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Why are low-educated adults underrepresented in adult education? Studying the role of educational background in expressing learning needs and barriers.

ABSTRACT

The shift to a knowledge society has transformed the way we live and work, which is especially challenging to adults with low education levels. Adult education could be the answer, but low-educated adults participate least in adult education. The present study uses data from the Programme for the International Assessment of Adult Competencies to investigate participation needs and barriers of low-, medium- and high-educated adults across 15 European countries (N = 20,593). Descriptives show that low-educated adults report the lowest need for training to exercise their job and indicate to be the least prevented from taking more training because of experienced barriers. We then analysed which barriers non-participating and participating adults were referring to. While medium- and high-educated non-participants indicate being prevented because of work and family responsibilities, low-educated non-participants chose family responsibilities but mainly and remarkably the option 'other' as their most important barrier. Contrary to medium- and high-educated adults, low-educated adults' most important barrier could not be defined. A possible explanation is that they experience more dispositional barriers (such as bad memories of education or low self-esteem), which were not included in the list. Our results point to the importance of targeting low-educated adults in participation research.

1. Introduction

Currently, society is characterised by immense changes as European countries are increasingly turning into knowledge-based economies and societies with a surging need for more frequent renewal of knowledge and competencies. This evolution exerts considerable influence on adult education (Kasworm 2011; Laal 2013). Recent reports of the OECD (2019) state that there is a growing need for twenty-first century competencies such as digital skills, critical thinking, communication, responsibility, and adaptability. For example, the importance of technology

keeps growing and technological advancements are transforming the way we live and work. Therefore, the required competencies for participating in society and exercising certain occupations are changing (Goos 2013; OECD 2019).

Unemployment rates have been on the rise for the last years, even for occupations that require medium to high degrees (OECD 2019). In the future about 9% of European jobs are estimated to disappear due to automation and digitalisation. Although this number may not seem too concerning, mostly the jobs of low-educated adults and a fair share of jobs of medium-educated adults are in danger, while the jobs of high-educated adults are relatively safe. Results of Arntz, Gregory, and Zierahn (2016) show that almost 1 out of 2 jobs of low-educated adults face high automatibility, almost 1 out of 10 jobs of medium-educated adults and near 0% of jobs of high-educated adults. This evolution could lead to a growing inequality between adults with different educational levels (Arntz, Gregory, and Zierahn 2016; Autor 2014).

The need for twenty-first century competencies is not only rising at work but also in daily life. Newspapers, for example, are increasingly turning to digital delivery, the proportion of e-commerce is growing every year and political participation is increasingly moving online (Witte and Mannon 2013). According to Haight, Quan-Haase, and Corbett (2014), adults with lower education levels have lower access to the internet, lower activity rates and use the internet in a different way than higher educated adults (e.g. they are less likely to use the internet to search for health-related and financial information, interact with government services, seek educational opportunities, or explore job opportunities).

The recent COVID-19 crisis has showed us that the importance of twenty-first century skills and adult education only increases as adults are forced to process large chunks of information and to use information technology on a whole different level (e.g. learning new terminology, interpreting graphs, helping children with online homework and working from home).

Participating in adult education has multiple benefits, ranging from employment and labour market outcomes to progress in social domains (Schuller and Desjardins 2010). As such, adult education could respond to the abovementioned needs relating to the rise of the knowledge economy.

Desjardins, Rubenson, and Milana already argued in 2006 that a broader access to learning could possibly reduce the inequality between low- and high-educated adults from both a personal and an economic perspective. Moreover, research of de Greef, Verté, and Segers (2015) states that adults with limited education experience a stronger increase of social inclusion after participation compared to adults with higher levels of education, in particular relating to international language skills and meeting intimate contacts. Next to this, Fouarge, Schils, and de Grip (2013) showed that low-educated workers who participate in adult education earn more than those who do not.

However, several studies indicate that low-educated adults participate less in adult education than high-educated adults. In this sense, a Matthew effect is present: those who are already in an advantaged position, benefit even more, while the ones who are more disadvantaged, are profiting less of existing systems. The Matthew effect in the context of low- and high-educated adults refers to the fact that participation rates are highest among people who already successfully participated in education in the past. Consequently, adult education mainly serves adults who are already advantaged (e.g. already obtained high educational qualifications, have white collar jobs), and not those who could use it to compensate for missed opportunities (Boeren 2017). For this reason, it is important to study what is withholding low-educated adults from participating.

Although limited, some research has been conducted on the specific barriers keeping adults from participating in adult education. Especially large-scale international surveys such as the Adult Education Survey (AES) and the Programme for International Assessment of Adult Competencies (PIAAC) have been used several times for studying barriers to learning (e.g. Massing and Gaulty 2017; Patterson 2017). For example, Hovdhaugen and Opheim (2018) discuss barriers to participation in countries with low and high participation rates. The authors conclude that barriers do not differ considerably in countries with different participation rates.

However, how barriers and educational background are related and how barriers differ for low-, medium and high-educated adults in Europe remains largely unclear. The aforementioned societal challenges and present Matthew effect point to the value of specifically targeting low-educated adults. To address this problem, the present study uses data from the Programme for

International Assessment of Adult Competencies (PIAAC) to study barriers to learning, distinguishing between low-, medium- and high-educated adults.

2. Background

Two caveats for adult education as a means for equality

In the last decades, opportunities for participating in adult education have increased (Crompton 2014). For instance, a lot of learning has moved towards online learning, either in blended or distance courses.

However, there are two important caveats in this respect. A first caveat is that there is a risk of a vicious circle, namely that there is a need for adult education to increase the digital, twenty-first century skills of low-educated adults, however, it are exactly those skills that adults often already need to have in order to be able to fully participate in adult education – which is now way more often online than before (Jelfs and Richardson 2013; Laal 2013). During the COVID-19 crisis, the importance of online education has only increased and will probably continue to increase in the future (Mäkelä et al. 2020). For adults who do not possess sufficient skills, this lack could thus act as a barrier, preventing them from participating. Second, there is evidence for a Matthew effect in adult education since adults who already successfully participated in education are participating the most (Boeren 2017). Multiple studies show that the average participant in adult education is a white, young and employed, middle-class adult who is higher educated than the non-participant (Desjardins, Rubenson, and Milana 2006; Grotlüschen 2017; Rubenson 2010).

Why are low-educated adults participating less?

The question that arises from this observed Matthew effect is: why are the people who would benefit most from adult education participating the least? From an economic perspective, multiple theories can explain this lack of participation. The most well-known is the human capital theory, which states that the decision to participate in education is based on the careful consideration of the benefits (e.g. promotion and job security) and costs (e.g. direct costs such as transportation costs and tuition but also indirect costs such as childcare and less time for leisure activities) a certain investment would generate. The probability of investing in education

increases when the benefits outweigh the costs (Becker 1994). This would explain why low-educated adults participate less: they face more risks (e.g. losing their job because of a temporary contract, having to invest a bigger part of their earnings than high-educated adults and having little experience or negative experiences regarding learning), so the benefits do not always outweigh the costs (Boeren and Nicaise 2009; Cincinnato, De Wever, and Valcke 2014). However, economic theories have been strongly criticised for being too rationality-based.

In addition to this economic framework, adult education frameworks provide information about barriers which may be present in the lives of certain adults or in society in general and might affect participation in adult education. Rubenson (2010) states that these barriers to participation can be conceptualised in a number of ways. On the one hand, they can be considered as obstacles preventing adults from participating in education. On the other hand, they can be conceptualised as factors lowering the occurrence of participation but not preventing it entirely. In the first case only non-participants can be included in research on barriers, in the second case also participants can be questioned, whose participation rates are lowered because of barriers.

A frequently used typology to describe these barriers to learning is that of Cross (1981), distinguishing institutional, situational and dispositional barriers. In more recent research a fourth barrier has been added, namely informational barriers (OECD 2005; see also Rubenson 2010). Institutional barriers mainly cover practices and procedures that are beyond control of the participant, usually subconsciously created by providers of educational services. Some examples are the accessibility of training courses (place and time), governmental financial support, employer support (financial as well as for instance flexible working hours) and an appropriate range of courses (Cross 1981). Research of Desjardins and Rubenson (2009) indicates that this type of barrier is influenced by the occupation, skills and educational level of the adult. Like institutional barriers, situational barriers are also beyond the control of the participant. The latter, however, comprise the personal situation of the adult instead of procedures and practices that hinder participation. Examples of this barrier are income, age, health, skills level, the roles a person has (e.g. being a parent, single, married or taking care of a sick parent) and a lack of time because of workload or family responsibilities (Cross 1981). Situational barriers are more often mentioned by females, who particularly more often indicate family responsibilities as a barrier to

learning than men. However, the adults' educational level and occupation does not seem to be related to the extent to which this barrier is mentioned (Desjardins and Rubenson 2009). The third barrier consists of dispositional factors. This category includes personal attitudes and self-perceptions, for example myths and views adults have on learning, readiness to learn, how much they value learning, self-confidence in terms of learning, being anxious of learning new things, bad memories of education and feeling no need for continued education (Cross 1981). Dispositional barriers are more often experienced by those who do not want to participate. They also play a more important role as to participation of elder people, low-educated adults, working class and adults with low skill levels (Desjardins 2010; Desjardins and Rubenson 2009). As to informational barriers, researchers refer to a lack of information about education, learning opportunities and the benefits of learning (Desjardins and Rubenson 2013; OECD 2005).

Next to the traditional distinction between participants and non-participants, other conceptualisations have been used for studying adults in the field of adult education. One possible option is to distinguish between adults with and without participation intentions (Boeren, Nicaise, and Baert 2010; Kyndt et al. 2013). Boeren, Nicaise, and Baert (2010) studied adults who had an intention to participate but did not succeed in actually participating, as this group of adults shows potential for future participation. Results of this research show that adults with lower participation intentions do not have lower educational attainment than adults with higher participation intentions. However according to our knowledge, so far no distinction has been made based on the participation needs of adults, neither at work nor in daily life. Having learning needs (at work or in daily life) or being able to identify them could possibly explain why certain adults participate less or more.

The present study

During the seventies and eighties an extensive amount of research was dedicated to barriers preventing participation in adult education. However, Rubenson (2010) claims that in the last few years there seems to be a lack of interest from the academic world regarding the barriers adults encounter when trying to participate, while participation is still of great concern at a policy level.

A large share of research on barriers to participation in adult education does not distinguish between low-, medium- and high-educated adults (e.g. Desjardins and Rubenson 2009; Massing and Gauly 2017). Given that low-educated are more at risk when it comes to overcoming institutional and dispositional barriers, there are multiple reasons to believe that barriers relate to educational qualifications.

Further, no distinction between adults low-, medium- and high-educated adults with and without participation needs has been made in research up until now. However, this type of distinction could enable studying whether low-, medium- and high-educated adults have different training needs and if this explains why adults with low educational levels participate less in adult education.

In this respect, PIAAC is a useful source for studying adult education in different OECD-countries. Although substantial research has been conducted on the subject of participation in adult education (e.g. Grotlüschen 2017; Massing and Gauly 2017), up until now, no research has used PIAAC data to offer a detailed picture of the low-, medium- and high-educated adult learner in Europe.

Based on the literature review, we aim at studying the following research questions:

1. To what extent do low-, medium- and high-educated adults in Europe participate in adult education?
2. (a) To what extent do low-, medium- and high-educated employed adults in Europe express the need for more training to successfully exercise their jobs?
(b) Do low-, medium- and high-educated employed adults in Europe expressing needs actually participate in adult education?
3. (a) To what extent do low-, medium- and high-educated adults in Europe encounter barriers when trying to participate in adult education?
(b) Moreover, which barriers do adults encounter in view of participation in adult education and how do these differ for low-, medium- and high-educated participants and non-participants?

3. Method

Data

The data from PIAAC 2012 were used in this study. PIAAC is a large-scale, international assessment that measures 16–65-year olds' literacy, numeracy and problem solving (in technology rich environments) skills. Next to this cognitive assessment, background data on sociodemographics, educational attainment, occupation etc. was collected. The background questionnaire also includes information on formal and non-formal training activities during the past 12 months. PIAAC was conducted between 2011 and 2018 in 38 countries in 3 different rounds. Each country is responsible for selecting a representative sample of respondents. In the present study we only focus on the European countries. The results of 15 European countries ¹were included, resulting in a total sample of 20,593 adults.

We selected the PIAAC dataset because it provides an excellent way to study participation in adult education across Europe, given its richness (containing multiple variables of at least 5000 participants from multiple countries). The latest dataset available for these countries is the PIAAC 2012 (a second cycle is foreseen in 2022–2023).

The data originate from 2012, 5 years after the start of the global financial crisis. By 2012 this financial crisis still impacted the labour market. There was a large shortfall in employment as measured by the jobs gap or the difference between actual employment and OECD estimates of potential employment. In addition, aggregate demand was weak and the OECD output gap was still 3.7% higher than at the start of the financial crisis (OECD 2013).

Variables

Due to routing not every PIAAC-participant receives the same questions during administration of the background questionnaire. In this section we will clarify which variables were used in this study and which subsample received which questions. Table A1 in the appendix depicts how many adults answered the question.

¹ Belgium (Flanders), Finland, the United Kingdom (England and Northern Ireland), Italy, Germany, the Netherlands, Spain, Denmark, Sweden, Norway, Austria, Ireland, Cyprus, Estonia and Greece. Data from France, Slovakia, Slovenia, Lithuania, Czech Republic and Poland were excluded due to an insufficiently large sample of low-educated adults experiencing barriers in learning.

Participation in adult education

Every participant received the question: 'During the last 12 months, have you studied for any formal qualification, either full-time or part-time?'. Next, all participants were asked about other organised learning activities (open or distance education, on the job training, seminars or workshops and other courses or private lessons) they have attended during the last 12 months. This includes work-related as well as non-work-related training. Response options for both questions were: 1. Yes, 2. No. We withdrew the data of the 16- to 24-year-olds who were still enrolled in initial formal education. In other words, if a 16- to 24-year-old indicated that they were enrolled in formal education but were referring to their initial formal education (e.g. a college student), this result was not included in the analysis.

Need for training

Contrary to the variables 'Participation in adult education' and 'barriers to learning', only participants who were employed at the time of the survey received the question: 'Do you feel that you need further training in order to cope well with your present duties?' Response options were: 1. Yes, 2. No. As a consequence, the non-working population is excluded for this question.

Barriers to learning

All participants, regardless of their employment status, received the question: 'In the last 12 months, were there more/ any learning activities you wanted to participate in but did not? Include both learning activities that lead to formal qualifications and other organised learning activities.' Response options were: 1. Yes, 2. No. In addition, only participants who indicated that they wanted to participate were asked for which reason they did not: 'Which of the following reasons prevented you from participating in education and training? Please indicate the most important reason.' Response options were: (1) I did not have the prerequisites, (2) Education or training was too expensive/ I could not afford it, (3) Lack of employer's support, (4) I was too busy at work, (5) The course or programme was offered at an inconvenient time or place, (6) I did not have time because of child care or family responsibilities, (7) Something unexpected came up that prevented

me from taking education or training, (8) Other. This means that adults who do not want to participate (more) were unable to indicate whether there are barriers present preventing them from participating (more) in adult education, as they did not receive this follow up question.

Analysis

All adults were coded into one of three levels, being low- (ISCED 1, 2 and 3C (short) – lower secondary education or less), medium- (ISCED 3A, 3B, 3C (long) and 4 – higher secondary education) or high-educated (ISCED 5 and 6 – tertiary education).

Descriptives were calculated for each country separately, combining the aforementioned variables and educational levels. The data have been weighted to correct for nonresponse bias. This weight was created by multiplying sample size with the weight provided by the OECD and dividing this by population size, as recommended by the OECD (OECD 2009).

4. Results

Participation in adult education

The results show that low-educated adults participate least in all countries while high-educated adults participate most in adult education. However, as can be deduced from Table A1 in appendix, there are large differences between countries in the number of low-, medium- and high-educated adults participating in adult education. When taking a closer look at Table A1, 4 major trends can be observed. First, there are countries that fail to reach low- as well as medium- and high-educated adults (e.g. Greece, Italy, Cyprus, and Belgium). Second, there are countries that are successful in reaching low- as well as medium- and high-educated adults (e.g. Sweden, The Netherlands, Norway and Denmark). Third, some countries show moderate participation rates regardless of education level (e.g. Spain, Ireland and the United Kingdom). And finally, some countries are relatively better in reaching one group than reaching other groups. For example in Germany 39% of low-educated adults participate in adult education which is similar to countries such as Sweden and Finland with very high participation rates for high-educated adults. Nonetheless, the number of medium- and high-educated participating adults is lower than that in high scoring countries such as Finland, Sweden and Norway.

Need for training

Further, the results show that low-educated adults express the lowest need for more training to exercise their job in a satisfactory way in all European countries, except for Denmark. As for the experienced need to attend training, there are countries with differences in needs for low-, medium- and high-educated adults but also countries with similar results regardless of educational level and some exceptions. A sidenote however is that, as can be deduced from Table 1, some countries present lower sample sizes (e.g. Belgium, Cyprus, Finland). This should be kept in mind when interpreting the results.

Table 1
Percentage of adults that think they need more training to exercise their job

	Low			Medium			High		
	%	(n)	% PART	%	(n)	% PART	%	(n)	% PART
AUT	30.8	134	56	39.7	885	67.8	60.8	378	81.1
BEL	15.5	67	40.3	20.7	335	61.5	27.3	430	79.9
CYP	24.9	85	28.2	33.6	393	49.3	39.6	430	70.4
DEU	35.5	166	51.4	40.9	897	70.6	60.7	830	81.9
DNK	20.2	219	62.8	20.1	428	75.2	26.8	571	88.4
ESP	30.3	392	46.8	38.8	325	60.8	47.3	644	80.3
EST	36.2	210	52.6	42	1040	57.9	54	1288	82.5
FIN	18.2	78	62	27.5	638	82.1	37.7	401	92.7
GBR	14.7	148	58.7	19.1	437	79.1	25.3	575	82.8
GRC	24.1	149	18.1	35.5	345	30.1	45	360	63.4
IRL	17.9	125	59	24.1	346	57.7	28.7	431	83.5
ITA	26.5	303	29	35.5	354	46.8	42.7	186	64.7
NLD	14.4	139	69.4	17.9	273	79.1	18.9	254	89.4
NOR	25.1	211	66.9	30.2	460	73.6	34.6	547	86.2
SWE	26.9	111	50	32.9	584	73.4	38	417	88.5

Note: % PART indicates the percentage of adults that are participating in training (within the sample of adults that indicated a need to participate training); country abbreviations can be found in appendix.

First, as depicted in Table 1, the lowest reported need for training is expressed in the Netherlands, the United Kingdom and Belgium. Remarkably, these countries all have very different participation rates (see Table A1 in appendix) with respectively relatively high, moderate, and low rates. The highest reported need for more training to exercise their job satisfactory is indicated by respondents in Germany, Estonia, Austria, and Spain. In some countries the expressed needs

for training differ depending on educational background. In Finland for example, reported needs are moderate for medium- and high-educated adults but rather low for low-educated adults compared to the other countries. In Denmark, the reported needs for training are moderate for low-educated adults but rather low for medium- and high educated adults in relation to the other countries.

Next, we analysed to which degree adults who indicated having training needs to exercise their job in fact participated in training activities during the past 12 months. Participation rates are lowest for low-educated adults expressing training needs and differ to a large extent between countries. In Greece less than 1 out of 5 adults expressing that they need more training in order to successfully exercise their job in fact participate in adult education. Conversely, in the Netherlands 70% of low-educated adults indicating needs participate in education. On average, across all low-educated adults, only 50% of adults with reported needs have attended training activities in the past 12 months.

Barriers to learning

Next, we studied the degree to which adults with different educational levels in different European countries encounter barriers when trying to participate in more training activities. The results in Table 2 show that low-educated adults indicate they are least prevented from participating (more) in adult education because of barriers in all European countries, ranging from 6% (Greece) to 24% (Spain). As education levels increase, perceived barriers also increase with ranges from 13% (Belgium) to 31% (Spain) for medium-educated adults and 25% (Belgium) to 43% (Finland) for high-educated adults.

Table 2
Percentage of people that wanted to participate but could not because of perceived barriers

	Low		Medium		High	
	%	(n)	%	(n)	%	(n)
AUT	12.7	(201)	19.3	(553)	31	(222)
BEL	10.2	(84)	13.1	(302)	25.1	(459)
CYP	10.7	(79)	18.1	(348)	32.2	(424)
DEU	17.3	(110)	23.5	(664)	41.7	(660)
DNK	22.8	(319)	31	(888)	41.5	(1031)
ESP	24.1	(645)	31.3	(436)	43	(754)
EST	18.7	(177)	29	(999)	41.4	(1149)
FIN	15.4	(115)	27.9	(882)	43.3	(522)
GBR	16.3	(281)	22.7	(676)	30.8	(857)
GRC	5.7	(82)	15	(313)	28.1	(340)
IRL	21.8	(311)	29.8	(701)	38.1	(718)
ITA	10.4	(227)	18.3	(282)	34.5	(193)
NLD	12.9	(169)	22.4	(428)	31.3	(484)
NOR	16.1	(166)	23.3	(437)	32	(556)
SWE	20.7	(135)	29.5	(673)	42.2	(530)

Further, we studied which particular barriers were reported by the adults described above. We divided the adults into two groups of non-participating adults and participating adults. This way we are able to analyse whether adults who already participate in adult education are prevented from participating more because of other reasons than adults who are not in education. We only included 5 out of 8 possible response options in our results since response options (1) I did not have the prerequisites, (3) Lack of employer's support and (7) Something unexpected came up that prevented me from taking education or training were hardly chosen by respondents. The results of the non-participants in adult education are depicted in Table 3, the results of the participants who are already participating in Table 4.

Table 3**Perceived barriers of non-participants in adult education (%)**

	Work			Family			Cost			Inconvenient time or place			Other			<i>(n)</i>		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
AUT	14	29.7	32.1	32.6	18.4	17.9	7	8.6	10.7	4.7	10.3	10.7	25.6	19.5	17.9	(43)	(185)	(28)
BEL	12.5	20.9	21.5	30.4	28.2	30.8	5.4	3.6	7.7	14.3	13.6	16.9	25	21.8	12.3	(56)	(110)	(65)
CYP	22.4	15.6	35.6	32.7	40.6	31	18.4	14.1	10.3	6.1	4.7	8	12.2	9.4	9.2	(49)	(128)	(87)
DEU	20.6	20.2	26.2	22.1	27.5	26.2	14.7	9	14.6	2.9	7.3	4.9	25	22.5	16.5	(68)	(178)	(103)
DNK	14.3	25.1	19.9	5.6	5.7	7.1	21.4	17.5	17.8	11.1	6.2	7.1	31	27	28.6	(126)	(211)	(145)
ESP	24	23.6	35.1	29.5	22.9	26.4	9.2	10.7	7.4	3.5	11.4	9.5	21.7	25.7	14.2	(346)	(140)	(148)
EST	14.1	25	25.7	20.7	9.1	17.6	16.3	21.5	20.9	10.9	12.6	11.2	19.6	16.9	13.4	(92)	(372)	(187)
FIN	5.3	17.6	6.3	14	10.2	39.6	3.5	8.6	6.3	21	17.1	16.7	43.9	32.1	18.8	(57)	(187)	(48)
GBR	11.7	23	22	19.3	17.6	16.7	18.7	27.3	16.7	8.2	2.1	6.8	34.5	18.7	24.2	(171)	(187)	(132)
GRC	6.6	13.5	18.5	23	22.2	34.6	18	21.7	23.5	3.3	7.9	6.2	27.9	11.9	11.1	(61)	(126)	(81)
IRL	8.2	16	15.3	22.8	20.7	27.1	15.2	16.3	25.7	9.8	10.2	4.9	31	20.4	19.4	(184)	(294)	(144)
ITA	27	37.2	33.3	28.1	21.5	23.1	8.4	17.4	28.2	5.6	5	2.6	15.2	11.6	7.7	(178)	(121)	(39)
NLD	11.5	13.6	21.7	9.8	19.3	19.6	14.8	21.6	17.4	9.8	5.7	6.5	36.1	21.6	17.4	(61)	(88)	(46)
NOR	5.6	20.9	24.7	26.8	12.2	16.4	19.7	14.8	4.1	2.8	7.8	9.6	16.9	26.1	20.5	(71)	(115)	(73)
SWE	11.4	15.8	19.7	11.4	14.5	21.2	11.4	20.4	18.2	7.1	6.6	4.5	32.9	25	16.7	(70)	(152)	(66)

Table 3: Experienced barriers by low-, medium- and high-educated adults in percentages. Barriers that are mentioned by more than 20% of the adults in the respective educational category are indicated in grey.

Table 4
Perceived barriers of participants in adult education (%)

	Work			Family			Cost			Inconvenient time or place			Other			<i>(n)</i>		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
AUT	27.3	35	43.1	9.1	11.9	14.4	24.2	12.8	9	12.1	16.6	16	12.1	10.6	9.6	(33)	(320)	(188)
BEL	19.2	31.9	40.1	15.4	17.5	14.9	7.7	6	5.2	19.2	18.7	19.6	34.6	14.5	8.9	(26)	(166)	(382)
CYP	34.5	26.7	36.2	24.1	32	22.1	6.9	12.8	11	20.7	9.3	15	10.3	7	7.1	(29)	(172)	(326)
DEU	24.3	30.1	40.1	13.5	8.9	11.9	16.2	10.3	7.1	5.4	15.7	17.7	18.9	17.3	10.9	(37)	(439)	(548)
DNK	17.6	30.2	28.1	7.4	3.9	4.8	11.7	10.5	12.7	6.9	10.5	10.6	29.3	24.6	20.9	(188)	(590)	(1655)
ESP	24	30.4	31.8	14.1	15.9	21.1	12	11.9	10.1	6.4	9.3	10.4	30.4	22.5	16.8	(283)	(227)	(584)
EST	31.6	29.4	32.7	15.2	8.3	8.1	11.4	19.1	17.7	11.4	17.9	16.9	15.2	9.6	11.5	(79)	(470)	(911)
FIN	20.7	30.6	35	6.9	5.5	10.7	10.3	6.5	6	10.3	23.6	20.5	24.1	18.1	11.5	(58)	(635)	(469)
GBR	36.7	28.4	35.9	11.9	15.3	10.3	8.3	22.3	19	5.5	9	10.9	13.8	10.7	10	(109)	(457)	(688)
GRC	4.8	13.1	24.7	14.3	20.6	10.7	28.6	29.9	35.4	9.5	9.3	16.9	9.5	13.1	4.5	(21)	(107)	(243)
IRL	24.4	21.2	30.4	13	12.9	18.3	18.7	24	22.3	10.6	11.4	10.4	13.8	17.5	9.5	(123)	(325)	(546)
ITA	40.8	44.7	49	8.2	12.9	12.1	18.4	16.7	14.8	10.2	6.1	4.7	6.1	12.1	12.8	(49)	(132)	(149)
NLD	23.1	25.2	41.6	7.4	10.2	10.5	20.4	15	9.8	11.1	7.1	9.6	17.6	20.4	15.8	(108)	(294)	(418)
NOR	20.7	33.7	39.6	9.2	8.3	10.9	17.2	11.8	5.2	4.6	10.4	10.5	23	16.3	13.8	(87)	(288)	(477)
SWE	11.7	22.7	36	5	10.4	13.3	10	12.3	9.6	25	13.7	12	18.3	23.3	16.9	(60)	(454)	(450)

Table 4: Experienced barriers by low-, medium- and high-educated adults already participating in adult education in percentages. Barriers that are mentioned by more than 20% of the adults in the respective educational category are indicated in grey.

Table 3 shows that, as educational levels rise, work responsibilities increasingly act as a barrier to learning. Conversely, the importance of 'other' drops as the educational level of the adult rises. The grey boxes clearly identify work responsibilities as a major barrier for trying to participate for high-educated adults (in 10 out of 15 countries 20% or more of the high-educated adults reports work responsibilities as their most important barrier), while the response category 'other' is selected most by low-educated non-participants as a way to refer to their most important barrier (in 11 out of 15 countries 20% or more of the low-educated adults reports 'other' as their most important barrier). The main barrier for medium-educated adults in Europe is slightly more scattered between countries. As the grey boxes in Table 3 indicate, there are 3 major barriers in Europe for medium-educated adults, being work, family responsibilities, and the 'other' response category.

However, not only adults who do not find their way to adult education experience barriers, even adults who already participate can feel as if they are prevented from participating more because of constraints. The results in Table 4 indicate that being too busy at work is the main reason for low-, as well as medium- and high-educated adults for not participating in more training courses in most European countries. The response option 'other' remains a frequently selected response in a few countries, especially for low-educated adults but also for medium-educated adults. In Denmark low-, medium- as well as high-educated adults indicate the category 'other' when choosing their most important barrier.

When comparing non-participants with participants certain trends can be observed. First it appears that 'other' is often selected by low-educated non-participants as well as low-educated participants. However, the results are much more striking for non-participants (Table 3). Family responsibilities operate as a major barrier for low-educated non-participants, while being too busy at work is the main reason for not participating more for low-educated adults who are already in education. Next, 'other' is a major barrier for medium-educated non-participants. This is also the case for participants in a few countries. Remarkably, 'other' is the most important response category in countries with the highest participation rates (such as Finland, Denmark, Norway and the Netherlands). Medium-educated participants are mostly prevented from participating more because of work responsibilities. Family responsibilities are a barrier for

medium-educated non-participants but not for participants. In every country more than 20% of the already participating high-educated adults indicate work responsibilities as the most important barrier for not participating more. High-educated non-participants also often point to this barrier but not in every country. Next, family responsibilities also act as an important barrier to learning for non-participating high-educated adults.

5. Discussion

The focus of the present study was to investigate participation and the accompanying barriers in adult education for low-, medium- and high-educated adults. We analysed our results at a European level rather than comparing participation rates across countries. Nonetheless, we chose not to combine all data into one pool because, as the results show, countries show wide variations and a general conclusion about adult education at a European level would not fit every country. As expected, low-educated adults participate least in adult education compared to medium- and high-educated adults. This is true for all countries. This finding confirms the presence of a Matthew effect in adult education (Boeren 2017), nevertheless literature suggests that it is especially low-educated adults who would benefit from education, at work (Arntz, Gregory, and Zierahn 2016) as well as in daily life (Witte and Mannon 2013; de Greef, Verté, and Segers 2015). Unlike Boeren, Nicaise, and Baert (2010) who studied the learning intentions of low-educated adults, we wanted to analyse the learning needs of low- medium- and high-educated adults. Different learning needs could explain different participation patterns. In line with the low participation rates of low-educated adults, the results show that low-educated adults express the lowest need for training in all countries (except for Denmark). This finding seems to be in contrast to the findings of Arntz, Gregory, and Zierahn (2016) stating that mostly jobs of low-educated adults are in danger and will be affected by digitalisation. Therefore, we expected low-educated adults to express the highest need for training to exercise their jobs. It is possible that the jobs of low-educated adults have not been affected by recent trends up until now. Also, it may be possible that the low-educated adults in our sample would in fact benefit from more training to exercise their job but are not aware of this. Further, research of Raemdonck, Gijbels, and van Groen (2014) shows that adults with high job demands often face challenges in their work, forcing

them to learn. It could be that job demands of low-educated adults are lower. This way they are less challenged and required to learn, focusing more on 'present' job duties (as formulated in the survey question). Conversely, it is plausible that high-educated adults more often have high job demands. In our research they show the highest need for training to exercise their job. It is also possible that high-educated adults are better at estimating whether additional training is needed and in assessing their knowledge and skills.

Studying which part of the adults that indicated having a need for training in fact participated in some sort of training activity (during the past 12 months), generated problematic results for some countries' low-educated adults: in 6 out of 15 countries 50% or less of low-educated adults with training needs participate in adult education. This means that for example in Belgium 60% of low-educated adults who express they have a training need to exercise their current job do not participate in education. Going to work every day, feeling like you are not fully capable of performing your job must put a burden on the daily lives of these adults. It is of the utmost importance to study why these adults, indicating and in fact realising they would benefit from education, are not participating. According to the human capital theory (Becker 1994) it would mean that the benefits (being able to properly exercise your job) do not outweigh the costs.

To get a grip on what these costs are, we studied participation barriers. Surprisingly, our results show that low-educated adults least indicate feeling prevented from participating more in adult education because of barriers, in all European countries. High-educated non-participants more often point to being too busy at work for not participating in education. Conversely and more important, we found that low-educated non-participants more often opt for the response category 'other' when asked for the most important barrier in participating in adult education. However, what adults precisely are referring to by choosing this option is unclear. The only information that we have is that the reasons preventing them from participating are not related to work, family, cost, inconvenient time or place of the training activity but to something else. This finding is new and introduces important questions regarding the barriers that are preventing low-educated adults from participating in adult education. It is possible low-educated adults used the option 'other' as a way to refer to dispositional barriers (such as readiness to learn or a positive attitude towards learning; Cross 1981) which were not included in the answer options,

instead of the situational and institutional barriers that were included since research suggests that low-educated adults are more at risk for experiencing dispositional barriers than high-educated adults (Desjardins and Rubenson 2009). However at this point we cannot provide evidence for this assumption, as no further questions were asked to the participants, thus the 'other' category might also refer to other barriers not included in the survey. It could also mean that adults may face multiple types of barriers at once. It is possible that the combined influence of these barriers makes it impossible for the adult to differentiate between the different barriers and choose the most important one. However, it is also possible that experiencing multiple barriers at once can seem insurmountable to the adult, resulting in them wanting to participate but being unable to and unable to express why because multiple different barriers become one major indefinable one, which leads them to choose the response category 'other'.

However, barriers do not only prevent participation of adults entirely, they can also lower the extent to which adults participate (Rubenson 2010). For this reason, we also included the barriers experienced by adults who are already participating in education. Work responsibilities are the main reason for low-, medium- and high-educated adults for not participating in more training courses. However, 'other' remains an important response category, especially for low-educated adults. This finding would suggest that, if low-educated adults are using 'other' as a way to refer to dispositional barriers (e.g. being scared to go back to school, low self-confidence), even adults who are already in adult education or are already willing to participate to adult education still encounter significant dispositional barriers.

Limitations

There are some limitations related to using the PIAAC dataset for our analyses. First, only adults expressing interest in participating in adult education were asked to indicate what their perceived barriers were. This has two consequences. First, no response options referring to dispositional barriers were included in the survey. Second, as adults with e.g. a negative attitude towards learning would not indicate that they showed interest in additional training, they are therefore not included in the sample that was offered this specific question on barriers. Rubenson (2010) indicates that this is also the case in multiple other large-scale national or international surveys

(e.g. US National Higher Education Survey (NHES), the Canadian Adult Education and Training Survey, or the International Adult Literacy Survey). Consequently, these surveys exclusively focus on situational and institutional barriers on the one hand, and on adults already willing to participate on the other hand.

Next, due to the quantitative nature of the research, no clarifications were given when responding to the question. First, this is why we do not know what adults were referring to when they choose the response option 'other' when asked for their most important barrier. Second, adults were only asked about training activities in the previous 12 months. This is a relatively short time period. It could be that low-educated adults attend as much useful training activities as high-educated adults, but the latter also participate in activities with a lesser impact or participate because they are obliged by their employer. Last, respondents could only indicate their most important barrier to learning, meaning that there may be other reasons currently not indicated, and also a combination of reasons may be constituting the barrier. Qualitative research or in-depth quantitative research could give a better insight in the nature and impact of the training courses and the accompanying barriers.

Another limitation is the number of low-educated adults in the PIAAC sample participating or showing interest in adult education. Because the participation rates are lowest among low-educated adults and some countries are better than others in successfully reaching low-educated adults, some countries' samples are very small. The number of low-educated adults experiencing barriers in participating vary widely between countries. Replicating this research with a larger sample of low-educated adults would allow us to broaden our results.

Finally, the PIAAC study operates from a rather economic perspective. Consequently, questions about participation in adult education are more work-related although it is clear we also need adult participation for updating the skills that are necessary in daily life (de Greef, Verté, and Segers 2015; European Commission 2000).

Recommendations for future research

It is of substantial value to address the barriers of non-participating low-educated adults in future research, since they are the group that is most at risk. Focusing on their dispositional barriers

could generate important results (Rubenson 2010). Future research should question what low-educated adults are referring to when using the response option 'other' for describing their most important barrier for participating in adult education. Also, more research is needed on educational needs of adults to cope with daily activities, as the current PIAAC questionnaire only included workers when asking about learning needs.

Next, the data used for this research dates from 2012. Digitalisation has expanded and adult education has received a lot of policy attention. Future research could analyse whether the results in this study have continued or changes can be noticed. In addition, new PIAAC-data will be collected in 2023 in over 30 OECD-countries. This enables studying trends in participation in adult education.

6. Conclusion

The aim of this research was to study adult learner participation patterns, needs and barriers to learning of low- as well as medium- and high-educated adults in Europe. By studying countries at a European level, we were able to describe countries' abilities in attracting adults with different educational backgrounds to participate in adult education. This study furthermore added information to existing research on participation but most importantly to research on barriers to participating in adult education. We conclude our research with the significant finding that low-educated non-participants show different barriers to participation compared to medium- and high-educated non-participants and that it is still unclear which barriers they are referring to when choosing the response category 'other' when asked for their most important barrier.

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Table A1 Sample descriptives (Countries part 1)

	AUSTRIA (AUT)						BELGIUM (BEL)						CYPRUS (CYP)						GERMANY (DEU)					
	L		M		H		L		M		H		L		M		H		L		M		H	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
FULL	19	(841)	64.9	(2878)	16.2	(717)	20	(1037)	44.7	(2316)	35.3	(1828)	21.6	(900)	46.6	(1938)	31.8	(1321)	17.8	(957)	52.8	(2842)	29.4	(1585)
PART.	29	(176)	49	(1315)	72.8	(508)	21.8	(177)	41	(838)	69.2	(1207)	14	(103)	33.1	(530)	56.9	(720)	38.7	(262)	47.6	(1244)	70.4	(1096)
Gender																								
Female	26.7	100	46.9	610	82.2	254	19.3	(83)	38.7	(353)	71.5	(652)	12.4	(49)	31.5	(241)	57.6	(408)	29.7	(109)	45.4	(603)	70.9	(490)
Male	32.9	76	51	706	65.3	254	24.3	(92)	42.8	(484)	66.6	(554)	15.8	(54)	34.7	(289)	56.2	(312)	49.5	(153)	49.9	(641)	70.1	(606)
Age																								
16-24	65.2	(60)	61.9	(143)	83.3	(5)	44.9	(22)	44.3	(62)	68.8	(22)	45.1	(41)	28.4	(50)	50	(20)	76.8	(149)	66.1	(74)	50	(6)
25-34	33.8	(26)	59.5	(343)	89.4	(152)	45.2	(33)	47.3	(194)	75.8	(336)	18.5	(10)	40.2	(143)	61.8	(303)	34	(34)	59	(309)	78	(262)
35-44	30.4	(28)	56.1	(361)	75.8	(144)	25.8	(25)	46.8	(220)	70	(329)	13.7	(13)	39.5	(153)	58.3	(193)	23.6	(34)	55.2	(354)	74.3	(295)
45-54	31.5	(47)	51.2	(361)	69.9	(142)	25.1	(52)	43	(227)	68.6	(327)	12.2	(22)	31.5	(128)	55.8	(139)	24.8	(31)	48.2	(360)	72.1	(328)
55-65	7.7	(15)	20.4	(107)	50.8	(65)	11.7	(45)	27.2	(135)	59.8	(193)	5.4	(17)	20.4	(56)	41.9	(65)	12.3	(14)	25	(147)	57.6	(205)
NEEDS	30.7	(134)	39.7	(885)	60.7	(377)	15.5	(67)	20.7	(336)	27.3	(430)	24.6	(84)	33.6	(393)	39.7	(430)	35.5	(166)	40.9	(897)	60.7	(831)
Gender																								
Female	24.3	60	36.4	386	61.8	173	14.2	(28)	17.8	(118)	28.1	(229)	20.7	(25)	30	(148)	38.8	(233)	28.5	(63)	40	(425)	63.7	(370)
Male	39.7	75	42.5	498	59.9	205	16.3	(38)	22.7	(217)	26.4	(201)	26.7	(59)	36.2	(245)	40.6	(197)	41.7	(103)	41.7	(472)	58.4	(460)
Age																								
16-24	47.3	(71)	35.6	(110)	35.3	(6)	18.2	(8)	21.3	(32)	38.1	(24)	36.4	(8)	37.3	(56)	39.7	(27)	44.1	(90)	47.7	(112)	63.3	(19)
25-34	29.4	(15)	39.8	(200)	50.9	(81)	19.6	(10)	21.5	(78)	30.5	(128)	36.8	(14)	33.8	(95)	44.4	(184)	46.2	(24)	45.5	(202)	55.3	(157)
35-44	21.1	(15)	43.5	(257)	63.6	(112)	14.7	(11)	22.3	(95)	26.3	(119)	24.1	(13)	40.9	(123)	38.1	(114)	33.7	(29)	45.7	(244)	61.5	(224)
45-54	23.6	(26)	42.6	(263)	67.9	(127)	16.9	(26)	21.6	(99)	25.1	(112)	27.1	(29)	30.3	(89)	35.3	(77)	21.8	(19)	40.6	(260)	67.3	(286)
55-65	13	(7)	26.1	(55)	62.2	(51)	11.2	(12)	14.3	(32)	24.4	(47)	16.5	(20)	20.8	(30)	32.9	(28)	10.3	(4)	23.5	(80)	54.5	(145)
BARR.	12.7	(81)	19.3	(553)	30.9	(222)	10.3	(85)	13.1	(302)	25.1	(459)	10.6	(78)	18.1	(347)	32.1	(424)	17.3	(110)	23.5	(665)	41.7	(661)
Gender																								
Female	12.2	48	23.1	324	36.4	117	10.3	(45)	13.7	(144)	28.2	(270)	13.2	(27)	24.1	(229)	34.1	(257)	17.4	(61)	26.1	(375)	46.6	(331)
Male	13.4	33	15.6	229	26.3	104	10	(39)	12.7	(158)	21.7	(189)	7.9	(52)	12.4	(120)	29.7	(168)	17.1	(49)	20.8	(290)	37.7	(329)
Age																								
16-24	15	(19)	23.4	(98)	25.9	(7)	14.1	(9)	12.1	(48)	16.5	(19)	19.8	(18)	13.6	(68)	23.7	(23)	22.6	(35)	19.9	(66)	40	(16)
25-34	33.8	(26)	22.9	(132)	36.5	(62)	19.2	(14)	16.3	(67)	28.2	(125)	18.5	(10)	20.2	(72)	34.8	(170)	19	(19)	30.2	(158)	43.2	(145)
35-44	12.1	(11)	20.2	(130)	33.9	(64)	16.5	(16)	15.6	(73)	28.8	(135)	9.5	(9)	24.5	(95)	30.8	(102)	21	(30)	31.3	(201)	47.6	(189)
45-54	11.5	(17)	18.4	(130)	30.9	(63)	8.2	(17)	12.9	(68)	23.9	(114)	12.7	(23)	18.5	(75)	35.7	(89)	14.5	(18)	23	(172)	43.3	(197)
55-65	4.1	(8)	12	(63)	20.3	(26)	7.6	(29)	9.3	(46)	20.4	(66)	5.7	(18)	13.6	(37)	26.1	(40)	7	(8)	11.6	(68)	32	(114)

Table A1: Sample descriptives. FULL= full dataset (all PIAAC-participants divided into categories of low-, medium- and high-educated adults). PART.= % of low-, medium-, or high-educated adults participating in adult education during the past 12 months (e.g. 29% of low-educated adults in Austria have participated in adult education during the past 12 months). NEEDS= % of employed low-, medium-, or high-educated adults indicating having a training need in order to cope with work duties (e.g. 20.7% of medium-educated adults in Belgium express having training needs in order to cope with present work duties). BARR.= % of low-, medium-, or high-educated indicating they wanted to participate in more training activities but could not because of barriers (e.g. 32.2% of high-educated adults in Cyprus indicate being prevented from participating in training activities because of barriers).

Table A1 Sample descriptives (Countries part 2)

	DENMARK (DNK)						SPAIN (ESP)						ESTONIA (EST)						FINLAND (FIN)					
	L		M		H		L		M		H		L		M		H		L		M		H	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
FULL	26.4	(1925)	39.6	(2889)	34.1	(2488)	47.4	(2850)	23.4	(1408)	29.2	(1752)	18.1	(1373)	45.4	(3450)	36.6	(2780)	19.6	(1073)	58.2	(3182)	22.1	(1208)
PART.	51.7	(776)	62.2	(1596)	80.7	(1981)	30.8	(832)	48.7	(583)	70.8	(1202)	36	(353)	43.5	(1320)	70	(1873)	37.7	(278)	64.9	(1886)	86.3	(1026)
Gender																								
Female	50.7	(384)	64.1	(675)	81.7	(1129)	28.6	(365)	47	(279)	70.3	(634)	37.3	(150)	44.7	(641)	71.9	(1185)	36.2	(119)	68	(950)	87.6	(588)
Male	52.7	(392)	61	(921)	79.5	(852)	32.7	(467)	50.3	(303)	71.4	(569)	35.1	(203)	42.5	(678)	67	(687)	39.1	(159)	62	(936)	84.6	(438)
Age																								
16-24	87.3	(269)	82.2	(139)	66.7	(2)	60.8	(144)	61	(25)	72.7	(16)	69.5	(139)	60.6	(117)	73.5	(36)	76.3	(61)	74.3	(159)	100	(1)
25-34	54.8	(97)	75	(348)	87	(569)	39.5	(173)	54.8	(182)	77.6	(389)	44.5	(105)	59	(390)	79.2	(571)	49.4	(39)	74	(413)	89.2	(370)
35-44	48.3	(116)	66.7	(409)	83.8	(605)	32.3	(194)	53.8	(175)	69.9	(400)	34.3	(58)	47.8	(344)	75.7	(517)	60.3	(38)	72.8	(434)	89.5	(299)
45-54	46	(165)	61.4	(408)	82.9	(464)	29.4	(196)	47.5	(131)	71.5	(279)	17.2	(22)	37.9	(281)	71.7	(452)	39	(53)	65.9	(500)	87.6	(212)
55-65	30.9	(129)	44.7	(292)	66.3	(342)	16.5	(125)	31.5	(70)	55.7	(118)	11.7	(29)	26.1	(188)	50.7	(297)	22.9	(86)	48.7	(380)	73.1	(144)
NEEDS	20.2	(219)	20.2	(428)	26.8	(571)	30.4	(393)	38.7	(324)	47.4	(644)	36.1	(210)	42	(1040)	54	(1288)	18.4	(79)	27.5	(638)	37.7	(401)
Gender																								
Female	16.6	(86)	18.3	(154)	26.7	(318)	28	(142)	36.5	(143)	46.4	(320)	32.4	(73)	43.1	(475)	55	(802)	20.9	(36)	28.9	(322)	41.4	(250)
Male	23.5	(133)	21.3	(274)	26.9	(253)	31.8	(250)	40.8	(182)	48.2	(324)	38.6	(137)	41.1	(565)	52.3	(485)	16.7	(43)	26.2	(316)	32.8	(151)
Age																								
16-24	16.5	(60)	14.6	(47)	12	(3)	30.8	(28)	28.2	(20)	33.3	(12)	40.1	(61)	36.3	(126)	42.7	(50)	18.6	(16)	19.8	(56)	50	(6)
25-34	30.3	(33)	21	(72)	24.3	(136)	31.6	(84)	43.3	(101)	45.4	(174)	38.1	(59)	44.2	(245)	51.7	(335)	28.9	(13)	23.1	(100)	35.7	(130)
35-44	28.3	(43)	25.3	(136)	28.2	(186)	35.2	(122)	37	(85)	51	(241)	36.9	(45)	44.3	(266)	57.8	(362)	15	(6)	31.3	(161)	42.8	(134)
45-54	20.2	(52)	21.4	(120)	31.5	(166)	28.8	(101)	40.9	(83)	48.9	(162)	35.5	(27)	44.9	(258)	57.9	(335)	17.5	(17)	28.5	(181)	37.5	(84)
55-65	15.2	(31)	14.7	(53)	22.2	(80)	24.3	(58)	35	(35)	40.1	(55)	23.7	(18)	36.2	(145)	49.5	(206)	18.8	(27)	30.6	(140)	31.1	(47)
BARR.	22.8	(319)	31	(888)	41.5	(1031)	24.1	(646)	31.3	(436)	43.1	(755)	18.7	(177)	29	(999)	41.4	(1150)	15.4	(115)	27.8	(884)	43.3	(522)
Gender																								
Female	24.3	(173)	32.3	(394)	43	(606)	25.5	(324)	34.5	(240)	46.1	(431)	21.9	(85)	27.9	(498)	43.4	(750)	18	(61)	33.9	(522)	36.6	(330)
Male	21.3	(147)	30	(494)	39.5	(425)	22.7	(321)	28	(196)	39.5	(323)	16.4	(92)	30.3	(501)	38	(400)	13.3	(54)	22.1	(362)	48.4	(192)
Age																								
16-24	24.8	(52)	32.1	(151)	22.9	(8)	37.2	(83)	33.5	(80)	48.7	(37)	32.9	(56)	36.7	(222)	46.8	(72)	22.2	(20)	24.1	(116)	28.6	(6)
25-34	32.2	(57)	40	(186)	44.6	(292)	31.7	(139)	37.7	(125)	49	(246)	20.3	(48)	37.8	(250)	50.2	(362)	28.7	(23)	30.3	(169)	47.2	(196)
35-44	27	(65)	36.1	(221)	47.1	(340)	27	(162)	33.2	(108)	45.8	(262)	18.9	(32)	28.8	(207)	43.9	(300)	28.6	(18)	33.4	(199)	44.9	(150)
45-54	21.7	(78)	29.3	(195)	41.1	(230)	21.7	(145)	27.2	(75)	41.4	(162)	13.4	(17)	25.5	(189)	39.6	(252)	6.6	(9)	30.3	(230)	41.0	(98)
55-65	16.3	(68)	20.7	(135)	31.2	(161)	15.5	(117)	21.5	(48)	22.6	(48)	9.8	(24)	18.2	(131)	28.1	(164)	12	(45)	21.8	(170)	36.5	(72)

Table A1 Sample descriptives (Countries part 3)

UNITED KINGDOM (GBR)							GREECE (GRC)						IRELAND (IRL)						ITALY (ITA)					
L		M		H			L		M		H		L		M		H		L		M		H	
%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	
FULL	23.3	(1837)	41.2	(3253)	35.5	(2799)	23.3	(1577)	42.9	(2093)	24.8	(1211)	28.5	(1696)	39.9	(2377)	31.7	(1887)	53.7	(2469)	34.1	(1570)	12.2	(559)
PART.	32.1	(558)	55.4	(1507)	71.3	(1855)	7.2	(102)	18	(327)	40.7	(476)	30.5	(439)	46.4	(931)	72.3	(1269)	12.2	(266)	30.1	(428)	58	(314)
Gender																								
Female	27.5	(246)	53.5	(707)	71.6	(967)	8.3	(43)	15	(141)	42.4	(253)	26.9	(174)	42.1	(432)	70.9	(697)	8.5	(91)	28.7	(200)	56.1	(171)
Male	37	(312)	57.1	(800)	71	(888)	6	(59)	21.3	(187)	38.8	(222)	33.5	(266)	51	(499)	74.2	(572)	15.8	(175)	31.5	(229)	60.6	(143)
Age																								
16-24	35.6	(72)	64	(190)	71.4	(55)	11.3	(7)	25.5	(37)	56.5	(13)	60.9	(53)	46.9	(69)	76.5	(39)	23.6	(30)	25.6	(22)	0	(0)
25-34	28.4	(71)	57	(335)	74.6	(580)	14.1	(21)	23.9	(108)	51.6	(193)	40.1	(75)	46.6	(277)	75.2	(503)	15.4	(37)	35	(146)	65.4	(134)
35-44	39.4	(129)	59.5	(370)	73.9	(538)	10.1	(31)	21.6	(106)	43.6	(140)	28.7	(87)	47.6	(253)	71.5	(393)	13.9	(75)	30.4	(126)	57.6	(95)
45-54	38.7	(175)	57.6	(379)	74.3	(423)	6.2	(25)	13.8	(60)	34.8	(88)	27.7	(106)	49.3	(214)	75	(219)	14.4	(85)	32.2	(103)	56	(51)
55-65	22	(111)	41.8	(233)	57.7	(259)	3.6	(18)	5.4	(16)	21.1	(42)	24.5	(118)	39.5	(118)	59.9	(115)	5.7	(39)	16.8	(31)	43.6	(34)
NEEDS	14.7	(148)	19.1	(437)	25.3	(575)	24	(149)	35.6	(346)	45	(360)	17.9	(125)	24.2	(348)	28.6	(430)	26.4	(303)	35.4	(352)	42.7	(186)
Gender																								
Female	15.4	(66)	18.3	(191)	26.4	(293)	20.1	(42)	33.2	(130)	51.1	(187)	16.1	(41)	22.9	(153)	27.8	(230)	25.6	(95)	35.8	(150)	40	(92)
Male	14.2	(82)	19.8	(247)	24.2	(282)	26.1	(107)	37	(215)	39.9	(173)	18.7	(83)	25.3	(194)	29.7	(201)	26.9	(208)	35.4	(204)	45.6	(94)
Age																								
16-24	20.2	(20)	18.9	(82)	18.2	(35)	18.8	(5)	35.7	(41)	50	(15)	23.5	(12)	23.1	(52)	33.1	(42)	41.8	(33)	39.4	(26)	28.6	(2)
25-34	16.7	(23)	17.7	(81)	27.8	(191)	20.6	(14)	32.1	(79)	48.3	(114)	14.5	(11)	27.8	(113)	26	(149)	30.1	(47)	34.1	(95)	48.1	(74)
35-44	15.9	(34)	21.3	(111)	25.9	(165)	27	(48)	37	(117)	48.1	(124)	20.7	(30)	27.9	(97)	29.8	(133)	28.6	(103)	39.1	(129)	44.2	(61)
45-54	13.6	(42)	19.7	(109)	25.5	(127)	21.5	(43)	37	(91)	42.1	(80)	19.6	(40)	20.1	(60)	30.5	(76)	24.9	(91)	33.1	(78)	38.8	(33)
55-65	11.8	(29)	16.6	(54)	21.8	(57)	26.5	(39)	36	(18)	31.4	(27)	14.5	(32)	16.4	(26)	27.8	(30)	15.7	(29)	28.9	(24)	30.8	(16)
BARR.	16.3	(281)	22.8	(677)	30.8	(857)	5.7	(82)	14.9	(312)	28.1	(340)	21.8	(311)	29.7	(701)	38.1	(718)	10.4	(227)	18.3	(283)	34.5	(193)
Gender																								
Female	16.3	(145)	24.4	(350)	31.6	(454)	8.1	(58)	16.8	(182)	35.3	(221)	22.2	(143)	30.4	(366)	42.2	(449)	11.6	(125)	20.9	(161)	33.8	(106)
Male	16.4	(137)	21.2	(326)	29.9	(403)	3.5	(25)	13	(131)	20.3	(119)	21.6	(168)	29.1	(335)	32.8	(270)	9.2	(102)	15.7	(122)	35.5	(87)
Age																								
16-24	25.9	(49)	18.9	(104)	23.8	(62)	10.3	(7)	24.8	(103)	39.1	(25)	35.8	(24)	29.3	(146)	27.9	(51)	22	(28)	20.7	(44)	20	(4)
25-34	19.3	(48)	25.5	(149)	35	(272)	4.1	(6)	11.7	(53)	30.3	(113)	31.2	(59)	33.8	(201)	41.3	(276)	9.5	(23)	21.1	(88)	39.8	(82)
35-44	18	(59)	25.5	(159)	33.2	(242)	7.8	(24)	17.1	(84)	33.3	(107)	22.8	(69)	29.7	(158)	41.5	(228)	14.9	(80)	18.6	(77)	39.4	(65)
45-54	15.3	(69)	23.6	(155)	34.3	(195)	5.2	(21)	11.1	(48)	26.9	(68)	20.6	(79)	28.6	(124)	39.4	(115)	9.9	(59)	18.7	(60)	30.8	(28)
55-65	11.1	(56)	19.7	(110)	19.2	(86)	4.8	(24)	8.1	(24)	13.6	(27)	16.6	(80)	24.2	(72)	24.9	(48)	5.4	(37)	7.6	(14)	17.9	(14)

Table A1 Sample descriptives (Countries part 4)

	NETHERLANDS (NLD)						NORWAY (NOR)						SWEDEN (SWE)					
	L		M		H		L		M		H		L		M		H	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
FULL	31	(1568)	38.4	(1943)	30.6	(1546)	27.4	(1376)	37.9	(1899)	34.7	(1741)	20.8	(928)	51.1	(2285)	28.1	(1257)
PART.	45.5	(606)	65.3	(1089)	80.8	(1198)	49.2	(532)	61.9	(1035)	77.7	(1314)	42.9	(279)	63.8	(1327)	80.4	(975)
Gender																		
Female	40.4	(281)	63.8	(517)	81.8	(586)	48.8	(265)	61.3	(439)	80.8	(722)	45.1	(139)	64.5	(608)	81.4	(559)
Male	51	(325)	66.7	(572)	79.8	(611)	49.4	(266)	62.4	(596)	74.2	(591)	40.8	(140)	63.2	(719)	79.2	(415)
Age																		
16-24	86	(117)	77.7	(108)	87.5	(14)	85.3	(174)	76.3	(103)	92.3	(12)	74	(54)	72.6	(162)	85.7	(6)
25-34	61.1	(96)	74.3	(284)	87.7	(336)	61.2	(101)	71.6	(267)	84.8	(380)	54.2	(52)	73.4	(301)	87.8	(289)
35-44	48.9	(112)	65.5	(277)	80.9	(327)	51.5	(86)	68.3	(276)	80.9	(412)	37.1	(36)	65.1	(309)	81	(278)
45-54	45.8	(159)	67.1	(273)	83.7	(318)	42	(100)	63.1	(263)	77.5	(297)	50.7	(72)	64.7	(323)	81.7	(223)
55-65	26.3	(122)	46.5	(147)	67.9	(203)	23.1	(71)	36.7	(125)	62.8	(213)	26.9	(65)	49	(232)	68.8	(179)
NEEDS	14.4	(139)	17.9	(273)	19	(255)	25.1	(211)	30.2	(460)	34.7	(548)	26.8	(111)	32.9	(585)	38.1	(418)
Gender																		
Female	9.6	(43)	15.8	(110)	18	(114)	23.7	(91)	26.8	(177)	36.8	(308)	27.3	(42)	30.2	(236)	39.8	(247)
Male	18.5	(96)	19.7	(163)	19.8	(141)	26.4	(120)	32.8	(283)	32.2	(240)	26.6	(69)	35	(348)	35.6	(170)
Age																		
16-24	14.3	(31)	14.5	(43)	15.9	(10)	25	(59)	24.6	(66)	30.2	(16)	14.9	(11)	22.7	(57)	26.7	(8)
25-34	20.2	(23)	17.4	(56)	18.2	(64)	30.6	(37)	33.5	(107)	37.4	(151)	32.1	(17)	33.2	(107)	40	(116)
35-44	20.4	(34)	20.1	(75)	23.3	(88)	27.1	(35)	32.1	(114)	34.2	(167)	25.9	(15)	39.1	(167)	41.9	(134)
45-54	13.2	(35)	21	(71)	19.5	(69)	27.5	(49)	31.7	(112)	35.5	(127)	33.3	(37)	38.7	(168)	36.6	(94)
55-65	7.9	(16)	14.4	(28)	12	(24)	17.6	(31)	26.6	(61)	31.4	(87)	26.3	(31)	25.1	(86)	32.8	(66)
BARR.	12.9	(170)	22.4	(427)	31.2	(483)	16.2	(167)	23.4	(438)	32	(557)	20.7	(135)	29.5	(673)	42.2	(529)
Gender																		
Female	12.6	(86)	22.3	(208)	32	(241)	14.8	(76)	23.4	(193)	32.4	(299)	21.6	(67)	29.7	(313)	44.3	(316)
Male	13.3	(83)	22.5	(220)	30.6	(242)	17.4	(90)	23.4	(245)	31.5	(257)	19.6	(68)	29.5	(361)	39.6	(215)
Age																		
16-24	15.6	(17)	21.1	(80)	32.9	(26)	21.3	(33)	21	(71)	21.3	(13)	31.6	(25)	29.6	(125)	38	(19)
25-34	19.5	(31)	28.3	(108)	28.2	(108)	29.1	(48)	30.3	(113)	37.3	(167)	22.9	(22)	32.4	(133)	46.5	(153)
35-44	13.9	(32)	25.3	(107)	37.8	(153)	22.8	(38)	30.2	(122)	35.1	(179)	26.8	(26)	35.6	(169)	46.1	(158)
45-54	15	(52)	20.9	(85)	34.2	(130)	12.2	(29)	20.3	(85)	32.4	(124)	17.6	(25)	31.3	(156)	44.1	(120)
55-65	8.2	(38)	14.9	(47)	22.1	(66)	6.2	(19)	13.8	(47)	21.9	(74)	15.2	(37)	19.1	(90)	30.4	(79)