinearity. Multicollinearity exists when one of the independent variables is correlated with another independent variable. This could be, for example, because the measure for each of these variables are comparable. The effect of these independent variables on the dependent variable becomes vague and intertwined, making them no longer independent. Using a variance inflation factor test (vif), we can determine if there is any collinearity between our independent variables. The results of the vif test are shown in table 5.

TABLE 5

VIF values			
Variables	GVIF	Df	$GVIF^{1/(2*Df)}$
data\$FWB	2.419599	1	1.555506
data\$FA	1.170056	1	1.081691
data\$FB	1.329321	1	1.152962
data\$M_status	7.671155	1	2.769685
data\$gender	1.277714	1	1.130360
data\$age	1.146658	1	1.070821

data\$Integration_time	6.163792	1	2.482699
data\$Parents	1.979530	1	1.406958
data\$Reli	3.655347	3	1.241142

The vif values that are higher than 5 indicate that there is collinearity found. Although no values higher than 5 are found, it is still clear that the variables “migration status” and “integration time” have a higher value than the others. Considering that integration time is completely dependent on whether the respondent has a migration background, we do suspect potential collinearity between these two variables. For that reason, a pearson correlation test was performed. The result ( $p\text{-value} < 2.2e\text{-}16$ ) confirms a significant relationship between these two variables. For that reason, integration time is removed from the model after which all the previous steps were repeated to ensure the removal did not create a violation of the OLS assumptions, which it did not.

### 4.3 Regression analysis

Before we shift our focus to regression analysis, we first want to test H1. We can do this by using four separate one-sided Mann-Whitney U tests to see if there is a statistical difference between the groups with and without migration backgrounds with regards to the variables: FL, FA, FB, and FWB. The Mann-Whitney test is used instead of a t-test because the Mann-Whitney test does not assume equal variances or a normal distribution. The results of these tests show that these two groups are significantly different for FL, FB, and FWB but not for FA. The direction of these differences show that students without a migration background have a higher positive FB, have more FWB, and are more financially literate. More precise results of these tests can be found in table 6 in the appendix.

After the tests performed in the previous section, we are left with a model that does not violate any of the OLS assumption. With this initial model, we perform a stepwise elimination process of insignificant variables while keeping an eye on the OLS assumptions, the significance of the model, and the adjusted R-squared. This process is repeated for every insignificant variable, making sure that none of the previously named values do not alter towards problematic values. Following this process, “age” and “Gender” were removed. Any further removals did not seem to do more than lower the significance of the model and the adjusted r-squared, which is why the elimination process ended here. FA also seems to be highly insignificant, but given its place in the existing

literature, it is kept. This eventually leaves us with table 7, seen below. The plots testing for the OLS assumptions of this final model can be found in the appendix.

Table 7

	<i>Dependent variable:</i>
	FL
FWB	1.426*** p = 0.00004
FA	0.029 p = 0.569
FB	0.247*** p = 0.00001
M_status	0.374* p = 0.072
Parents	-0.090 p = 0.204
Reli1	0.316* p = 0.058
Reli2	-0.011 p = 0.964
Reli3	-0.033 p = 0.942
Constant	-1.432* p = 0.073
Observations	94
R <sup>2</sup>	0.544
Adjusted R <sup>2</sup>	0.502
Residual Std. Error	0.593 (df = 85)
F Statistic	12.696*** (df = 8; 85)
<i>Note:</i>	* p < 0.05 ** p < 0.01 *** p < 0.001

To test H2, we now begin adding the interaction terms for migration status and the variables FWB, FB, and FA while keeping an eye on the OLS assumptions. To avoid a high vif value, these interaction terms are first centred. The first interaction term, between migration status and FA was statistically insignificant and lowered the adjusted r-squared. For that reason, it was not added to the model. The interaction term between FB and migration status did slightly increase the adjusted r-squared, although the interaction term itself was statistically insignificant. For that reason, it is also not included in the model. The interaction term between FWB and migration status further

increased the adjusted r-squared, but again the interaction term was insignificant. Furthermore, adding the interaction term caused high vif values for not only the interaction term itself but also for the variables well-being and migration status. These high values persisted despite centring the interaction term, potentially indicating collinearity between well-being and migration status that was not previously captured. Because of this, the interaction between well-being and migration status was also not included in the model. This leaves us with the same model found previously in figure 1. The power of this model was then tested. The results, for a medium effect size, show a power of 0.782. The test can be found in table 12 in the appendix

## 5 Discussion

The findings of this study have attempted to explore how a migration background might affect FL and its relationship with economic outcomes of students. Following existing literature, these economic outcomes were chosen to be FA, FB, and FWB. The results can thus be divided by discovering how these variables are different for those with and without a migration background and by seeing how the relationships between the variables are altered when the effect of having a migration background is included as a factor.

First off, the combination of the summary statistics with the one-sided Mann-Whitney U test has shown that there is a significant difference between those with and without a migration background when it comes to FL, FB, and FWB. Additionally, it was found that the difference is an overall higher FL, positive FB, and FWB of students without a migration background. These findings confirm hypotheses H1a, H1c, and H1d. While we accept these hypotheses, we do however have to reject H1b as we found no significant difference for FA.

An additional finding within the summary statistics is that 19 respondents have requested family reunification and that 16 respondents even have a financial responsibility for their parents or siblings. While these statistics were initially used to operationalize financial well-being, it could be argued that these statistics might be a better representative of a unique position many migrants have, a position where money plays a different role for these adolescents as they are responsible for ensuring the financial stability in their family or even responsible for financing the process of family reunification.

Next, linear regression was performed to test the interaction between the variables that were created using the survey responses. The model that was eventually created after a process of eliminating the least significant variables, seen in figure 1, was resistant to all concerns surrounding the OLS assumptions. The model had a p-value lower than the 5% level, suggesting the model was significant. The adjusted r-squared was 0.502 which shows that just over half of the variation of FL can be explained by this model. In accordance with existing literature, we can confirm that FWB and positive FB positively affect FL and are significant at the 0.050 level. Interestingly, positive FA does not seem to have a significant effect on FL. A lower Cronbach's alpha compared to the other measure might suggest that FA was incorrectly measured, but as of now we cannot confirm the relationship between FA and FL that some of the literature has suggested.

Religion was measured as the effect of having religion on FL compared to the standard effect measured when not religious. Religion 1, 2, and 3 are the effects of being Christian, Islamic, and having a different religion respectively. We can see that being Christian seems to slightly increase FL, although this effect is only significant at the 10% level. Migration status was found to be significant, although this is only at the 10% level. Even so, its effect on financial literacy would be positive, going against expectations. A possible explanation could be the earlier mentioned financial responsibility found amongst youth with a migration background. This financial responsibility could force these youths to learn the necessary skills to tackle financial issues. The rest of the variables were also found to be insignificant.

To investigating the effect of migration status on the relationship between FL and the economic outcome variables, interaction terms were created and added to the model. Not only did the interaction term between FWB and migration status bring problems of multicollinearity to the model, but all the interaction terms were also found to be insignificant, even at the 10%. Due to this insignificance, we cannot confidently say that migration status affects the relationship between FL and the outcome variables, which is why we must reject H2a, H2b, and H2c.

The power of the model was also tested. The results of this test show that the model has a power of 0.782 which means that in 78% of the cases, the model can correctly find an effect if there is one present. It must be noted that the results of the model do not have a high generalizability. Low amounts of responses combined with concerns surrounding multicollinearity of the survey questions make it difficult to tell if the variables in the model and their relationships truly represent what is happening in the real world. On top of that, the adjusted r-squared of 0.502 signals almost

half of the variation in the model is still unexplained, suggesting omitted variable bias. These omitted variables could potentially be financial stress and internal locus of control, which did appear in previous literature (Doloh & Redzuan, 2023; Indana & Pambekti, 2022) but were left out of the current study.

## 6 Limitations

It is fair to say that this study is not without its flaws. Foremost, the short period in which this study took place has constrained the scale of the study. The current study encountered many obstacles in the data collection process that required a significant amount of time to overcome. More time would have contributed towards solving these issues and additionally would have allowed for more data collection, increasing the reliability of the entire study.

Another shortcoming of this study is related to the survey questions. This study attempted the tough task of balancing both informative questions and a level of difficulty that is not too hard to understand for youth with a migration background yet also too simple for youth without a migration background. In this struggle, some liberties were taken when designing the survey. Some of the items were deemed to be irrelevant for the current sample and were, also in an effort to reduce the length of the survey, removed. Although the values of Cronbach's alpha for each of the items showed acceptable levels of internal consistency, the possible effects from reducing the number of items should always be carefully considered. This is especially the case considering a common critique on the use of measures with limited items in FL studies (Gignac and Ooi (2021), Kunovskaya et al. (2014)). The most common way to measure FL is with a set of five questions, also known as the big five. Gignac and Ooi (2021) claim that this measure has a low level of internal consistency reliability and therefore advocate the use of measures that use more items. However, this recommendation could not be applied because making the survey not too extensive was considered more important.

Besides this point, all items commonly used to measure FL were deemed too difficult for the sample regardless. This view has led to the decision to step away from questions asking FL directly, instead measuring self-observed FL by asking the participants how much they think they know about certain financial topics. Obviously, discrepancies can exist between self-reported and actual

FL but due to the short timeframe and the importance of having simplified questions in the survey, the choice for self-reported data was made.

For FWB, many studies use measures that asks participants their current financial situation in a direct manner (Utkarsh et al., 2020). The sample in the current study consists of youth that is, in general, not fully financially independent. For this reason, many existing measures for FWB are not applicable which is why a new measure was created. The results from the analysis indicated that the measure for FWB was highly correlated with the variable migration status. This could simply indicate that FWB is strongly determined by migration status, or it could indicate a potential unconscious bias during the development of the FWB measure, one where questions were developed with migration background as an important factor in mind. Due to this bias, the questions developed might be specifically asking for things that are more common under youth with a migration background.

The combination of uncertainties surrounding the variables and a lack of an extensive amount of data make the results susceptible to concerns. Generalizability is a key part of research, and this study does not sufficiently attain this. Although the power of the model was acceptable, the explanatory power of the model is still likely to be subject to omitted variable bias, potentially due to the exclusion of financial stress and locus of control.

Lastly, all the collected responses came from schools located in approximately the same area in the Netherlands. This study does not consider possible difference between regions, both within the Netherlands and on an international scale.

## 7 Recommendations

The findings have showcased that there are differences between students with and without a migration background. Although it seems that people with a migration background have a lower overall FL, FB, and FWB, future research should explore this idea to a further extent. Using more extensive data and developing a more robust survey that correctly operationalizes the variables and is better suited for both migrant and domestic youth should be key. A closer look should especially be taken at the measure of FA as the findings in this paper seem to contrast the findings found in

previous research. Additionally, new studies should also consider including financial stress and locus of control into their analysis.

Although having a migration background did not seem to significantly alter the relationship between FL and the economic outcome variables, future research should still try to reconfirm this using improved or different methods, more data, and varied contexts. The slightly significant negative relationship found between migration status and FL despite finding low FL among students with a migration background further fuels the notion that the relationship is yet to be fully understood. The facts remain that youth with a migration background is a vulnerable group within our society, one where the potential impact of FL should not be underestimated. Findings on family reunification and financial responsibility of migrants supplement the notion that high FL could be favourable for this demographic. Future studies should also incorporate this form of responsibility more deeply into the analysis.

On the societal level, both policymakers and teachers should take note of the simple fact that on average, self-reported FL can still be considered low. This is especially the case when comparing for migration background. These basic descriptive statistics should be enough concern for both policymakers and teachers to at least consider improvements of FL education to reap the benefits it could bring to this population.

## 8 Conclusion

The aim of this empirical study was to investigate if the education system should change to incorporate differences between youth with and without a migration background when it comes to FL. The findings show lower FL, FB, and FWB for youth with a migration background. Combining this with the fact that a financial responsibility for family can often be found among youth with a migration background suggests potential benefits of raising the FL of this group, thus making changes in the education system desirable. How these potential benefits can be defined was tested by studying how the relationship between FL and the economic outcome variable are affected by a migration background. The insignificant results mean we cannot explain these benefits, although the literature has implied these to be increased positive FB, positive FA, and FWB, two of which we confirmed to be low amongst youth with a migration background.

The arguments made in this paper should be taken with a grain of salt, as doubts surrounding the sample size and correct measurement instruments make generalization questionable. Future research is advised to develop a better measure for each of the variables that is more suitable for a younger foreign audience. Besides measurement improvements, future research is recommended to aim for a larger sample, try out different contexts, test for more potentially significant variables, and take a more in-depth exploration of financial responsibility as a factor found among youth with a migration background.

Despite its flaws, this study has contributed to literature on financial literacy by retesting findings on the relationship between FL and economic outcome variables, exploring these relationships with a younger audience, and by including youth with a migration background, the last of which does not appear to have been done before. In the current age, FL is an important part of someone's capabilities given the positive outcomes it can lead to. With most things learned at younger age being the things we take with us when we get older, there can be no doubt that educating FL at this early stage is crucial. Having made one of the first attempts at including youth with a migration background into this discussion, we can only hope for a future with high and equal financial capabilities among all its youth, a new generation that is ready for whatever financial dilemmas the future may bring.

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# 10 Appendices

## 10.1 Appendix A, Informed Consent Form

# Toestemmingsformulier

Radboud Universiteit



Welkom bij mijn onderzoek!

Voor dit onderzoek ben ik geïnteresseerd in de financiële kennis en het gedrag van jongeren. Hiervoor vraag ik jou de enquête in te vullen. Ik zal de informatie die je mij geeft vertrouwelijk behandelen.

De enquête vraagt ongeveer 10 minuten van je tijd. Jouw deelname aan dit onderzoek is vrijwillig en je mag op elk moment stoppen gedurende het onderzoek. Wanneer je vragen hebt kun je contact met mij opnemen via: [jari.vannorel@ru.nl](mailto:jari.vannorel@ru.nl)

Door onderstaande keuzen aan te vinken ga je akkoord met:

Dat je deelname vrijwillig is.

Dat je 16 jaar of ouder bent.

Dat je ervoor kunt kiezen om te stoppen gedurende het onderzoek.

Ik ga akkoord

Ik ga niet akkoord

Naam: ..... Geboortedatum :.....

Handtekening: .....Datum: .....

***Verklaring uitvoerend onderzoeker***

Ik verklaar dat ik de deelnemer juist heb geïnformeerd over het onderzoek en dat ik mij houd aan de richtlijnen voor onderzoekers zoals verwoord in het protocol van de Ethische Toetsingscommissie Rechtsgeleerdheid en Managementwetenschappen.

Naam: Jari van Norel

Handtekening:



Datum: 01-05-2024

## 10.2 Appendix B, Financial Literacy Survey

### Enquête financiële kennis

Dank je wel voor je deelname. De antwoorden worden gebruikt om het onderwijs over financiële kennis te verbeteren. Soms zijn meerdere antwoorden mogelijk.

1. Hoe schat jij je kennis in over de volgende onderwerpen?

	Daar weet ik niets van	Daar weet ik weinig van	Daar weet ik een beetje van	Daar weet ik veel van	Daar weet ik alles van
Rente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inflatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aandelen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Geef je mening over de volgende stellingen:

	Helemaal mee oneens	Oneens	Een beetje oneens	Neutraal	Een beetje eens	Eens	Helemaal mee eens
Over het algemeen: Ik leef voor vandaag	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<b>Het is</b>	0	0	0	0	0	0	0
<b>beter om</b>							
<b>geld uit te</b>							
<b>geven dan</b>							
<b>te sparen</b>							

<b>Geld is er</b>	0	0	0	0	0	0	0
<b>om uit te</b>							
<b>geven</b>							

3. Geef je mening over de volgende stellingen:

	<b>Helemaal</b>	<b>Oneens</b>	<b>Een</b>	<b>Neutraal</b>	<b>Een</b>	<b>Eens</b>	<b>Helemaal</b>
	<b>mee oneens</b>		<b>beetje</b>		<b>beetje</b>		<b>mee eens</b>
			<b>oneens</b>		<b>eens</b>		

<b>Ik zet geld</b>	0	0	0	0	0	0	0
<b>opzij voor</b>							
<b>gebruik in de</b>							
<b>toekomst</b>							

<b>Ik zet geld</b>	0	0	0	0	0	0	0
<b>beschikbaar</b>							
<b>voor</b>							
<b>noodgevallen</b>							

<b>Ik let goed op</b>	0	0	0	0	0	0	0
<b>hoeveel geld ik</b>							
<b>uitgeef</b>							

	Ja	Nee	Niet van toepassing
<b>4. Geef aan of de volgende stellingen voor jou kloppen</b>			
Is er altijd ontbijt?	0	0	0
Ga je naar de voedselbank?	0	0	0
Is er geld om cadeautjes te kopen?	0	0	0
Is er geld om genoeg kleding te kopen?	0	0	0
Heb je een baan?	0	0	0
Heb je een financiële verantwoordelijkheid voor je ouder(s)/broers en zussen?	0	0	0
Heb je gezinshereniging aangevraagd?	0	0	0

5. Een pen en een schrift kosten samen 1,10 euro. Het schrift kost 1 euro meer dan de pen, hoe duur is de pen? \_\_\_\_\_ cent

Als het 5 machines 5 minuten kost om 5 telefoons te maken, hoelang duurt het voor 100 machines om 100 telefoons te maken? \_\_\_\_\_ minuten

In een vijver zitten waterplanten. Elke dag verdubbelt de hoeveelheid planten in de vijver. Na 48 dagen zit de vijver vol met planten. Hoelang duurde het voordat de vijver voor de helft gevuld was met planten? \_\_\_\_\_ dagen

6. Wat is je geslacht:

- Man
- Vrouw
- Anders

7. Hoe oud ben je?

\_\_\_\_\_

8. Wat is je nationaliteit?

\_\_\_\_\_

9. Hoe lang krijg je onderwijs in Nederland?

- Minder dan 1 jaar
- Tussen 1 en 2 jaar
- Tussen 2 en 3 jaar
- Langer dan 3 jaar

10. Geef hieronder je woonsituatie aan:

- Ik woon met beide ouders
- Ik woon met 1 ouder
- Ik woon bij familie/gastgezin
- Ik woon zonder ouders

11. Heb jij broers/zussen?

- Ja
- Nee

Zo ja, hoe oud zijn jouw broers/zussen? (schrijf alle leeftijden op):

\_\_\_\_\_

12. Welke religie heb je?

- Christendom
- Islam
- Anders: \_\_\_\_\_
- Geen: \_\_\_\_\_

### 10.3 Appendix C, Results R

Table 6

Wilcoxon rank sum tests with continuity correction			
data_NonMig\$FL and data_Mig\$FL	data_NonMig\$FWB and data_Mig\$FWB	data_NonMig\$FA and data_Mig\$FA	data_NonMig\$FB and data_Mig\$FB
W = 1485	W = 1870.5	W = 1110	W = 1457.5
p-value = 0.0009049	p-value = 6.288e-12	p-value = 0.4104	p-value = 0.001881

FIGURE 6

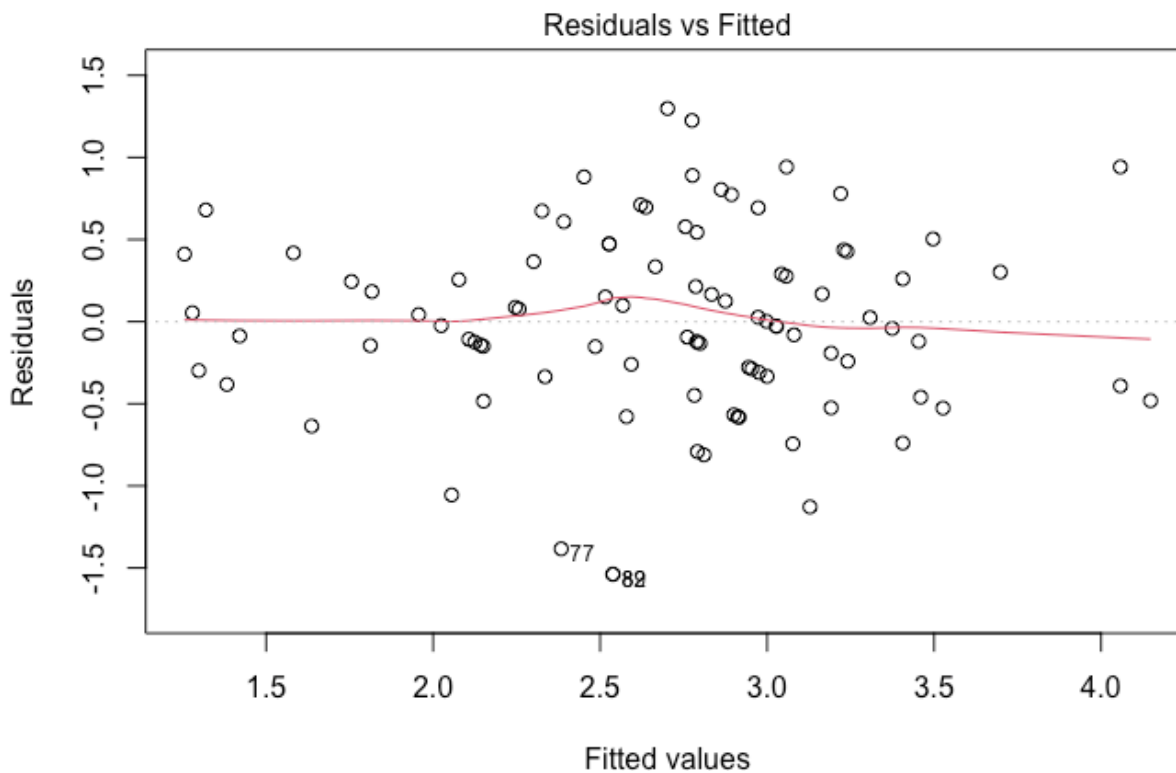


FIGURE 7

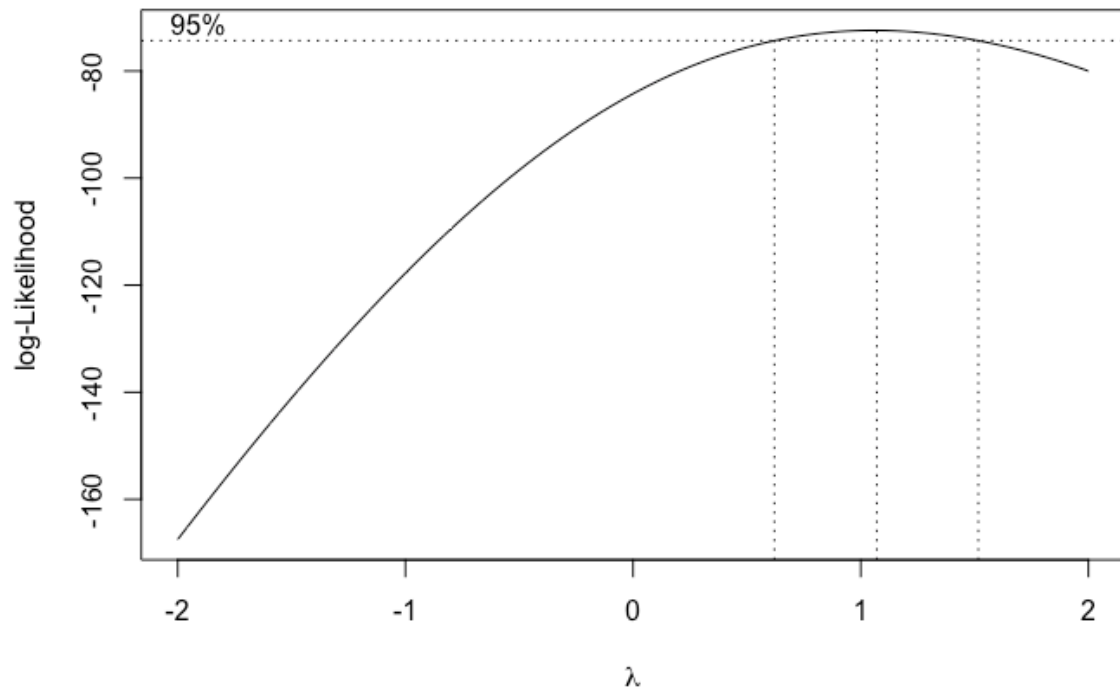


FIGURE 8

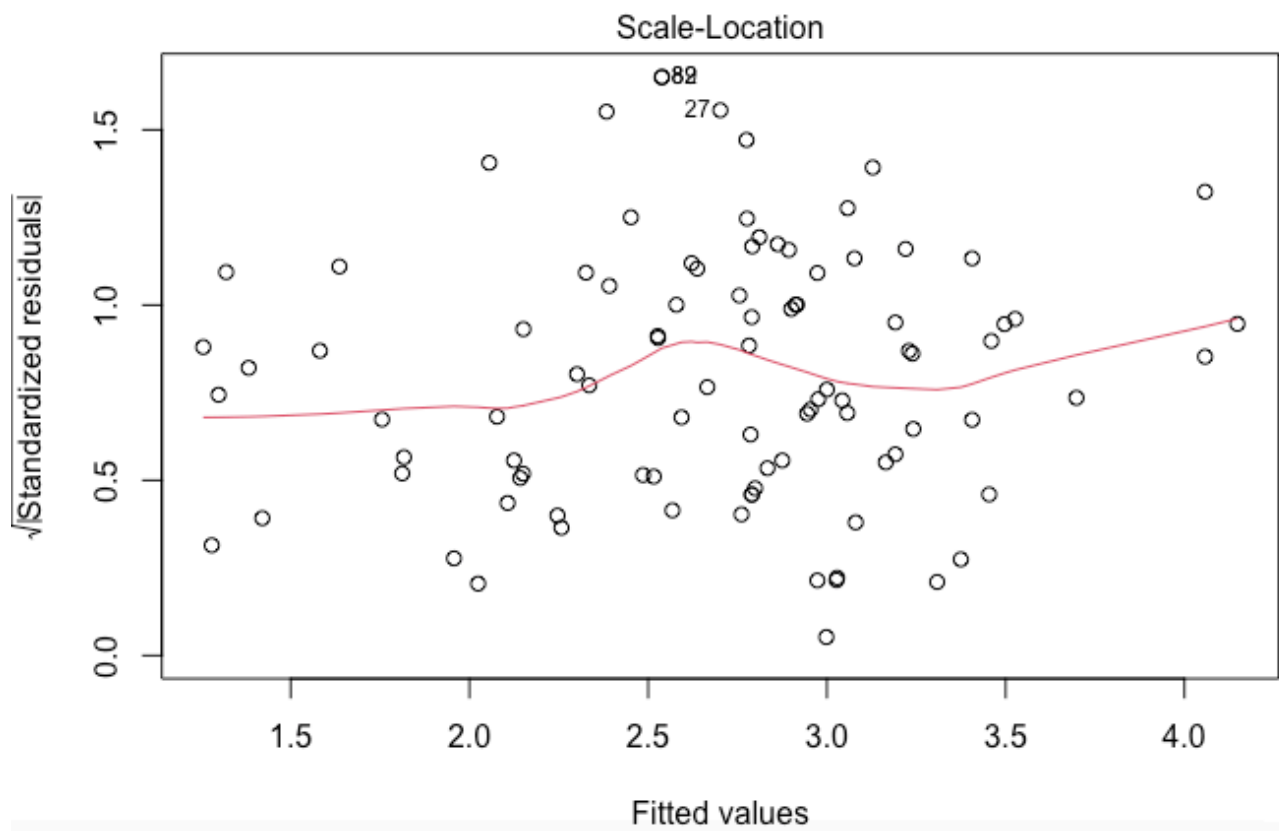


FIGURE 9

Normal Q-Q

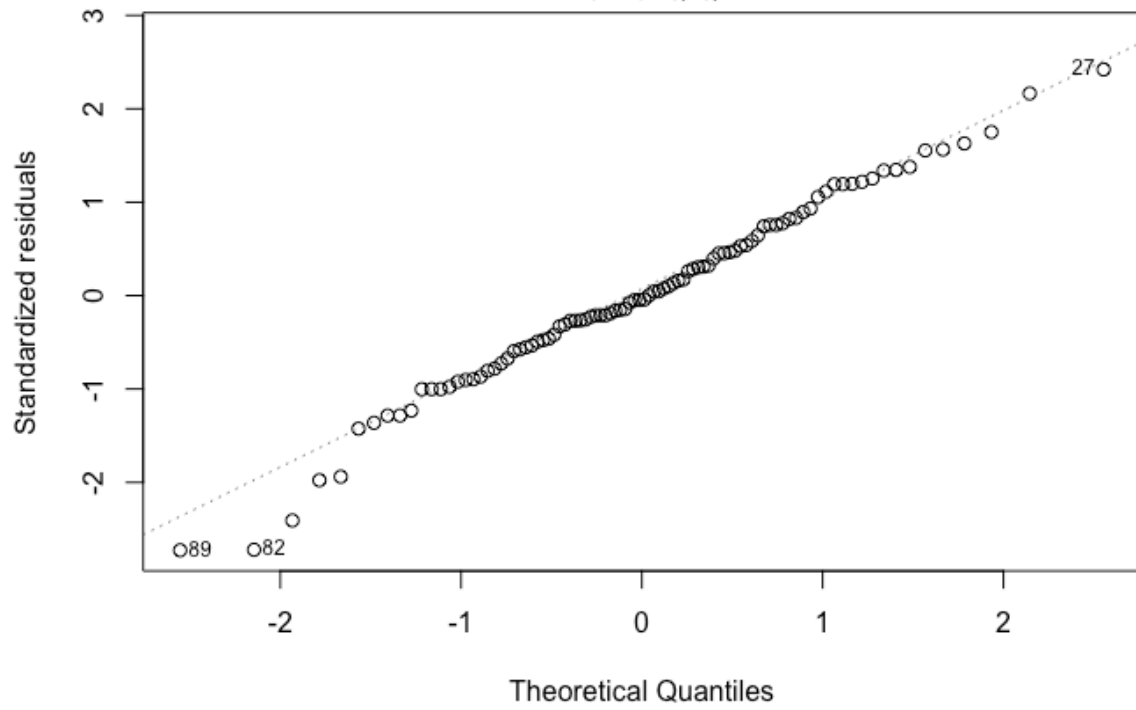


FIGURE 10

Cook's distance

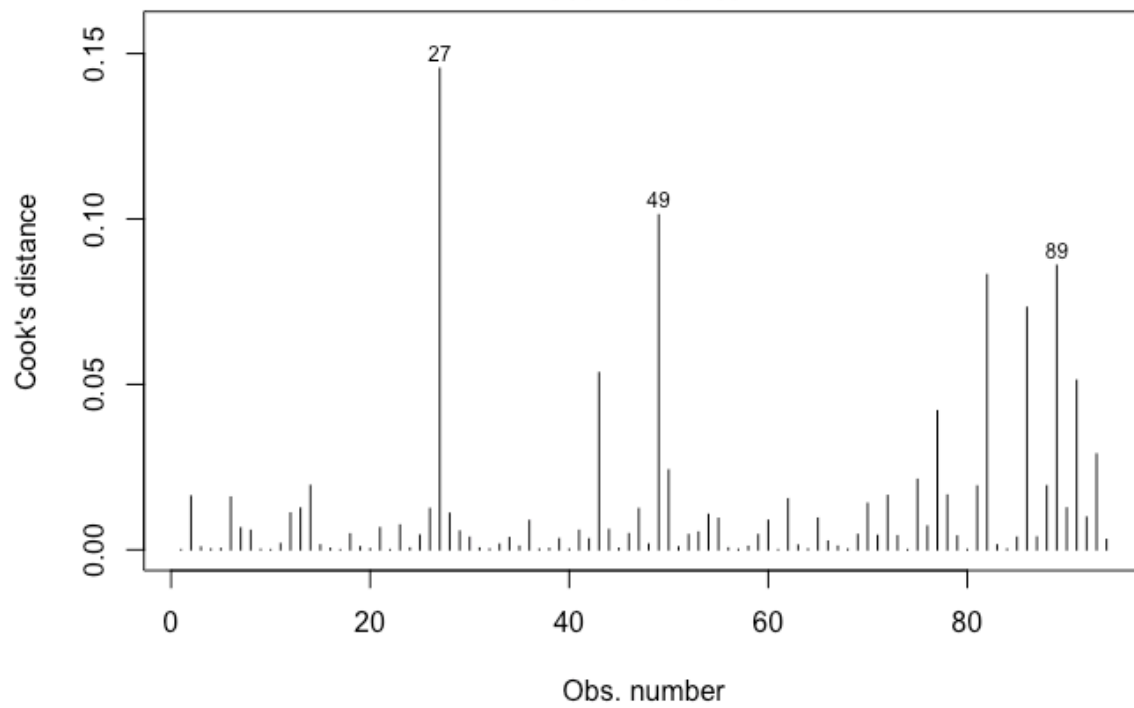


TABLE 8

VIF values			
Variables	GVIF	Df	$GVIF^{1/(2 \cdot Df)}$
data\$FWB	2.141631	1	1.463431
data\$FA	1.093008	1	1.045470
data\$FB	1.249093	1	1.117628
data\$M_status	2.750841	1	1.658566
data\$Parents	1.936185	1	1.391469
data\$Reli	3.348785	3	1.223154

TABLE 9

Multiple regression power calculation	
u	6
v	87
f2	0.15
sig.level	0.05
power	0.7823766