



**University of  
Zurich<sup>UZH</sup>**

## Master Thesis

# A Comprehensive Validation of Personality Measures Across 11 Surveys

Submitted to  
**Prof. Anne Ardila Brenøe**

Department of Economics  
**University of Zurich**

Zurich, 27<sup>th</sup> March 2020

**Author:** Wolfram Ritter

**E-Mail:** wolfram.ritter@uzh.ch

**Student ID:** 14-727-044

**Field of Study:** Economics

## **Abstract**

In this thesis I investigate if personality measures elicited in eleven different surveys reasonably predict socio-economic and demographic outcomes. Further I explore whether cross survey comparisons can be made using these different data sources. My findings suggest that even though different surveys use different conceptual frameworks to measure personality, the vast majority of these measures predicts socio-economic and demographic outcomes in a way one would expect based on previous literature findings. Therefore, I conclude that cross-country comparisons can be made using these data sources.

# Contents

<b>List of Tables</b>	<b>iii</b>
<b>List of Figures</b>	<b>iii</b>
<b>1 Introduction</b>	<b>1</b>
<b>2 The Different Aspects of Personality</b>	<b>2</b>
2.1 Personality and its Interconnection . . . . .	3
2.2 Personality and Gender . . . . .	5
2.3 Personality and Health Behavior . . . . .	7
2.4 Personality and Career Outcomes . . . . .	9
<b>3 Data</b>	<b>15</b>
3.1 Personality Trait Measures . . . . .	16
<b>4 Empirical Strategy</b>	<b>18</b>
<b>5 Empirical Analysis</b>	<b>20</b>
5.1 An Empirical Assessment of the Validity of Personality Traits Elicited in Eleven Surveys . . . . .	21
5.2 Cross-Survey Comparison . . . . .	25
<b>6 Robustness</b>	<b>32</b>
<b>7 Conclusion</b>	<b>34</b>
<b>8 Acknowledgements</b>	<b>iv</b>
<b>9 Appendix</b>	<b>v</b>
9.1 Brief Survey Descriptions and Descriptive Statistics . . . . .	v
9.2 Transformation of Likert Scales . . . . .	xxi
9.3 Intercorrelation between Personality Traits for each Survey . . . . .	xxii
9.4 Correlation between Personality, Socio-Economic and Demographic Outcomes by Survey . . . . .	xxxii
9.5 NLSY79 Risk Tolerance Measures Life Outcome Regressions . . . . .	.xxxix
9.6 Patience Cross Country Analysis . . . . .	xl
9.7 Statutory Declaration . . . . .	xli
<b>10 References</b>	<b>xlii</b>

## List of Tables

1	Intercorrelation between Personality Traits . . . . .	4
2	Expected Correlation between Personality, Socio-Economic and Demographic Outcomes . . . . .	7
3	Number of Respondents for each Personality Trait by Survey . . . . .	16
4	Elicitation of Personality Traits . . . . .	17
5	Summary of (1): Intercorrelations between Personality Traits and (2): Correlations between Personality Traits and Demographic and Socio-Economic Outcomes consistent with Literature . . . . .	22

## List of Figures

1	Correlation between being Female and Personality . . . . .	26
2	Correlation between Smoking and Personality . . . . .	27
3	Correlation between BMI and Personality . . . . .	28
4	Correlation between Education and Personality . . . . .	29
5	Correlation between Income and Personality . . . . .	30
6	Correlation between Self-Employment and Personality . . . . .	31

# 1 Introduction

Personality plays a crucial role in social and economic interaction and behavior. Therefore, it is important to understand individual differences with respect to these aspects to predict and explain economic and social behavior.

On the one hand, in the field of personality psychology, with the introduction of the Five Factor Model (commonly referred to as Big Five Personality Traits) and the concept of Locus of Control (LoC), researchers have created a consistent conceptual framework to measure and assess personality and link it to life outcomes (Costa & McCrae, 1985; Rotter, 1966). On the other hand in the field of economics only in incentivized experimental settings there seems to be a consensus on how to elicit economic preferences. Only recently, with the Global Preference Survey (GPS) Module, Falk, Becker, Dohmen, Huffman, and Sunde (2016) have created a consistent conceptual framework to measure economic preferences such as risk tolerance, trust or patience in surveys. However, many of the longitudinal surveys have not implemented the GPS and use different approaches as to how they gather these different measures. Naturally, this poses the question whether all of these different survey measures capture the same thing.

In this paper I address these concerns and investigate if personality measures and economic preferences elicited in surveys predict real-life behavior and socio-economic outcomes. More closely, I investigate eleven different surveys and examine if the measures at hand reasonably predict socio-economic outcomes and real-life behavior. Further, I investigate whether cross-country comparisons can be made using these different data sources.

My results suggest that even though there are multiple ways of measuring personality across surveys these different measures, for the most part, reasonably capture what they are intended to measure and predict socio-economic and demographic outcomes in a way one would predict based on previous literature findings. Further, the results across the different surveys are quantitatively very similar and based on these results it is reasonable to make cross-country comparisons using these data sources.

Personality has been shown to be associated with several demographic variables, socio-economic outcomes and the personality traits themselves are also related. For instance, Becker, Deckers, Dohmen, Falk, and Kosse (2012) have shown that economic preferences and the Big Five personality traits as well as locus of control are related. Their findings suggest that economic preferences and psychological personality traits can be seen as complements. Further, economic preferences as well as psychological personality traits have been shown to be associated with gender, health behavior and career outcomes (Becker et al., 2012; Dohmen et al., 2011; Falk et al., 2018; Goldberg, Sweeney, Merenda, & Hughes Jr, 1998)

This paper makes three main contributions to the economics literature. Firstly, to my knowledge this is one of the first papers that attempts to validate and compare economic

preferences, the Big Five personality traits and locus of control across multiple surveys. Secondly, it illustrates the importance of inter-disciplinary thinking by integrating psychological measures into the economics literature. Thirdly, through validating these measures researchers have a general understanding on which traits from which survey they can rely on for the future. Additionally, it expands the empirical evidence on correlations between self-employment and psychological measures, which heavily relied on data from the German Socioeconomic Panel (SOEP). For this relationship, I analyze and have data from the Household, Income and Labour Dynamics in Australia (HILDA), the SOEP, the Swiss Household Panel (SHP) and the British Household Panel combined with the UK Household Longitudinal Study (BHPS/UKHLS). Finally, I supplement existing empirical evidence on correlations between trust, the Big Five personality traits, risk tolerance, patience and locus of control, which also heavily relied on data from the SOEP.

This paper proceeds as follows: In the next section I identify the relevant literature which links economic preferences, the Big Five personality traits and locus of control to real life outcomes. Further, I describe the data sources and the empirical framework I use for the validation study. Finally, I present the empirical results, a robustness test and make some concluding remarks.

## 2 The Different Aspects of Personality

For the purpose of convenience and clarity, from here on when I refer to personality I mean economic preferences, the Big Five personality traits and locus of control. Attitude towards risk or more commonly referred to as risk tolerance or risk aversion describes an individual's willingness to take risks or its proneness to avoid risks in a decision making context. In the economics literature patience refers to an individual's willingness to delay instant gratification for a higher future reward. Individuals value consumption in the present more than in the future and therefore discount future rewards. Patience is highly important for economic decision making (Frederick, Loewenstein, & O'donoghue, 2002). In experimental economics patience is most commonly elicited by giving individuals choice lists of lower payoffs now versus higher payoffs in the future. Trust refers to an individual's willingness to trust others, typically financially, in the economics literature (Fehr, 2009). In experimental economics researchers obtain an individual's level of trust by running the "Trust Game" (Berg, Dickhaut, & McCabe, 1995) or the "Gift Exchange Game" (Fehr, Kirchsteiger, & Riedl, 1993). The general consensus in the personality psychology literature is that personality can be categorized into five broader dimensions (Costa & McCrae, 1985, 1992a; Goldberg, 1993; McCrae & Costa, 1987; McCrae & John, 1992; Penley & Tomaka, 2002; Watson & Clark, 1997):

- *Openness to Experience*: an individual's willingness to experience new things, interest in artistic tasks, intellectuality, flexibility and innovative thinking
- *Conscientiousness*: efficiency, dutifulness, hard working, well organized, ambitious and self-disciplined
- *Extraversion*: outgoing, enjoying the company of other people, assertive and passionate
- *Agreeableness*: kindness, selflessness, forgiving, sympathetic and helpful
- *Neuroticism*: worrying, nervous, self-pitying and insecure

In an empirical study DeYoung, Quilty, and Peterson (2007) have shown that these five broader personality dimensions which typically contain fifteen items can be split up into two facets<sup>1</sup> for each personality domain. This shows that even though some individuals might have similar scores for different personality traits they still can differ immensely due to the nature of the constructed variables.

Rotter (1966) established the concept Locus of Control, which is rooted in social learning theory (Rotter, 1954). Generally, it indicates to which extent, individuals believe, they can control outcomes that happen in their life. For instance, individuals who believe they can affect outcomes in their life by themselves typically have a dominant internal locus of control whereas individuals who believe they cannot affect outcomes in their life and these outcomes happen by chance have a higher external locus of control.

## 2.1 Personality and its Interconnection

Before relating personality to socio-economic and demographic outcomes it is important to first identify the interconnection among the personality traits of interest to paint a clear picture of what to expect for the empirical analysis.

Empirical research has shown that the correlations between risk tolerance and trust and trust and patience is positive (Caliendo, Fossen, & Kritikos, 2014; Falk et al., 2018). Using data from the German SOEP Caliendo et al. (2014) have found a negative association between patience and risk tolerance whereas Falk et al. (2018), using the Global Preference Survey, have shown a positive association between patience and risk tolerance. Based on this knowledge, as seen in Table 1, I expect that trust and risk tolerance and trust and patience are positively associated and further expect ambiguous results for the correlation between patience and risk tolerance.

---

<sup>1</sup>Openness: Openness and Intellect; Conscientiousness: Industriousness and Orderliness; Extraversion: Enthusiasm and Assertiveness; Agreeableness: Compassion and Politeness; Neuroticism: Volatility and Withdrawal

Even though the Big Five personality traits were originally meant to be orthogonal empirical research has shown that the traits are correlated (Hirsh, DeYoung, & Peterson, 2009). The associations between the Big Five personality traits have long been investigated and yield relatively consistent results. As seen in Table 1, all Big Five personality traits are negatively associated with Neuroticism, while the intercorrelation between Openness, Conscientiousness, Extraversion and Agreeableness is positive (Mount, Barrick, Scullen, & Rounds, 2005; Van der Linden, te Nijenhuis, & Bakker, 2010).

Table 1: Intercorrelation between Personality Traits

	R	P	T	O	C	E	A	N	LoC
Risk Tolerance									
Patience	( )								
Trust	+	+							
Openness	+	( )	+						
Conscientiousness	−	+	−	(+)					
Extraversion	+	(−)	+	+	(+)				
Agreeableness	−	+	+	(+)	+	(+)			
Neuroticism	−	−	−	(+)	(−)	−	−		
Locus of Control	+	+	+	+	+	+	+	−	

Notes: + refers to positive correlation; − refers to negative correlation; ( ) refers to ambiguous results, when + or − in bracket evidence tends to support one direction

The integration of personality psychology into the economics literature is more recent. For instance, Almlund, Duckworth, Heckman, and Kautz (2011) integrate personality psychology measures into economic models. They conclude that integrating personality psychology measures into economic models and economic research in general is a promising avenue because psychological measures allow for more distinct interpretations of human behavior. Related to this, Becker et al. (2012)’s research suggests that the Big Five personality traits and locus of control can be seen as complements to the economic preferences. Generally, the evidence for correlations between economic preferences and personality traits has not been as thoroughly researched as the relationship between the personality traits themselves (Almlund et al., 2011; Borghans, Duckworth, Heckman, & Ter Weel, 2008).

Openness and Extraversion have consistently been found to be positively associated with risk tolerance. Conscientiousness, Neuroticism and Agreeableness typically have been shown to be negatively associated with risk tolerance (Becker et al., 2012; Borghans, Heckman, Golsteyn, & Meijers, 2009; Nicholson, Soane, Fenton-O’Creevy, & Willman, 2005; Pinjissakikool, 2018).

The relationship between the Big Five personality traits and patience does not show such a clear picture. Daugherty and Brase (2010) have investigated several measures for patience, which are potentially associated with Openness. In their study, they used the 27 item Money



Choice Questionnaire (MCQ) created by Kirby and Maraković (1996), the Consideration of Future Consequences Scale (CFC) by Strathman, Gleicher, Boninger, and Edwards (1994) and the (1) Future, (2) Hedonism and (3) Fatalism Scales by Zimbardo and Boyd (2015). Of these five measures only two scales were statistically significantly associated with Openness: the Hedonistic scale positively implying higher Openness is associated with lower patience and the CFC scale also positively implying higher Openness is associated with higher patience. Taking the other scales into considerations, the authors cannot show a consistent association between Openness and patience. A number of authors have shown that the correlation between Conscientiousness and patience and the correlation between Agreeableness and patience is positive (Becker et al., 2012; Daugherty & Brase, 2010; Manning et al., 2014). Further, Neuroticism has consistently been negatively associated with patience (Becker et al., 2012; Daugherty & Brase, 2010; Hirsh, Morisano, & Peterson, 2008; Manning et al., 2014). Some authors have found no correlation between Extraversion and patience whereas others have found negative correlations between Extraversion and patience (Becker et al., 2012; Daugherty & Brase, 2010; Hirsh et al., 2008).

A number of studies have shown that the correlation between trust, Openness, Extraversion and Agreeableness respectively is positive. Further, Conscientiousness and Neuroticism have been found to be negatively correlated with trust (Becker et al., 2012; Caliendo et al., 2014; Dohmen, Falk, Huffman, & Sunde, 2008). These studies all use data from either the German Socioeconomic Panel or representative experimental data of the German population which does not necessarily represent trust preferences in other countries.

Turning to locus of control, Becker et al. (2012) and Beauchamp, Cesarini, and Johannesson (2017) have found that locus control is positively associated with risk tolerance, patience and trust.<sup>2</sup> Caliendo et al. (2014)’s results indicate that locus of control is positively correlated with Openness, Conscientiousness, Agreeableness, Extraversion and negatively correlated with Neuroticism.

## 2.2 Personality and Gender

One of the most researched and validated variables and its relation to risk tolerance is gender. Numerous studies have shown that men are more willing to take risks than women across different contexts (Borghans et al., 2009; Charness & Gneezy, 2012; Dohmen et al., 2011; Falk et al., 2018). In a meta study that analyzes 150 academic psychology papers Byrnes, Miller, and Schafer (1999) have found that men are consistently more willing to take risks than women. However, more recently Filippin and Crosetto (2016) surveyed the existing experimental literature. They collected data from 54 replication studies of Holt and Laury (2002) gamble lotteries and found that only in less than ten percent of the studies gender

---

<sup>2</sup>A high score indicates internal locus of control and a low score indicates external locus of control

differences existed. This could imply that there is a more complex underlying relationship than just difference in gender.<sup>3</sup> Consequently, I expect that men tend to be more risk tolerant than women in our eleven surveys, because it has been replicated so many times with vastly different elicitation methods.

The relationship between gender and patience has not been researched as extensively as the relationship between risk tolerance and gender. On the one hand, some studies have found that women are less patient than men (Falk et al., 2018; Wang, Rieger, & Hens, 2016). However, the difference tends to be rather small and therefore not economically significant. On the other hand in a meta study including 33 studies Silverman (2003) has found that women are slightly more patient than men. Falk et al. (2018)'s findings suggest that the correlation is country specific. Therefore, I do not expect big gender differences for our surveys and assume that the results concerning this correlation are mostly ambiguous.

A number of studies have investigated the relationship between trust and gender. Whereas Bellemare and Kröger (2007), Falk et al. (2018) and Feingold (1994) have found that men are more trusting than women Alesina and La Ferrara (2002) and Buchan, Croson, and Solnick (2008) have shown the opposite. Other studies have found no statistical difference between trust and gender (Chaudhuri & Sbai, 2011; Croson & Buchan, 1999; Fehr, Fischbacher, Von Rosenbladt, Schupp, & Wagner, 2002). Based on these findings I expect ambiguous correlations across the eleven surveys I investigate.

The relationship between the Big Five personality traits and gender is relatively consistent across different contexts and has long been investigated. Empirical research typically has found mixed results for gender differences for the summarized Openness coefficient (Costa, Terracciano, & McCrae, 2001; Feingold, 1994; Schmitt, Realo, Voracek, & Allik, 2008; Weisberg, DeYoung, & Hirsh, 2011). Men tend to score higher in the openness to experience aspect (intellect) of the summarized Openness measure women tend to score higher on emotional openness (Costa et al., 2001; Feingold, 1994). Therefore, I expect mixed/ambiguous results for the summarized Openness measure in the surveys I investigate.

In a cross-country study Schmitt et al. (2008) have shown that women score higher in Conscientiousness than men in most countries. In a meta analysis Feingold (1994) has shown that gender differences in Conscientiousness tend to be rather small. Vianello, Schnabel, Sriram, and Nosek (2013) have shown that the results might depend on how researchers frame their survey questions. Women scored higher in Conscientiousness when the questions they answered were of explicit nature. When questions were framed implicitly the authors have found no gender differences which might implicate some social norm effect Vianello et al. (2013). Since the surveys I investigate use standardized questionnaires and do not

---

<sup>3</sup>For a potential explanation see Stanton, Liening, and Schultheiss (2011) & Stanton, Mullette-Gillman, et al. (2011)

focus on the explicitness or implicitness of a question I expect women to score higher in Conscientiousness than men.

The majority of research has shown that women are more extraverted than men (Feingold, 1994; Schmitt et al., 2008; Vianello et al., 2013; Weisberg et al., 2011). Typically, men score higher in Assertiveness than women which is one aspect of Extraversion (Feingold, 1994). However, higher Warmth, Positive Emotions and Gregariousness for women dominates this effect (Feingold, 1994). The focus of my analysis lies on the summarized score of Extraversion and therefore I expect women to score higher in Extraversion than men.

Further, the relationship between Agreeableness, Neuroticism and gender consistently shows the same results. Women tend to be more agreeable and more neurotic than men (Costa et al., 2001; Feingold, 1994; Lippa, 2010; Schmitt et al., 2008; Vianello et al., 2013; Weisberg et al., 2011). Consequently, I predict women to score higher in Agreeableness and Neuroticism than men.

Gender differences in the locus of control measure have been investigated since Rotter (1966) established the concept in the literature. Empirical results on this relationship have been mixed. Some authors have found no or small differences in the locus of control measures for women and men (Chubb, Fertman, & Ross, 1997; Rotter, 1966; Strickland & Haley, 1980). In a meta study Sherman, Higgs, and Williams (1997) have concluded that women tend to be more external than men. While Archer and Waterman (1988), analyzing 22 studies, have not found enough evidence to conclude that gender differences exist. Consequently, I expect that gender differences are rather small with a tendency that men tend to be more internal than women. Table 2 summarizes the expected correlations for the surveys I investigate.

Table 2: Expected Correlation between Personality, Socio-Economic and Demographic Outcomes

	Risk Tolerance	Patience	Trust	Open- ness	Conscien- tiousness	Extra- version	Agree- ableness	Neuro- ticism	LoC
Female	—	( )	( )	( )	(+)	+	+	+	(—)
Smoking	+	—	/	0	(—)	(+)	(—)	(+)	/
BMI	+	(—)	/	(—)	—	(+)	(—)	(+)	/
Education	+	+	+	+	(+)	(+)	( )	—	+
Income	+	+	+	(+)	(+)	( )	(—)	—	+
Self-Emp.	+	+	+	+	0	+	0	0	+

+ means positive correlation; - negative; 0 no correlation, ( ) means ambiguous results, when + or - in brackets evidence tends to support one direction; / means no reference in literature.

## 2.3 Personality and Health Behavior

It is commonly known that smoking is one of the major causes for lung cancer. A widely researched topic has been the relationship between smoking and risk tolerance. The empirical evidence for this relationship is consistent and robust across different contexts. Individuals

who smoke are more risk tolerant than non-smokers (Anderson & Mellor, 2008; Dohmen et al., 2011; Falk et al., 2018; Khwaja, Sloan, & Salm, 2006). In contrast, Conell-Price and Jamison (2015)’s results suggest that locus of control (LoC) explains the majority of individual differences and not risk tolerance. However, their sample size was small and only consisted of students enrolled in a Masters of Public Health program. Another important dimension of health behavior are individual’s eating and drinking habits. It is commonly known that junk-food and sugary drinks contain a lot of calories. Unfortunately, most surveys do not precisely ask individuals about their eating and drinking habits. However, Body Mass Index (BMI), even though it is not a perfect measure, can be used as a proxy for these habits since it indicates whether a person is overweight or obese. Obesity has been linked to diabetes type 2, heart diseases, certain forms of cancer and strokes (WHO, 2009). Therefore, it is risky, in a way, to be obese. Empirical evidence overwhelmingly suggests that the correlation between BMI and risk tolerance is positive (Anderson & Mellor, 2008; Conell-Price & Jamison, 2015; Rieger, 2015). Consequently, I expect that risk tolerance is positively correlated with smoking behavior and BMI respectively.

The decision to smoke can be modelled as an inter-temporal choice between instant gratification and better health in the future. This indicates that there might be a connection between smoking and patience. Empirical evidence has demonstrated that the correlation between patience and smoking behavior is negative (Bradford, Courtemanche, Heutel, McAlvanah, & Ruhm, 2017; Chabris, Laibson, Morris, Schuldt, & Taubinsky, 2008; Khwaja et al., 2006; Rustichini, DeYoung, Anderson, & Burks, 2016; Sutter, Kocher, Glätzle-Rützler, & Trautmann, 2013). Another inter-temporal choice between instant gratification and better health in the future are eating and drinking habits. Junk-food and sugary drinks might give a higher instantaneous gratification than a healthy meal and water. The empirical evidence on this is not as clear as one might expect. Some authors find a negative relationship between BMI and patience (Chabris et al., 2008; Komlos, Smith, & Bogin, 2004; Rieger, 2015; Sutter et al., 2013). Burks, Carpenter, Götte, and Rustichini (2012) have found no statistically significant relationship between the two measures and de Oliveira et al. (2016) have found that only obesity ( $BMI > 30$ ) is statistically significantly correlated with patience but not BMI itself. Therefore, I expect that the correlation between patience and smoking behavior is negative and I expect no clear association between BMI and patience.

The most consistently associated Big Five personality trait with smoking behavior is Conscientiousness. Generally, higher Conscientiousness is associated with a lower probability an individual smokes (Lemos-Giráldez & Fidalgo-Aliste, 1997; Lunn, Nowson, Worsley, & Torres, 2014; Malouff, Thorsteinsson, & Schutte, 2006; Rustichini et al., 2016; Vollrath & Torgersen, 2002). Based on this quite robust evidence I predict Conscientiousness to be negatively associated with smoking behavior. For Openness, Extraversion, Agreeableness

and Neuroticism the correlation with smoking is not as consistent as for Conscientiousness. Typically, Openness is not correlated with smoking, Extraversion and Neuroticism tend to be positively associated with smoking and Agreeableness tends to be negatively associated with smoking. However, the findings for these correlations are not always statistically significant and tend to be context dependent (Malouff et al., 2006; Raynor & Levine, 2009; Rustichini et al., 2016; Vollrath, Knoch, & Cassano, 1999). Therefore, I expect that Openness is not correlated with smoking, Extraversion and Neuroticism are positively correlated with smoking and Agreeableness is negatively associated with smoking. I expect some ambiguity for these correlations which I indicated in Table 2.

The most consistently associated Big Five personality trait with BMI/obesity is Conscientiousness (Sutin & Terracciano, 2017). In their literature review Sutin and Terracciano (2017) have found that individuals with higher Conscientiousness scores tend to have a lower likelihood to be overweight. Rustichini et al. (2016) have investigated this connection more closely. Their findings suggest that the main driver of this relationship is the proactive side of Conscientiousness. As for the other Big Five personality traits the association is more complex and context dependent. In the empirical literature there is a tendency of positive associations between Extraversion and Neuroticism and BMI (Brummett et al., 2006; Magee & Heaven, 2011; Sutin & Terracciano, 2017). Further, Openness and Agreeableness tend to be negatively associated with BMI in some studies while others do not find a significant association (Brummett et al., 2006; Magee & Heaven, 2011; Sutin & Terracciano, 2017). Therefore, I expect Conscientiousness to be negatively associated with BMI, Openness and Agreeableness to be negatively associated (with some ambiguity) with BMI and Neuroticism and Extraversion to be positively associated (with some ambiguity) with BMI. Table 2 summarizes the expected correlations between personality and health behaviour for the surveys I investigate.

## 2.4 Personality and Career Outcomes

From a theoretical perspective education can be seen as a risky investment decision where an individual has the potential of a higher expected income at the cost of a probability to fail to complete the education. Obviously, there is an inter-temporal component included in this decision since the higher income will be realized in the future. The general consensus in the empirical literature is that risk tolerance and education are positively correlated (Becker et al., 2012; Belzil & Leonardi, 2013; Guiso & Paiella, 2008; Outreville, 2015; Shaw, 1996). Interestingly, using the German Socioeconomic Panel, Hartlaub and Schneider (2012) have found that the positive relationship between risk tolerance and education only holds for students of lower socio-economic class. Risk tolerance appears to be completely irrelevant in the decision making process for students of a higher socio-economic class. On the other

hand, Becker et al. (2012) have used the same data set and shown that overall educational attainment and risk tolerance are positively correlated. Since I do not investigate specific sub-populations in my analysis I expect risk tolerance to be positively associated with education in the surveys I investigate.

The link between attitude towards risk and income has long been investigated and yields relatively consistent results. The majority of empirical findings suggests that risk tolerance is positively associated with income (Becker et al., 2012; Guiso & Paiella, 2005; Hartog, Ferrer-i-Carbonell, & Jonker, 2002; Shaw, 1996; Sung & Hanna, 1996). More risk tolerant individuals select into occupations with higher occupational and higher earning risks, which often times entails variable income components (Bonin, Dohmen, Falk, Huffman, & Sunde, 2007; Fouarge, Kriechel, & Dohmen, 2014). Therefore, I predict risk tolerance to be positively associated with income in the eleven surveys I investigate.

Closely related to the decision to enter into an occupation with high earnings risk is the decision to go into self-employment. The empirical findings confirm the intuitive assumption that risk tolerance is positively associated with self-employment (Ahn, 2010; Caliendo et al., 2014; Cramer, Hartog, Jonker, & Van Praag, 2002; Dohmen et al., 2011; Ekelund, Johansson, Järvelin, & Lichtermann, 2005; Falk et al., 2018). Based on these consistent findings I expect risk tolerance to be positively associated with self-employment.

As mentioned previously the decision to invest into ones education is of inter-temporal nature. An individual can either work now with a given level of education or invest into education and potentially earn more in the future. This decision partly depends on how much an individual discounts the future. Theoretically, an individual who values the present relatively more than the future compared to another individual therefore should work now and not invest into education. Logically, this leads to the conclusion that more patient individuals attain more education. Empirical results tend to support this theoretical argument where more patient individuals attain more education (Dohmen, Enke, Falk, Huffman, Sunde, et al., 2015; Falk et al., 2018; Lee & Ohtake, 2012). In contrast, Becker et al. (2012) have found a negative significant relationship between patience and education for their representative experimental data set. However, the authors give no explanation for the non-intuitive correlation they have found. Therefore, I expect patience to be positively associated with education.

The theoretical hypothesis about patience and income is similar to those beforehand. For instance, an individual often times has a choice between a job that has a high base wage but low wage growth or a job with low starting wage and high wage growth in the future that eventually overtakes the other jobs total wages (Doepke & Zilibotti, 2006). Therefore, one should expect more patient individuals to select into occupations with higher wage growth and lower base wage. Fouarge et al. (2014)s' results support this hypothesis where more patient individuals select into occupations with steeper earnings profiles. Therefore, I

expect patience to be positively associated with income in our samples.

Vereshchagina and Hopenhayn (2009)'s economic model suggests that patience is negatively associated with the decision to be self-employed. They argue that agents who are initially employees can either save their wages and enter self employment when they have accumulated enough wealth ("safe entrepreneurs") or enter self-employment immediately ("risky entrepreneurs") without a certain level of wealth. Thus, patient individuals wait longer until they enter self-employment. The decision to be self-employed is closely related to risk taking since there is a cost for the "risky entrepreneurs" that might occur if their project fails (Vereshchagina & Hopenhayn, 2009). Even though economic theory suggests a link between patience and self-employment, Caliendo et al. (2014) do not find any statistically significant association between the two. However, this study only uses data from the German SOEP, which might not necessarily be representative for other contexts. Since I only have data for patience and self-employment from the SOEP I expect patience to not be correlated with self-employment.

According to Helliwell and Putnam (1999) theoretically there are positive feedback effects between education and trust. Their basic argument implies that higher average levels of education cultivate a more trusting environment with positive feedback effects. Further, they argue that if it is common knowledge that higher education is positively correlated with trust individuals might in turn trust more themselves. Their empirical results support this hypothesis, where higher average levels of education is positively associated with higher levels of trust. In general, highly educated individuals tend to have higher levels of trust than low-educated individuals (Alesina & La Ferrara, 2002; Becker et al., 2012; Bellemare & Kröger, 2007). Even though Fehr et al. (2002) do not find any statistically significant relationship between trust and education their findings suggest that highly skilled workers are more trusting than low-skilled workers. Similarly, trust exhibits a positive association with income (Alesina & La Ferrara, 2002; Becker et al., 2012). The relationship between trust and self-employment is more intuitive. In self-employment individuals have to trust their investors, employees and buyers on a more personal level. Empirical results support this intuitive hypothesis where self-employment is positively associated with trust (Caliendo, Fossen, & Kritikos, 2012; Caliendo et al., 2014). Therefore, I expect trust to be positively correlated with education, income and self-employment respectively.

The relationship between the Big Five personality traits and career outcomes yields relatively consistent results for some traits but most of the times results tend to be ambiguous, context dependent or insignificant. Openness is the trait that measures intellectual curiosity, innovative thinking and an individual's willingness to experience new things. Therefore, intuitively Openness should be positively correlated with education, income and self-employment respectively. Empirical research mostly supports this intuitive hypothesis. Educational at-

tainment is consistently positively associated with Openness (Becker et al., 2012; Goldberg et al., 1998; Kajonius & Carlander, 2017; Lee & Ohtake, 2012; O'Connor & Paunonen, 2007). Further, generally the correlation between Openness and wages is positive (Becker et al., 2012; Kajonius & Carlander, 2017; Mueller & Plug, 2006). However, Braakmann (2009)'s results suggest that this relationship only holds for men. Contradicting, the general consensus Viinikainen, Kokko, Pulkkinen, and Pehkonen (2010) have found no statistically significant relationship for Openness and income. Finally, Caliendo et al. (2014) have shown that Openness is positively associated with entry to self-employment. Therefore, I expect Openness to be positively associated with education, income and self-employment in the surveys I investigate.

Conscientiousness captures an individual's dutifulness, self-discipline and efficiency. Based on this definition, Conscientiousness should be positively correlated with education. Further, Conscientiousness should be positively correlated with income, because efficiency, self-discipline and dutifulness are traits that most employers look for in their workers and might be important traits for job-promotions. I theorize that the relationship between Conscientiousness and self-employment might be positive, because in self-employment individuals have to be more organized and self-disciplined than regular employees, because their livelihood is at stake more so than for employees. Most authors have found a positive association between Conscientiousness and educational attainment (Goldberg et al., 1998; Hampson, Goldberg, Vogt, & Dubanoski, 2007). However, some have found negative associations (Becker et al., 2012; Kajonius & Carlander, 2017). These mixed findings suggest that the correlation between Conscientiousness and education might be context dependent. For instance, whereas Lee and Ohtake (2012) have found positive correlations for the US population, they have found no correlation for Japanese students. Turning to the correlation between Conscientiousness and an individual's income, some authors have found positive associations (Becker et al., 2012; Lee & Ohtake, 2012). Mueller and Plug (2006)'s results suggest that the positive correlation between wages and Conscientiousness only holds for women. Nyhus and Pons (2005)'s results are more nuanced. At the beginning of an individual's work life Conscientiousness was positively associated with income. Once interacted with tenure the correlation became negative. Other authors have found no association between the two factors (Fletcher, 2013; Viinikainen et al., 2010). Finally, Caliendo et al. (2014) have not found a statistically significant association between Conscientiousness and entry to self-employment. Consequently, I expect education to be positively associated with Conscientiousness, a positive association between Conscientiousness and income with some ambiguity, and no correlation between self-employment and Conscientiousness.

Extraversion is the trait that measures if an individual is outgoing, enjoys the company of others and if an individual is expressive. There is no intuitive link for a clear positive or nega-



tive correlation between Extraversion and education and income. However, in some contexts (certain school systems or jobs with high social skill requirement) it might be beneficial to score high in Extraversion. Self-employment intuitively, should be positively associated with Extraversion, because in self-employment an individual has to be outgoing, participate in networking etc. Empirical research supports the hypothesis that there is some ambiguity for the association between Extraversion and education. For instance, for Swedish individuals Extraversion has been shown to be positively associated with education whereas for German individuals no association has been found (Becker et al., 2012; Kajonius & Carlander, 2017). Similarly, some authors have shown positive associations between Extraversion and income (Fletcher, 2013; Kajonius & Carlander, 2017; Lee & Ohtake, 2012; Viinikainen et al., 2010). Mueller and Plug (2006)’s results suggest that women who score high on Extraversion are punished by low wages which directly contradicts Fletcher (2013)’s findings. Becker et al. (2012) have found a negative association between Extraversion and income for the German population and Braakmann (2009) has found no association. Finally, Caliendo et al. (2014) have shown that Extraversion is positively associated with entry to self-employment. Therefore, I expect ambiguous results for the correlation between Extraversion and education and income respectively and a positive correlation between Extraversion and self-employment in the surveys I investigate.

Agreeableness captures an individual’s selflessness, helpfulness, how cooperative an individual is and an individual’s kindness. There does not seem to be a clear link between Agreeableness and education, income and self-employment. However, there might be some context dependent advantages and disadvantages of scoring high in Agreeableness. For instance, school systems that reward cooperation could be an advantage for individuals who score high in Agreeableness whereas competitive work places could be disadvantageous for individuals who score high in Agreeableness. Empirical evidence tends to support the hypothesis that the relationship between Agreeableness and education should be context dependent. Whereas Kajonius and Carlander (2017), Lee and Ohtake (2012) have found positive associations between education and Agreeableness for Japanese and Swedish students, Becker et al. (2012) have found no statistically significant relationship for the German population. Further, Goldberg et al. (1998)’s results suggest that Agreeableness is negatively correlated with educational attainment. The relationship between income and Agreeableness is clearer. Most authors have found a negative correlation between Agreeableness and income (Becker et al., 2012; Braakmann, 2009; Mueller & Plug, 2006; Nyhus & Pons, 2005). On the other hand some authors have found no relationship between these two factors (Kajonius & Carlander, 2017; Viinikainen et al., 2010). As previously mentioned, the reason for this might be, because the work environment rewards competitive (sometimes ruthless) behavior. Finally, Caliendo et al. (2014) have not found a statistically significant association between

Agreeableness and self-employment. However, Zhao and Seibert (2006) have found that entrepreneurs are less agreeable than managers. Consequently, I expect no correlation between Agreeableness and education, negative correlation between Agreeableness and income with some ambiguity and no correlation between Agreeableness and self-employment.

Neuroticism is the trait that captures if an individual worries often, feels nervous, is self-pitying and in general is not emotionally stable. Intuitively, scoring high in Neuroticism should be negatively correlated with education, income and being self-employed, because all these career outcomes are negatively affected by being nervous, handling criticism badly and over-thinking. Empirical evidence supports this hypothesis mostly. Educational attainment has consistently been negatively associated with Neuroticism (Becker et al., 2012; Goldberg et al., 1998; Kajonius & Carlander, 2017; Lee & Ohtake, 2012; O'Connor & Paunonen, 2007). Further, individuals who score high in Neuroticism experience lower wages across multiple contexts (Becker et al., 2012; Kajonius & Carlander, 2017; Mueller & Plug, 2006; Nyhus & Pons, 2005; Viinikainen et al., 2010). Interestingly, Braakmann (2009)s' and Lee and Ohtake (2012)s results suggest that the negative correlation between Neuroticism and wages only holds for women. Turning to self-employment Caliendo et al. (2014) using data from the German SOEP have not found a statistically significant association between Neuroticism and self-employment. However, closely related to this Zhao and Seibert (2006)'s findings suggest that entrepreneurs are less neurotic than managers. Therefore, I predict Neuroticism to be negatively associated with education, income and expect no correlation between Neuroticism and self-employment. However, since Caliendo et al. (2014) use data from the German population their findings do not necessarily have to be representative for other countries.

Internal Locus of Control is the tendency to attribute success and positive life-outcomes to one's own abilities and decisions, whereas external Locus of Control is the tendency to believe life-outcomes happen by chance. Based on this definition I predict that internal locus of control is positively associated with education, income and self-employment since individuals who score high in internal locus of control believe they can affect their own career outcomes. In an early meta study Findley and Cooper (1983) have found that higher scores in internal locus of control are positively associated with academic achievement. The authors classified the effect size as small to medium. More recent studies confirm these findings for high-school and college students respectively (Gifford, Briceno-Perriott, & Mianzo, 2006; Shepherd, Owen, Fitch, & Marshall, 2006). In their representative experimental data for the German population Becker et al. (2012) have found a positive correlation between internal locus of control and education. Regarding wages and locus of control, empirical evidence is rather inconsistent. For instance, Becker et al. (2012) and Heineck and Anger (2010) both using German data have found positive correlations between wages/income and locus of control. In contrast, Piatek and Pinger (2010) argue that these effects diminish once level

of education is controlled for. Turning to self-employment empirical evidence consistently predicts positive correlations for self-employment and internal locus of control (Begley & Boyd, 1987; Caliendo et al., 2014; Mueller & Thomas, 2001). Therefore, I expect internal locus control to be positively associated with education, income and self-employment. Table 2 summarizes the expected correlations between personality and the demographic and socio-economic outcomes I discussed in this section. My empirical analysis is based on this table.

### 3 Data

In this thesis I use eleven surveys from eight different countries for my analysis: The National Longitudinal Study of Adolescent to Adult Health (AddHealth) and the National Longitudinal Survey of Youth (NLSY79) from the USA, the China Family Panel Studies (CFPS), the Household, Income and Labour Dynamics in Australia (HILDA), the Indonesian Family and Life Survey (IFLS), the Longitudinal Internet Studies for the Social Sciences (LISS) from the Netherlands, the Mexican Family Life Survey (MXFLS), the Millenium Cohort Study (MCS) and the British Household Panel combined with the UK Household Longitudinal Study (BHPS/UKHLS) from the United Kingdom, the Swiss Household Panel (SHP) and the German Socioeconomic Panel (SOEP). In total the data sets include 154'906 respondents. The number of survey waves I have data on varies from survey to survey from a minimum of one wave to a maximum of seventeen waves. The main variables of interest are risk tolerance, patience, trust, the Big Five personality traits and locus of control as discussed in section 2. Table 3 illustrates which survey collected which personality traits and how many respondents I have for each survey.

As seen in Table 3, for the SOEP I have data on all personality traits and some surveys only collect two personality traits of interest (CFPS & MXFLS). For the measure risk tolerance, I have observations in all surveys, whereas for the measure patience I only have observations from four surveys. Detailed descriptions on each survey and descriptive statistics can be found in Appendix subsection 9.1. For my analysis I cluster standard errors at the individual level to account for multiple observations per individual.

Table 3: Number of Respondents for each Personality Trait by Survey

	Risk Tolerance	Patience	Trust	Open- ness	Conscien- tiousness	Extra- version	Agree- ableness	Neuro- ticism	LoC
AddHealth	6'020	.	.	4'967	6'323	6'325	6'327	6'329	4'970
CFPS	2'868	.	11'388	.	.	.	.	.	.
HILDA	18'877	.	18'266	17'571	17'579	17'598	17'593	17'577	17'823
IFLS	13'809	15'060	10'015	12'791	12'791	12'791	12'791	12'791	.
LISS	3'616	.	7'866	7'887	7'887	7'887	7'887	7'887	.
MCS	10'627	10'670	10'683	.	.	.	.	.	.
MXFLS	26'915	28'263	.	.	.	.	.	.	.
NLSY79	7'446	.	6'263	5'838	5'878	5'804	5'773	5'882	7'455
SHP	14'095	.	19'518	8'409	8'403	8'411	8'418	8'420	12'837
SOEP	12'141	6'236	8'077	7'259	7'292	7'293	7'295	7'300	6'504
UKHLS	5'141	.	6'724	5'912	5'914	5'907	5'916	5'914	.
Total	121'555	60'229	98'800	70'634	72'067	72'016	72'000	72'100	49'589

. means that the survey does not collect data on personality trait; for detailed summary statistics see Appendix, subsection 9.1

### 3.1 Personality Trait Measures

The surveys I investigate differ in the measurement method of the personality traits. As seen in Table 4 risk tolerance has been collected in one of three ways:<sup>4</sup>

- *General Risk Tolerance*: In general, how willing are you to take risks?
- *Financial Risk Tolerance*: How willing are you to take financial risks?
- *Gamble Risk Tolerance*: Individuals are faced with hypothetical gambles

Not only the elicitation method differs from survey to survey also the scales on which risk tolerance is elicited differ. For instance, some surveys use Likert scales from 1-5 while others use Likert scales from 0-10.

Additionally, some surveys use multiple methods to elicit risk tolerance for different survey waves. For example, the German SOEP uses “General Risk Tolerance” and “Financial Risk Tolerance” to measure risk tolerance, both on a 0-10 Likert scale. For our analysis we harmonized all risk measures into one measure on a Likert scale from 0-10 using Preston and Colman (2000)’s method of optimally transforming Likert-scales.<sup>5</sup> The “General Risk Tolerance” measure has been shown to be predictive of actual gambling behaviour and actual risk taking behavior (Dohmen et al., 2011). Using a population based sample of 11'000 Swedish twins Beauchamp et al. (2017) show that the different measures of risk tolerance used in the eleven surveys I investigate are highly correlated.

Only four out of eleven surveys collect data on patience. Three surveys directly ask if individuals would describe themselves as patient on a Likert scale from 0-10 and the IFLS

<sup>4</sup>Exact wording varies from survey to survey, see Appendix subsection 9.1 for details

<sup>5</sup>for details see Appendix subsection 9.2

Table 4: Elicitation of Personality Traits

Variable	Elicitation Method	Survey & original Scale
General Risk Tolerance	Likert	AddHealth(1-5), HILDA(0-10), LISS(0-10), MCS(0-10), NLSY79(0-10), SHP(0-10), SOEP(0-10), UKHLS(0-10)
Financial Risk Tolerance	Likert	CFPS(1-4), HILDA(1-4), NLSY79(0-10), SOEP(0-10)
Gamble Risk Tolerance	Choice lists/ Hypothetical Gambles	IFLS(1-4), LISS(1-6), MXFLS(1-7), NLSY79(1-4)
Patience	Likert or choices	IFLS(1-4) choice lists, MCS(0-10), MXFLS(0-10), SOEP(0-10)
Trust	Likert	CFPS(0-1/0-10), HILDA(1-7), IFLS(1-4), LISS(0-10) MCS(0-10), NLSY79(0-10), SHP(0-10), SOEP(1-4), UKHLS(1-3/0-10)
Big Five	Likert	AddHealth(1-5), HILDA(1-7), IFLS(1-5), LISS(1-5), NLSY79 (1-7), SHP(0-10), SOEP (1-7), UKHLS (1-7)
Locus of Control	Likert	AddHealth(1-5), HILDA(1-7), NLSY79(4-16), SHP(0-10), SOEP(1-7)

For a detailed description on how each survey collects data on these personality traits see Appendix subsection 9.1. This table illustrates how and on what scales the different surveys I use for my analysis collect and measure the personality traits of interest.

uses choice lists to elicit patience as described in subsection 3.1. Out of these choice lists a patience measure on a Likert scale from 1-4 was derived. Consequently, we use the same formula as for risk tolerance to transform the scale to a 0-10 scale for comparability. Vischer et al. (2013) have experimentally validated the survey measure for patience the SOEP collects data on. Their findings suggest that the patience measure from the SOEP predicts actual inter-temporal choices.

For trust the elicitation method is more consistent across surveys. Typically, individuals have to answer a simple question about how much they trust other people (in some variation). However, typically the scales on which these questions are measured differ. For instance, some use a 1-4 scale whereas others use a 0-10 scale (see Table 4). For my analysis the Trust variable has been harmonized to a 0-10 scale using Preston and Colman (2000)'s formula of transforming Likert scales.

The Big Five personality traits all have been collected from self-rated measures using mostly shorter and previously validated versions of the 240 item NEO-PI-R by Costa and McCrae

(1992b).<sup>6</sup> The variables of each survey have been transformed to a 1-7 Likert scale.<sup>7</sup>

Finally, Locus of Control is a self-rated measure combined from multiple questions in our surveys. Again, the scale on which the measure is elicited differs across surveys. The variables are harmonized to a 1-7 Likert scale (see Appendix subsection 9.2). The general approach was to take the average of all self-reported questions and then harmonize them to the desired scale.<sup>8</sup> Finally, for my analysis I standardize the variable to mean zero and standard deviation one. This transformation yields identical results to what other authors have done previously. For instance, Kesavayuth, Ko, and Zikos (2018) using HILDA data sum up the seven locus control questions in HILDA which range from 1-7 to a scale that ranges from 7-49 and then standardize the score for their analysis. Other authors use a similar strategy to create an index for locus of control (see: Buddelmeyer and Powdthavee (2016), Caliendo, Cobb-Clark, and Uhlenborff (2015), Semykina and Linz (2007)).

## 4 Empirical Strategy

The main goal of this section is to construct an empirical framework that I use for the following analysis. After harmonizing the personality traits to the scales discussed in the previous section I standardize the personality traits to mean zero and standard deviation one. I do this procedure, because this makes the interpretation and comparability of the correlations among the personality traits and between the personality traits and the demographic and socio-economic outcomes, discussed previously, more informative and easier. Further, harmonization is necessary, because for some personality traits we combine multiple measures with different Likert scales into one scale. For instance, as seen in Table 4, the LISS collects data on risk tolerance on a 0-10 Likert scale for the general risk tolerance question and it collects data on gamble risk tolerance on a 1-6 Likert scale.

The empirical model to estimate the intercorrelation between the personality traits is the following:

$$\bar{Y}_i = \beta_0 + \beta_1 \bar{K}_i + v_i \quad (1)$$

$\bar{Y}_i$  is the average of the standardized personality trait score an individual  $i$  has.  $\bar{K}_i$  is the average of the standardized personality trait score an individual  $i$  has.  $\bar{K}_i$  is defined such that  $\bar{K}_i$  cannot be the same personality trait as  $\bar{Y}_i$ . This implies that I regress the average of

---

<sup>6</sup>See Appendix subsection 9.1 for detailed information on each survey

<sup>7</sup>see transformation formulas in Appendix subsection 9.2 for Big Five personality traits and locus of control

<sup>8</sup>The number of questions differs from survey to survey.

all (individual's) personality traits on each other to get the intercorrelation of all personality traits. Taking the average of the standardized personality traits is necessary, because data on different personality traits are not always collected in the same survey year. This causes the problem that I cannot calculate correlations between traits that are not collected in the same survey year. Therefore, the only solution is to take the average of the standardized personality score of an individual. I compare the results of the intercorrelations for each survey with previous literature findings summarized in Table 1. I label an intercorrelation as consistent with previous literature findings if the correlation coefficient shows the expected sign and if the correlation is at least statistically significant on the ten percent level. The empirical model to estimate the correlation between the personality traits and demographic and socio-economic outcomes is the following:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + A_{it}\gamma' + u_{it} \quad (2)$$

$Y_{it}$  is the standardized personality trait score an individual  $i$  has at survey year  $t$ .  $X_{it}$  represents an individual's gender, BMI, if an individual smokes, education in years, the natural logarithm of income from wages and if an individual is self-employed wherein I run a separate regression for each of the personality traits on each of these demographic and socio-economic outcomes separately.  $A_{it}$  is a vector that includes age, age squared and age cubed of individual  $i$  in survey year  $t$  to filter out age-specific correlations. I run these regressions for all eleven surveys separately. It is important to note, that the goal of this thesis is not to capture a causal effect but rather to validate the personality traits in the eleven different surveys I mentioned previously. I compare the results of the correlations this model yields with previous literature findings summarized in Table 1. I label a correlation consistent with previous literature findings if the correlation shows the expected sign and if the correlation is statistically significant at least on the ten percent level.

Since it is arbitrary to judge if a personality measure reasonably captures what it is intended to measure and to the best of my knowledge there does not exist a consistent conceptual framework in the current literature to do this I use the following approach: Firstly, the direction of a correlation has to correspond with the expected correlation. Secondly, the correlation has to be statistically significant at least at the 10 percent level. In my thesis a correlation is consistent with previous literature findings if both conditions are fulfilled. If a correlation shows the expected direction but is not statistically significant this might still be an indication of the measure capturing what it is intended to capture. In my thesis a measure reasonably captures what it is intended to measure if at least 70 percent of the intercorrelations and life outcome correlations per trait combined are consistent with previous

literature findings. When a measure does not fulfill this condition but the correlations which are not consistent with previous literature findings overwhelmingly show the expected sign I classify the measure as reasonable in capturing what it is intended to measure and further discuss this in my analysis.

The number of 70 percent might sound rather low on first thought. However, there are three reasons why I decided to set the requirement to 70 percent. Firstly, the intercorrelation between two personality traits by definition depends on two personality trait variables. If a survey only collects data on three personality traits and one of those traits does not reasonably capture what it is intended to measure this would imply that for the “bad” trait measure we would find that zero out of two correlations are consistent with previous literature findings and for the “good” trait measures we would find that one out of two correlations is consistent with previous literature findings. Even though the two “good” measures reasonably capture what they are intended to measure, in this thought experiment, only 50 percent of the correlations are consistent with previous literature findings. Therefore, we have to take into account that due to the nature of looking at intercorrelations the prediction rate should be lower than 100 percent. Secondly, even though most surveys are of high quality there is always a possibility that there exists measurement error in the surveys I investigate which would bias the correlations I find towards zero. Thirdly, for some surveys I only observe three socio-economic outcomes and therefore I can only run three regressions. If only one correlation is not consistent with previous literature findings in such a case the measure would only predict 66 percent of the correlations correctly. As a robustness test I increase the requirement that a trait has to be consistent with previous literature findings from 70 percent to 80 percent in section 6.

## 5 Empirical Analysis

Firstly, I analyze whether the harmonized personality measures in these eleven surveys capture what they are intended to measure by investigating the intercorrelations among the personality traits and the correlation of the socio-economic and demographic variables for each survey I discussed in section 2. Secondly, I investigate if cross survey comparisons can be made using these different data sources.



## 5.1 An Empirical Assessment of the Validity of Personality Traits Elicited in Eleven Surveys

In Table 5 I summarize the two empirical main results for each survey and each personality trait. Firstly, for each survey I regress the average of the standardized (mean 0, sd. 1) personality traits on each other and assess if these correlations are consistent with previous literature findings, as summarized in Table 1.<sup>9</sup> For clarity, I label the row for the summarized intercorrelations for each survey with (1): and the the row for the summarized life outcome regressions for each survey with (2):. The third column in Table 5 references the tables that contain the detailed regression results for each survey. The summed up numbers for the (1): intercorrelations in the last column in Table 5 have to be divided by two so we do not count an intercorrelation twice. The total number of intercorrelations can also be calculated with the following formula: For instance, when a survey collects data on  $n$  personality traits there are a total of  $(n^2 + n)/2$  intercorrelations. Secondly, Table 5 summarizes the results of the correlations between the personality traits and the socio-economic and demographic outcome variables, gender, Body Mass Index, if an individual smokes, an individual's education, an individual's natural logarithm of income and if an individual is self-employed. These correlations all stem from regressions of the standardized (mean 0, sd. 1) personality traits on these demographic and socio-economic outcomes, each controlling for age, age squared and age cubed.<sup>10</sup> When a personality trait does not capture what it is intended to measure I highlight the trait in italics in Table 5.

For AddHealth the Big Five personality traits and locus of control measures, based on my empirical framework, capture what they are intended to measure. As seen in Table 5, which summarizes the results from Table 20 and Table 31, for the Big Five personality traits and locus of control over 70 percent of the correlations are consistent with previous literature findings. The AddHealth risk tolerance measure predicts three out of five life outcome correlations consistent with previous literature findings and four out of six intercorrelations consistent with the literature findings. This sums up to 64 percent. Of the two life outcome correlations not consistent with previous literature findings both show the opposite sign of what one would predict as seen in Table 31. Of the two intercorrelations not consistent with previous literature findings the correlation between Agreeableness and risk tolerance shows the expected sign but is not statistically significant and the correlation between locus of control and risk tolerance shows the opposite of the expected sign but is not statistically significant, as seen in Table 31. Therefore, eight out of eleven correlations show the expected sign with seven being consistent with previous literature findings.

---

<sup>9</sup>for detailed results on each survey see Appendix subsection 9.3

<sup>10</sup>for detailed results on each survey see Appendix subsection 9.4

Table 5: Summary of (1): Intercorrelations between Personality Traits and (2): Correlations between Personality Traits and Demographic and Socio-Economic Outcomes consistent with Literature

			Risk Tol- erance	Pa- tience	Trust	Open- ness	Conscien- tiousness	Extar- version	Agree- ableness	Neuro- ticism	LoC	Total
<b>AddHealth</b>	(1):	Table 20:	4/6	.	.	6/6	5/6	6/6	3/6	5/6	5/6	17/21
	(2):	Table 31:	3/5	.	.	5/5	4/5	3/5	5/5	5/5	3/3	29/33
<b>CFPS</b>	(1):	Table 21:	1/1	.	1/1	.	.	.	.	.	.	1/1
	(2):	Table 32:	4/4	.	3/3	.	.	.	.	.	.	7/7
<b>HILDA</b>	(1):	Table 22:	6/7	.	5/7	5/7	6/7	7/7	7/7	5/7	7/7	24/28
	(2):	Table 33:	4/5	.	4/4	5/5	4/5	5/5	4/5	3/5	4/4	33/38
<b>IFLS</b>	(1):	Table 23:	3/7	3/7	2/7	6/7	4/7	5/7	4/7	5/7	.	16/28
	(2):	Table 34:	4/4	3/4	1/3	3/4	4/4	4/4	4/4	4/4	.	26/31
<b>LISS</b>	(1):	Table 24:	4/6	.	4/6	6/6	5/6	5/6	6/6	6/6	.	19/21
	(2):	Table 35:	3/4	.	3/3	4/4	4/4	3/4	4/4	4/4	.	25/27
<b>MCS</b>	(1):	Table 25:	2/2	2/2	2/2	.	.	.	.	.	.	3/3
	(2):	Table 36:	2/3	3/3	1/1	.	.	.	.	.	.	6/7
<b>MXFLS</b>	(1):	Table 26:	1/1	1/1	.	.	.	.	.	.	.	1/1
	(2):	Table 37:	3/5	4/5	.	.	.	.	.	.	.	7/10
<b>NLSY79</b>	(1):	Table 27:	5/7	.	5/7	6/7	6/7	7/7	7/7	6/7	6/7	24/28
	(2):	Table 38:	2/5	.	3/3	5/5	4/5	4/5	5/5	5/5	3/3	31/36
<b>SHP</b>	(1):	Table 28:	6/7	.	6/7	7/7	6/7	6/7	5/7	7/7	7/7	25/28
	(2):	Table 39:	4/6	.	4/4	5/6	4/6	5/6	6/6	4/6	4/4	36/44
<b>SOEP</b>	(1):	Table 29:	7/8	5/8	2/8	7/8	7/8	7/8	6/8	6/8	6/8	27/36
	(2):	Table 40:	5/6	4/6	3/4	4/6	4/6	6/6	6/6	6/6	4/4	42/50
<b>UKHLS</b>	(1):	Table 30:	4/6	.	0/6	5/6	4/6	5/6	5/6	5/6	.	14/21
	(2):	Table 41:	5/5	.	2/4	3/5	5/5	5/5	5/5	5/5	.	30/34

This table illustrates how many intercorrelations between the personality traits and how many correlations between the personality traits and the demographic & socio-economic outcomes are consistent with the literature for each survey, where: # of Correlations consistent with literature / # of Total Regressions / (Inter-)Correlations. The intercorrelations of the personality traits and the correlation between personality and the socioeconomic and demographic outcomes stem from regressions linked in the second column of the table. The first row for each survey refers to intercorrelations and the second row refers to the life outcome regressions. Numbers in italic indicate that the measure does not reasonably capture what it is intended to capture. Not all surveys have data on all the socio-economic outcomes I described in Table 2 this is why the total number of regressions run differs from survey to survey. The summed up numbers for the intercorrelations have to be divided by two so we do not count an intercorrelation twice.

Therefore, the AddHealth risk tolerance measure does not pass the first requirement of being consistent with previous literature findings in 70 percent of the cases. Those correlations not consistent with previous literature findings do not predominantly show the expected sign. Therefore, based on my empirical framework, I conclude that the risk tolerance measure in AddHealth does not capture what it is intended to measure. Further, the Big Five personality trait measures and the locus of control measure capture what they are intended to measure. The CFPS only collects data on (financial-) risk tolerance and trust. For both measures all correlations turn out as expected, as seen in Table 5. Therefore, I conclude that based on my empirical framework the measures reasonably capture what they are intended to measure. As seen in Table 5, which summarizes the regression results from HILDA based on Table 22 and Table 33, risk tolerance, trust, locus of control and all Big Five personality traits predict socio-economic, life outcomes and personality intercorrelations consistent with previous literature findings in 70 percent or more cases. Therefore, I conclude that, based on my empirical framework, the personality measures from HILDA reasonably capture what they are intended to measure.

The risk tolerance measure in the IFLS is an interesting case. Whereas, all life outcome correlations are consistent with previous literature findings, the intercorrelation between risk tolerance and the other personality traits yields puzzling results, as seen in Table 5. Only three out of seven personality trait intercorrelations with risk tolerance are consistent with previous literature findings. Ignoring the statistical significance and just looking at the direction of the intercorrelations, five out of seven intercorrelations turn out as expected. This suggests that the IFLS risk tolerance measure reasonably captures what it is intended to measure, but has to be treated with caution, to predict socio-economic outcomes. Further, based on my empirical framework, the patience and trust measure in IFLS do not reasonably capture what they are intended to measure. Looking at the intercorrelations between patience and the other personality traits reveals that these correlations show the opposite of what one would expect in four out of seven cases, as seen in Table 23. Further, the correlations of the trust measure in IFLS are only consistent with previous literature findings in 30 percent of the cases (3/10). The Big Five personality trait measures elicited in the IFLS reasonably capture what they are intended to measure when I take into account that the risk tolerance, patience and trust measure correlations with the Big Five personality traits are not consistent with previous literature findings in the overwhelming majority of cases. Therefore, based on my empirical framework risk tolerance and the big five personality trait measures in the IFLS capture what they are intended to measure. The patience and the trust measure do not.

Turning to the LISS, as seen in Table 5 which summarizes the results from Table 24 and Table 35, my findings suggest that risk tolerance, trust and the Big Five personality traits

capture what they are intended to measure. All measures are consistent with previous literature findings in 70 percent or more cases.

The MCS only collects data on the three economic preferences risk tolerance, patience and trust. All three measures yield correlations consistent with previous literature findings. Therefore, based on my empirical framework, I conclude that the measures capture what they are intended to measure.

The MXFLS only collects data on risk tolerance and patience. For risk tolerance three out of five life outcome correlations turn out as expected. Taking a closer look at Table 37 shows that the correlation between BMI and risk tolerance shows the predicted direction but is not statistically significant. This suggests that the risk tolerance measure reasonably captures what it is intended to measure. My findings for the patience measure suggest that the measure captures what it is supposed to capture. Five out of five life outcome correlations show the expected direction, where three out of these five correlations are statistically significant. Therefore, the risk tolerance measure and the patience measure in the MXFLS, based on my empirical framework, capture what they are intended to measure.

In the NLSY79 the trust, the Big Five personality traits and the locus of control measure reasonably capture what they are intended to measure, as seen in Table 5. The risk tolerance is an interesting case. Only two out of five correlations between the socio-economic and demographic outcomes with risk tolerance are consistent with previous literature findings. The risk tolerance measure I use for NLSY79 is a combined measure of gamble risk tolerance and financial risk tolerance and a negligible number of general risk tolerance observations as illustrated in subsection 3.1. Running the financial risk tolerance and gamble risk tolerance regressions separately yields an interesting result. As seen in Table 42, the financial risk tolerance measure's results correctly predict the correlations with gender, education and income. As already mentioned in the discussion of the HILDA financial risk tolerance measure (see Table 33), the financial risk tolerance measure does not consistently predict health outcomes. Further, the gamble risk tolerance measure only correlates as predicted by previous literature in one of five cases. Therefore, I conclude that the gamble risk tolerance measure does not consistently capture life outcomes. Further, the financial risk tolerance measure does not predict health outcomes. Based on this analysis, combining the gamble risk tolerance measure and the financial risk tolerance measure from NLSY79 into one risk tolerance measure does not yield a measure that reasonably captures what it is intended to measure. To summarize, based on my empirical framework, the trust measure, the Big Five personality trait measures and the locus of control measure in the NLSY79 reasonably capture what they are intended to measure. Further, the combined risk tolerance measure does not reasonably capture what it is intended to measure. The financial risk tolerance measure reasonably predicts career outcomes and gender differences but does not reasonably

predict health outcomes.

In the SHP risk tolerance, trust, the Big Five personality traits and locus of control all reasonably capture what they are intended to measure, based on my empirical framework. All measures produce correlations consistent with previous literature findings in over 70 percent of the cases I investigate.

For the German SOEP the personality measures for risk tolerance, patience, the Big Five personality traits and locus of control all predict socio-economic and demographic outcomes as expected based on previous literature findings summarized in Table 2. The trust measure is an interesting case. Whereas three out of four life outcome regressions are consistent with previous literature findings only two out of eight intercorrelations with the other personality traits are consistent with previous literature findings. This finding is particularly puzzling, because this exact trust measure has been used in several studies and the questions used to construct the trust measure have been empirically and experimentally validated (Becker et al., 2012; Caliendo et al., 2012; Dohmen et al., 2008; Fehr et al., 2002). I conclude that in this specific sample the trust measure does not reasonably capture what it is intended to measure.

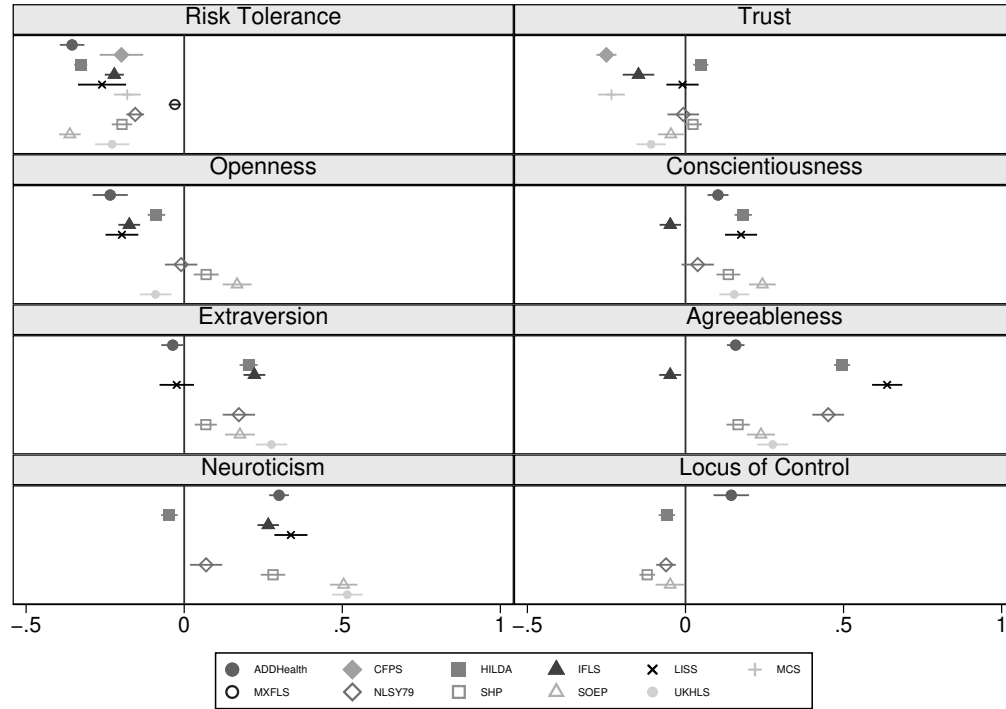
Finally, for the BHPS/UKHLS the risk tolerance and the Big Five personality trait measures capture what they are intended to measure, based on my empirical framework. All measures produce correlations consistent with previous literature findings in over 70 percent of the cases I investigate. The trust measure collected in UKHLS does not reasonably capture what it is intended to measure based on my empirical framework (as seen in Table 5). The measure predicts life outcomes poorly, as seen in Table 41, and not a single intercorrelation, as seen in Table 30 is consistent with previous literature findings.

## 5.2 Cross-Survey Comparison

Since I have established that most personality traits reasonably capture what they are intended to measure for most surveys I now turn to the question whether cross survey comparisons can be made using these surveys. I have not included patience in the following figures, because of two reasons: I do not have data on patience for most surveys and one out of four surveys that collect data on patience has a patience measure which based on my analysis does not capture what it is intended to measure. For an overview on the correlations between patience and the socio-economic and demographic variables across surveys see Appendix subsection 9.6.

The following figures I present all stem from the same life-outcome regressions as the results in Table 5. These figures plot the correlation between the standardized (mean 0; sd 1) personality traits and the socio-economic and demographic variables of interest, each controlling for age, age squared and age cubed as discussed in section 4.

Figure 1: Correlation between being Female and Personality

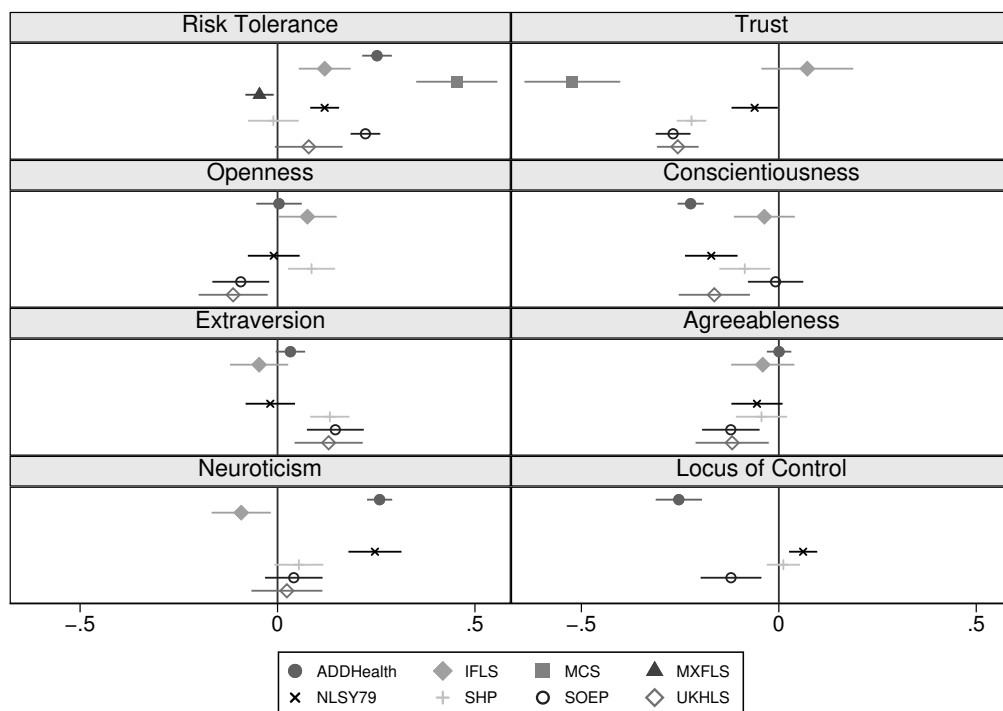


Personality Traits are all standardized to mean 0 and standard deviation 1 (for each survey separately); this figure plots the correlation between being female and the standardized personality trait for each survey. These correlations all control for age, age squared and age cubed. The inclusion of those variables does not change the correlation coefficients substantially. The lines indicate 95% confidence intervals. Standard errors are clustered at the individual level.

In Figure 1 I plot the correlation between being female and the standardized personality traits for each survey, controlling for age, age squared and age cubed. The lines indicate 95% confidence intervals. The correlation coefficients can be interpreted as follows: For instance, the correlation coefficient for being female and risk tolerance in AddHealth is -0.356 (see Table 31). This means that being female on average is associated with having a 0.356 standard deviation lower score in risk tolerance than being male. As seen in Figure 1, the correlations of the different surveys generally show the same direction and similar correlation coefficients in terms of size. The results are consistent with previous findings in the literature (see Table 2). Based on these results we can conclude that being female is associated with: scoring lower in risk tolerance than men, on average scoring lower in trust than men, on average having the same level of openness as men, being more conscientious, extraverted, agreeable and neurotic than men and scoring slightly lower in internal locus of control than men. The correlation coefficients for the different surveys overwhelmingly show the same direction (for variables with a clear correlation direction) and similar coefficient sizes. In the empirical literature gender differences in the Big Five personality traits are biggest in countries with high GDP and high equality index (Costa et al., 2001; Schmitt et al., 2008).

For the surveys I investigate and have data on the Big Five personality traits the Indonesian Family and Life Survey (IFLS) is the only non-western country. As seen in Figure 1, for Conscientiousness and Agreeableness gender differences are very small. For the other Big Five personality traits gender differences in the IFLS are similar to those of the rest of the surveys I investigate. Whereas earlier studies, which also investigate gender differences in Indonesia, had relatively small sample sizes (111 participants for Schmitt et al. (2008) and 172 for Costa et al. (2001)) my findings are based on 12'791 respondents. However, since I do not have data on other non-western, low GDP countries I cannot test the hypothesis that countries with high GDP and equality show bigger gender differences.

Figure 2: Correlation between Smoking and Personality

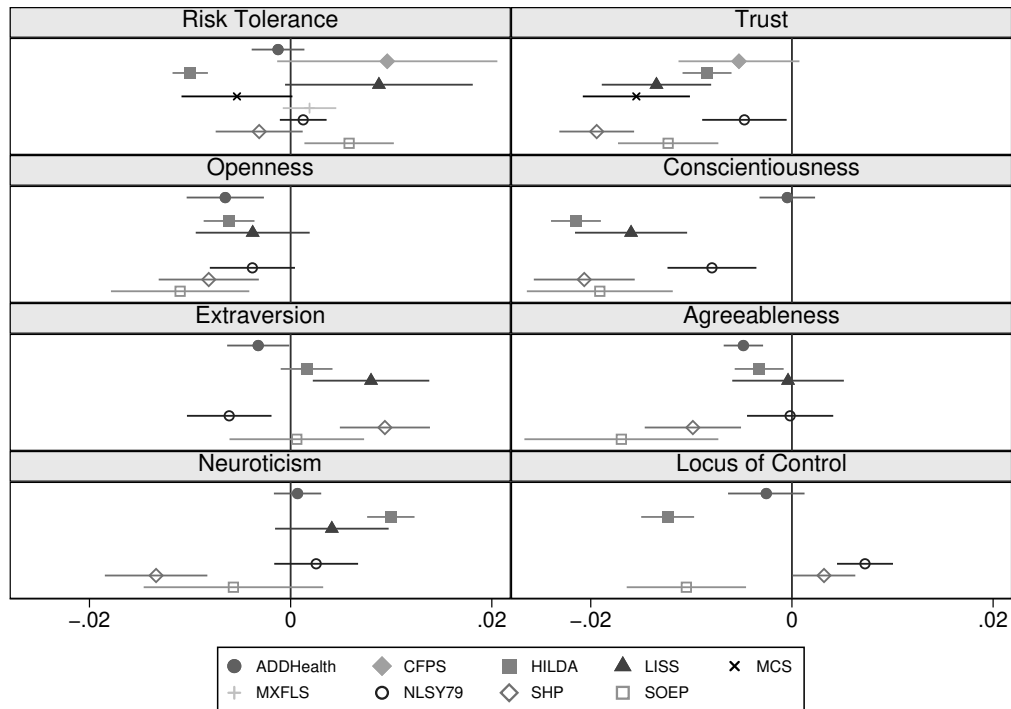


Personality traits are all standardized to mean 0 and standard deviation 1 (for each survey separately); this figure plots the correlation between an individual's current smoking status and the standardized personality trait for each survey. These correlations all control for age, age squared and age cubed. The inclusion of those variables does not change the correlation coefficients substantially. The lines indicate 95% confidence intervals. Standard errors are clustered at the individual level.

In Figure 2 I plot the correlation between the standardized personality traits and an individual's smoking status. For instance, looking at the correlation coefficient for risk tolerance in the German SOEP: Being a smoker, on average, is associated with scoring 0.215 standard deviations higher in risk tolerance than non-smokers controlling for age, age squared and age cubed. Generally, the results are consistent with previous literature findings, as seen in Table 2. The direction and size of correlations between smoking and personality are similar across the surveys I investigate. To summarize: being a smoker, on average, is associated

with scoring higher in risk tolerance, scoring lower in Conscientiousness, scoring slightly higher in Extraversion, scoring slightly lower in Agreeableness and scoring slightly higher in Neuroticism than non-smokers. Additionally, my findings suggest that there is no association between smoking and Openness and locus of control. To the best of my knowledge there does not exist any literature that investigates the relationship between trust and smoking. There is no intuitive explanation as to why trust in other individuals is negatively associated with being a smoker.

Figure 3: Correlation between BMI and Personality



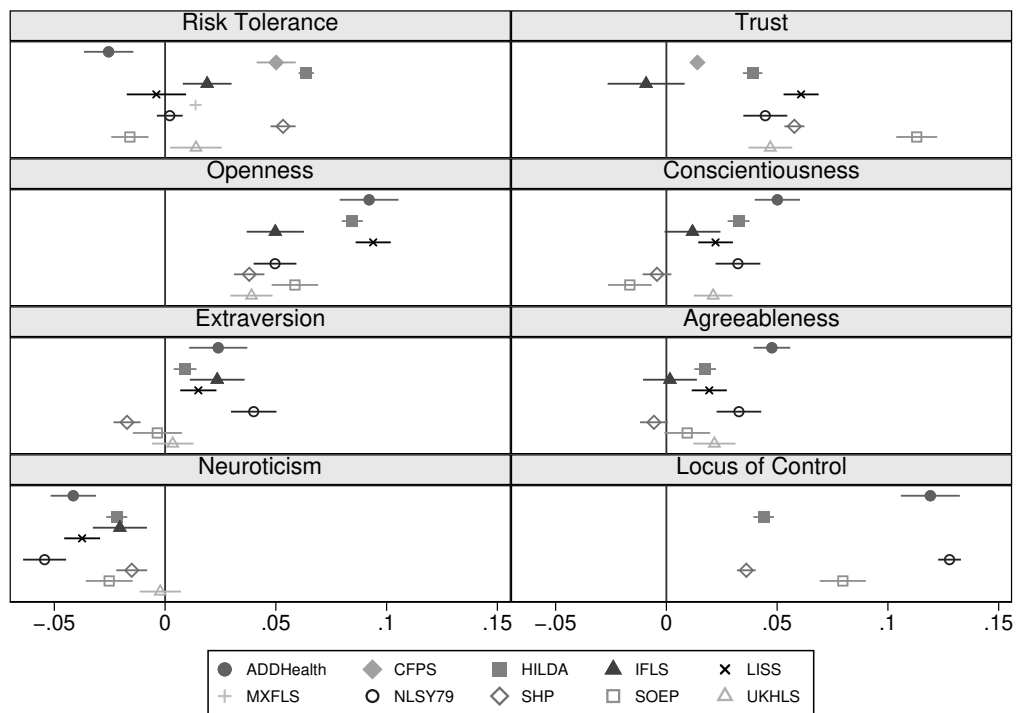
Personality traits are all standardized to mean 0 and standard deviation 1 (for each survey separately), this figure plots the correlation between BMI and the standardized personality trait for each survey. These correlations all control for age, age squared and age cubed. The lines indicate 95% confidence intervals. Standard errors are clustered at the individual level.

In Figure 3 I plot the correlation between the standardized personality traits and an individual's BMI. For instance, looking at the correlation coefficient for Conscientiousness in HILDA: An increase in BMI by one point is associated with scoring 0.0215 standard deviations lower in Conscientiousness controlling for age, age squared and age cubed. Overall, the results are consistent with previous literature findings. BMI is typically positively associated with risk tolerance which I find for most of our surveys, but some surveys however, I find negative correlations which intuitively makes no sense. Additionally, my findings suggest that trust is negatively associated with BMI which is puzzling. To the best of my knowledge there does not exist literature that explores the correlation between trust and an individ-



ual's BMI. The results for Conscientiousness, Extraversion, Agreeableness and Neuroticism are consistent with previous findings as seen in Table 2. My findings suggest that Openness is consistently negatively correlated with BMI. This consistent pattern could be explained by the hypothesis that Openness is negatively associated with BMI, because individuals who score higher in Openness might be more inclined to try new foods and consequently might have a more diverse (and healthier) diet. For instance, in a literature review Lunn et al. (2014)'s summary reveals that Openness is positively associated with fruit and vegetable consumption which in turn suggests a healthier diet. Even though the results do not necessarily represent previous findings of the literature for all personality traits the correlation coefficients for most personality traits show similar direction and size.

Figure 4: Correlation between Education and Personality

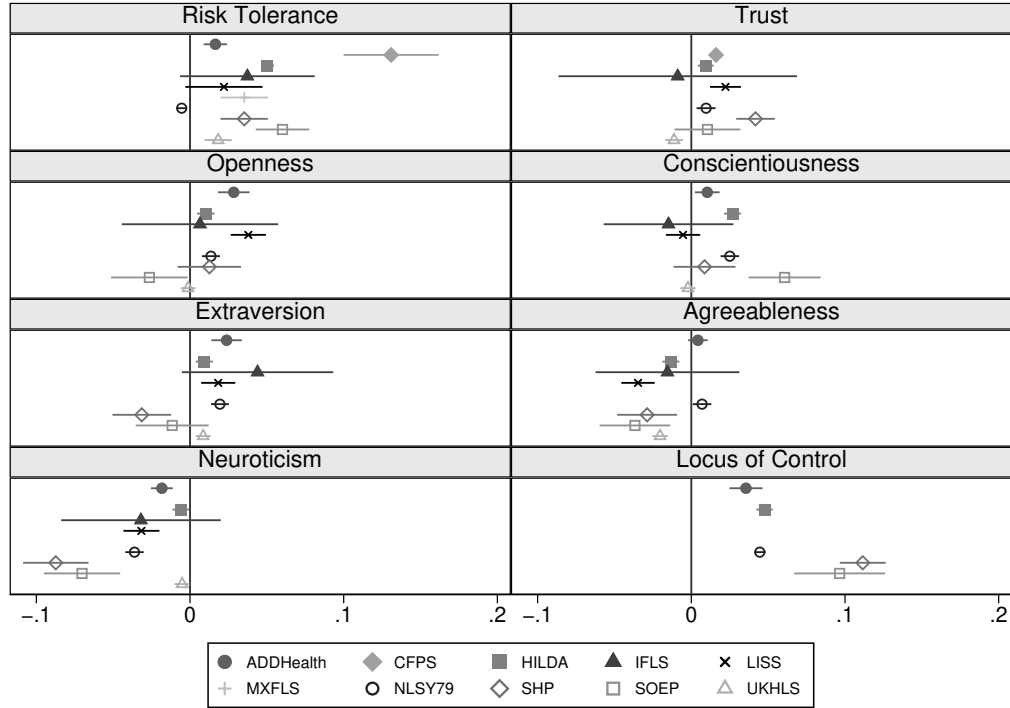


Personality traits are all standardized to mean 0 and standard deviation 1 (for each survey separately) this figure plots the correlation between an individual's highest grade completed and the standardized personality trait for each survey. These correlations all control for age, age squared and age cubed. The lines indicate 95% confidence intervals. Standard errors are clustered at the individual level.

In Figure 4 I plot the correlation between the standardized personality traits and an individual's highest grade completed (in years) controlling for age, age squared and age cubed. For instance, looking at the correlation coefficient for Openness from UKHLS: An increase in education is associated with scoring 0.0403 standard deviations higher in Openness which corresponds with a 0.049 higher score in Openness, controlling for age, age squared and age cubed. The results are consistent with previous literature findings as seen in Table 2. For

the surveys I analyze the correlation coefficients overwhelmingly show similar signs for all personality traits and similar coefficient sizes. To summarize: in our surveys education is positively associated with risk tolerance, trust, Openness, Conscientiousness, Extraversion, Agreeableness and locus of control and education is negatively associated with Neuroticism. The relationship is strongest for locus of control and Openness for the data I investigate.

Figure 5: Correlation between Income and Personality

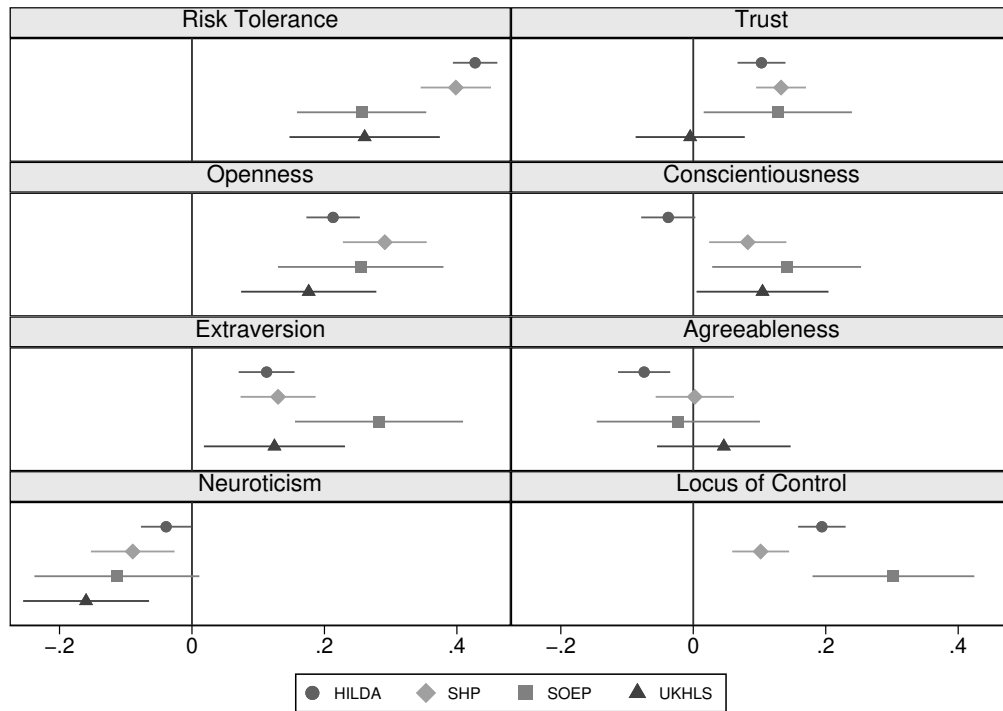


Personality traits are all standardized to mean 0 and standard deviation 1 (for each survey separately) this figure plots the correlation between the natural logarithm of income and the standardized personality trait for each survey. These correlations all control for age, age squared and age cubed. Standard errors are clustered at the individual level. The lines indicate 95% confidence intervals.

In Figure 5 I plot the correlation between the standardized personality traits and the natural logarithm of an individual's income controlling for age, age squared and age cubed. Overall, the results are consistent with the predictions from the literature as seen in Table 2. Risk tolerance and trust are mostly positively associated with income. The only Big Five personality traits that have consistently been shown to be associated with income are Openness (positive) and Neuroticism (negative). For the other traits the correlations are generally more nuanced and context dependent (Becker et al., 2012; Kajonius & Carlander, 2017; Lee & Ohtake, 2012; Viinikainen et al., 2010). Looking at Figure 5, the large standard errors of the IFLS correlation coefficients are conspicuous. The relatively lower sample size for the income variable in IFLS is most likely the cause of these larger standard errors (see Summary Statistics Table 9). In general, the sign and the size of the correlation coefficients (with some

exceptions) are similar across surveys.

Figure 6: Correlation between Self-Employment and Personality



Personality traits are all standardized to mean 0 and standard deviation 1 (for each survey separately) this figure plots the correlation between being self-employed and the standardized personality trait for each survey. These correlations all control for age, age squared and age cubed. The lines indicate 95% confidence intervals. Standard errors are clustered at the individual level.

In Figure 6 I plot the correlation between the standardized personality traits and a dummy variable that indicates if an individual is self-employed controlling for age, age squared and age cubed. For self-employment I only have data for four out of eleven surveys. Being self-employed is positively associated with risk tolerance, trust, Openness, Conscientiousness, Extraversion and locus of control. Additionally, being self-employed is negatively associated with Neuroticism and not associated with Agreeableness. For the relationship between trust and self-employment previous studies have relied on data from the German SOEP (see Caliendo et al. (2012)). This figure adds to the existing literature by replicating the positive association between trust and self-employment for HILDA and the SHP. As previously discussed, the trust measure in UKHLS, based on my empirical framework, does not capture what it is intended to measure. Overall, the results are consistent with the literature as seen in Table 2. However, in the limited studies available, which only used data from the German SOEP, on this subject Conscientiousness and Neuroticism typically have not shown a statistically significant correlation with self-employment (Caliendo et al., 2014). On the other hand Zhao and Seibert (2006)’s findings suggest that entrepreneurs are

more conscientious and less neurotic than managers. Conscientiousness might be positively associated with self-employment, because self-employed individuals have to be more organized and self-disciplined than regular employees since for these individuals their livelihood is at stake more so than for regular employees. Further, Neuroticism might be negatively associated with self-employment, because highly neurotic individuals might worry too much to even go into self-employment and cannot handle failures which most of the time occur in self-employment.

The results combined suggest that comparisons across surveys can be justified since the overwhelming majority of correlations mostly show the same directions and the correlation coefficient sizes tend to be very similar across multiple socio-economic and demographic variables.

## 6 Robustness

To check whether the personality measures for each survey are robust across different specifications I increase the requirement that every personality trait has to be consistent with previous literature findings from 70 percent to 80 percent. Overall, this does not change a lot. I discuss those cases that are not robust in this specification or need further explanation. I do not discuss personality traits that do not pass the 70 percent requirement.

The Agreeableness measure in AddHealth predicts 73 percent of the correlations consistent with previous literature findings. However, when I relax the requirement that a correlation has to be statistically significant at the ten percent level to a correlation has to show the expected direction the Agreeableness measure predicts 82 percent of the correlations correctly. Therefore, I conclude that the Agreeableness measure captures what it is intended to measure.

It is already debatable whether the IFLS risk tolerance measure passes the 70 percent requirement in the first specification, because not a single intercorrelation with the big five personality traits is consistent with previous literature findings, only the direction of the correlation in some cases, as seen in Table 23. The IFLS risk tolerance does not pass the robustness test, especially when taking into consideration, that the only intercorrelations of risk tolerance consistent with previous literature findings are those with the measures trust and patience, which based on my empirical framework do not capture what they are intended to measure. As seen in Table 5, at first glance it looks like the Conscientiousness and Agreeableness measures do not pass the new robustness requirement of 80 percent. However, we have to take into account that the patience and trust measures in the IFLS do not capture what they are intended to measure. Therefore, I do not take the two (for each trait) intercorrelations between patience and trust and the Big Five personality traits into

account (see Table 23). Consequently, the Conscientiousness and Agreeableness measures correlate in 89 percent of the cases as expected based on previous literature findings, as seen in Table 1 and Table 2.

As seen in Table 5, the risk tolerance measure in LISS is consistent with previous literature findings in 70 percent of the cases. When I relax the requirement that a correlation has to be statistically significant at the 10 percent level this number increases to 90 percent. The jump of twenty percentage points can be attributed to the not statistically significant but correct direction of intercorrelation between risk tolerance and trust and risk tolerance and Extraversion, as seen in Table 24. Further, the trust measure in LISS is consistent with previous literature findings in 78 percent (7/9) of the cases. As previously mentioned, taking into consideration, that the correlation between trust and risk tolerance shows the expected direction but is not statistically significant. This puts the percentage number to 88 percent (8/9 cases) and I therefore conclude that even with the 80 percent requirement the measure captures what it is intended to measure.

As previously discussed, for the risk tolerance measure in the MXFLS four out of six correlations are consistent with previous literature findings which is only 67 percent. However, taking into consideration, that the correlation between risk tolerance and BMI shows the expected sign and the t-value is reasonably high ( $t=1.39$ ), as seen in Table 37, I conclude that the risk tolerance measure capture what it is intended to measure since it predicts 83 percent (5/6) of the correlations as expected.

As seen in Table 5, the risk tolerance measure and the Conscientiousness measure in the SHP are consistent with previous literature findings in ten out of thirteen cases (77 percent). For the risk tolerance measure, of the three correlations that are not consistent with previous literature findings two show the expected direction but are not statistically significant, as seen in Table 28 and Table 39. Therefore, I consider the measure as robust in this new specification. Further, for Conscientiousness of the three correlations that are not consistent with previous literature findings the correlation between Conscientiousness and trust shows the expected direction, as seen in Table 28. Additionally, the correlation between Conscientiousness and self-employment is positive and statistically significant in three out of four surveys I investigate contrary to Caliendo et al. (2014)'s findings which suggest that Conscientiousness is not correlated with self-employment. Therefore, I conclude that the Conscientiousness measure reasonably captures what it is intended to measure, because it correctly predicts over 80 percent of the correlations.

The German SOEP patience measure is consistent with previous literature findings in nine out of fourteen cases which is 64 percent. Taking into consideration, that three out of the five correlations that are not consistent with previous literature findings show the expected direction, as seen in Table 29, I conclude that the measure reasonably captures what it is

intended to measure even with the more restrictive requirement. Further, the Openness and Conscientiousness measure in the German SOEP are consistent with previous literature findings in 79 percent of the cases. Taking into consideration, that the trust measure does not reasonably capture what it is intended to measure I do not take the intercorrelation between trust and Openness and trust and Conscientiousness into account. Therefore, I conclude that the Openness and Conscientiousness measures in the German SOEP reasonably capture what they are intended to measure with more restrictive requirements.

## 7 Conclusion

In this thesis I investigate whether personality measures elicited in eleven different surveys reasonably predict real-life behavior and socio-economic outcomes even though these surveys do not necessarily use the same conceptual framework to collect data on these measures. Additionally, I investigate whether cross survey comparisons can be made using these surveys. My findings suggest that even though surveys use different methods to collect data on different personality traits these methods yield relatively similar results. The overwhelming majority of personality traits elicited in those eleven surveys show correlations with life outcomes and real-life behavior as one would predict based on previous literature findings. Generally, the measures are consistent with previous literature findings even when the requirement is more restrictive (70 percent vs. 80 percent). However, there are measures, based on my empirical framework, that do not reasonably capture what they are intended to measure. For instance, the UKHLS trust measure, the IFLS patience and trust measure, the NLSY79 risk tolerance measure and the risk tolerance measure in AddHealth perform poorly in my validation exercise and based on my empirical framework do not reasonably capture what they are intended to measure. Further, the risk tolerance measure in IFLS does not pass the robustness test. Surprisingly, the trust measure in the German SOEP sample I investigate also does not reasonably capture what it is intended to measure even though it has been empirically and experimentally validated for the German population (Becker et al., 2012; Caliendo et al., 2012; Dohmen et al., 2008; Fehr et al., 2002). Additionally, my findings suggest that financial risk tolerance does not reasonably predict health outcomes. Generally, the Big Five personality traits and the locus of control measures yield more consistent results than the economic preference measures. This result is somewhat expected since for these measures the surveys I investigate use consistent conceptual and already validated frameworks. For the economic preferences the elicitation method across surveys differs vastly. Therefore, longitudinal surveys might consider implementing already experimentally validated survey measures. For instance, implementing the Global Preference Survey (GPS) Module by Falk et al. (2016) to elicit economic preferences would be an option to consider.

## 8 Acknowledgements

This research uses data from the following data providers. I am not affiliated with any of those or the people who work for those. I have not received any funds from any of the data providers. The entire thesis rests on my own analysis and to the best of my knowledge nothing of what I have written represents an opinion of anyone affiliated with the data:

- The National Longitudinal Study of Adolescent to Adult Health (Add Health)
- China Family Panel Studies (CFPS)
- Household, Income and Labour Dynamics in Australia (HILDA)
- Indonesian Family Life Survey (IFLS)
- Longitudinal Internet studies in the Social Sciences (LISS)
- Millenium Cohort Study (MCS)
- Mexican Family Life Survey (Mexcian Family Life Survey (MXFLS))
- NLSY79 Cohort
- Swiss Household Panel (SHP)
- German Socio-Economic Panel (SOEP)
- British Household Panel Survey (BHPS) and the UK Household Longitudinal Study (UKHLS)

## 9 Appendix

### 9.1 Brief Survey Descriptions and Descriptive Statistics

The personality traits in the descriptive statistics summary tables have all been transformed to 0-10 Likert scales for the economic preferences and to a 1-7 Likert scales for the Big Five personality traits and locus of control. For a detailed overview on the transformation formulas see Appendix subsection 9.2. To account for multiple observations per individual I first calculate the average of all variables per individual and second I proceed by using the common procedure of calculating summary statistics.

#### 9.1.1 AddHealth

“The National Longitudinal Study of Adolescent to Adult Health (Add Health) is a longitudinal study of a nationally representative sample of adolescents in grades 7-12 in the United States during the 1994-95 school year. The Add Health cohort has been followed into young adulthood with four in-home interviews, the most recent in 2008, when the sample was aged 24-32.”

“Add Health” (n.d.)

AddHealth collects data on risk tolerance, the Big Five personality traits and locus of control. Risk tolerance is measured by asking individuals to rate themselves based on the statement “I like to take risks” on a Likert scale from 1-5 where 1 means “strongly agree” and 5 means “strongly disagree”. Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism are measured with the 20 item mini IPIP scale (four questions per trait) (Donnellan, Oswald, Baird, & Lucas, 2006). Finally, in AddHealth locus of control is elicited by asking six questions where individuals have to rate themselves on a 1-5 Likert scale (ratings same as for risk tolerance). We obtain the locus of control score by taking the average of these six questions and then using the transformation formula discussed in subsection 9.2: (1) “I hardly ever expect things to go my way.”, (2) “There is little I can do to change the important things in my life.”, (3) “Other people determine most of what I can and cannot do.”, (4) “There are many things that interfere with what I want to do.” (5) “I have little control over the things that happen to me.” (6) “There is really no way I can solve the problems I have”. The scores on these questions are reversed that a higher score means a higher internal locus of control.

For risk tolerance I have data in 1996, 2002 and 2008. For Openness and locus of control I have data for one year, namely 2008. For Conscientiousness, Extraversion and Agreeableness I have data in 1995, 2002 and 2008. For Neuroticism I have data in 1995, 1996, 2002 and 2008. For my analysis I use the variables Female, an individual’s age, Smoker which indicates



if an individual currently smokes, an individual’s Body-Mass-Index(BMI), HGC which is an individual’s highest grade completed, and an individual’s current income.

Table 6: Summary Statistics AddHealth

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk Tolerance	5.71	2.15	0.00	10.00	6020
Openness	4.95	0.93	1.00	7.00	4967
Conscientiousness	4.71	0.61	2.46	7.00	6323
Extraversion	4.97	0.89	1.00	7.00	6325
Agreeableness	4.65	0.77	1.00	7.00	6327
Neuroticism	3.02	0.64	1.00	5.89	6329
Locus of Control	5.26	0.84	1.00	7.00	4970
<b>Correlation Variables</b>					
Female	0.52	0.50	0.00	1.00	6329
Average Age	20.48	2.41	14.00	27.00	6291
BMI	25.17	5.87	13.53	86.31	6311
Smoker	0.31	0.36	0.00	1.00	6329
HGC	13.72	2.02	7.00	22.00	4773
Income	30363.65	37239.37	0.00	1300000.00	5554
ln(income)	9.12	2.36	0.00	13.69	5554

Female indicates an individual’s gender, BMI is the Body Mass Index, Smoker indicates if an individual smokes, HGC is the highest grade completed, Income is measured in June 2019 USD, ln(income) is the natural logarithm of an individual’s income

### 9.1.2 China Family Panel Studies (CFPS)

“China Family Panel Studies (CFPS) is a nationally representative, annual longitudinal survey of Chinese communities, families, and individuals launched in 2010 by the Institute of Social Science Survey (ISSS) of Peking University, China. The CFPS is designed to collect individual-, family-, and community-level longitudinal data in contemporary China. The studies focus on the economic, as well as the non-economic, wellbeing of the Chinese population, with a wealth of information covering such topics as economic activities, education outcomes, family dynamics and relationships, migration, and health. The CFPS is funded by the Chinese government through Peking University.”

Institute of Social Science Survey, Peking University (2015)

The CFPS collects data on risk tolerance and trust. Risk tolerance is measured by asking the following question: “If your family invest/In investment, what kind of risk are you willing to take?” Respondents can answer on a Likert scale from 1-4 where (1) means “high risk high return”, (2) means “Moderate risk, steady return”, (3) means “Low risk, low return” and (4) means “Unwilling to take any investment risk”. Trust was collected in one of two ways:

“In general, do you think that most people are trustworthy, or it is better to take greater caution when getting along with other people? which can either be answered with yes or no. Secondly: “How much you trust: People you meet for the first time” this is elicited on a 0-10 Likert scale where 0 means “no trust at all” and 10 means “trustworthy”.

For risk tolerance I only have data in 2014. For trust I have data in 2012, 2014 and 2016. Additionally, for my analysis I use an individual’s gender, age, BMI, an individual’s highest grade completed and an individual’s income.

Table 7: Summary Statistics CFPS

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk Tolerance	3.33	3.16	0.00	10.00	2868
Trust	2.10	1.72	0.00	10.00	11388
<b>Correlation Variables</b>					
Female	0.51	0.50	0.00	1.00	11467
Average Age	47.25	15.45	18.00	96.00	11467
BMI	22.82	3.36	8.96	45.00	10818
HGC	6.15	3.80	0.00	19.50	11019
Income	2613.30	5671.51	0.00	290000.00	10605
ln(income)	4.78	3.71	0.00	12.57	10605

Female indicates an individual’s gender, BMI is the Body Mass Index, HGC is the highest grade completed, Income is measured in 2019 USD, ln(income) is the natural logarithm of an individual’s income

### 9.1.3 Household, Income and Labour Dynamics in Australia (HILDA)

“The Household, Income and Labour Dynamics in Australia (HILDA) Survey is a nationally representative longitudinal study of Australian households which commenced in 2001. Funded by the Australian Government Department of Social Services (DSS), the HILDA Survey is managed by the Melbourne Institute of Applied Economic and Social Research at the University of Melbourne. The HILDA Survey provides longitudinal data on the lives of Australian residents. Its primary objective is to support research questions falling within three broad and inter-related areas of income, labour market and family dynamics. The HILDA Survey is a household-based panel study of Australian households and, as such, it interviews all household members (15 years and over) of the selected households and then re-interviews the same people in subsequent years. This dataset is the 17th release of the HILDA data, incorporating data collected from 2001 through 2017 (Waves 1-17). The special topic module in Wave 17 is health, and includes questions on health care utilisation, physical and mental health, diet, exercise and lifestyle, quantity and quality of sleep, and children’s health.”

Department of Social Services and Melbourne Institute of Applied Economic and Social Research (2018)

The HILDA collects data on risk tolerance, trust, the Big Five personality traits and locus of control. Risk tolerance is measured in one of two ways: (1) “Are you generally a person who is willing to take risks or are you unwilling to take risks?” on a 0-10 Likert scale where 0 means “unwilling to take risks” and 10 means “very willing to take risks”.<sup>11</sup> (2) “Which of the following statements comes closest to describing the amount of financial risk that you are willing to take with your spare cash? That is, cash used for savings or investment.” on a 1-4 Likert scale where [4] “I take substantial financial risks expecting to earn substantial returns”, [3] “I take above average financial risks expecting to earn above average returns”, [2] “I take average financial risks expecting to earn average financial returns”, and [1] “I am not willing to take any financial risks.” In their analysis, Grable and Lytton (2001) conclude that this measure is reasonably reliable and has rather good construct and face validity. Trust is gathered with the following statement: “Generally speaking, most people can be trusted” on a 1-7 Likert scale where 1 means “strongly disagree” and 7 means “strongly agree”. For the Big Five personality traits HILDA uses the 36 item questionnaire (Saucier, 1994) asking the following questions: “How well do the following words describe you? For each word, cross one box to indicate how well that word describes you. There are no right or wrong answers.” where each word corresponds with one of the Big Five personality traits and respondents have to answer on a 1-7 Likert scale where 1 means “Does not describe me at all” and 7 means “Describes me very well”. Locus of control is collected by asking individuals to rate themselves based on seven statements on a Likert scale from 1-7 where in the summarized measure 1 means people do not believe they have control over things that happen in their lives and 7 means people think they can influence what happens in their lives: (1) “I have little control over the things that happen to me.”, (2) “There is really no way I can solve some of the problems I have.”, (3) “There is little I can do to change many of the important things in my life.”, (4) “I often feel helpless in dealing with the problems of life.”, (5) “Sometimes I feel that I’m being pushed around in life.”, (6) “What happens to me in the future mostly depends on me.”, and (7) “I can do just about anything I really set my mind to do.” Firstly, the scales are reversed that a higher score means higher internal locus of control for the “external” questions and then we take the mean of the score of these seven questions to obtain the summarized score.

For risk tolerance I have observations from 2001-2017 (excluding 2005, 2007, 2009), for trust 2005, 2006, 2008, 2010, 2011 and 2014 for the Big Five personality traits I have observations in 2005, 2009, 2013 and 2017 and finally for locus of control I have observations in 2003, 2004, 2007, 2011 and 2015.

---

<sup>11</sup>This question only contains 158 observations in my sample

Additionally, for my analysis I use an individual's gender, age, Body Mass Index, highest grade completed, income and if an individual is self-employed.

Table 8: Summary Statistics HILDA

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk Tolerance	2.20	1.77	0.00	10.00	18877
Trust	6.27	1.85	0.00	10.00	18266
Openness	4.20	0.99	1.00	7.00	17571
Conscientiousness	5.07	0.93	1.00	7.00	17579
Extraversion	4.43	0.99	1.00	7.00	17598
Agreeableness	5.38	0.84	1.00	7.00	17593
Neuroticism	2.81	0.97	1.00	7.00	17577
Locus of Control	5.39	0.97	1.00	7.00	17823
<b>Correlation Variables</b>					
Female	0.52	0.50	0.00	1.00	18982
Average Age	43.75	18.58	15.00	96.00	18982
BMI	26.64	5.31	13.10	67.89	18711
HGC	13.04	2.81	5.00	19.00	18949
Income	45788.96	46766.91	0.00	1200000.00	18982
ln(income)	9.85	1.64	0.00	14.01	18982
Self-Employed	0.09	0.24	0.00	1.00	18982

Female indicates an individual's gender, BMI is an individual's Body Mass Index, HGC is an individual's highest grade completed, Income is an individual's income in 2019 USD, ln(income) is the natural logarithm of an individual's income and Self-Employed indicates if an individual is self-employed

#### 9.1.4 Indonesian Family Life Survey (IFLS)

“The Indonesian Family Life Survey (IFLS) is an on-going longitudinal survey in Indonesia. The sample is representative of about 83% of the Indonesian population and contains over 30,000 individuals living in 13 of the 27 provinces in the country.”

“The Indonesia Family Life Survey (IFLS)” (n.d.)

The IFLS collects data on risk tolerance, patience, trust and the Big Five personality traits. Patience and risk tolerance are collected by using choice lists where individuals are faced with hypothetical gambles. Since education levels are very low in Indonesia the survey tries to make sure that respondents understand these choice lists. Respondents who did not understand the questions at all were excluded (for details see (Sohn, 2017)). Both patience and risk tolerance are then assigned a value of 1-4 on a Likert scale where 1 means “not willing to take risks/ impatient” and 4 means “very risk tolerant/patient”. Trust is collected by asking respondents multiple questions about their willingness to trust other people in their village on a Likert scale from 1-4 where 1 means “strongly disagree” and 4 means “strongly

agree” indicating higher trust. The Big Five personality traits are measured using a short questionnaire called BFI-S consisting of 15 questions (3 per trait) which has been validated in the literature (Gerlitz & Schupp, 2005; Hahn, Gottschling, & Spinath, 2012). Individuals answer these questions on a Likert scale from 1-5 where 1 means “strongly disagree” and 5 means “strongly agree”.

For the three economic preferences I have data in 2007 and 2014 and for the Big Five personality traits I only have data in 2014. For my analysis I additionally use an individual’s gender, age, if an individual smokes, an individual’s highest grade completed and income.

Table 9: Summary Statistics IFLS

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk Tolerance	3.36	3.78	0.00	10.00	13809
Patience	2.18	3.00	0.00	10.00	15060
Trust	4.65	0.94	0.00	10.00	10015
Openness	5.13	0.96	1.00	7.00	12791
Conscientiousness	5.17	0.85	1.00	7.00	12791
Extraversion	4.69	1.00	1.00	7.00	12791
Agreeableness	5.32	0.77	1.00	7.00	12791
Neuroticism	3.57	1.00	1.00	7.00	12791
<b>Correlation Variables</b>					
Female	0.50	0.50	0.00	1.00	15429
Average Age	26.93	9.09	14.00	85.00	15429
Smoker	0.06	0.21	0.00	1.00	15429
HGC	9.96	3.41	0.00	18.00	4508
Income	1206.55	2135.57	0.00	62077.65	1678
ln(income)	6.43	1.34	0.00	11.04	1678

Female indicates an individual’s gender, Smoker indicates if an individual smokes, HGC is an individual’s highest grade completed, Income is an individual’s income in 2019 USD, ln(income) is the natural logarithm of an individual’s income

### 9.1.5 Longitudinal Internet studies in the Social Sciences (LISS)

“The LISS panel (Longitudinal Internet Studies for the Social sciences) is the principal component of the MESS project. It consists of 4500 households, comprising 7000 individuals. The panel is based on a true probability sample of households drawn from the population register by Statistics Netherlands.

Panel members complete online questionnaires every month of about 15 to 30 minutes in total. They are paid for each completed questionnaire. One member in the household provides the household data and updates this information at regular time intervals.”

“Reference to LISS panel data in text:” (n.d.)

The LISS collects data on risk tolerance, trust and the Big Five personality traits. Risk tolerance is measured in one of two ways: (1) “How do you see yourself? Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?” on a 0-10 Likert scale where 0 means “not at all willing to take risks” and 10 means “very willing to take risks”.<sup>12</sup> (2) Individuals are faced with a set of hypothetical gambles where they have to choose the option they prefer. Eventually, this is transformed to a 1-6 Likert scale where 1 indicates not willing to take risks and 6 very willing to take risks. For trust the LISS only uses the following question: “Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people? Please indicate a score of 0 to 10.” The survey uses a 0-10 Likert scale where 0 means “You can’t be too careful” and 10 means “Most people can be trusted”. To elicit the Big Five personality traits the LISS uses the International Personality Item Pool (IPIP) with 50 questions using a 1-5 Likert scale (Goldberg et al., 2006).

For all traits I have data from 2008-2018. For my analysis I additionally use an individual’s gender, age, BMI, an individual’s highest grade completed and an individual’s income.

Table 10: Summary Statistics LISS

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk	3.29	3.30	0.00	10.00	3616
Trust	6.04	1.78	0.00	10.00	7866
Openness	4.38	0.79	1.00	7.00	7887
Conscientiousness	4.79	0.82	1.17	7.00	7887
Extraversion	4.36	0.91	1.15	7.00	7887
Agreeableness	4.98	0.80	1.00	7.00	7887
Neuroticism	3.35	0.93	1.00	7.00	7887
<b>Correlation Variables</b>					
Female	0.54	0.50	0.00	1.00	5047
Average Age	50.77	16.87	16.00	105.00	5047
BMI	25.53	4.27	12.16	56.86	4938
HGC	12.91	3.00	0.00	20.00	5017
Income	36201.22	46584.66	0.00	1100000	3449
ln(income)	9.17	2.91	0.00	13.17	3449

Female indicates an individual’s gender, BMI is an individual’s Body Mass Index, HGC is an individual’s highest grade completed, Income is an individual’s income in 2019 USD, ln(income) is the natural logarithm of an individual’s income

<sup>12</sup>In our sample we only have 259 observations for this measure

### 9.1.6 Millenium Cohort Study (MCS)

“The Millennium Cohort Study (MCS), known as ‘Child of the New Century’ to cohort members and their families, is following the lives of around 19,000 young people born across England, Scotland, Wales and Northern Ireland in 2000-01. The study began with an original sample of 18,818 cohort members. [...] The MCS provides multiple measures of the cohort members’ physical, socio-emotional, cognitive and behavioural development over time, as well as detailed information on their daily life, behaviour and experiences. Alongside this, rich information on economic circumstances, parenting, relationships and family life is available from both resident parents.”

Centre for Longitudinal Studies, UCL Institute of Education (n.d.)

The MCS collects data on risk tolerance, patience and trust. Risk tolerance is assessed by asking the following question: “How willing to take risks would you say you are?” respondents answer on a Likert scale from 0-10 where 0 means “not at all” and 10 means “completely”. For patience the question is almost the same: “How patient would you say you are?” respondents answer on a Likert scale from 0-10 where 0 means “not at all” and 10 means “always”. For trust the MCS asks the following question: “How much would you say you trust other people?” respondents answer on a Likert scale from 0-10 where 0 means “not at all” and 10 means “completely”. For all variables I only have data on from 2015.

Since the MCS follows young people I only use gender, age, BMI and if an individual smokes for my analysis.

Table 11: Summary Statistics MCS

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk Tolerance	6.10	2.28	0.00	10.00	10627
Patience	5.69	2.37	0.00	10.00	10670
Trust	6.15	2.19	0.00	10.00	10683
<b>Correlation Variables</b>					
Female	0.50	0.50	0.00	1.00	10710
Average Age	14.37	0.27	14.00	15.30	8551
BMI	21.47	4.13	7.35	46.49	10276
Smoker	0.04	0.18	0.00	1.00	10710

Female indicates an individual’s gender, BMI is an individual’s Body Mass Index and smoker indicates whether an individual smokes

### 9.1.7 Mexican Family Life Survey (Mexican Family Life Survey (MXFLS))

“The Mexican Family Life Survey (MxFLS) is a longitudinal, multi-thematic survey representative of the Mexican population at the national, urban, rural and regional level. The MxFLS has been developed and managed by researchers from the Iberoamerican University (UIA, per its name in Spanish) and the Center for Economic Research and Teaching (CIDE, per its name in Spanish) in collaboration with researchers from Duke University in the United States. Currently, the MxFLS contains information for a 10-year period, collected in three rounds: 2002, 2005-2006 and 2009-2012.”

“Mexican Family Life Survey” (n.d.)

The MXFLS collects data on risk tolerance and patience. Risk tolerance is a constructed variable from lottery choices. These choices are combined to one risk tolerance measure from 1-7 where 1 indicates “low risk tolerance” and 7 “high risk tolerance”. The patience measure is collected very similarly. Individuals are faced with choices of payments now or in the future. These choices are summarized into one patience measure from 1-6. For risk tolerance I have data in 2005 and 2009, for patience I have data in 2005, 2008, 2009, 2013 and 2015.

For my analysis I additionally use gender, BMI, if an individual smokes, an individual’s highest grade completed and an individual’s income.

Table 12: Summary Statistics MXFLS

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk Tolerance	5.76	2.64	0.00	10.00	26915
Patience	2.39	2.44	0.00	10.00	28263
<b>Correlation Variables</b>					
Female	0.55	0.50	0.00	1.00	28265
Average Age	38.48	17.99	14.00	103.00	28241
BMI	26.81	5.32	11.47	81.97	17570
Smoker	0.09	0.24	0.00	1.00	28269
HGC	8.94	3.91	0.00	18.00	28241
Income	20090.85	240000	0.00	9164001	4545
ln(income)	8.42	1.57	0.00	16.03	4545

Female indicates an individual’s gender, BMI is an individual’s Body Mass Index, Smoker indicates if an individual smokes, HGC is an individual’s highest grade completed, Income is an individual’s income in 2019 USD, ln(income) is the natural logarithm of an individual’s income



### 9.1.8 NLSY79

“The NLSY79 Cohort is a longitudinal project that follows the lives of a sample of American youth born between 1957-64. The cohort originally included 12,686 respondents ages 14-22 when first interviewed in 1979; after two subsamples were dropped, 9,964 respondents remain in the eligible samples. Data are now available from Round 1 (1979 survey year) to Round 27 (2016 survey year).”

U.S. Bureau of Labor Statistics (n.d.)

The NLSY79 collects data on risk tolerance, trust, the Big Five personality traits and locus of control. Risk tolerance is measured in one of two ways: (1) The survey asks individuals: “Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?” and a second questions concerning “financial matters” where respondents answer on a Likert scale from 0-10 where 0 means “unwilling to take any risks” and 10 means “fully prepared to take risks”. (2) A set of lottery choices where individuals have to choose the one of two options they prefer. The measure is then summarized into a scale from 1-4. The NLSY79 does not have a direct trust question in its survey that is why a trust measure was derived using the following question: “How would you rate your willingness to take risks in the following areas? In your faith in other people?” where respondents answer on a Likert scale from 0-10 where 0 means “unwilling to take any risks” and 10 means “fully prepared to take risks”. For the Big Five personality traits the NLSY79 uses the TIPI scale where 1 means “disagree strongly” and 7 means “agree strongly”. Locus of control is elicited in two ways in the NLSY79: {1}: An adapted four item version of the classic Rotter-Scale (Rotter, 1966) which faces respondents with a pair of statements where one statement is of external nature and one statement is of internal nature; for instance: [1] “What happens to me is my own doing” or [2] “Sometimes I feel that I don’t have enough control over the direction my life is taking.” Individuals then are asked to rate themselves on a 1-4 Likert scale where (1) means that the respondent is “much closer” to statement [1], (2) means “slightly closer” to statement [1], (3) means “slightly closer” to statement [2] and (4) means “much closer” to statement [2]. Respondents do this for four pairs of internal/external statements which yields a Likert scale from 4-16 where (4) means high internal locus of control and (16) means high external locus of control. The second way {2}: The Pearlin Mastery scale developed by Pearlin, Lieberman, Menaghan, and Mullan (1981). This scale consists of 7 statements about the perception individuals have about themselves. Individuals rate themselves on a 1-4 Likert scale where (1) means “strongly disagree” and (4) means “strongly agree” which yields a cumulative scale from 7-28.

For my analysis I additionally use gender, BMI, if an individual smokes, an individual’s highest grade completed and an individual’s income.

Table 13: Summary Statistics NLSY79

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk Tolerance	3.73	2.55	0.00	10.00	7446
Trust	4.15	2.83	0.00	10.00	6263
Openness	4.99	1.30	1.00	7.00	5838
Conscientiousness	5.76	1.27	1.00	7.00	5878
Extraversion	4.47	1.45	1.00	7.00	5804
Agreeableness	5.22	1.24	1.00	7.00	5773
Neuroticism	2.86	1.36	1.00	7.00	5882
Locus of Control	5.07	0.79	1.57	7.00	7455
<b>Outcomes Variables</b>					
Female	0.51	0.50	0.00	1.00	7455
Average Age	31.88	2.23	28.00	36.00	7455
BMI	27.05	5.08	14.46	63.65	7426
Smoker	0.12	0.18	0.00	1.00	7455
HGC	12.88	2.19	0.00	19.50	7455
Income	40569.28	39665.57	0.00	373099.10	7433
ln(income)	8.41	3.04	0.00	12.83	7433

Female indicates an individual's gender, BMI is an individual's Body Mass Index, Smoker indicates if an individual smokes, HGC is an individual's highest grade completed, Income is an individual's income in 2019 USD, ln(income) is the natural logarithm of an individual's income

### 9.1.9 Swiss Household Panel (SHP)

“Collecting data on households and individuals since 1999, the Swiss Household Panel (SHP) is an ongoing, unique, large-scale, nationally representative, longitudinal study in Switzerland (N=7,383 households and N=12,119 persons interviewed in 2014). The data of the SHP provide a rich source of information to study social change in Switzerland over a significant period on a wide variety of topics. The SHP aims to provide both continuity and innovation in measurement and data collection, with the combination of retrospective and prospective longitudinal data in the most recent refreshment sample as one notable example of such an innovation.[...]”

Tillmann et al. (2016, p. 1)

The SHP collects data on risk tolerance, trust the Big Five personality traits and locus of control. Risk tolerance is elicited by asking respondents the following question: “Are you generally a person who is fully prepared to take risk or do you try to avoid taking risks, if 0 means "avoid taking risks" and 10 means "fully prepared to take risk?" respondents answer on a Likert scale. Trust is measured in two ways: (1) “Would you say that most people can be trusted or that you can't be too careful in dealing with people, if 0 means "Can't be too

careful" and 10 means "Most people can be trusted" ?" respondents answer on a 0-10 Likert scale. (2) The second question is from the Big Five personality trait questionnaire and faces individuals with the statement: "Please tell me how well do the following statements describe your personality, if 0 means "I completely disagree" and 10 "I completely agree". I see myself as someone who is generally trusting". The Big Five personality traits are also collected in two ways where in wave 11, 12 and 13 the SHP uses a 10-item questionnaire (Rammstedt & John, 2007) and in wave 17 the SHP uses the BFI-S questionnaire which contains 15 items (Gerlitz & Schupp, 2005). The SHP uses a 0-10 Likert scale for both methods. For locus of control the SHP uses the self-perception scale from Levy, Joye, Guye, and Kaufmann (1997) for the waves 11, 14 and 17 and in waves 14 and 17, the SHP uses a mastery scale, with three questions taken from from Pearlin and Schooler (1978) and three questions taken from Lachman and Weaver (1998) where individuals answer statements on a 0-10 Likert scale. For risk tolerance I have data from 2009-2017, for trust from 2002-2017, for the Big Five personality traits from 2009-2011 and in 2015 and finally for locus of control in 2009, 2012 and 2015. Additionally I use an individual's gender, age, BMI, if an individual smokes, an individual's highest grade completed, an individual's income and if an individual is self-employed for my analysis.

Table 14: Summary Statistics SHP

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk Tolerance	5.19	2.45	0.00	10.00	14095
Trust	5.88	2.02	0.00	10.00	19518
Openness	4.82	1.00	1.00	7.00	8409
Conscientiousness	5.18	0.96	1.00	7.00	8403
Extraversion	4.60	0.95	1.00	7.00	8411
Agreeableness	5.09	0.80	1.00	7.00	8418
Neuroticism	3.34	0.98	1.00	7.00	8420
Locus of Control	4.62	0.75	1.00	7.00	12837
<b>Correlation Variables</b>					
Female	0.53	0.50	0.00	1.00	19527
Average Age	45.28	19.69	14.00	96.42	19496
BMI	24.15	4.15	12.96	65.74	18314
Smoker	0.19	0.37	0.00	1.00	14853
HGC	12.84	3.18	6.00	21.00	19527
Income	59208.23	58551.34	41.55	2300000.00	18104
ln(income)	10.43	1.22	3.75	14.64	18104
Self-Employed	0.10	0.25	0.00	1.00	19527

Female indicates an individual's gender, BMI is an individual's Body Mass Index, Smoker indicates if an individual smokes, HGC is an individual's highest grade completed, Income is an individual's income in 2019 USD, ln(income) is the natural logarithm of an individual's income, Self-Employed indicates if an individual is self-employed

### 9.1.10 German Socio-Economic Panel (SOEP)

“The Socio-Economic Panel (SOEP) study is a wide-ranging, nationally representative longitudinal study of private households across Germany that was launched in 1984. It is based at DIW Berlin. Every year, nearly 15,000 households and more than 25,000 individuals are surveyed for the SOEP-Core study by the field-work organization Kantar Public (TNS Infratest up to 2017).

Since its inception, the SOEP’s goal has been to collect and provide representative microdata that allow researchers to study stability and change in living conditions. Its approach is micro-econometric, with added variables from sociology and political science (influenced by the social indicator movement). The data provide information on all members of households in both the former East and West, including foreigners, and recent immigrants to Germany. The study was launched in 1984. [...]”

DIW Berlin (n.d.)

The German SOEP collects data on risk tolerance, patience, trust, the Big Five personality traits and locus of control. For risk tolerance the SOEP collects data on general risk tolerance and financial risk tolerance: (1) “Would you describe yourself as someone who tries to avoid risks (risk-averse) or as someone who is willing to take risks (risk-prone)?” and (2) “How would you rate your willingness to take risks in the following areas? [in financial matters]” which respondents can answer on a 0-10 Likert scale where 0 means “risk averse” and 10 means “risk prone”. These two measures are then combined into one risk tolerance variable. Data on patience is collected by asking respondents: “Would you describe yourself as an impatient or a patient person in general?” on a 0-10 Likert scale where 0 means “very impatient” and 10 means “very patient”. Trust is measured with three questions where individuals answer on a 1-4 Likert scale where [1] “Strongly disagree”, [2] “Disagree” [3] “Agree” [4] “Strongly agree”: (1) “People can generally be trusted”; (2) “Nowadays you can’t rely on anyone”; (3) “If you are dealing with strangers, it is better to be careful before trusting them”. These variables are then combined into one trust variable using the mean of the three variables. The Big Five personality traits are measured using a short questionnaire called BFI-S consisting of 15 questions (3 per trait) which has been validated in the literature (Gerlitz & Schupp, 2005; Hahn et al., 2012). Individuals answer these statements on a Likert scale from 1 (“Does not apply to me at all”) to 7 (“Applies to me perfectly”). Locus of control is collected using a 10 item questionnaire where individuals answer statements on a 1-7 Likert scale where 1 means “I disagree completely” and 7 means “I agree completely”: (1) “My life’s course depends on me.”, (2) “I haven’t achieved what I deserve”, (3) “What you achieve depends on luck”, (4) “I can influence social conditions”, (5) “Others make crucial decisions in my life”, (6) “Success

takes hard work”, (7) “I doubt my abilities when problems arise”, (8) “Possibilities are defined by social conditions”, (9) “Abilities are more important than effort”, (10) “I have little control over my life”. Firstly, the scores are reversed that 1 means high external locus of control and 7 means high internal locus of control and finally we obtain the summarized score by taking the mean of these ten answers.

For the combined risk tolerance measures we have data in the years 2004 and from 2008-2018. Patience has been collected in 2008, 2013 and 2018 trust has been collected in 2003, 2008, 2013 and 2018. For the Big Five personality traits I have data in the years 2005, 2009, 2013 and 2017. Finally, for locus of control I have data in 2005, 2010, 2015 and 2016.

Additionally, I use an individual’s gender, BMI, if an individual smokes, an individual’s highest grade completed, an individual’s income and if an individual is self-employed for my analysis.

Table 15: Summary Statistics SOEP

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk Tolerance	5.33	2.15	0.00	10.00	12141
Patience	5.86	2.26	0.00	10.00	6236
Trust	4.53	1.69	0.00	10.00	8077
Openness	4.76	1.03	1.00	7.00	7259
Conscientiousness	5.43	0.99	1.00	7.00	7292
Extraversion	4.93	1.13	1.00	7.00	7293
Agreeableness	5.30	0.91	1.00	7.00	7295
Neuroticism	3.82	1.13	1.00	7.00	7300
Locus of Control	4.38	0.83	1.00	7.00	6504
<b>Correlation Variable</b>					
Female	0.48	0.48	0.00	1.00	15473
Average Age	24.21	7.20	16.50	80.50	15473
BMI	23.82	4.30	13.26	90.74	13066
Smoker	0.24	0.37	0.00	1.00	13625
HGC	11.68	2.29	4.50	18.00	12046
Income	1837.21	1776.45	0.00	93600.04	11184
ln(income)	7.02	1.12	0.00	11.45	11184
Self-Employed	0.03	0.13	0.00	1.00	14710

Female indicates an individual’s gender, BMI is the Body Mass Index, HGC is the highest grade completed

### 9.1.11 British Household Panel (BHPS) & UK Household Longitudinal Study (UKHLS)

“British Household Panel Survey (BHPS) and the UK household Longitudinal Study (UKHLS) are high quality longitudinal data, providing crucial information on the life of households living in Britain and the UK. The BHPS started in 1991 and was collected annually until 2008. The UKHLS started in 2009 and is still ongoing. The UKHLS can be seen as the continuation of the BHPS, and the two surveys share many similarities in terms of sample design, survey environment, and type of information collected.”

Fumagalli (2017)

The BHPS/UKHLS collects data on risk tolerance, trust and the Big Five personality traits. Risk tolerance is collected by asking respondents the following question: “Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks” which respondents answer on a 0-10 Likert scale where 0 means “avoid taking risks” and 10 means “fully prepared to take risks”. Trust is measured in two ways: (1) “Generally speaking [...] most people can be trusted or that you can’t be too careful in dealing with people”. Respondents answer this on a scale from 1-3: [1] (“Most people can be trusted”), [2] (“Depends”) to [3] (“Can’t be too careful”). The second way is as follows: “Generally are you a person who is fully prepared to take risks in trusting strangers”, on a Likert scale from 0 (“Avoid taking risks in trusting strangers”) to 10 (“Fully prepared to take risks in trusting strangers”). The majority of observations I have are from method (1). The Big Five personality traits are elicited using the BIFI-S 15 item questionnaire where respondents rate themselves on a 1-7 Likert scale where 1 means “disagree strongly” and 7 means “agree strongly” (Gerlitz & Schupp, 2005).

For risk tolerance I have data in 2008 and 2010, for trust in the years 1998, 2000, 2003, 2005, 2007, 2008 and 2010 and the Big Five personality traits in 2005 and 2012.

Table 16: Summary Statistics BHPS/UKHLS

	Mean	Sd	Min	Max	N
<b>Personality Traits</b>					
Risk Tolerance	6.31	2.25	0.00	10.00	5141
Trust	3.61	3.80	0.00	10.00	6724
Openness	4.76	1.20	1.00	7.00	5912
Conscientiousness	4.99	1.08	1.00	7.00	5914
Extraversion	4.75	1.14	1.00	7.00	5907
Agreeableness	5.44	1.03	1.00	7.00	5916
Neuroticism	3.79	1.34	1.00	7.00	5914
<b>Correlation Variables</b>					
Female	0.51	0.49	0.00	1.00	13306
Average Age	21.81	5.54	15.00	76.33	13305
Smoker	0.27	0.42	0.00	1.00	6414
HGC	11.44	2.61	0.00	17.00	13306
Income	9296.12	13069.35	0.00	190000.00	13306
ln(income)	5.35	3.95	0.00	12.12	13306
Self-Employed	0.05	0.20	0.00	1.00	13306

Female indicates an individual's gender, smoker indicates if an individual smokes,  
HGC is the highest grade completed

## 9.2 Transformation of Likert Scales

Economic Preferences are all transformed to a 0-10 Likert scale using the following formula:

$$(\text{original\_score} - 1) / (\text{upper\_end\_point\_on\_original\_scale} - 1) * 10$$

which yields the following scales:

Table 17: Likert Scale Transformation for Economic Preferences

Scale	Transformation of Likert Scale Values							
1-3	1	2	3					
1-10	0	5	10					
1-4	1	2	3	4				
0-10	0	3.3	6.7	10				
1-5	1	2	3	4	5			
0-10	0	2.5	5	7.5	10			
1-6	1	2	3	4	5	6		
0-10	0	2	4	6	8	10		
1-7	1	2	3	4	5	6	7	
0-10	0	1.7	3.3	5.0	6.7	8.3	10	

This table illustrates the values of the original Likert scales the surveys used and the transformed new values of the Likert scales I use in this thesis

Psychological Traits are all transformed to a 1-7 Likert scale using one of the following formulas: if the original scale is 1-5:

$$(\text{original\_score} - 1) / (5 - 1) * 6 + 1$$

if the original scale is 1-10:

$$(7 - 1) * ((\text{original\_score}) / (10)) + 1$$

and if the original scale is 4-16:

the lowest score becomes 1 and the following scores are increased by 0.5



which yields the following scales:

Table 18: Likert Scale Transformation for Psychological Traits

Scale	Transformation of Likert Scale Values						
1-5	1	2	3	4	5		
1-7	1	2.5	4	5.5	7		
1-10	1	2	...	5	...	9	10
1-7	1	1.5	...	4	...	6.4	7
4-16	4	5	...	8	...	15	16
1-7	1	1.5	...	3	...	6.5	7

This table illustrates the values of the original Likert scales the surveys used and the transformed new values of the Likert scales I use in this thesis

### 9.3 Intercorrelation between Personality Traits for each Survey

Table 19: Pairwise Correlation Summarized by Survey

	# of Intercorrelations as expected	Percent
AddHealth	17/21	86%
CFPS	1/1	100%
HILDA	24/28	86%
IFLS	16/28	57%
LISS	19/21	90%
MCS	3/3	100%
MXFLS	1/1	100%
NLSY79	24/28	86%
SHP	25/28	89%
SOEP	27/36	75%
UKHLS	14/21	67%

This table summarizes how many of the intercorrelations between the personality traits turn out as expected from the literature. A correlation is indicated as expected if the correlation shows the expected sign and is statistically significant.

In the following tables the estimates highlighted in bold are not consistent with previous literature findings as seen in Table 1. A correlation is not consistent with previous literature findings if the sign of the correlation is wrong and/or it is not statistically significant at least at the ten percent level.

Table 20: AddHealth Intercorrelation between Personality Traits

	(1) R	(2) O	(3) C	(4) E	(5) A	(6) N	(7) LoC
Risk Tolerance	1.000 (.)						
Openness	0.109*** (9.24)	1.000 (.)					
Conscientiousness	-0.136*** (-7.96)	0.239*** (9.99)	1.000 (.)				
Extraversion	0.248*** (16.54)	0.245*** (11.28)	0.148*** (11.22)	1.000 (.)			
Agreeableness	<b>-0.021</b> <b>(-1.10)</b>	0.311*** (11.41)	<b>-0.025</b> <b>(-1.64)</b>	0.006 (0.37)	1.000 (.)		
Neuroticism	-0.137*** (-7.95)	-0.234*** (-9.60)	-0.253*** (-17.58)	-0.448*** (-31.38)	<b>0.168***</b> <b>(12.34)</b>	1.000 (.)	
Locus of Control	<b>-0.003</b> <b>(-0.24)</b>	0.258*** (15.88)	0.130*** (13.86)	0.165*** (16.40)	0.082*** (10.00)	-0.206*** (-22.32)	1.000 (.)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. Estimates highlighted in bold are not consistent with previous literature findings (Table 1). Whether a correlation is consistent with previous literature findings is based on the empirical framework explained in section 4 t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 1 Agreeableness is typically negatively associated with Risk Tolerance. This is also the case for the AddHealth measures, as seen in Table 20. However, the correlation coefficient is not statistically significant at the ten percent level. Further, as seen in Table 1 locus of control is typically positively associated with risk tolerance. For the the AddHealth measure I do not find a statistically significant correlation between risk tolerance and locus of control. As seen in Table 1, Conscientiousness is typically positively associated or shows no association with Agreeableness. For AddHealth, this is not the case. The correlation coefficient is negative and borderline statistically significant on the ten percent level. Finally, based on previous literature findings, as seen in Table 1 Neuroticism should be negatively associated with Agreeableness. For the AddHealth measure this is not the case. The correlation is negative and statistically significant in my sample. *Jump back to Table 5.*

Table 21: CFPS Intercorrelation between Personality Traits

	(1) Risk Tolerance
Trust	0.271*** (11.63)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. t-statistics in paranthesis \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 1, based on previous literature findings, trust is positively associated with risk tolerance. In the CFPS this association is consistent with previous literature findings, as seen in Table 21. *Jump back to Table 5.*

Table 22: HILDA Intercorrelation between Personality Traits

	(1) R	(2) T	(3) O	(4) C	(5) E	(6) A	(7) N	(8) LoC
Risk Tolerance	1.000 (.)							
Trust	0.059*** (8.69)	1.000 (.)						
Openness	0.159*** (27.56)	<b>0.004</b> <b>(0.61)</b>	1.000 (.)					
Conscientiousness	-0.014** (-2.39)	<b>0.132***</b> <b>(18.94)</b>	0.074*** (8.93)	1.000 (.)				
Extraversion	0.052*** (8.97)	0.072*** (10.40)	0.076*** (9.37)	0.134*** (16.45)	1.000 (.)			
Agreeableness	-0.047*** (-7.63)	0.191*** (26.35)	0.309*** (38.50)	0.319*** (42.39)	0.193*** (24.76)	1.000 (.)		
Neuroticism	<b>0.029***</b> <b>(4.84)</b>	-0.225*** (-31.66)	<b>0.221***</b> <b>(27.63)</b>	-0.354*** (-45.55)	-0.178*** (-22.77)	-0.168*** (-20.67)	1.000 (.)	
Locus of Control	0.138*** (22.65)	0.266*** (34.53)	0.050*** (5.77)	0.275*** (32.79)	0.262*** (32.36)	0.160*** (18.24)	-0.334*** (-40.87)	1.000 (.)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. Estimates highlighted in bold are not consistent with previous literature findings (Table 1). Whether a correlation is consistent with previous literature findings is based on the empirical framework explained in section 4.

t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 1, Neuroticism is negatively associated with risk tolerance and negatively but not necessarily statistically significantly associated with Openness. In HILDA, as seen in Table 22, this is not the case. Neuroticism is positively associated with risk tolerance and Openness. Further, trust has been shown to be positively associated with Openness and negatively associated with Conscientiousness. The correlations derived from the HILDA sample are not consistent with these results. *Jump back to Table 5.*

Table 23: IFLS Intercorrelation between Personality Traits

	(1) R	(2) P	(3) T	(4) O	(5) C	(6) E	(7) A	(8) N
Risk Tolerance	1.000 (.)							
Patience	0.099*** (10.95)	1.000 (.)						
Trust	0.018* (1.65)	<b>-0.005</b> <b>(-0.48)</b>	1.000 (.)					
Openness	0.035*** (4.15)	0.036*** (4.67)	<b>-0.028***</b> <b>(-2.75)</b>	1.000 (.)				
Conscientiousness	<b>-0.000</b> <b>(-0.04)</b>	<b>-0.044***</b> <b>(-5.37)</b>	<b>-0.014</b> <b>(-1.31)</b>	0.250*** (25.47)	1.000 (.)			
Extraversion	<b>-0.015*</b> <b>(-1.73)</b>	0.008 (0.95)	<b>-0.010</b> <b>(-0.99)</b>	0.170*** (18.47)	0.091*** (9.48)	1.000 (.)		
Agreeableness	<b>0.002</b> <b>(0.20)</b>	<b>-0.002</b> <b>(-0.22)</b>	<b>-0.014</b> <b>(-1.30)</b>	0.214*** (22.30)	0.321*** (34.19)	0.073*** (7.87)	1.000 (.)	
Neuroticism	<b>-0.006</b> <b>(-0.67)</b>	<b>0.023***</b> <b>(2.87)</b>	-0.034*** (-3.31)	-0.057*** (-6.08)	-0.212*** (-23.00)	-0.092*** (-9.73)	-0.157*** (-16.85)	1.000 (.)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. Estimates highlighted in bold are not consistent with previous literature findings (Table 1). Whether a correlation is consistent with previous literature findings is based on the empirical framework explained in section 4.

t-statistics in paranthesis \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 1, based on previous literature findings, most intercorrelations of risk tolerance, patience and trust with the Big Five personality traits are not consistent with previous literature findings, as seen in Table 23. The intercorrelation between the Big Five personality traits turns out as expected. *Jump back to Table 5.*

Table 24: LISS Interrelation between Personality Traits

	(1) R	(2) T	(3) O	(4) C	(5) E	(6) A	(7) N
Risk Tolerance	1.000 (.)						
Trust	<b>0.000</b> <b>(0.02)</b>	1.000 (.)					
Openness	0.049*** (2.60)	0.158*** (14.63)	1.000 (.)				
Conscientiousness	-0.034* (-1.79)	<b>0.022**</b> <b>(1.98)</b>	0.215*** (17.59)	1.000 (.)			
Extraversion	<b>0.020</b> <b>(1.10)</b>	0.148*** (13.77)	0.354*** (31.60)	0.090*** (7.47)	1.000 (.)		
Agreeableness	-0.068*** (-3.60)	0.181*** (15.86)	0.272*** (21.36)	0.306*** (25.29)	0.332*** (26.84)	1.000 (.)	
Neuroticism	-0.051*** (-2.73)	-0.262*** (-24.59)	-0.199*** (-16.57)	-0.239*** (-20.03)	-0.262*** (-21.67)	-0.067*** (-5.48)	1.000 (.)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. Estimates highlighted in bold are not consistent with previous literature findings (Table 1). Whether a correlation is consistent with previous literature findings is based on the empirical framework explained in section 4. t-statistics in paranthesis \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 1 risk tolerance is typically positively associated with trust and Extraversion. In my sample for LISS, as seen in Table 24, this is not the case. Risk tolerance shows no correlation with trust and Extraversion. Further, as seen in Table 1 Conscientiousness has been shown to be negatively associated with trust. My sample for LISS shows the opposite. *Jump back to Table 5.*

Table 25: MCS Interrelation between Personality Traits

	(1) R	(2) P	(3) T
Risk Tolerance	1.000 (.)		
Patience	0.061*** (5.34)	1.000 (.)	
Trust	0.084*** (7.51)	0.326*** (31.68)	1.000 (.)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. Estimates highlighted in bold are not consistent with previous literature findings (Table 1). Whether a correlation is consistent with previous literature findings is based on the empirical framework explained in section 4.

t-statistics in paranthesis \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

For the MCS all intercorrelations turn out as one would expect based on previous literature findings (see Table 1). *Jump back to Table 5.*

Table 26: MXFLS Intercorrelation between Personality Traits

	(1) Risk
Patience	-0.034*** (-5.12)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. Estimates highlighted in bold are not consistent with previous literature findings (Table 1). Whether a correlation is consistent with previous literature findings is based on the empirical framework explained in section 4.

t-statistics in paranthesis \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 27: NLSY79 Intercorrelation between Personality Traits

	(1) R	(2) T	(3) O	(4) C	(5) E	(6) A	(7) N	(8) LoC
Risk Tolerance	1.000 (.)							
Trust	0.095*** (12.42)	1.000 (.)						
Openness	0.038*** (4.74)	<b>0.023</b> <b>(1.63)</b>	1.000 (.)					
Conscientiousness	-0.035*** (-4.39)	<b>-0.005</b> <b>(-0.36)</b>	0.276*** (19.66)	1.000 (.)				
Extraversion	0.025*** (3.05)	0.067*** (4.83)	0.210*** (14.73)	0.094*** (6.55)	1.000 (.)			
Agreeableness	-0.050*** (-6.23)	0.057*** (4.10)	0.210*** (14.60)	0.261*** (16.98)	0.051*** (3.57)	1.000 (.)		
Neuroticism	<b>0.011</b> <b>(1.43)</b>	-0.039*** (-2.75)	-0.246*** (-16.73)	-0.357*** (-23.97)	-0.111*** (-7.62)	-0.312*** (-21.56)	1.000 (.)	
Locus of Control	<b>-0.002</b> <b>(-0.17)</b>	0.120*** (6.41)	0.227*** (11.91)	0.257*** (13.26)	0.294*** (14.96)	0.149*** (7.41)	-0.378*** (-19.47)	1.000 (.)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. Estimates highlighted in bold are not consistent with previous literature findings (Table 1). Whether a correlation is consistent with previous literature findings is based on the empirical framework explained in section 4.

t-statistics in paranthesis \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 1, previous literature findings show that risk tolerance is negatively associated with Neuroticism and positively associated with locus of control. The correlations derived from the NLSY79, as seen in Table 27, are not consistent with these results. In NLSY79 risk tolerance is positively associated with Neuroticism and risk tolerance and locus of control are not correlated at all. Further, as seen in Table 1, trust was shown to be positively associated with Openness and Conscientiousness. In the NLSY79 sample I investigate the sign of the correlation is consistent with previous literature findings but the coefficients are not or only borderline statistically significant on the ten percent level. *Jump back to Table 5.*

Table 28: SHP Intercorrelation between Personality Traits

	(1) R	(2) T	(3) O	(4) C	(5) E	(6) A	(7) N	(8) LoC
Risk Tolerance	1.000 (.)							
Trust	0.236*** (19.60)	1.000 (.)						
Openness	0.189*** (15.32)	0.082*** (8.28)	1.000 (.)					
Conscientiousness	-0.074*** (-5.70)	<b>-0.010</b> <b>(-1.01)</b>	0.072*** (6.00)	1.000 (.)				
Extraversion	0.192*** (13.68)	0.056*** (4.99)	0.172*** (12.55)	0.138*** (10.56)	1.000 (.)			
Agreeableness	<b>-0.014</b> <b>(-1.00)</b>	0.186*** (17.62)	0.089*** (6.90)	0.310*** (24.83)	<b>-0.003</b> <b>(-0.26)</b>	1.000 (.)		
Neuroticism	-0.112*** (-8.58)	-0.142*** (-14.30)	-0.039*** (-3.21)	-0.255*** (-21.49)	-0.170*** (-14.47)	-0.263*** (-22.39)	1.000 (.)	
Locus of Control	0.169*** (14.31)	0.138*** (14.34)	0.146*** (9.15)	0.117*** (7.45)	-0.036** (-2.39)	0.126*** (8.27)	-0.170*** (-11.09)	1.000 (.)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. Estimates highlighted in bold are not consistent with previous literature findings (Table 1). Whether a correlation is consistent with previous literature findings is based on the empirical framework explained in section 4.

t-statistics in paranthesis \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 1, Agreeableness has been shown to be negatively associated with risk tolerance and positively (with some ambiguity) with Extraversion. In the SHP sample I investigate, as seen in Table 28, the direction of the correlation between risk tolerance and Agreeableness is consistent with previous literature findings but the coefficient is not statistically significant on the ten percent level. Extraversion is negatively but not statistically significantly associated with Agreeableness in the SHP. *Jump back to Table 5.*

Table 29: SOEP Intercorrelation between Personality Traits

	(1) R	(2) P	(3) T	(4) O	(5) C	(6) E	(7) A	(8) N	(9) LoC
Risk Tolerance	1.000 (.)								
Patience	-0.007 (-0.44)	1.000 (.)							
Trust	<b>0.007</b> <b>(0.52)</b>	0.133*** (9.09)	1.000 (.)						
Openness	0.130*** (11.85)	0.016 (0.69)	<b>0.003</b> <b>(0.15)</b>	1.000 (.)					
Conscientiousness	-0.082*** (-7.41)	0.043* (1.89)	<b>-0.016</b> <b>(-0.83)</b>	0.141*** (11.03)	1.000 (.)				
Extraversion	0.235*** (23.06)	-0.018 (-0.77)	<b>0.011</b> <b>(0.58)</b>	0.333*** (27.09)	0.150*** (11.86)	1.000 (.)			
Agreeableness	-0.099*** (-8.92)	<b>0.028</b> <b>(1.18)</b>	<b>-0.014</b> <b>(-0.69)</b>	0.163*** (12.32)	0.315*** (25.75)	0.044*** (3.45)	1.000 (.)		
Neuroticism	-0.150*** (-13.96)	<b>-0.038</b> <b>(-1.58)</b>	-0.045** (-2.18)	-0.040*** (-3.15)	-0.099*** (-7.83)	-0.192*** (-14.98)	-0.088*** (-6.89)	1.000 (.)	
Locus of Control	0.099*** (8.31)	<b>0.011</b> <b>(0.42)</b>	<b>0.008</b> <b>(0.36)</b>	0.082*** (5.63)	0.134*** (9.39)	0.171*** (12.69)	0.098*** (7.25)	-0.267*** (-20.23)	1.000 (.)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. Estimates highlighted in bold are not consistent with previous literature findings (Table 1). Whether a correlation is consistent with previous literature findings is based on the empirical framework explained in section 4.

t-statistics in paranthesis \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 1, the correlations of the trust measure in the SOEP sample I investigate, as seen in Table 29, are not consistent with previous literature findings except for the correlation between trust and patience and the correlation between trust and Neuroticism. This finding is puzzling since the studies I base my prediction on all use data from the German SOEP. Further, the correlation between patience and Neuroticism as well as the correlation between patience and locus of control are not consistent with previous literature findings. However, In the sample I investigate the correlation between Neuroticism and patience is borderline statistically significant. *Jump back to Table 5.*



Table 30: UKHLS Intercorrelation between Personality Traits

	(1) R	(2) T	(3) O	(4) C	(5) E	(6) A	(7) N
Risk Tolerance	1.000 (.)						
Trust	<b>-0.000</b> <b>(-0.01)</b>	1.000 (.)					
Openness	0.202*** (11.10)	<b>0.018</b> <b>(0.58)</b>	1.000 (.)				
Conscientiousness	<b>0.082***</b> (4.39)	<b>0.032</b> <b>(1.03)</b>	0.221*** (14.99)	1.000 (.)			
Extraversion	0.213*** (11.96)	<b>0.005</b> <b>(0.16)</b>	0.234*** (16.27)	0.170*** (12.44)	1.000 (.)		
Agreeableness	-0.034* (-1.78)	<b>0.016</b> <b>(0.53)</b>	0.276*** (18.56)	0.331*** (24.19)	0.124*** (8.75)	1.000 (.)	
Neuroticism	-0.213*** (-11.92)	<b>-0.013</b> <b>(-0.39)</b>	-0.069*** (-4.92)	-0.175*** (-12.55)	-0.169*** (-12.25)	-0.041*** (-2.87)	1.000 (.)

This table illustrates the intercorrelation between the personality traits. Every cell represents a regression of the average of a standardized (mean 0, sd 1) personality trait on the average of the standardized personality trait indicated in the first column. Standard errors are robust. Estimates highlighted in bold are not consistent with previous literature findings (Table 1). Whether a correlation is consistent with previous literature findings is based on the empirical framework explained in section 4.

t-statistics in paranthesis \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 1, trust has been shown to be positively associated with Openness, Extraversion Agreeableness and risk tolerance and negatively associated with Neuroticism. In the UKHLS sample I investigate, as seen in Table 30, no intercorrelation with trust is consistent with previous literature findings. I hypothesize that this is due to the nature of how the trust variable in the BHPS/UKHLS was elicited. Respondents only had three options to answer the trust question: [1] “Most people can be trusted”, [2] “Depends” and [3] “Can’t be too careful”. Further, Conscientiousness is positively associated with risk tolerance in the sample I investigate. This finding is not consistent with previous literature findings on the association between trust and Conscientiousness which has shown a negative association as seen in Table 1. *Jump back to Table 5.*

## 9.4 Correlation between Personality, Socio-Economic and Demographic Outcomes by Survey

Table 31: AddHealth Life Outcome Regressions

	(1) Risk Tolerance	(2) Open- ness	(3) Conscientious- ness	(4) Extra- version	(5) Agreeable- ness	(6) Neuroticism	(7) LoC
Female	-0.356*** (-18.03)	-0.234*** (-8.24)	0.101*** (6.11)	<b>-0.043**</b> <b>(-2.38)</b>	0.148*** (10.54)	0.301*** (19.26)	0.145*** (5.05)
Smoker	0.256*** (13.43)	0.005 (0.15)	-0.245*** (-15.02)	0.025 (1.32)	0.010 (0.64)	0.265*** (16.55)	-0.251*** (-8.38)
BMI	<b>-0.001</b> <b>(-0.98)</b>	-0.006*** (-3.32)	<b>-0.001</b> <b>(-0.69)</b>	<b>-0.004***</b> <b>(-2.58)</b>	-0.005*** (-4.75)	0.001 (0.87)	-0.003 (-1.31)
HGC	<b>-0.025***</b> <b>(-4.48)</b>	0.092*** (13.62)	0.050*** (9.63)	0.024*** (3.58)	0.048*** (11.29)	-0.041*** (-7.93)	0.119*** (17.58)
ln(income)	0.017*** (4.27)	0.028*** (5.44)	0.010** (2.51)	0.024*** (4.72)	0.004 (1.32)	-0.018*** (-5.04)	0.036*** (6.48)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socioeconomic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socioeconomic or demographic variable of interest controlling for age, age squared and age cubed. **Important:** Every cell therefore represents a separate regression in which age is always controlled for. Female is a dummy variable equal one if the individual is female, smoker is a dummy variable equal 1 if the individual currently smokes, BMI is an individual's Body-Mass-Index, HGC is the highest grade an individual has completed, ln(income) represents the logarithm of income for each individual. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level.

t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 2, previous literature findings suggest that risk tolerance is positively associated with education and BMI. The risk tolerance measure in AddHealth is negatively, but not statistically significantly, associated BMI and statistically significantly negatively with education which directly contradicts previous literature findings. Further, as seen in Table 2 Extraversion either shows a positive or no correlation with BMI and positive correlation with being female. In AddHealth Extraversion is negatively associated with BMI and negatively associated with being female which directly contradicts previous literature findings. Taking a look at the 20-item mini IPIP scale (see Donnellan et al. (2006)) used in AddHealth does not confirm my hypothesis that the scale values Assertiveness relatively higher, which men typically score higher on than women, than Warmth, Positive Emotions and Gregariousness, which women typically score higher on (Feingold, 1994).  
*Jump back to Table 5.*

Table 32: CFPS Life Outcome Regressions

	(1) Risk Tolerance	(2) Trust
Female	-0.199*** (-5.67)	-0.234*** (-16.12)
BMI	0.010* (1.72)	-0.007*** (-3.08)
HGC	0.050*** (11.16)	0.010*** (6.96)
ln(income)	0.131*** (8.30)	0.012*** (5.60)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socio-economic or demographic variable of interest controlling for age, age squared and age cubed. **Important:** Every cell therefore represents a separate regression each controlling for age, age squared and age cubed. Female is a dummy variable equal one if the individual is Female, BMI is an individual's Body-Mass-Index, HGC is the highest grade an individual has completed, ln(income) represents the logarithm of income for each individual. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level. t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 2 all correlations between risk tolerance, trust and the life outcomes I have data on in the CFPS correlate as expected. *Jump back to Table 5.*

Table 33: HILDA Life Outcome Regressions

	(1) Risk Tolerance	(2) Trust	(3) Open- ness	(4) Conscientious- ness	(5) Extra- version	(6) Agreeable- ness	(7) Neuroticism	(8) LoC
Female	-0.327*** (-31.12)	0.051*** (4.38)	-0.088*** (-6.19)	0.183*** (13.11)	0.204*** (13.99)	0.495*** (38.26)	<b>-0.047***</b> <b>(-3.51)</b>	-0.059*** (-4.45)
BMI	<b>-0.010***</b> <b>(-11.12)</b>	-0.009*** (-8.00)	-0.006*** (-4.75)	-0.021*** (-16.97)	0.002 (1.21)	-0.003*** (-2.62)	0.010*** (8.28)	-0.012*** (-9.20)
HGC	0.064*** (36.01)	0.040*** (18.96)	0.085*** (34.66)	0.033*** (12.93)	0.009*** (3.44)	0.018*** (6.99)	-0.022*** (-9.00)	0.044*** (18.47)
ln(income)	0.050*** (23.56)	0.011*** (4.63)	0.010*** (3.53)	0.027*** (9.42)	0.009*** (3.30)	-0.013*** (-4.69)	-0.006** (-2.22)	0.048*** (17.51)
SE	0.428*** (24.96)	0.106*** (6.15)	0.213*** (10.35)	-0.038* (-1.81)	0.113*** (5.24)	<b>-0.074***</b> <b>(-3.69)</b>	<b>-0.039**</b> <b>(-2.01)</b>	0.194*** (10.63)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socioeconomic or demographic variable of interest controlling for age, age squared and age cubed. **Important:** Every cell therefore represents a separate regression which controls for age, age squared and age cubed. Female is a dummy variable equal one if the individual is female, BMI is an individual's Body-Mass-Index, HGC is the highest grade an individual has completed, ln(income) represents the logarithm of income for each individual and SE indicates if an individual is Self-Employed. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level. t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 2 the the correlation between BMI and risk tolerance has consistently been shown to be positive. In HILDA I find a negative association between risk tolerance and BMI. I suspect that the risk tolerance measure in HILDA which measures financial risk tolerance is not necessarily a good measure to predict health behavior. SOEP and NLSY79 also collect data on financial risk tolerance (but not exclusively, as previously discussed). Running the same regression model for these surveys yields similar results which supports my hypothesis, that financial risk tolerance does not consistently predict health outcomes. For HILDA, I find a negative correlation between

Agreeableness and self-employment. Typically, as seen in Table 2, Agreeableness is not correlated with self-employment. However, Caliendo et al. (2014)'s findings suggest that higher Agreeableness tends to be associated with higher exit rates from self-employment, which my findings for HILDA might capture. Further, as seen in Table 2, Neuroticism, with limited evidence from the German SOEP, has been found not to be correlated with self-employment and Neuroticism has consistently been found to be positively associated with being female. My findings for HILDA directly contradict these findings. *Jump back to Table 5.*

Table 34: IFLS Life Outcome Regressions

	(1) Risk Tolerance	(2) Patience	(3) Trust	(4) Open- ness	(5) Conscientious- ness	(6) Extra- version	(7) Agreeable- ness	(8) Neuroticism
Female	-0.221*** (-14.36)	0.008 (0.61)	-0.157*** (-9.15)	-0.174*** (-9.87)	<b>-0.048***</b> <b>(-2.77)</b>	0.222*** (12.63)	<b>-0.048***</b> <b>(-2.74)</b>	0.266*** (15.29)
Smoker	0.117*** (3.50)	<b>-0.021</b> <b>(-0.73)</b>	0.068* (1.66)	<b>0.078**</b> <b>(2.06)</b>	-0.039 (-1.00)	-0.045 (-1.20)	-0.042 (-1.03)	<b>-0.092**</b> <b>(-2.40)</b>
HGC	0.019*** (3.38)	0.029*** (6.24)	<b>-0.015**</b> <b>(-2.55)</b>	0.050*** (7.55)	0.012* (1.83)	0.024*** (3.73)	0.002 (0.26)	-0.020*** (-3.28)
ln(income)	0.037* (1.67)	0.036* (1.72)	0.009 (0.36)	0.006 (0.25)	-0.015 (-0.69)	0.044* (1.75)	-0.016 (-0.65)	-0.032 (-1.21)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socioeconomic or demographic variable of interest controlling for age, age squared and age cubed. **Important:** Every cell therefore represents a separate regression which controls for age, age squared and age cubed. Female is a dummy variable equal one if the individual is female, smoker is a dummy equal to one if an individual smokes, HGC is the highest grade an individual has completed, ln(income) represents the logarithm of income for each individual. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level.

t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 2 the correlation between patience and smoking in the IFLS (Table 34) is not consistent with previous literature findings. My findings for the direction of the correlation are counter intuitive since smoking can be seen as an instant reward which more patient individual tend to be better to delay than less patient individuals theoretically. Further, in the IFLS trust is negatively associated with education and not correlated with income which is not consistent with previous literature findings, which suggest positive associations for both correlations. Further, in the IFLS Openness is positively associated with smoking where previous literature typically found ambiguous and mostly no correlations at all (Table 2). Further, Conscientiousness and Agreeableness are negatively associated with being female in the IFLS which contradicts previous literature findings. However, Costa et al. (2001), Schmitt et al. (2008) have found that in countries with low GDP and low equality index gender differences do show the same patterns. Schmitt et al. (2008) have found that women are less agreeable and conscientious in Indonesia. Therefore, the correlation is consistent with previous literature findings. Finally, Neuroticism is negatively associated with smoking in the IFLS which was typically found to not be associated with smoking, as seen in Table 2. *Jump back to Table 5.*

In LISS the only correlations not consistent with previous literature findings, summarized in Table 2, are the correlation between education and risk tolerance and the correlation between Extraversion

Table 35: LISS Life Outcome Regressions

	(1) Risk Tolerance	(2) Trust	(3) Open- ness	(4) Conscientious- ness	(5) Extra- version	(6) Agreeable- ness	(7) Neuroticism
Female	-0.260*** (-6.70)	-0.009 (-0.36)	-0.197*** (-7.45)	0.176*** (6.81)	<b>-0.024</b> <b>(-0.85)</b>	0.638*** (26.19)	0.338*** (12.66)
BMI	0.009* (1.84)	-0.014*** (-5.14)	-0.004 (-1.31)	-0.016*** (-5.63)	0.008*** (2.71)	-0.000 (-0.14)	0.004 (1.42)
HGC	<b>-0.004</b> <b>(-0.57)</b>	0.061*** (15.44)	0.094*** (23.28)	0.022*** (5.56)	0.015*** (3.59)	0.019*** (4.78)	-0.037*** (-9.06)
ln(income)	0.022* (1.72)	0.024*** (4.79)	0.038*** (6.51)	-0.005 (-0.95)	0.018*** (3.25)	-0.035*** (-6.27)	-0.032*** (-5.30)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socio-economic or demographic variable of interest controlling for age, age squared and age cubed. **Important:** Every cell therefore represents a separate regression which controls for age, age squared and age cubed. Female is a dummy variable equal one if the individual is female, BMI indicates an individual's Body-Mass-Index, HGC is the highest grade an individual has completed, ln(income) represents the logarithm of income for each individual. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level.

t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

and being female. Both correlations show the opposite of the expected sign but are not statistically significant. Taking a look at the 50-item International Personality Item Pool (IPIP) scale (see Goldberg et al. (2006)) used in LISS does not confirm my hypothesis that the scale values Assertiveness relatively higher, which men typically score higher on than women, than Warmth, Positive Emotions and Gregariousness, which women typically score higher on (Feingold, 1994). *Jump back to Table 5.*

Table 36: MCS Life Outcome Regressions

	(1) Risk Tolerance	(2) Patience	(3) Trust
Female	-0.180*** (-8.32)	-0.092*** (-4.25)	-0.234*** (-10.88)
BMI	<b>-0.005*</b> <b>(-1.90)</b>	-0.006** (-2.27)	-0.015*** (-5.69)
Smoker	0.456*** (8.67)	-0.492*** (-8.52)	-0.523*** (-8.44)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socio-economic or demographic variable of interest controlling for age, age squared and age cubed. **Important:** Every cell therefore represents a separate regression which controls for age, age squared and age cubed. Female is a dummy variable equal one if the individual is female, BMI indicates an individual's Body-Mass-Index, smoker is a dummy equal to one if an individual smokes. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level.

t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 36, the only correlation not consistent with previous literature findings in MCS is the correlation between risk tolerance and BMI. As seen in Table 2, risk tolerance has consistently been shown to be positively associated with BMI. In MCS BMI is negatively associated with risk tolerance which intuitively makes no sense, because being obese is risky as it is connected to multiple health issues. *Jump back to Table 5.*

Table 37: MXFLS Life Outcome Regressions

	(1)	(2)
	Risk Tolerance	Patience
Female	-0.029*** (-2.94)	0.037*** (3.83)
BMI	<b>0.002</b> <b>(1.39)</b>	-0.009*** (-7.12)
Smoker	<b>-0.046**</b> <b>(-2.50)</b>	-0.133*** (-8.21)
HGC	0.014*** (9.73)	<b>0.000</b> <b>(0.32)</b>
ln(income)	0.035*** (4.49)	0.014* (1.73)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socio-economic or demographic variable of interest controlling for age, age squared and age cubed. **Important:** Every cell therefore represents a separate regression which controls for age, age squared and age cubed. Female is a dummy variable equal one if the individual is female, BMI indicates an individual's Body-Mass-Index, smoker is a dummy equal to one if an individual smokes, HGC is the highest grade an individual has completed, ln(income) represents the logarithm of income for each individual. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level.

t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 37, in the MXFLS the correlation between risk tolerance and BMI and smoking respectively is not consistent with previous literature findings. As seen in Table 2, smoking has consistently been shown to be positively associated with risk tolerance. My findings for the MXFLS suggest the opposite which intuitively makes no sense. Further, the correlation between BMI and risk tolerance shows the expected direction but is not statistically significant. Finally, patience is typically positively associated with education. In MXFLS I do not find a correlation between patience and education. *Jump back to Table 5.*

Table 38: NLSY79 Life Outcome Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Risk Tolerance	Trust	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism	LoC
Female	-0.155*** (-10.81)	-0.008 (-0.32)	-0.010 (-0.37)	<b>0.039</b> <b>(1.48)</b>	0.173*** (6.63)	0.451*** (17.58)	0.069*** (2.66)	-0.062*** (-3.88)
BMI	<b>0.001</b> <b>(1.06)</b>	-0.004** (-2.02)	-0.004* (-1.76)	-0.008*** (-3.53)	<b>-0.006***</b> <b>(-2.85)</b>	-0.000 (-0.08)	0.003 (1.19)	0.007*** (5.12)
Smoker	0.119*** (6.40)	-0.064** (-2.16)	-0.010 (-0.29)	-0.172*** (-5.07)	-0.019 (-0.58)	-0.055* (-1.68)	0.247*** (7.21)	0.062*** (3.39)
HGC	<b>0.002</b> <b>(0.71)</b>	0.044*** (8.83)	0.050*** (10.07)	0.032*** (6.27)	0.040*** (7.64)	0.033*** (6.37)	-0.054*** (-10.99)	0.128*** (48.92)
ln(income)	<b>-0.005***</b> <b>(-3.31)</b>	0.010*** (3.15)	0.014*** (4.55)	0.025*** (8.14)	0.019*** (6.55)	0.007** (2.29)	-0.036*** (-11.84)	0.045*** (23.13)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socio-economic or demographic variable of interest controlling for age, squared and age cubed. **Important:** Every cell therefore represents a separate regression which controls for age, age squared and age cubed. Female is a dummy variable equal one if the individual is female, BMI indicates an individual's Body-Mass-Index, smoker is a dummy equal to one if an individual smokes, HGC is the highest grade an individual has completed, ln(income) represents the logarithm of income for each individual. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level.

t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 2 the correlation between risk tolerance and BMI, education and income respectively is not consistent with previous literature findings in the NLSY79. As seen in Table 38, the correlation between risk tolerance and BMI and the correlation between risk tolerance and education show the expected direction but are not statistically significant. Further, income is negatively associated with risk tolerance in the sample I investigate which directly contradicts previous literature findings. The risk tolerance measure I use for NLSY79 is a combined measure of gamble risk tolerance and financial risk tolerance and a negligible number of general risk tolerance observations as illustrated in subsection 3.1. Running the financial risk tolerance and gamble risk tolerance regressions separately yields an interesting result. As seen in Table 42, the financial risk tolerance measure's results correctly predict the correlations with gender, education and income. As already mentioned in the discussion of the HILDA financial risk tolerance measure, the financial risk tolerance measure does not consistently predict health outcomes. Further, the gamble risk tolerance measure only correlates as predicted by previous literature in one of five cases. Therefore, I conclude that the gamble risk tolerance measure does not capture life outcomes and based on my empirical framework does not capture what it is intended to measure. Further, in the NLSY79, Extraversion is negatively associated with BMI which generally has not been shown in previous literature. Extraversion is typically positively/not correlated with BMI as seen in Table 2. *Jump back to Table 5.*

Table 39: SHP Life Outcome Regressions

	Risk Tolerance	Trust	Open- ness	Conscientious- ness	Extra- version	Agreeable- ness	Neuroticism	LoC
Female	-0.197*** (-12.00)	0.026* (1.84)	0.069*** (3.44)	0.136*** (7.06)	0.068*** (3.85)	0.166*** (8.81)	0.281*** (14.24)	-0.121*** (-9.57)
BMI	<b>-0.003</b> <b>(-1.42)</b>	-0.020*** (-10.53)	-0.008*** (-3.21)	-0.021*** (-8.07)	0.009*** (4.10)	-0.010*** (-4.03)	<b>-0.013***</b> <b>(-5.15)</b>	0.003** (2.01)
Smoker	<b>0.022</b> <b>(0.65)</b>	-0.231*** (-12.50)	<b>0.095***</b> <b>(3.13)</b>	-0.110*** (-3.39)	0.142*** (5.58)	-0.053 (-1.60)	0.060* (1.90)	0.011 (0.51)
HGC	0.053*** (18.39)	0.058*** (25.69)	0.038*** (10.84)	<b>-0.004</b> <b>(-1.28)</b>	<b>-0.017***</b> <b>(-5.52)</b>	-0.006* (-1.75)	-0.015*** (-4.23)	0.036*** (16.65)
ln(income)	0.140*** (14.68)	0.043*** (6.89)	0.013 (1.20)	0.009 (0.84)	-0.031*** (-3.22)	-0.029*** (-2.89)	-0.087*** (-8.05)	0.112*** (14.65)
SE	0.398*** (14.72)	0.135*** (7.22)	0.291*** (9.02)	<b>0.082***</b> <b>(2.77)</b>	0.130*** (4.49)	0.002 (0.08)	<b>-0.089***</b> <b>(-2.77)</b>	0.102*** (4.64)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socio-economic or demographic variable of interest. **Important:** Every cell therefore represents a separate regression which controls for age, age squared and age cubed. Female is a dummy variable equal one if the individual is female, BMI indicates an individual's Body-Mass-Index, smoker is a dummy equal to one if an individual smokes, HGC is the highest grade an individual has completed, ln(income) represents the logarithm of income for each individual and SE indicates if an individual is Self-Employed. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level.

t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As summarized in Table 2, risk tolerance has consistently been shown to be positively associated with BMI and smoking. In the SHP, as seen in Table 39, risk tolerance is negatively, but not statistically significantly, associated with BMI. Further, the correlation between smoking and risk tolerance is positive but not statistically significant. Further, Conscientiousness has been shown to be mostly positively associated with education and to not be correlated with self-employment.

My findings for the SHP suggest that Conscientiousness is not correlated with education (with a negative tendency). Further, Conscientiousness is positively associated with being self-employed and Neuroticism is negatively associated with self-employment in the SHP. Three out of four surveys I investigate suggest that Conscientiousness/Neuroticism is positively/negatively associated with being self-employed. Previous literature only used data from the German SOEP (Caliendo et al., 2014) which is not necessarily representative of other countries. Finally, the correlation between Neuroticism and BMI has been shown to be positive with some ambiguity. For the SHP I find a negative, statistically significant, correlation between these two factors. This finding is atypical and finds no basis in the empirical literature. *Jump back to Table 5.*

Table 40: SOEP Life Outcome Regressions

	(1) Risk Tol.	(2) Pa- tience	(3) Trust	(4) Open- ness	(5) Conscien- tiousn.	(6) Extra- version	(7) Agree- ableness	(8) Neuroti- cism	(9) LoC
Female	-0.362*** (-20.72)	-0.095*** (-4.05)	-0.046** (-2.24)	0.167*** (7.17)	0.243*** (11.31)	0.176*** (7.37)	0.239*** (10.62)	0.504*** (22.76)	-0.048** (-2.03)
BMI	0.006** (2.56)	-0.002 (-0.84)	-0.012*** (-4.84)	-0.011*** (-3.13)	-0.019*** (-5.16)	0.001 (0.18)	-0.017*** (-3.45)	-0.006 (-1.25)	-0.010*** (-3.47)
Smoker	0.232*** (12.06)	-0.136*** (-5.24)	-0.266*** (-11.81)	<b>-0.095**</b> <b>(-2.57)</b>	-0.024 (-0.66)	0.149*** (4.04)	-0.121*** (-3.25)	0.036 (0.95)	-0.128*** (-3.26)
HGC	<b>-0.016***</b> <b>(-3.72)</b>	<b>-0.004</b> <b>(-0.69)</b>	0.113*** (23.94)	0.059*** (10.97)	<b>-0.016***</b> <b>(-3.27)</b>	-0.003 (-0.62)	0.009* (1.78)	-0.025*** (-4.67)	0.080*** (15.02)
ln(inc.)	0.060*** (6.78)	<b>-0.012</b> <b>(-0.95)</b>	<b>0.011</b> <b>(0.97)</b>	<b>-0.026**</b> <b>(-2.08)</b>	0.061*** (5.08)	-0.012 (-0.96)	-0.037*** (-3.13)	-0.070*** (-5.54)	0.097*** (6.39)
SE	0.256*** (5.14)	0.052 (0.84)	0.128** (2.24)	0.255*** (4.00)	<b>0.141**</b> <b>(2.46)</b>	0.282*** (4.37)	-0.023 (-0.36)	-0.113* (-1.78)	0.302*** (4.85)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socio-economic or demographic variable of interest. **Important:** Every cell therefore represents a separate regression. Female is a dummy variable equal one if the individual is female, BMI indicates an individual's Body-Mass-Index, smoker is a dummy equal to one if an individual smokes, HGC is the highest grade an individual has completed, ln(inc.) represents the logarithm of income for each individual and SE indicates if an individual is Self-Employed. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level.

t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As summarized in Table 2, risk tolerance was shown to be positively associated with education. In the SOEP sample I investigate, as seen in Table 40, the measure is negatively associated with education. Further, in the SOEP patience is negatively, but not statistically significantly, associated with education and income. Generally, positive associations have been found for both correlations in previous literature, as seen in Table 2. Interestingly, using representative experimental data from Germany Becker et al. (2012) have also found a negative association between patience, education and income. Unfortunately, they do not explain there results any further. To me, these findings combined suggest that there might be a different direction of correlation in the German population. Further, previous literature findings suggest that Openness is not correlated with smoking and positively (not always stat. significantly) associated with income. My findings, suggest that Openness is negatively associated with smoking and negatively associated with income. Further, in the SOEP sample I investigate Conscientiousness is negatively associated with education. This



contradicts previous literature findings and the general findings in my analysis which both suggest a positive correlation between the two variables. Even though previous literature (Caliendo et al. (2014)) suggests that Conscientiousness is not associated with being self-employed. In my analysis in three out of four surveys I find a positive correlation for this relationship. *Jump back to Table 5.*

Table 41: UKHLS Life Outcome Regressions

	(1) Risk Tolerance	(2) Trust	(3) Openness	(4) Conscien- tiousness	(5) Extraversion	(6) Agreeableness	(7) Neuroticism
Female	-0.228*** (-8.28)	-0.109*** (-4.60)	-0.091*** (-3.56)	0.154*** (6.31)	0.276*** (10.88)	0.276*** (11.01)	0.516*** (20.90)
Smoker	0.081* (1.85)	-0.251*** (-9.28)	<b>-0.114**</b> <b>(-2.56)</b>	-0.176*** (-3.85)	0.132*** (3.00)	-0.125*** (-2.64)	0.023 (0.51)
HGC	0.014** (2.36)	0.047*** (9.30)	0.039*** (8.05)	0.021*** (4.76)	0.003 (0.72)	0.022*** (4.48)	-0.002 (-0.46)
ln(income)	0.018*** (4.07)	<b>-0.011***</b> <b>(-3.81)</b>	<b>-0.001</b> <b>(-0.51)</b>	-0.002 (-0.85)	0.009*** (3.48)	-0.020*** (-7.89)	-0.005** (-2.08)
SE	0.261*** (4.50)	<b>-0.005</b> <b>(-0.11)</b>	0.176*** (3.39)	0.105** (2.06)	0.125** (2.29)	0.046 (0.90)	-0.160*** (-3.30)

This table represents the correlation for each standardized (mean 0, sd 1) personality trait with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized personality trait on the socio-economic or demographic variable of interest. **Important:** Every cell therefore represents a separate regression which controls for age, age squared and age cubed. Female is a dummy variable equal one if the individual is female, smoker is a dummy equal to one if an individual smokes, HGC is the highest grade an individual has completed, ln(income) represents the logarithm of income for each individual and SE indicates if an individual is Self-Employed. Estimates highlighted in bold are not consistent with previous literature findings. Standard errors are clustered at the individual level. t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

As seen in Table 2, trust is typically positively associated with income and self-employment. The UKHLS trust measure is negatively associated with both measures, as seen in Table 41. As previously discussed in the intercorrelation section, the trust measure in UKHLS, based on my empirical framework, does not capture what it is intended to measure. Further, Openness is typically positively associated with income and not correlated with smoking. In the UKHLS I find that Openness is negatively associated with smoking and not correlated with income. For income the correlation is negative but not statistically significant on any common levels. *Jump back to Table 5.*

## 9.5 NLSY79 Risk Tolerance Measures Life Outcome Regressions

Table 42: NLSY79 Risk Tolerance Measures Life Outcome Regressions

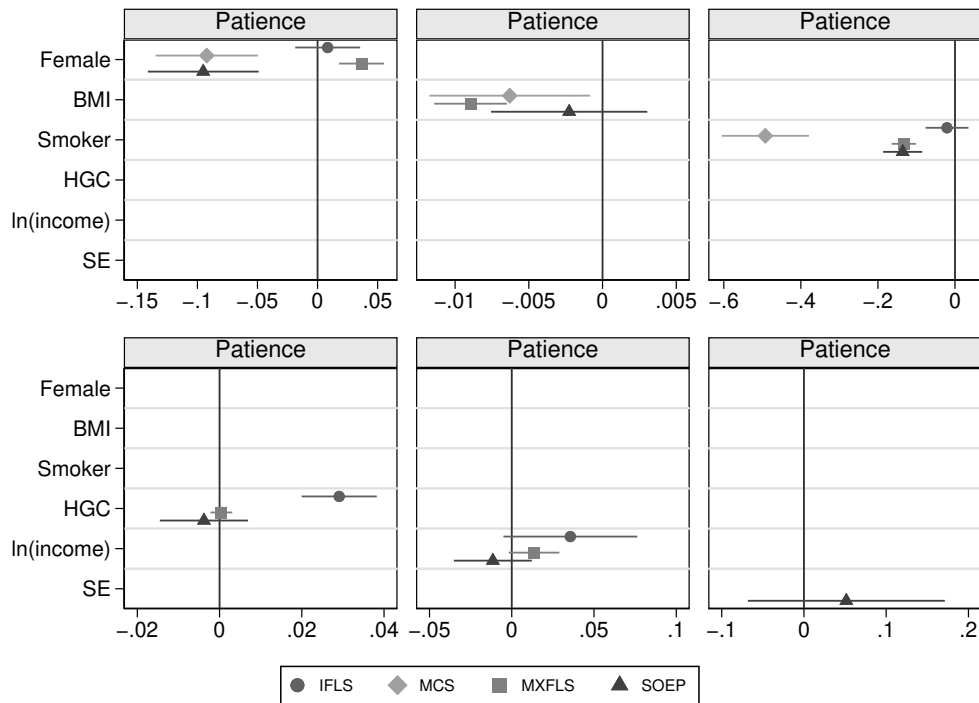
	(1) Risk Tolerance	(2) Gamble Risk Tolerance	(3) Financial Risk Tolerance
Female	-0.155*** (-10.81)	-0.145*** (-9.18)	-0.287*** (-11.48)
BMI	0.001 (1.06)	-0.001 (-0.44)	-0.000 (-0.11)
Smoker	0.119*** (6.40)	-0.032 (-1.07)	-0.140*** (-4.68)
HGC	0.002 (0.71)	-0.006 * (-1.88)	0.049*** (9.86)
ln(income)	-0.005*** (-3.31)	-0.007*** (-4.02)	0.017*** (5.38)

This table represents the correlation for each standardized (mean 0, sd 1) risk tolerance measure in NLSY79 with each socio-economic and demographic outcome I have data on. The correlation coefficients in each column stem from regressions of the standardized risk tolerance measure from NLSY79 on the socio-economic or demographic variable of interest. **Important:** Every cell therefore represents a separate regression. Female is a dummy variable equal one if the individual is female, BMI is an individual's Body Mass Index, smoker is a dummy equal to one if an individual smokes, HGC is the highest grade an individual has completed, ln(income) represents the logarithm of income for each individual. Standard errors are clustered at the individual level.

t-statistics in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## 9.6 Patience Cross Country Analysis

Figure 7: Correlation between Patience, Socio-Economic and Demographic Outcomes



Patience is standardized to mean 0 and standard deviation 1 (for each survey separately). This figure plots the correlation between Patience, Female, BMI, if an individual smokes, an individuals highest grade completed (HGC) and if an individual is Self-Employed for each survey. The coefficients stem from regressions of the standardized Patience variables (for each survey) on each socio-economic and demographic outcome separately controlling for age, age squared and age cubed. Standard errors are clustered at the individual level. The lines indicate 95% confidence intervals.

As seen in subsection 9.6, the correlations between patience and the socio-economic and demographic variables yield relatively inconsistent results in the education-income domain. I find no correlation between education, income, self-employment and patience. This directly contradicts previous literature findings (Bradford et al., 2017; Dohmen et al., 2015; Falk et al., 2018; Fouarge et al., 2014). The patience measure seems to perform better in the health behaviour domain and is mostly consistent with previous findings (Bradford et al., 2017; Chabris et al., 2008; Harrison, Hofmeyr, Ross, & Swarthout, 2018; Ida & Goto, 2009; Rieger, 2015).

## 9.7 Statutory Declaration

I hereby declare that the thesis with title:

“A Comprehensive Validation of Personality Measures across 11 Surveys”

has been composed by myself autonomously and that no means other than those declared were used. In every single case, I have indicated parts that were taken out of published or unpublished work, either verbatim or in a paraphrased manner, as such through a quotation. This thesis has not been handed in or published before in the same or similar form.

27.03.2020

Date



Signature

## 10 References

- Add Health. (n.d.). <https://www.cpc.unc.edu/projects/addhealth>. [Online; accessed 25-March-2020].
- Ahn, T. (2010). Attitudes toward risk and self-employment of young workers. *Labour Economics*, 17(2), 434–442.
- Alesina, A., & La Ferrara, E. (2002). Who trusts others? *Journal of Public Economics*, 85(2), 207–234.
- Almlund, M., Duckworth, A. L., Heckman, J., & Kautz, T. (2011). Personality psychology and economics. In *Handbook of the economics of education* (Vol. 4, pp. 1–181). Elsevier.
- Anderson, L. R., & Mellor, J. M. (2008). Predicting health behaviors with an experimental measure of risk preference. *Journal of Health Economics*, 27(5), 1260–1274.
- Archer, S. L., & Waterman, A. S. (1988). Psychological individualism: Gender differences or gender neutrality? *Human Development*, 31(2), 65–81.
- Beauchamp, J. P., Cesarini, D., & Johannesson, M. (2017). The psychometric and empirical properties of measures of risk preferences. *Journal of Risk and Uncertainty*, 54(3), 203–237.
- Becker, A., Deckers, T., Dohmen, T., Falk, A., & Kosse, F. (2012). The relationship between economic preferences and psychological personality measures. *Annual Review of Economics*, 4(1), 453–478.
- Begley, T. M., & Boyd, D. P. (1987). Psychological characteristics associated with performance in entrepreneurial firms and smaller businesses. *Journal of Business Venturing*, 2(1), 79–93.
- Bellemare, C., & Kröger, S. (2007). On representative social capital. *European Economic Review*, 51(1), 183–202.
- Belzil, C., & Leonardi, M. (2013). Risk aversion and schooling decisions. *Annals of Economics and Statistics/ANNALES D'ÉCONOMIE ET DE STATISTIQUE*, 35–70.
- Berg, J., Dickhaut, J., & McCabe, K. (1995). Trust, reciprocity, and social history. *Games and Economic Behavior*, 10(1), 122–142.
- Bonin, H., Dohmen, T., Falk, A., Huffman, D., & Sunde, U. (2007). Cross-sectional earnings risk and occupational sorting: The role of risk attitudes. *Labour Economics*, 14(6), 926–937.
- Borghans, L., Duckworth, A. L., Heckman, J. J., & Ter Weel, B. (2008). The economics and psychology of personality traits. *Journal of Human Resources*, 43(4), 972–1059.
- Borghans, L., Heckman, J. J., Golsteyn, B. H., & Meijers, H. (2009). Gender differences in risk aversion and ambiguity aversion. *Journal of the European Economic Association*, 7(2-3), 649–658.

- Braakmann, N. (2009). The role of psychological traits for the gender gap in full-time employment and wages: Evidence from Germany. *SOEP Paper*, (162).
- Bradford, D., Courtemanche, C., Heutel, G., McAlvanah, P., & Ruhm, C. (2017). Time preferences and consumer behavior. *Journal of Risk and Uncertainty*, 55(2-3), 119–145.
- Brummett, B. H., Babyak, M. A., Williams, R. B., Barefoot, J. C., Costa, P. T., & Siegler, I. C. (2006). NEO personality domains and gender predict levels and trends in Body Mass Index over 14 years during midlife. *Journal of Research in Personality*, 40(3), 222–236.
- Buchan, N. R., Croson, R. T., & Solnick, S. (2008). Trust and gender: An examination of behavior and beliefs in the investment game. *Journal of Economic Behavior & Organization*, 68(3-4), 466–476.
- Buddelmeyer, H., & Powdthavee, N. (2016). Can having internal locus of control insure against negative shocks? psychological evidence from panel data. *Journal of Economic Behavior & Organization*, 122, 88–109.
- Burks, S., Carpenter, J., Götte, L., & Rustichini, A. (2012). Which measures of time preference best predict outcomes: Evidence from a large-scale field experiment. *Journal of Economic Behavior & Organization*, 84(1), 308–320.
- Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological Bulletin*, 125(3), 367.
- Caliendo, M., Cobb-Clark, D. A., & Uhlenhorff, A. (2015). Locus of control and job search strategies. *Review of Economics and Statistics*, 97(1), 88–103.
- Caliendo, M., Fossen, F., & Kritikos, A. (2012). Trust, positive reciprocity, and negative reciprocity: Do these traits impact entrepreneurial dynamics? *Journal of Economic Psychology*, 33(2), 394–409.
- Caliendo, M., Fossen, F., & Kritikos, A. S. (2014). Personality characteristics and the decisions to become and stay self-employed. *Small Business Economics*, 42(4), 787–814.
- Centre for Longitudinal Studies, UCL Institute of Education. (n.d.). Millennium Cohort Study. <https://cls.ucl.ac.uk/cls-studies/millennium-cohort-study/>. [Online; accessed 29-January-2020].
- Chabris, C. F., Laibson, D., Morris, C. L., Schuldt, J. P., & Taubinsky, D. (2008). Individual laboratory-measured discount rates predict field behavior. *Journal of Risk and Uncertainty*, 37(2-3), 237.
- Charness, G., & Gneezy, U. (2012). Strong evidence for gender differences in risk taking. *Journal of Economic Behavior & Organization*, 83(1), 50–58.
- Chaudhuri, A., & Sbai, E. (2011). Gender differences in trust and reciprocity in repeated gift exchange games. *New Zealand Economic Papers*, 45(1-2), 81–95.

- Chubb, N. H., Fertman, C. I., & Ross, J. L. (1997). Adolescent self-esteem and locus of control: A longitudinal study of gender and age differences. *Adolescence*, 32(125), 113.
- Conell-Price, L., & Jamison, J. (2015). Predicting health behaviors with economic preferences & locus of control. *Journal of Behavioral and Experimental Economics*, 54, 1–9.
- Costa, P. T., & McCrae, R. R. (1985). *The NEO personality inventory*. Psychological Assessment Resources Odessa, FL.
- Costa, P. T., & McCrae, R. R. (1992a). Four ways five factors are basic. *Personality and Individual Differences*, 13(6), 653–665.
- Costa, P. T., & McCrae, R. R. (1992b). Revised NEO personality inventory (NEO-PI-R) and NEO five-factor (NEO-FFI) inventory professional manual. *Odessa, Fl: PAR*.
- Costa, P. T., Terracciano, A., & McCrae, R. R. (2001). Gender differences in personality traits across cultures: Robust and surprising findings. *Journal of Personality and Social Psychology*, 81(2), 322.
- Cramer, J. S., Hartog, J., Jonker, N., & Van Praag, C. M. (2002). Low risk aversion encourages the choice for entrepreneurship: An empirical test of a truism. *Journal of Economic Behavior & Organization*, 48(1), 29–36.
- Croson, R., & Buchan, N. (1999). Gender and culture: International experimental evidence from trust games. *American Economic Review*, 89(2), 386–391.
- Daugherty, J. R., & Brase, G. L. (2010). Taking time to be healthy: Predicting health behaviors with delay discounting and time perspective. *Personality and Individual Differences*, 48(2), 202–207.
- de Oliveira, A. C., Leonard, T. C., Shuval, K., Skinner, C. S., Eckel, C., & Murdoch, J. C. (2016). Economic preferences and obesity among a low-income african american community. *Journal of Economic Behavior & Organization*, 131, 196–208.
- Department of Social Services and Melbourne Institute of Applied Economic and Social Research. (2018). The Household, Income and Labour Dynamics in Australia (HILDA) Survey, GENERAL RELEASE 17 (waves 1-17). <http://dx.doi.org/10.26193/PTKLYP>. ADA Dataverse.
- DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between facets and domains: 10 aspects of the big five. *Journal of Personality and Social Psychology*, 93(5), 880.
- DIW Berlin. (n.d.). SOEP-Core. [https://www.diw.de/en/diw\\_02.c.222516.en/data.html](https://www.diw.de/en/diw_02.c.222516.en/data.html). [Online; accessed 29-January-2020].
- Doepke, M., & Zilibotti, F. (2006). Patience capital, occupational choice, and the spirit of capitalism. *UCLA Department of Economics Working Paper*, (848).
- Dohmen, T., Enke, B., Falk, A., Huffman, D., Sunde, U., et al. (2015). Patience and the wealth of nations. *Unpublished Manuscript. University of Bonn*.

- Dohmen, T., Falk, A., Huffman, D., & Sunde, U. (2008). Representative trust and reciprocity: Prevalence and determinants. *Economic Inquiry*, 46(1), 84–90.
- Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. G. (2011). Individual risk attitudes: Measurement, determinants, and behavioral consequences. *Journal of the European Economic Association*, 9(3), 522–550.
- Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The mini-ipip scales: Tiny-yet-effective measures of the big five factors of personality. *Psychological Assessment*, 18(2), 192.
- Ekelund, J., Johansson, E., Järvelin, M.-R., & Lichtermann, D. (2005). Self-employment and risk aversion—evidence from psychological test data. *Labour Economics*, 12(5), 649–659.
- Falk, A., Becker, A., Dohmen, T. J., Huffman, D., & Sunde, U. (2016). The preference survey module: A validated instrument for measuring risk, time, and social preferences.
- Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., & Sunde, U. (2018). Global evidence on economic preferences. *The Quarterly Journal of Economics*, 133(4), 1645–1692.
- Fehr, E. (2009). On the economics and biology of trust. *Journal of the European Economic Association*, 7(2-3), 235–266.
- Fehr, E., Fischbacher, U., Von Rosenbladt, B., Schupp, J., & Wagner, G. G. (2002). A nation-wide laboratory: Examining trust and trustworthiness by integrating behavioral experiments into representative survey. *Schmoller Jahrbuch*, (122), 519–542.
- Fehr, E., Kirchsteiger, G., & Riedl, A. (1993). Does fairness prevent market clearing? an experimental investigation. *The Quarterly Journal of Economics*, 108(2), 437–459.
- Feingold, A. (1994). Gender differences in personality: A meta-analysis. *Psychological Bulletin*, 116(3), 429.
- Filippin, A., & Crosetto, P. (2016). A reconsideration of gender differences in risk attitudes. *Management Science*, 62(11), 3138–3160.
- Findley, M. J., & Cooper, H. M. (1983). Locus of control and academic achievement: A literature review. *Journal of Personality and Social Psychology*, 44(2), 419.
- Fletcher, J. M. (2013). The effects of personality traits on adult labor market outcomes: Evidence from siblings. *Journal of Economic Behavior & Organization*, 89, 122–135.
- Fouarge, D., Kriechel, B., & Dohmen, T. (2014). Occupational sorting of school graduates: The role of economic preferences. *Journal of Economic Behavior & Organization*, 106, 335–351.
- Frederick, S., Loewenstein, G., & O’donoghue, T. (2002). Time discounting and time preference: A critical review. *Journal of Economic Literature*, 40(2), 351–401.



- Fumagalli, L. (2017). The new harmonized BHPS-UKHLS data set. <https://www.understandingsociety.ac.uk/scientific-conference-2017/papers/214.html>. [Online; accessed 29-January-2020].
- Gerlitz, J.-Y., & Schupp, J. (2005). Zur Erhebung der Big-Five-basierten Persönlichkeitsmerkmale im SOEP. *DIW Research Notes*, 4, 2005.
- Gifford, D. D., Briceno-Perriott, J., & Mianzo, F. (2006). Locus of control: Academic achievement and retention in a sample of university first-year students. *Journal of College Admission*, 191, 18–25.
- Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, 48(1), 26.
- Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. G. (2006). The international personality item pool and the future of public-domain personality measures. *Journal of Research in Personality*, 40(1), 84–96.
- Goldberg, L. R., Sweeney, D., Merenda, P. F., & Hughes Jr, J. E. (1998). Demographic variables and personality: The effects of gender, age, education, and ethnic/racial status on self-descriptions of personality attributes. *Personality and Individual Differences*, 24(3), 393–403.
- Grable, J. E., & Lytton, R. H. (2001). Assessing the concurrent validity of the scf risk tolerance question. *Journal of Financial Counseling and Planning*, 12(2), 43.
- Guiso, L., & Paiella, M. (2005). The role of risk aversion in predicting individual behaviors. Bank of Italy Economic Working Paper No. 546.
- Guiso, L., & Paiella, M. (2008). Risk aversion, wealth, and background risk. *Journal of the European Economic Association*, 6(6), 1109–1150.
- Hahn, E., Gottschling, J., & Spinath, F. M. (2012). Short measurements of personality—validity and reliability of the GSOEP big five inventory (BFI-S). *Journal of Research in Personality*, 46(3), 355–359.
- Hampson, S. E., Goldberg, L. R., Vogt, T. M., & Dubanoski, J. P. (2007). Mechanisms by which childhood personality traits influence adult health status: Educational attainment and healthy behaviors. *Health Psychology*, 26(1), 121.
- Harris, K., Halpern, C., Whitsel, E., Hussey, J., Tabor, J., Entzel, P., & Udry, J. (2009). The National Longitudinal Study of Adolescent to Adult Health: Research Design. <http://www.cpc.unc.edu/projects/addhealth/design>. [Online; accessed 29-January-2019].
- Harrison, G. W., Hofmeyr, A., Ross, D., & Swarthout, J. T. (2018). Risk preferences, time preferences, and smoking behavior. *Southern Economic Journal*, 85(2), 313–348.
- Hartlaub, V., & Schneider, T. (2012). *Educational choice and risk aversion: How important is structural vs. individual risk aversion?* SOEPpapers on Multidisciplinary Panel Data Research.

- Hartog, J., Ferrer-i-Carbonell, A., & Jonker, N. (2002). Linking measured risk aversion to individual characteristics. *Kyklos*, 55(1), 3–26.
- Heineck, G., & Anger, S. (2010). The returns to cognitive abilities and personality traits in germany. *Labour Economics*, 17(3), 535–546.
- Helliwell, J. F., & Putnam, R. D. (1999). *Education and social capital*. National Bureau of Economic Research.
- Hirsh, J. B., DeYoung, C. G., & Peterson, J. B. (2009). Metatraits of the big five differentially predict engagement and restraint of behavior. *Journal of Personality*, 77(4), 1085–1102.
- Hirsh, J. B., Morisano, D., & Peterson, J. B. (2008). Delay discounting: Interactions between personality and cognitive ability. *Journal of Research in Personality*, 42(6), 1646–1650.
- Holt, C. A., & Laury, S. K. (2002). Risk aversion and incentive effects. *American Economic Review*, 92(5), 1644–1655.
- Ida, T., & Goto, R. (2009). Interdependency among addictive behaviours and time/risk preferences: Discrete choice model analysis of smoking, drinking, and gambling. *Journal of Economic Psychology*, 30(4), 608–621.
- Institute of Social Science Survey, Peking University. (2015). "China Family Panel Studies (CFPS)". <https://doi.org/10.18170/DVN/45LCSO>. Peking University Open Research Data Platform, V37.
- Kajonius, P. J., & Carlander, A. (2017). Who gets ahead in life? Personality traits and childhood background in economic success. *Journal of Economic Psychology*, 59, 164–170.
- Kesavayuth, D., Ko, K. M., & Zikos, V. (2018). Locus of control and financial risk attitudes. *Economic Modelling*, 72, 122–131.
- Khwaja, A., Sloan, F., & Salm, M. (2006). Evidence on preferences and subjective beliefs of risk takers: The case of smokers. *International Journal of Industrial Organization*, 24(4), 667–682.
- Kirby, K. N., & Maraković, N. N. (1996). Delay-discounting probabilistic rewards: Rates decrease as amounts increase. *Psychonomic Bulletin & Review*, 3(1), 100–104.
- Komlos, J., Smith, P. K., & Bogin, B. (2004). Obesity and the rate of time preference: Is there a connection? *Journal of Biosocial Science*, 36(2), 209–219.
- Lachman, M. E., & Weaver, S. L. (1998). The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology*, 74(3), 763.
- Lee, S., & Ohtake, F. (2012). The effect of personality traits and behavioral characteristics on schooling, earnings and career promotion. *Journal of Behavioral Economics and Finance*, 5, 231–238.

- Lemos-Giráldez, S., & Fidalgo-Aliste, A. M. (1997). Personality dispositions and health-related habits and attitudes: A cross-sectional study. *European Journal of Personality*, 11(3), 197–209.
- Levy, R., Joye, D., Guye, O., & Kaufmann, V. (1997). Tous égaux? de la stratification aux représentations. Seismo, Zürich.
- Lippa, R. A. (2010). Gender differences in personality and interests: When, where, and why? *Social and Personality Psychology Compass*, 4(11), 1098–1110.
- Lunn, T. E., Nowson, C. A., Worsley, A., & Torres, S. J. (2014). Does personality affect dietary intake? *Nutrition*, 30(4), 403–409.
- Magee, C. A., & Heaven, P. C. (2011). Big-Five personality factors, obesity and 2-year weight gain in Australian adults. *Journal of Research in Personality*, 45(3), 332–335.
- Malouff, J. M., Thorsteinsson, E. B., & Schutte, N. S. (2006). The Five-Factor model of personality and smoking: A meta-analysis. *Journal of Drug Education*, 36(1), 47–58.
- Manning, J., Hedden, T., Wickens, N., Whitfield-Gabrieli, S., Prelec, D., & Gabrieli, J. D. (2014). Personality influences temporal discounting preferences: Behavioral and brain evidence. *NeuroImage*, 98, 42–49.
- McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, 52(1), 81.
- McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality*, 60(2), 175–215.
- Mexican Family Life Survey. (n.d.). <http://www.ennvih-mxfls.org/english/index.html>. [Online; accessed 4-March-2020].
- Mount, M. K., Barrick, M. R., Scullen, S. M., & Rounds, J. (2005). Higher-order dimensions of the big five personality traits and the big six vocational interest types. *Personnel Psychology*, 58(2), 447–478.
- Mueller, G., & Plug, E. (2006). Estimating the effect of personality on male and female earnings. *ILR Review*, 60(1), 3–22.
- Mueller, S. L., & Thomas, A. S. (2001). Culture and entrepreneurial potential: A nine country study of locus of control and innovativeness. *Journal of Business Venturing*, 16(1), 51–75.
- Nicholson, N., Soane, E., Fenton-O’Creedy, M., & Willman, P. (2005). Personality and domain-specific risk taking. *Journal of Risk Research*, 8(2), 157–176.
- Nyhus, E. K., & Pons, E. (2005). The effects of personality on earnings. *Journal of Economic Psychology*, 26(3), 363–384.
- O’Connor, M. C., & Paunonen, S. V. (2007). Big five personality predictors of post-secondary academic performance. *Personality and Individual Differences*, 43(5), 971–990.

- Outreville, J. F. (2015). The relationship between relative risk aversion and the level of education: A survey and implications for the demand for life insurance. *Journal of Economic Surveys*, 29(1), 97–111.
- Pearlin, L., Lieberman, M., Menaghan, E., & Mullan, J. (1981). Mastery scale. *Measures of Personality and Social Psychological Attitudes*. San Diego: Academic Press, Inc.
- Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior*, 2–21.
- Penley, J. A., & Tomaka, J. (2002). Associations among the big five, emotional responses, and coping with acute stress. *Personality and Individual Differences*, 32(7), 1215–1228.
- Piatek, R., & Pinger, P. (2010). Maintaining (locus of) control? assessing the impact of locus of control on education decisions and wages. *Assessing the Impact of Locus of Control on Education Decisions and Wages*, 10–093.
- Pinjisakikool, T. (2018). The influence of personality traits on households' financial risk tolerance and financial behaviour. *Journal of Interdisciplinary Economics*, 30(1), 32–54.
- Preston, C. C., & Colman, A. M. (2000). Optimal number of response categories in rating scales: Reliability, validity, discriminating power, and respondent preferences. *Acta Psychologica*, 104(1), 1–15.
- Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the big five inventory in english and german. *Journal of Research in Personality*, 41(1), 203–212.
- Raynor, D. A., & Levine, H. (2009). Associations between the five-factor model of personality and health behaviors among college students. *Journal of American College Health*, 58(1), 73–82.
- Reference to LISS panel data in text: (n.d.). [https://www.lissdata.nl/sites/default/files/afbeeldingen/Reference\\_LISS\\_3.0.pdf](https://www.lissdata.nl/sites/default/files/afbeeldingen/Reference_LISS_3.0.pdf). [Online; accessed 4-March-2020].
- Rieger, M. (2015). Risk aversion, time preference and health production: Theory and empirical evidence from cambodia. *Economics & Human Biology*, 17, 1–15.
- Rotter, J. B. (1954). *Social learning and clinical psychology*. Prentice-Hall, Inc.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1.
- Rubalcava, L., & Teruel, G. (2006). User's guide for the Mexican Family Life Survey first wave. *Working Paper*. Available at [www.ennvih-mxfls.org](http://www.ennvih-mxfls.org).
- Rubalcava, L., & Teruel, G. (2008). Mexican Family Life Survey, second wave. *Working Paper*. Available at [www.ennvih-mxfls.org](http://www.ennvih-mxfls.org).
- Rubalcava, L., & Teruel, G. (2013). Mexican Family Life Survey, third wave. *Working Paper*. Available at [www.ennvih-mxfls.org](http://www.ennvih-mxfls.org).

- Rustichini, A., DeYoung, C. G., Anderson, J. E., & Burks, S. V. (2016). Toward the integration of personality theory and decision theory in explaining economic behavior: An experimental investigation. *Journal of Behavioral and Experimental Economics*, 64, 122–137.
- Saucier, G. (1994). Mini-markers: A brief version of goldberg’s unipolar big-five markers. *Journal of Personality Assessment*, 63(3), 506–516.
- Schmitt, D. P., Realo, A., Voracek, M., & Allik, J. (2008). Why can’t a man be more like a woman? sex differences in big five personality traits across 55 cultures. *Journal of Personality and Social Psychology*, 94(1), 168.
- Semykina, A., & Linz, S. J. (2007). Gender differences in personality and earnings: Evidence from Russia. *Journal of Economic Psychology*, 28(3), 387–410.
- Shaw, K. L. (1996). An empirical analysis of risk aversion and income growth. *Journal of Labor Economics*, 14(4), 626–653.
- Shepherd, S., Owen, D., Fitch, T. J., & Marshall, J. L. (2006). Locus of control and academic achievement in high school students. *Psychological reports*, 98(2), 318–322.
- Sherman, A. C., Higgs, G. E., & Williams, R. L. (1997). Gender differences in the locus of control construct. *Psychology and Health*, 12(2), 239–248.
- Silverman, I. W. (2003). Gender differences in delay of gratification: A meta-analysis. *Sex Roles*, 49(9-10), 451–463.
- Sohn, K. (2017). The risk preferences of entrepreneurs in Indonesia. *Bulletin of Economic Research*, 69(3), 271–287.
- Stanton, S. J., Liening, S. H., & Schultheiss, O. C. (2011). Testosterone is positively associated with risk taking in the Iowa gambling task. *Hormones and Behavior*, 59(2), 252–256.
- Stanton, S. J., Mullette-Gillman, O. A., McLaurin, R. E., Kuhn, C. M., LaBar, K. S., Platt, M. L., & Huettel, S. A. (2011). Low-and high-testosterone individuals exhibit decreased aversion to economic risk. *Psychological Science*, 22(4), 447–453.
- Strathman, A., Gleicher, F., Boninger, D. S., & Edwards, C. S. (1994). The consideration of future consequences: Weighing immediate and distant outcomes of behavior. *Journal of Personality and Social Psychology*, 66(4), 742.
- Strickland, B. R., & Haley, W. E. (1980). Sex differences on the Rotter IE scale. *Journal of Personality and Social Psychology*, 39(5), 930–939.
- Sung, J., & Hanna, S. D. (1996). Factors related to risk tolerance. *Financial Counseling and Planning*, 7.
- Sutin, A. R., & Terracciano, A. (2017). Personality and body weight. *The Japanese Journal of Personality*, 26(1), 1–11.

- Sutter, M., Kocher, M. G., Glätzle-Rützler, D., & Trautmann, S. T. (2013). Impatience and uncertainty: Experimental decisions predict adolescents' field behavior. *American Economic Review*, 103(1), 510–31.
- The Indonesia Family Life Survey (IFLS). (n.d.). <https://www.rand.org/well-being/social-and-behavioral-policy/data/FLS/IFLS.html>. [Online; accessed 4-March-2020].
- Tillmann, R., Voorpostel, M., Kuhn, U., Lebert, F., Ryser, V.-A., Lipps, O., ... Antal, E. (2016). The swiss household panel study: Observing social change since 1999. *Longitudinal and Life Course Studies*, 7(1), 64–78.
- U.S. Bureau of Labor Statistics. (n.d.). National Longitudinal Survey of Youth 1979 (NLSY79). <https://www.nlsinfo.org/content/cohorts/NLSY79>. [Online; accessed 29-January-2020].
- University of Essex, Institute for Social and Economic Research. (2019). *Understanding Society: Waves 1-9, 2009-2018 and Harmonised BHPS: Waves 1-18, 1991-2009*. [data collection]. 12th Edition. UK Data Service. SN: 6614. <http://doi.org/10.5255/UKDA-SN-6614-13>. [Online; accessed 29-January-2020].
- University of London, Institute of Education, Centre for Longitudinal Studies. (2017a). *Millennium Cohort Study: Fifth Survey, 2012*. [data collection]. 4th Edition. UK Data Service. SN: 7464. <http://doi.org/10.5255/UKDA-SN-7464-4>. [Online; accessed 29-January-2020].
- University of London, Institute of Education, Centre for Longitudinal Studies. (2017b). *Millennium Cohort Study: First Survey, 2001-2003*. [data collection]. 12th Edition. UK Data Service. SN: 4683. <http://doi.org/10.5255/UKDA-SN-4683-4>. [Online; accessed 29-January-2020].
- University of London, Institute of Education, Centre for Longitudinal Studies. (2017c). *Millennium Cohort Study: Fourth Survey, 2008*. [data collection]. 7th Edition. UK Data Service. SN: 6411. <http://doi.org/10.5255/UKDA-SN-6411-7>. [Online; accessed 29-January-2020].
- University of London, Institute of Education, Centre for Longitudinal Studies. (2017d). *Millennium Cohort Study: Second Survey, 2003-2005*. [data collection]. 9th Edition. UK Data Service. SN: 5350. <http://doi.org/10.5255/UKDA-SN-5350-4>. [Online; accessed 29-January-2020].
- University of London, Institute of Education, Centre for Longitudinal Studies. (2017e). *Millennium Cohort Study: Third Survey, 2006*. [data collection]. 7th Edition. UK Data Service. SN: 5795. <http://doi.org/10.5255/UKDA-SN-5795-4>. [Online; accessed 29-January-2020].
- University of London, Institute of Education, Centre for Longitudinal Studies. (2019). *Millennium Cohort Study: Sixth Survey, 2015*. [data collection]. 4th Edition. UK Data

- Service. SN: 8156. <http://doi.org/10.5255/UKDA-SN-8156-4>. [Online; accessed 29-January-2020].
- Van der Linden, D., te Nijenhuis, J., & Bakker, A. B. (2010). The general factor of personality: A meta-analysis of big five intercorrelations and a criterion-related validity study. *Journal of Research in Personality*, 44(3), 315–327.
- Vereshchagina, G., & Hopenhayn, H. A. (2009). Risk taking by entrepreneurs. *American Economic Review*, 99(5), 1808–30.
- Vianello, M., Schnabel, K., Sriram, N., & Nosek, B. (2013). Gender differences in implicit and explicit personality traits. *Personality and Individual Differences*, 55(8), 994–999.
- Viinikainen, J., Kokko, K., Pulkkinen, L., & Pehkonen, J. (2010). Personality and labour market income: Evidence from longitudinal data. *Labour*, 24(2), 201–220.
- Vischer, T., Dohmen, T., Falk, A., Huffman, D., Schupp, J., Sunde, U., & Wagner, G. G. (2013). Validating an ultra-short survey measure of patience. *Economics Letters*, 120(2), 142–145.
- Vollrath, M., Knoch, D., & Cassano, L. (1999). Personality, risky health behaviour, and perceived susceptibility to health risks. *European Journal of Personality*, 13(1), 39–50.
- Vollrath, M., & Torgersen, S. (2002). Who takes health risks? a probe into eight personality types. *Personality and Individual Differences*, 32(7), 1185–1197.
- Wang, M., Rieger, M. O., & Hens, T. (2016). How time preferences differ: Evidence from 53 countries. *Journal of Economic Psychology*, 52, 115–135.
- Watson, D., & Clark, L. A. (1997). Extraversion and its positive emotional core. In *Handbook of Personality Psychology* (pp. 767–793). Elsevier.
- Weisberg, Y. J., DeYoung, C. G., & Hirsh, J. B. (2011). Gender differences in personality across the ten aspects of the big five. *Frontiers in Psychology*, 2, 178.
- WHO. (2009). *Global health risks: Mortality and burden of disease attributable to selected major risks*. Geneva: World Health Organization.
- Zhao, H., & Seibert, S. E. (2006). The big five personality dimensions and entrepreneurial status: A meta-analytical review. *Journal of Applied Psychology*, 91(2), 259.
- Zimbardo, P. G., & Boyd, J. N. (2015). Putting time in perspective: A valid, reliable individual-differences metric. In *Time perspective theory; review, research and application* (pp. 17–55). Springer.