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Financial Literacy, Behaviour and Well-Being of Millennials in Poland Compared to Previous Generations: The Insights from Three Large-Scale Surveys

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Abstract: There are many concerns about financial competences of Millennials. Initial research on this generation suggests that it is less financially knowledgeable and exhibits less healthy financial behaviours compared to other generations. The goal of the article is to compare Millennials to non-Millennials as a whole, as well as to other generations treated in isolation, to check whether Millennials diverge in terms of financial literacy, behaviour and well-being. To that end, this study uses three distinct datasets from three surveys conducted in 2017 and 2018 on different samples of Poles. The applied statistic tests of significant differences do not confirm that Millennials diverge from other generations with respect to financial literacy as well as behaviours related to cash management, saving and investment. However, the surveyed Millennials perform significantly less healthy credit management and insurance behaviours compared to non-Millennials. We also found that Millennials report significantly higher levels of financial well-being compared to all previous generations.

Keywords: financial literacy, debt literacy, financial behaviour, financial well-being, Millennials

JEL codes: D14, D15, G51, G53

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1. Introduction

The term "Millennials" refers to the generation that will soon have a pivotal influence on labour markets, financial markets and entire economies worldwide (EY 2015; Kobler, Hauber, and Ernst 2015). On the one hand, financial outcomes of Millennials, both individual and aggregate, are contingent on their financial behaviour and related choices. On the other hand, it is well-documented that consumers' financial behaviours – including Millennials – are strongly related to financial literacy, with more literate individuals performing more healthy behaviours across all domains of household financial management (see Stolper and Walter 2017 for a comprehensive overview). However, the literature on the financial life of Millennials is often alarming as to both

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their financial competences and their financial behaviour. Specifically, the literature indicates that Millennials are less financially literate and exhibit less healthy behaviours compared to previous generations (Kim, Anderson, and Seay 2019; Global Financial Literacy Excellence Center and PwC 2015) implying that, as a result, Millennials may struggle with poorer financial achievements next to other generations, including their parents (i.e., Baby Boomers).

To some extent, the Millennial gap in financial literacy and behaviours is understandable. Financial choices being made by young adults today are more challenging than they have been in the past (Lusardi and Oggero 2017), both in developed countries and in emerging markets. The challenges can be attributed to increasing individual responsibility for own financial fate (e.g., entailed by demographic trends and related shifts in pension systems), extremely complex financial products, and more precarious occupational status, just to mention a few. Much has been written about these aspects of the US Millennials' financial living (e.g., Kim, Anderson, and Seay 2019; Friedline and West 2016; Simon and Houghton 2003). However, the issue is largely unexplored in Europe and, particularly, in Central and Eastern European countries (CEE, henceforward). Yet, as opposed to Western countries, there is a huge gap in these countries between Millennials and their parents (that is, Baby Boomers) in terms of life experiences shared by each of these generations. In CEE countries, Baby Boomers spent most of their lives in the world of deficits and centrally-planned economy. Their Millennial children know about this world only from stories or, in the worst case, from very early childhood experiences. Intergenerational differences seem to be particularly sizeable in this post-Soviet part of Europe.

The goal of this article is to examine financial literacy, behaviour and well-being of Millennials in Poland – one of the CEE countries – compared to previous generations, with particular reference to credit- and debt-related issues. We contribute to the existing literature in two ways. First, to our best knowledge, this is the first study on generational differences in financial literacy, behaviour and well-being in the CEE countries that uses such a rich dataset (more than 3,000 respondents, in total). Although the data do not allow to disentangle cohort effect from age effect, we believe that our findings are informative and robust, given that we used three distinct data sets obtained via three different large-scale surveys. The shift of focus from financial *outcomes* (assets, debt, wealth) of different generations to their financial *behaviours* gives us at least partial insight into intergenerational differences in the financial domain. Financial outcomes can be objectively and strongly constrained (e.g., income, assets or savings) or induced (e.g., debt) by factors being out of consumers' control and, at the same time, closely linked to the stage of life-cycle (Modigliani and Brumberg 1954; Ando and Modigliani 1963). Behaviours seem to be a more appropriate foundation of cross-generational comparisons than outcomes. For instance, although it is clear that younger adults – for objective reasons – may have more difficulty in accumulating wealth and, as a result, they may exhibit lower savings relative to older birth cohorts, they are equally supposed to save from every paycheque – even small amounts – because this is a desirable financial behaviour regardless of age. Similarly, even though younger respondents are expected to be more active in the credit market (and, on average, to be more indebted due to the life-cycle patterns), the expectation that they are less likely to make, for instance, a 'comparison shopping' when looking for a loan is hardly warranted. Second, given that indebtedness seems to be an emblem of Millennials' financial life (Hodson

and Dwyer 2014), in our study we paid particular attention to credit- and debt-related issues. Accordingly, we developed and applied a novel credit management behaviour scale to compare how Millennials and non-Millennials behave in this particular domain of household financial management.

We found that Millennials do not differ significantly from non-Millennials in terms of financial literacy, both actual and perceived, as well as concerning those financial behaviours that relate to wealth accumulation (savings and investment) and daily routine (cash management). However, Millennials report significantly less healthy credit management and insurance behaviours compared to non-Millennials. Despite this, the Millennial generation – relative to the others – is significantly more satisfied with its overall current financial situation. Given that previous empirical evidence suggests a strong positive relationship between not only financial literacy and financial behaviours (Behrman et al. 2012; Disney and Gathergood 2013; Hastings and Mitchell 2011; Van Rooij, Lusardi, and Alessie 2011; Yoong 2010), but also between financial literacy and financial satisfaction or well-being (Xiao and Porto 2017; Xiao, Chen, and Chen 2014), the disparity in credit management and insurance behaviours – as well as in financial well-being – between Millennials and non-Millennials must be attributed to factors that are different from financial literacy. We show that some personal (psychological) characteristics may be responsible for the dissimilarity. This implies that to enhance some financial behaviours through policy interventions, the Millennials' specificity in terms of psychological disposition needs to be taken into account.

2. Literature review

Theoretical framework

On the one hand, this work is interdisciplinary and locates primarily at the intersection of economics and sociology. On the other hand, the work is mostly descriptive, and it does not aim to examine a theory-derived relationship or, even more, the causality of a relationship. It focuses, instead, on the significant intergenerational differences in financial literacy, behaviour and well-being. For these reasons, it was difficult to embed the work within a theoretical framework, particularly a single one. We assumed that the appropriate conceptual basis to pursue the goal of this article on the ground of economics is the model proposed by Huston (2010). The model considers financial literacy, financial behaviour and financial well-being as key elements of an overarching model explaining how consumers acquire financial competences, how these competences translate into downstream financial actions, and how these actions determine financial well-being of individuals. Treated collectively, these three variables – financial literacy, financial behaviour and financial well-being – provide a broad perspective on the financial life of Millennials compared to other generations. For this reason, the model of Huston (2010) has been selected as the adequate conceptual framework even though the analyses conducted in this article do not examine the links between financial literacy, behaviour and well-being.

The model of Huston (2010) is a conceptual framework. Huston (2010) provides a conceptual definition of financial literacy, along with conceptual proposition of how it relates to financial behaviour and well-being, but the article doesn't operationalise any

of these concepts. For this reason, to measure financial literacy (as well as financial behaviour and well-being) we applied both: the instruments known from previous empirical studies and the self-designed instruments (they are described in the relevant Methods sections of this article). The assumed underlying order in the model of Huston (2010) is that to attain financial well-being, an individual must first acquire financial literacy and then to apply the knowledge and skills constituting the literacy. In this model, financial literacy is a prerequisite of healthy financial behaviours, though it is not the only factor shaping the behaviours. In turn, financial well-being is treated as the ultimate outcome of financial education and self-improvement.

The model of Huston (2010) is embedded in the human capital theory that was first formalised by (Becker 1962). The theory perceives financial literacy as a domain-specific human capital that requires an investment. In light of the theory, human capital is reflected in the individual resources of knowledge and skills and can be multiplied – through education or experiences, for instance – to increase the return on this peculiar form of capital. For the first time, financial literacy has been investigated on the grounds of human capital theory by Delavande, Rohwedder, and Willis (2008). The simple two-period model of financial literacy acquisition proposed by Delavande, Rohwedder, and Willis (2008) was later developed into more complex multi-period models by Jappelli and Padula (2013) as well as by Lusardi, Michaud, and Mitchell (2013). Given that both these models allow for changes in financial literacy in accordance with the life cycle stages, one may assume that the suitable, though very broad, theoretical foundation for financial literacy studies is the well-known life-cycle hypothesis (Modigliani, and Brumberg 1954; Ando and Modigliani 1963). The hierarchical relations among financial literacy, financial behaviour and financial well-being are also modelled theoretically (and verified empirically) by Shim et al. (2010) and Xiao et al. (2011) at the intersection of economics, psychology and sociology.

This article assumes that financial behaviour reflects how consumers transact in financial markets. There is a consensus in the literature as to what should be deemed healthy (desirable) financial behaviour (Dew and Xiao 2011). This also applies to debt-related behaviour – an issue exposed in this article. Specifically, by debt behaviour we mean how individuals borrow (i.e., for what purposes they borrow, do they make a 'comparison shopping' when looking for a loan, are they late when paying off their debts, etc.), assuming that such debt behaviour – as the behaviour in any other life domain – may be more or less desirable (see also Cwynar et al. 2019a).

On the grounds of sociology, this study relates to the concept of technological culture (Bijker 2001, 2006), which can be defined as the expression of all the modes through which individuals and societies appropriate technology (Godin and Gingras 2000). In light of this definition, technology filters through all aspects of culture, including norms and values, and has the power to shape generational identity and individual personality. Intergenerational differences in the available technology may result in significant divergencies between different generations in their formation in terms of norms, values, and needs. In the past, both parents and children were raised within a similar technological environment. The generation gap and resultant generational conflict involved different generations having different views on, after all, essentially the same values. However, modern societies are predominantly shaped by technology (Guggenheim and Nowotny 2003), and rapid technological development resulted in

children being raised nowadays in completely different technological setting compared to their parents. As a consequence, children rarely rebel against their parents' values today, because these values are quickly losing relevance for the youngest generations (Szlendak 2019). The issue of shifting values is highly debated nowadays in the context of post-modernism (Marody 2014). For instance, a striking feature of the youngest generations that mark them out is their attitude to work. A lot has been written about the alleged millennial lack of commitment to a job, deficits in responsibility and loyalty, as well as about the entitlement attitude. These characteristics may result from the pressures technology exerts on the millennial generation. The modern agora for this generation is the internet with a plethora of virtual and digital spaces, such as YouTube or Instagram, which socialise them more than any other socialisation agent. To an unprecedentedly high extent, the looking-glass self (or ego) of young adults is nowadays shaped by reactions of their peers that are shared in the digital world. This peculiar environment trains the individuals to assess their activity – or the lack of thereof – through a filter of a fast feedback and related pleasure. If an action fails the test of pleasure, then the outcome is a quick withdrawal from the activity. The attitude to employment and work can be easily explained in this particular framework: performing the professional duties is appreciated only as long as it brings pleasure. Given the goal of this article, we expect that the same mechanisms related to cross-generational differences in technological culture may explain, at least to a degree, the differences in financial behaviour between generations. For instance, in the contemporary environment of pleasure-seeking and instant gratification, money may be perceived instrumentally as a leverage of present-biased financial behaviours – perhaps unconsciously performed – aimed at achievement of fast satisfaction contingent on the verdict of one's social network in the virtual world.

Sociodemographic status of Millennials

In this article, we define a generation as all individuals – considered collectively – born and living at approximately the same time, who are shaped by the same socio-historical events (Pilcher 1994; Wiktorowicz et al. 2016). Defined in this way, generation incorporates individuals who share common thoughts, values, and experiences – mainly in cultural terms. As a result, the individuals have similar motivations, attitudes and behaviours.

The term 'Millennials' was introduced to the literature by Strauss and Howe (1991) to name a generation of Americans who came of age around the turn of the 21st century. Millennials are one of the five generations currently living – next to the Silent Generation, Baby Boomers, Gen X and Gen Z.[2] In social sciences, a generally accepted span of birth years of Millennials does not exist. Different authors use different ranges of birth years to define Millennials, both in the Western and the Polish literature.

[2] Millennials are often referred to as 'generation Y' (de Bassa Scheresberg and Lusardi 2014; Kobler, Hauber, and Ernst 2015; Lusardi and Oggero 2017). Accordingly, generation Z is considered as a birth cohort following Millennials. However, some authors (e.g., Wiktorowicz et al. 2016) equate generation Z with younger Millennials (while generation Y is equated with older Millennials). Due to their extremely small population, we do not distinguish the Great Generation (i.e., those born before the Silent Generation) in this article.

Generally, the research on Millennials assumes that the generation includes individuals born between the beginning of the 1980s and the end of 1990s. Nevertheless, the differences between definitions used in the literature that focuses on this generation's financial life are sometimes large (see Moreno et al. 2017 for comparison). Given that there is no official set of birth years to distinguish Millennials from other generations in Poland, this study adopts the definition of the US Census Bureau. In this definition, the birth years that mark the start and the end of the Millennial generation are 1982 and 2000 (i.e., Millennials are individuals between 20 and 38 years of age in 2020). Also, the US Census Bureau definitions were used in this article to distinguish other generations (Gen X – born between 1965 and 1981; Baby Boomers – born between 1946 and 1964; Silent Generation – born 1945 and earlier).

Obviously, socio-cultural specificity of a country may make the span of birth years used to distinguish generations incomparable to other countries. Differences in this regard are likely to occur between the Western countries, including the US, and the CEE countries, including Poland, due to different socio-economic inheritance of the 75 post-war years. However, it is argued that the differences between countries in the way the same generations are defined are the least with regard to the youngest generations, including Millennials (Wiktorowicz et al. 2016). These generations are the most globalised and unified through the internet and social media.

In the US, Millennials became the largest generation in 2015 (Y. Chien and Morris 2018) and, at the same time, the largest generation in US history (de Bassa Scheresberg and Lusardi 2014; Kim, Anderson, and Seay 2019; Fair Isaac Corporation 2014) with the number of individuals within the range of 70 to 80 million, depending on the source (de Bassa Scheresberg 2013; Yakoboski and Lusardi 2018; Fair Isaac Corporation 2014). This accounts for approximately 30% of the US entire population. In Poland, the share of Millennials in the total population reaches almost 30%, which equates to about 11 million (NEWSERIA News Organization 2016). The share is comparable in other CEE countries (Mazur-Werzbicka 2016). In terms of sociodemographic variables, the US Millennials have higher educational attainments, are more racially diverse, and are more likely to defer marriage and children compared to members of earlier generations (Kurz, Li, and Vine 2018; Global Financial Literacy Excellence Center and PwC 2015). They also delay transitioning from financial dependence to independence (Xiao, Chatterjee, and Kim 2014) and, as a result, to adulthood, given that independence in financial terms is deemed a marker of being an adult (Arnett 2000). The sociodemographic characteristics of Millennials in Poland are similar (Wiktorowicz et al. 2016).

The common experiences shared by Millennials are mainly related to the internet, digital revolution and globalisation. Due to extreme comfort with technology, Millennials are commonly referred to as the first 'digital natives' (Thompson and Blomquist 2017; Haefele, Smiles, and Carter 2017; Barton, Fromm, and Egan 2012). Relative to previous generations, Millennials are also more connected in terms of social networks, mainly online (Barton, Fromm, and Egan 2012). This is also the first generation comprising individuals who were raised in a society of rapidly improving status of children – their expectations, their needs, but also their wants. As a result, Millennials are characterised as having unprecedentedly high self-esteem, confidence,

optimism, and aspirations (Lusardi and Oggero 2017; Edelman 2018; de Bassa Scheresberg and Lusardi 2014).

The literature indicates that there are many stereotypes regarding Millennials, presumably more than about any other generation (Barton, Fromm, and Egan 2012; Robson and Loucks 2018; CBRE 2016). Millennials are often referred to as 'lazy', 'spoiled', 'entitled', 'narcissistic' or 'technologically obsessed' by the members of earlier generations (Haefele, Smiles, and Carter 2017; Barton, Fromm, and Egan 2012; CBRE 2016). However, many of these features – if not all of them – are age-specific instead of being generation-specific. The features are shared by all young individuals, and they elapse as the individuals grow older (Robson and Loucks 2018; CBRE 2016).

Among many, often stereotypic, features of Millennials, the irresistible need for instant gratification deserves closer attention (de Bassa Scheresberg and Lusardi 2014). Barton, Fromm, and Egan (2012, p. 6) point that 'the US Millennials are all about instant gratification' and that they are characterised by the attitude 'I want it fast, and I want it now'. Nielsen, a transnational corporation, described Millennials as #we, #more, #now (NEWSERIA News Organization 2016). 'Now' relates to the phenomenon known as 'fear of missing out' (FOMO) – overwhelming anxiety that something exciting may be happening elsewhere. This may entail impatience and, consequently, less resistance to wants.

The economic and financial status of Millennials

In terms of financial outcomes, the US Millennials have low incomes and low, even minimal, wealth (Global Financial Literacy Excellence Center and PwC 2015; Kim, Anderson, and Seay 2019; Mottola 2014; Hodson and Dwyer 2014). This comes as no surprise in light of the life-cycle hypothesis (Ando and Modigliani 1963; Modigliani and Brumberg 1954), which posits that both low income and the lack of wealth are objective indicators of the initial life stage. However, Kurz, Li, and Vine (2018, abstract) report that 'Millennials are less well off than members of earlier generations when they were young, with lower earnings, fewer assets, and less wealth'. This suggests that American Millennials are at a financial disadvantage compared to previous generations. It is argued that the disadvantage emerges as a consequence of the Great Recession (e.g., economic prospects worse than those of other generations at the time they were entering the labour market, including higher unemployment and lower wages, as well as rapid increases in costs of higher education) (Kim, Anderson, and Seay 2019; Mottola 2014; Y. Chien and Morris 2018). Although there is no data comparing Millennials' and non-Millennials' incomes and wealth at the same life stage in Poland, it is indicated that the hallmark of the Polish Millennials' circumstances is precarity – that is, the overwhelming experience of insecure and uncertain occupational status (Andrejczuk 2017). This renders Polish Millennials similar to their US counterparts.

The US Millennials display a low, or medium at best, level of financial literacy (National Endowment for Financial Education 2016), which is even lower compared to earlier generations (Yakoboski and Lusardi 2018; Kobler, Hauber, and Ernst 2015; Global Financial Literacy Excellence Center and PwC 2015). For instance, in Yakoboski and Lusardi (2018), Millennials answered 44% of the financial literacy test questions correctly, on average. For comparison, the average result among the US adults

reached 50%. Gen Xers and Baby Boomers also fared better in the test, on average (49% – Gen Xers; 55% – Baby Boomers). The only study that compares Millennials to other generations in terms of financial literacy in Poland (Defratyka and Morawski 2018) reports that the younger the generation, the more likely to answer the literacy test question incorrectly. However, the results of the study should not be overestimated, because the surveyed respondents were asked only one question.

There is a lively debate in the literature regarding the effect age has on financial literacy. A growing body of academic opinion tends to believe that the relationship between these two variables resembles an inverted U-curve, at least in Western economies (see, for instance, the following cross-national studies: Atkinson and Messy 2012; Roa, Garrón, and Barboza 2019; Kadoya and Khan 2019; Karakurum-Ozdemir, Kokkizil, and Uysal 2019; Nicolini, Cude, and Chatterjee 2013). This could suggest that, generally, financial literacy is low at a young age regardless of the generation. However, the evidence from other studies and, especially, from developing countries as well as emerging economies (including CEE states), suggests that the inverted U-shaped pattern may not be universal (Cwynar, Cwynar, and Wais 2019). In some of these studies positive relationship has been established (Alhenawi and Elkhal 2013; Yakoboski, Lusardi, and Hasler 2018; Xiao, Chen, and Sun 2015; O'Connor 2019), while other found a negative association between age and financial literacy (Klapper, Lusardi, and Van Oudheusden 2015; Klapper and Panos 2011; Cwynar et al. 2019b). These inconclusive results may indirectly imply a role for generation-specific factors in explaining financial literacy heterogeneity across generations.

The issue of age having an impact on financial literacy is particularly important given the matter of concern assumed in this article. Age and generation are intrinsically interrelated. As a result, what is often taken as an impact of age can equally be the generation-specific effect, better known as the cohort effect in the literature (Schulhofer-Wohl and Yang 2011). To avoid misinterpretations, these two effects should be disentangled. However, only a few recent studies on financial literacy implemented procedures allowing for such decoupling of cohort effect from pure age effect (Gamble et al. 2015; Finke, Howe, and Huston 2017). This comes as no surprise given that cohort effect can be isolated from age effect due to addressing the same questions to (optimally the same) respondents at different stages of their lives. Such longitudinal studies are still rare, especially when no national-wide surveys conducted on a regular basis are implemented. This kind of longitudinal data is missing in Poland, too. For this reason, the findings of this article must be interpreted with caution given that the underlying data did not allow to disentangle cohort effect from age effect.

De Bassa Scheresberg and Lusardi (2014) report that there is a disparity between actual and perceived financial literacy among American Millennials who are very confident about financial knowledge they possess. 69% of respondents rated themselves at least 5 on a 1-7 scale of self-assessed financial knowledge, confirming that they believe their financial knowledge is high. At the same time, 74% of the survey participants reported agreement with the statement 'I am good at dealing with day-to-day financial matters, such as checking accounts, credit and debit cards, and tracking expenses' (de Bassa Scheresberg and Lusardi 2014). Thompson and Blomquist (2017) add that majority of Millennials may hold elevated opinions of their financial competences: 64% of the

Millennial respondents felt they understood their holdings and investments as well as a professional.

The literature is inconclusive with regard to financial outcomes of the US Millennials as well as on their financial behaviour in general (Y. Chien and Morris 2018). Friedline and West (2016) report that 35% of Millennials save for an emergency, while nearly 60% have a retirement account (National Endowment for Financial Education 2016). De Bassa Scheresberg and Lusardi (2014) contend that 88% of them have either a checking account or a savings account, while 51% have a retirement account. In the study of Kim, Anderson, and Seay (2019) 41% of participating Millennials had an emergency fund, while 47.4% had at least one retirement account. Mottola (2014) provides a comparison of Millennials with earlier generations in terms of saving outcomes. 33% of Millennial respondents have rainy day funds, which is slightly more than among Gen Xers and significantly less than among Baby Boomers and Silent Generation. Only about 40% of the surveyed Millennials (which is significantly less compared to any of the previous generations) report saving for retirement. Kurz, Li, and Vine (2018) compared retirement savings of Millennials with those of Gen Xers at the same point in the life when the Gen Xers were of comparable age. The comparison revealed, somewhat surprisingly, that Millennials saved more (in terms of the amount put aside), which partly reflects the transition from defined-benefit retirement plans to defined-contribution retirement plans. Y. Chien and Morris (2018) showed that Millennials display a higher propensity to save for retirement compared to Gen Xers. The same has been documented in Poland. Defratyka and Morawski (2018) compared three generations (Gen Xers, older Millennials, labelled as 'generation Y', and younger Millennials, labelled as 'generation Z') and showed that the younger the generation, the greater percent that reports having a savings fund, although the magnitude of average savings funds increases for older generations. The Credit Information Bureau (2014) confirms these patterns, adding that about 45% of Millennials reported that they were saving. Kim, Anderson, and Seay (2019) report that about 30% of surveyed Millennials had an investment outside their retirement accounts, while de Bassa Scheresberg and Lusardi (2014) indicate that the share of those in the Millennial generation who have investments in stocks, bonds, or mutual funds is one-fourth.

The key marker of Millennials' financial life is indebtedness – often unsustainable. National Endowment for Financial Education (2016) reports that the share of American Millennials who have at least one long-term debt exceeds 70% (34% have more than one long-term debt). The share is even larger among the best-educated Millennials. According to the Global Financial Literacy Excellence Center and PwC (2015), 81% of college-educated Millennials have at least one long-term debt. Kurz, Li, and Vine (2018) show that Millennials took on more debt than their parents – i.e., the members of Baby Boomer generation – during the same, initial stages of their adult lives. Y. Chien and Morris (2018) report that in 2016 Millennials – compared to Gen Xers in 2001 – were slightly more indebted on average, with a larger amount of student loans, but less amount of mortgages and credit card debts. Hodson and Dwyer (2014) show not only that Millennials are more indebted compared to Gen Xers at the same point of life, but also that the structure of Millennials' debts is worrying. Specifically, Millennials have more non-collateralised debts (including consumer loans and student loans) and fewer mortgages compared to other generations. Mottola (2014) reports that non-banking (i.e., more costly) borrowing is fairly common among Millennials. They heavily rely on

alternative financial services (AFS). Over one-third of the Millennial generation use this kind of expensive financing (National Endowment for Financial Education 2016), in spite of their relatively high educational attainment. In the study of Friedline and West (2016), the share is even larger, reaching 44%. Millennials often apply for AFS even if they have a bank account or credit card (de Bassa Scheresberg and Lusardi 2014). Nearly 30% of Millennials are overdrawing on their chequing accounts, while over 20% of those who have retirement accounts took loans or made hardship withdrawals in the past year (Global Financial Literacy Excellence Center and PwC 2015). It is also evidenced that Millennials use credit cards in ways that generate high costs (de Bassa Scheresberg and Lusardi, 2014). Ultimately, they struggle slightly more than previous generations to pay their bills and meet their financial obligations (Mottola 2014). All in all, debt became an identification mark of Millennials in the US – the truth that has been well summarised by Hodson and Dwyer (2014, p. 3): 'for young Americans, the transition to adulthood, is a transition to holding debt'.

To a large extent, the reliance of American Millennials on credit – including their toxic relations with loans – can be explained by the conditions of the US financial market and the whole economy at the turn of 2000s and 2010s. Three events need to be indicated here as key sources of economic pressure to take on debt. First, the typical economic nuisances of the initial stage of the life-cycle – that is, low incomes and meagre wealth – were compounded by weak macroeconomic performance in the years following the Great Recession (being the same years Millennials were entering the labour market). Second, the access to credit was made considerably easier during the same years due to both the historically low-interest rates and the development of financial services, including services alternative to banking. Third, financial services offered to households became unprecedentedly complex for young, unexperienced adults to navigate.

The economic circumstances of Millennials in Poland differ in many respects from those of American ones. Poland avoided the economic downturn in the aftermath of the latest global crisis. As a result, Polish Millennials were entering the labour market and their family lives more smoothly compared to their American counterparts. Additionally, Poland belongs to countries where the ratio of household debt to GDP is relatively low, and the dependence of the household sector on credit is significantly lower compared to the US (Morawski and Wieczorek 2018). In particular, as opposed to young adults in the US, Polish Millennials were coming of age in an economy with much less prevalent credit card usage (Milleninum Bank 2016 – about 25% in Poland; Edelman 2018 – about 68% in the US) and, most of all, much less costly access to tertiary education (Polish Bank Association 2018). Generally, full-time studies at state (public) universities in Poland are free of charge. The tuition at extramural studies (as well as at non-public universities) depends on the major and ranges from ca. 1,000 to 3,000 euro annually. As a result, student loans are not very popular in Poland. To put it into perspective, 398,000 student loans were granted in 1998-2017 (Ministry of Science and Higher Education 2018), while the number of students reached 1,291,900 only in 2017 (Polish Bank Association 2018).

Nevertheless, the Credit Information Bureau (2014) indicates that 46% of the Millennial generation in Poland took on at least one credit or loan. However, 25% of those who have never been in debt justify this with a lack of creditworthiness. Additionally, the share of debtors increases with age. A large majority (79%) of Polish Millennials

borrow from banks (Credit Information Bureau 2014). 19% reported that they borrow because of temporary financial problems. The same percentage indicated that they borrow because of a lack of funds for basic necessities. Statistics also show that among all age groups in Poland, the fastest growth in outstanding debts during 2013-2018 was observed in the cohort of young adults – those who approximately comprise the Millennial generation. Specifically, these debts increased 3.3 times in the 26-35 age group, and as much as almost 15 times in the 18-25 age group. At the same time, the number of delinquent debtors rose by 25% and 437% for these groups, respectively (Defratyka and Morawski 2018). Surprisingly, younger Millennials (labelled 'generation Z' by Defratyka and Morawski 2018), compared to both the older Millennials (labelled 'generation Y') and the Gen Xers, are less likely to borrow to finance entertainment and fun purposes. However, the youngest generation has the largest problems in repaying debt. Generally, 36% of all Millennials failed at least once to pay off a bill (in this group, 10% failed to pay a loan instalment, while 8% failed to pay a credit instalment; 6% failed to pay off a credit card debt).

The data on the US Millennials' propensity to seek financial advice is mixed. Global Financial Literacy Excellence Center and PwC (2015) reports that only 27% of surveyed Millennials are seeking professional financial advice on saving and investment. Kobler, Hauber, and Ernst (2015) established that 84% of Millennials seek financial advice, despite that they are sceptical about the advisors. In the 2018 edition of the Edelman study (Edelman 2018), 25% of surveyed Millennials reported having a personal financial planner/advisor, while 12% had a robo-advisor for financial advice. Millennials are visibly more inclined to consider technology as an important feature of financial advice. Thompson and Blomquist (2017) report that 67% of Millennials, compared to 30% of Gen Xers and Baby Boomers, want computer-generated recommendations (robo). Barton, Fromm, and Egan (2012) indicate that Millennials, compared to earlier generations, also have a different view of an 'expert'. For them, peers or close friends who have had first-hand experience may be more appreciated advisors than someone with professional or academic credentials. The increasing role of peers, who act as an advisor in the first instance in financial consultations of Millennials, is also underlined by Kobler, Hauber, and Ernst (2015).

The evidence about the financial well-being of American Millennials is mixed. In the study of Global Financial Literacy Excellence Center and PwC (2015), 34% of them reported – on a scale of 1 to 10 – that they were very unsatisfied (1 – 3 on the scale) with their current financial situation. 18% were not at all satisfied (1 on the scale). Friedline and West (2016) report that the average level of satisfaction on a scale from 1 to 10 reached 5.115 in the sample of n=6,865 US Millennials. Taylor and Keeter (2010) show that 31% of US Millennials say they earn enough money to lead the kind of life they want, compared to 46% for Gen Xers and 52% for Baby Boomers. However, Mottola (2014) indicates that the share of respondents who are satisfied with their personal financial situation is similar across generations: it reaches 23% for Millennials, compared to 17% for Gen Xers, 25% for Baby Boomers, and 42% for Silent Generation. At the same time, 51% of the US Millennials feel that they have too much debt (National Endowment for Financial Education 2016).

In the next section, we provide details on three studies from which we retrieved data to compare Millennials to non-Millennials in terms of financial literacy, behaviour and well-being.

3. Study 1: Purposive sample of Facebook users who participated in the credit market

Methods

Data and participants

The data were collected through Computer-Assisted Web Interviewing (CAWI) from a purposive sample of 1,055 Facebook users in Poland who participated in the credit market in the last five years. The survey was fielded during the period of 28 May – 6 June 2017 through the online panel provided by Pollster Institute – a professional market and opinion research agency. There are more than 89,000 panellists enrolled on this platform. Sociodemographic composition of the sample has been adjusted to correspond to the distribution of key characteristics (gender, age, education, place of residence) of the entire Polish population. Nevertheless, due to problems with the information sources needed for the sampling frame of credit holders from Poland active on Facebook, we were constrained to the non-probabilistic selection of respondents to our research. As a consequence, results cannot be generalised to the whole population of credit holders in Poland. Table 1 compares the distribution of selected sociodemographic traits in the sample and in the subsample of Millennials. The sample composition in each of the three studies analysed in this article vis a vis the composition of the entire Polish population is demonstrated in Table 20 in the Appendix.

In all three studies – including study 1 – we followed the US Census Bureau in defining Millennials in terms of a span of birth years, as individuals born between 1982 and 2000 (we also adopted the definitions of the Bureau when selecting other generations from our sample – Gen X (1965-1981), Baby Boomers (1946-1964) and Silent Generation (born 1945 and earlier)).

Measures

Financial literacy

Table 2 reports the key characteristics of all variables used in study 1. Generally, in this article, we define financial literacy as 'knowledge of basic economic and financial concepts and the ability to use that knowledge and other financial skills to manage financial resources' (Hung, Parker, and Yoong 2009, p. 12). However, in study 1 we focused on debt literacy – a little aspect of financial literacy – and on debt-related behaviour. More specifically, in study 1 it is assumed that financial literacy in debt-related domain reflects consumers' knowledge of basic concepts regarding credits, loans and borrowing, as well as their ability to apply the knowledge in the debt-related domain. We measured debt literacy in two ways – through a test and through self-reports. We used the nomenclature proposed by Allgood and Walstad (2016) to name these two measurement instruments – that is, actual and perceived debt literacy, respectively. Actual debt literacy was measured with the instrument designed by

Lusardi and Tufano (2015) being a three-question, single-choice test. Lusardi and Tufano (2015) indicate that this test concentrates on three debt-related competencies: (i) the comprehension of interest compounding, (ii) the knowledge of how to pay off credit card effectively, and (iii) the understanding of the time value of money concept (the exact wording of the questions is provided in the Appendix). Correct answers were coded as 1 while all remaining options (incorrect answers, 'Don't know' responses and 'Prefer not to answer' responses) were coded as 0. Hence, the actual debt literacy index ranged between 0 and 3 in value.

Table 1. Study 1: Sample composition in terms of main sociodemographic variables

	Entire sample		**Sub-sample of Millennials**	
	n	*%*	*n*	*%*
Gender				
Female	541	51.7	272	62.5
Male	505	48.3	163	37.5
Educational attainment				
Primary school	7	0.7	3	0.7
Junior high school	7	0.7	7	1.6
Basic vocational school	96	9.2	25	5.7
Secondary uncompleted school	33	3.2	11	2.5
Secondary school	289	27.6	103	23.7
Post-secondary school	112	10.7	49	11.3
Bachelor's degree	76	7.3	49	11.3
Master's uncompleted degree	24	2.3	9	2.1
Master's degree	395	37.8	175	40.2
PhD degree or higher	7	0.7	4	0.9
Place of living				
Rural area	363	34.7	157	36.1
Town to 20,000 inhabitants	96	9.2	28	6.4
City from 20,001 to 50,000 inhabitants	104	9.9	38	8.7
City from 50,001 to 100,000 inhabitants	114	10.9	47	10.8
City from 100,001 to 200,000 inhabitants	88	8.4	35	8.0
City from 200,001 to 500,000 inhabitants	113	10.8	52	12.0
City 500,001 inhabitants and more	168	16.1	78	17.9

Source: Author's own study and elaboration

Respondents were also asked to self-report on their perception of the degree to which they are knowledgeable in debt-related domains. Specifically, perceived debt literacy came from the survey item that asked: 'On a scale of 1 to 7, where 1 means very low, and 7 means very high, how would you assess your debt knowledge?' This question preceded test of actual debt literacy.

Financial behaviours

In this article, by financial behaviour, we mean how individuals act when confronted with financial matters – from those related to daily routine and to the long-term and sizeable in terms of amounts involved – assuming that such 'financial behaviour' – as the behaviour in any other domain – may be more or less unhealthy (unbeneficial, unsustainable, undesirable). For instance, in this article credit management behaviour reflects how consumers transact in debt markets or, in other words, how they borrow (i.e., for what purposes they borrow, do they make a 'comparison shopping' when looking for a loan, do they pay off debts timely, etc.)

The questionnaire used in study 1 contained a series of questions allowing us to infer about a range of respondents' financial behaviours. The following survey items were used to gather data on cash management, savings and investment behaviours, respectively: (i) 'I compare prices before I decide to purchase a product', (ii) 'I have a term deposit(s) in a bank or in other financial institutions', (iii) 'I put some money aside for retirement'. The responses were measured on a 5-point Likert scale where 1 meant 'Decidedly disagree' and 5 meant 'Decidedly agree'. We also applied two binary questions (1=Yes; 0=No; respondents were also allowed to refuse to answer these questions) regarding debt behaviour. The questions were as follows: (i) 'Have you ever got into arrears?', (ii) 'Have you ever been a subject to a loan collection process?'

The questionnaire also included two items on credit- or debt-related help-seeking behaviour of surveyed individuals. First, they were asked if they sought credit- or debt-related advice from an expert: 'In the last 5 years, have you asked for any advice from a professional about any of the following: (a) a credit choice, (b) legal aspects of a contractual credit agreement, (c) debt counselling?' For each of these three specific behaviours, a binary variable indicator was created (1=Yes; 0=No). Second, we asked the survey participants to report any individual social capital resources made available as a help, a support or a form of assistance that can be received from family, friends or acquaintances. The variable – labelled as 'Network resources' – was measured with the following 'Yes/No' question: 'If you were in need, would there be someone you could turn to for help on the following matters: (a) Borrowing several thousand PLN? (b) Escaping the vicious circle (spiral) of debt? (c) Temporarily sharing a flat or a house? (d) Contacting a financial/credit advisor? (e) Recommending a credit product? (f) Recommending how to invest funds? (g) Help in the evaluation of credit contractual agreements? (h) Help in reducing the indebtedness? (i) Bringing a claim against a lending institution?' The question was asked separately in relation to family, friends and acquaintances. As a result, the variable 'Network resources' ranged from 0 to 27 in value (Yes=1, No=0). The variable has been designed to refer to the Resource Generator – a well-known questionnaire aimed at probing social capital embedded in personal networks (Van Der Gaag and Snijders 2005).

Financial well-being

In this article, we followed the view that financial well-being is a component of general well-being and, as such, can be defined as a 'state of being healthy, happy, and free of financial worries' (Joo and Grable 2004, p. 27). We used a diversified range of instruments to measure financial well-being in the three studies we refer to in this

article. In study 2, we adopted the Financial Anxiety Scale (Archuleta, Dale, and Spann 2013) as a proxy for financial well-being. In study 3 we applied a more direct indicator of financial well-being: a single question tool that is widespread in the relevant literature (Shim et al. 2010; Plagnol 2011; Robb, Babiarz, and Woodyard 2012; Archuleta, Dale, and Spann 2013; Hunter and Heath 2017). However, in study 1 we applied the following question introduced by Lusardi and Tufano (2015) as a proxy for the satisfaction with current debt load: 'Which of the following best describes your current debt position? (i) I have too much debt right now, and I have or may have difficulty in paying it off, (ii) I have about the right amount of debt right now, and I face no problems with it, (iii) I have too little debt right now. I wish I could get more, (iv) I just don't know'. If financial well-being reflects, among others, a lack of financial worries, then a respondent who reports having too much debt must experience a financial strain and, presumably, resultant worry.

Other measures

We applied several additional survey items allowing us to learn the financial behaviour-relevant attitudes and psychological dispositions (personality traits). First, we collected self-reports on impulsivity in buying (these reports can be alternatively used as a marker of materialism), which may trigger excessive borrowing. The variable, labelled as *Impulsivity*, was measured by confronting the respondents with the following statement and asking them to state if they agree or disagree on a 1–5-point scale: 'I buy goods under the influence of advertisements'. Second, three survey items were used to capture risk aversion: (i) 'Life without risk is boring', (ii) 'I often exceed the speed limit', (iii) 'I visit dangerous places and countries'. Again, respondents were to express their agreement or disagreement. Third, we confronted respondents with a statement allowing them to reveal their trust towards lending institutions: 'I do not trust lending institutions'.

Tests and analyses

Using the variables described in the section 'Measures', in all three studies demonstrated in this article Millennials were first compared to the remainder of the entire sample (that is, to 'non-Millennials'). A Mann-Whitney U test was used to conduct the comparisons. Then, Millennials and all other generations (i.e., Gen Xers and Baby Boomers) were compared peer-to-peer using the *H* Kruskal Wallis test. A chi-squared test was used for comparisons of non-ordinal variables.

Table 2. Definitions and descriptive statistics of the variables used in study 1

Category	Variable	Method of calculation	Min	Max	Median	Mode
Debt literacy	Actual debt literacy	Ordinal variable estimated on 3-question single-choice test	0	3	1	0
	Perceived debt literacy	Ordinal variable estimated on 7-point Likert scale where 1 means very low and 7 means very high	1	7	5	5
Financial behaviour	Cash management	Ordinal variable estimated on 5-point Likert scale where 1 means decidedly disagree and 5 means decidedly agree	1	5	4	5
	Savings	Ordinal variable estimated on 5-	1	5	2	1

		point Likert scale where 1 means decidedly disagree and 5 means decidedly agree				
	Investment	Ordinal variable estimated on 5-point Likert scale where 1 means decidedly disagree and 5 means decidedly agree	1	5	3	3
	Credit management_arrears	Nominal variable equals 1 if the respondent provides a positive response, and 0 otherwise	0	1	0	0
	Credit management_loan collection	Nominal variable equals 1 if the respondent provides a positive response, and 0 otherwise	0	1	0	0
	Debt advice-seeking_credit choice	Nominal variable equals 1 if the respondent provides a positive response, and 0 otherwise	0	1	x	0.462*
	Debt advice-seeking_legal aspects	Nominal variable equals 1 if the respondent provides a positive response, and 0 otherwise	0	1	x	0.168*
	Debt advice-seeking_debt counselling	Nominal variable equals 1 if the respondent provides a positive response, and 0 otherwise	0	1	x	0.153*
	Debt avice-seeking_number of advice themes	Ordinal variable: 4=four themes; 3=three themes; 2=two themes; 1=one theme; 0=no advice-seeking	0	4	1	0
	Network resources	Ordinal variable estimated on 7-question single-choice test asked separately in relation to family(1), friends(2) and acquaintances(3)	0	27	9	0
Financial well-being	Debt-related well-being	Ordinal variable: 0= I just don't know'; 1= I have too little debt right now. I wish I could get more; 2= I have about the right amount of debt right now and I face no problems with it; 3= I have too much debt right now and I have or may have difficulty in paying it off	0	3	2	2
Other variables	Impulsivity	Ordinal variable estimated on 5-point Likert scale where 1 means decidedly disagree and 5 means decidedly agree	1	5	2	3
	Risk aversion	Ordinal variable estimated on 3-question test with respondents' self-assessments on a 5-point Likert scale (where 1 meant 'Decidedly disagree' and 5 meant 'Decidedly agree')	3	15	7	9
	Trust in lending institutions	Ordinal variable estimated on 1-question test with respondents' self-assessments on a 5-point Likert scale (where 1 meant 'Decidedly disagree' and 5 meant 'Decidedly agree')	1	5	3	3

*Note: *Share of positive answers (equals 1); ** Share of male respondents (equals 1)*
Source: Author's own study and elaboration

Results

Financial literacy

We did not find significant differences in either actual debt literacy or in perceived debt literacy between Millennial and non-Millennial respondents in terms of the Mann-Whitney U test (Z = -0.08; p = 0.935 for actual debt literacy; Z = -1.93; p = 0.054 for perceived debt literacy). The average score in the test of debt literacy on a scale of 0 to 3 reached M = 0.70 (Me = 1.0; SD = 0.74; IQR = 1) for Millennials and M = 0.72 (Me = 1.0; SD = 0.80; IQR = 1) for non-Millennials. The average self-reported debt literacy on a scale of 1 to 7 was M = 4.49 (Me = 5.0; SD = 1.50; IQR = 3) for Millennials and M = 4.66 (Me = 5.0; SD = 1.53; IQR = 3) for non-Millennials.

The H Kruskal Wallis test brought the same result for the comparison of Millennials versus other generations distinguished in our study – that is, the lack of significant differences between Millennials and previous generations ($H(2)$ = 0.32; p = 0.853 for actual debt literacy; $H(2)$ = 3.71; p = 0.157 for perceived debt literacy). The generations examined in study 1 achieved the following average results in the debt literacy test: Baby Boomers – M = 0.76 (Me = 1.0; SD = 0.84; IQR = 1), Gen Xers – M = 0.70 (Me = 1.0; SD = 0.77; IQR = 1), Millennials – M = 0.70 (Me = 1.0; SD = 0.74; IQR = 1). Their average self-reports on the literacy reached the following levels: Baby Boomers – M = 4.65 (Me = 5.0; SD = 1.55; IQR = 3), Gen Xers – M = 4.67 (Me = 5.0; SD = 1.52; IQR = 3), Millennials – M = 4.49 (Me = 5.0; SD = 1.50; IQR = 3).

Financial behaviour

We did not find significant differences in behaviours related to cash management, savings and investment either between Millennials and non-Millennials or between Millennials and any of the previous generations considered in isolation (Table 3 and Table 4, respectively).

We did not detect significant differences in the variables of credit management between Millennials and non-Millennials (Credit management_arrears: $\chi^2(2) = 3.87$; p = 0.145; V = 0.06; Credit management_loan collection: $\chi^2(1) = 0.47$; p = 0.494; V = 0.02).

Table 3. Study 1: U Mann Whitney test for significant differences between Millennials and non-Millennials – financial behaviour (except credit management)

	Non-Millennials (n = 611)			**Millennials (n = 435)**					
	M_r	Me	IQR	M_r	Me	IQR	Z	p	η^2
Cash management	530.12	4	1	514.20	4	1	-0.90	0.368	<0.01
Savings	535.73	2	3	506.32	2	3	-1.61	0.108	<0.01
Investment	520.52	3	2	526.49	3	2	-0.32	0.746	<0.01

M_r – average rank; Me – median; IQR – interquartile range; Z – Z score; p – significance level; η^2 – effect size

Table 4. Study 1: H Kruskal Wallis test for significant differences between Millennials and two previous generations – financial behaviour (except credit management)

	Baby Boomers (n = 224)			Gen X (n = 387)			Millennials (n = 435)					
	M_r	*Me*	*IQR*	M_r	*Me*	*IQR*	M_r	*Me*	*IQR*	*H*	*p*	η^2
Cash management	551.26	5	1	517.83	4	1	514.20	4	1	2.81	0.245	<0.01
Savings	522.93	2	3	543.14	2	3	506.32	2	3	3.27	0.195	<0.01
Investment	496.25	3	3	534.57	3	2	526.49	3	2	2.52	0.284	<0.01

M_r – average rank; Me – median; IQR – interquartile range; H – Kruskal Wallis test; p – significance level; η^2 – effect size

However, we found some significant differences in credit management when running generation-to-generation comparisons. Gen Xers and Millennials significantly more often reported that they got into arrears compared to Baby Boomers (30%, n = 116; 27.4%, n = 119; 16.5%, n = 37; $\chi^2(4) = 18.41$; $p = 0.001$; $V = 0.09$). The differences between Baby Boomers, Gen Xers and Millennials in the frequency of reporting that respondent was subject to loan collection were insignificant (χ^2 (2) = 3.49; $p = 0.174$; $V = 0.06$).

The applied tests showed that Millennials do not differ significantly from non-Millennials either in the frequency of debt advice-seeking (about credit choice: χ^2 (1) = 0.01; $p = 0.911$; $\varphi < 0.01$, about legal aspects: χ^2 (1) = 0.09; $p = 0.762$; $\varphi = 0{,}01$; about debt counselling: χ^2 (1) = 0.13; $p = 0.722$; $\varphi = 0.01$) or in the number of themes of debt advice they sought ($Z = -0.54$; $p = 0.586$; $\eta^2 < 0.01$). Similarly, Millennials do not differ significantly in these two respects from any of the other generations distinguished in study 1 (for credit choice: χ^2 (2) = 1.00; $p = 0.952$; $V = 0.01$; for legal aspects: χ^2 (2) = 2.58; $p = 0.275$; $\varphi = 0.05$; for debt counselling: χ^2 (2) = 5.25; $p = 0.072$; $V = 0.07$).

Finally, we found that Millennials significantly more often than the non-Millennials report that they refer to their individual social capital resources made available as a help, a support or a form of assistance that can be received from family and friends (the resources made available by acquaintances turned out to be insignificant). This is particularly visible in comparison to Baby Boomers and when family resources are being considered (detailed results are demonstrated in the Appendix – see Table 21 and Table 22).

Financial well-being

We did not find significant differences in the subjectively perceived debt load reported by Millennial and non-Millennial respondents ($\chi^2(2) = 2.40$; $p = 0.301$; $V = 0.05$). On average, both age categories seem to be equally satisfied with the load: 80% of all Millennials and 76% of all non-Millennials reported that they had about the right amount of debt. The differences in the perceived debt loads were insignificant as well when comparing three isolated generations: Baby Boomers, Gen Xers and Millennials ($\chi^2(4) = 3.00$; $p = 0.558$; $V = 0.04$).

Other variables

Interestingly, we found some significant differences in psychological dispositions between Millennial and non-Millennial respondents. The applied tests showed that the latter are significantly less impulsive and more risk-averse compared to Millennials (see Table 5).

Table 5. Study 1: U Mann Whitney test for significant differences between Millennials and non-Millennials – psychological dispositions

	Non-Millennials (*n* = 611)			**Millennials (*n* = 435)**					
	M_r	*Me*	*IQR*	M_r	*Me*	*IQR*	*Z*	*p*	η^2
Impulsivity	504.45	2	1	550.25	3	1	-2.50	0.012	0.01
Risk aversion*	504.98	7	4	549.52	8	4	-2.37	0.018	0.01
Trust	514.22	3	1	536.54	3	1	-1.23	0.219	<0.01

M_r – average rank; Me – median; IQR – interquartile range; Z – Z score; p – significance level; η^2 – effect size; * Higher value means less aversion (more risk tolerance)

The same significant differences were also observed between Millennials and the two other generations distinguished in study 1: Baby Boomers and Gen Xers (see Table 6). To get an insight into these differences, we ran additional post hoc analysis using a Dunn test with Bonferroni correction of the significance level. Regarding impulsivity, the ad hoc test showed significant differences between Baby Boomers and Gen Xers ($p = 0.005$), as well as between Baby Boomers and Millennials ($p < 0.001$). Baby Boomers exhibited significantly lower impulsivity compared to Gen Xers and Millennials. As to risk acceptance, significant differences were found between Baby Boomers and Millennials ($p = 0.029$). The latter turned out to be significantly more risk-tolerant.

Table 6. Study 1: H Kruskal Wallis test for significant differences between Millennials and two previous generations – psychological dispositions

	Baby Boomers (*n* = 224)			**Gen X (*n* = 387)**			**Millennials (*n* = 435)**					
	M_r	*Me*	*IQR*	M_r	*Me*	*IQR*	M_r	*Me*	*IQR*	*H*	*p*	η^2
Impulsivity	456.01	2	2	532.50	2	1	550.25	3	1	15.99	<0.001	0.02
Risk acceptance*	485.56	7	4	516.21	7	4	549.52	8	4	7.07	0.029	0.01
Trust	523.77	3	1	508.69	3	2	536.54	3	1	1.90	0.387	<0.01

M_r – average rank; Me – median; IQR – interquartile range; H – Kruskal Wallis test; p – significance level; η^2 – effect size; * Higher value means less aversion (more risk tolerance)

4. Study 2: A nationally representative sample of adult Poles

Methods

Data and participants

This study used data from a nationally representative sample of adult Poles (n=1,067). We designed a questionnaire containing, among others, a number of questions on financial literacy and financial well-being. Respondents were surveyed through Computer-Assisted Telephone Interviewing (CATI) during the period 10–14 December 2018 by DRB Market Research in Poland – a professional market and opinion research agency. The sample was controlled for the residence of respondents in 16 administrative units (voivodeships).This study covered four generations: (a) Silent Generation (n=36), (b) Baby Boomers (n=447), (c) Gen X (n=328), and (d) Millennials (n=256).

Table 20 (Appendix) compares the sample with the entire population in Poland, while Table 7 compares the distribution of selected sociodemographic traits in the sample and in the subsample of Millennials.

Table 7. Study 2: Sample composition in terms of main sociodemographic variables

	Entire sample		Sub-sample of Millennials	
	n	*%*	*n*	*%*
Gender				
Female	558	52.3	135	52.7
Male	509	47.7	121	47.3
Educational attainment				
Primary school	14	1.3	1	0.4
Junior high school	5	0.5	2	0.8
Basic vocational school	170	15.9	22	8.6
General secondary school	141	13.2	45	17.6
Vocational secondary school	287	26.9	65	25.4
Post-secondary school	102	9.6	28	10.9
College (bachelor's degree, master's degree or equivalent)	336	31.5	90	35.2
PhD degree or more	12	1.1	3	1.2
Income (monthly, in PLN)				
Less than 1,500	75	7.0	10	3.9
1,500-2,500	276	25.9	57	22.3
2,500-3,500	306	28.7	72	28.1
3,500-4,500	252	23.6	66	25.8
4,500-6,000	121	11.3	34	13.3
Above 6,000	37	3.5	17	6.6

Source: Author's own study and elaboration

Measures

Financial literacy

Our measure of financial literacy in study 2 was the instrument used in the National Financial Capability Study (NFCS) and thoroughly validated by many previous researchers (e.g., Allgood and Walstad 2016; Mottola 2014; Kim, Anderson, and Seay 2019). The instrument is a single-choice test consisting of five questions. Two of these questions use numbers to test: (a) whether respondents understand the workings of percent, and (b) the relations among inflation, nominal and real interest rate. The remaining questions are more factual and probe whether respondents know some basic principles regarding financial products: (a) the effect of rising interest rates on bond prices, (b) the effect of diversification, and (c) the effect of credit duration on interest payments and total instalments. In our study, correct answers to test questions were coded as 1, while all remaining options (incorrect answers as well as 'Don't know' responses) were coded as 0. Hence, the financial literacy index ranged between 0 and 5 in value (see Appendix for details on the applied financial literacy test).

Financial well-being

We used the Financial Anxiety Scale (FAS, henceforward) introduced by Archuleta, Dale, and Spann (2013). The scale – used in study 2 as a marker of financial well-being – is derived from the Generalized Anxiety Disorder diagnostic criteria set forth by DSM-IV-TR (American Psychiatric Association 2000). Generalized anxiety disorders can be characterised as excessive anxiety that occurs for six months or longer due to events or activities. We adapted the diagnostic criteria of anxiety for the specificity of the financial domain. Respondents were asked to rate their reaction on a 7-point Likert scale (from 1=never to 7=always; see Appendix for details of the FAS). Table 8 summarises the measures of financial literacy and well-being used in study 2.

Table 8. Definitions and descriptive statistics of the variables used in study 2

Variable	Method of calculation	Min	Max	Median	Mode
Actual financial literacy	Ordinal variable estimated on 5-question single-choice test	0	5	10	7
Financial well-being	Ordinal variable estimated on 7-point Likert scale where 1 means never and 7 means always (applied to seven items)	7	49	2	2

Results

Financial literacy

We did not find significant differences in actual financial literacy between Millennial and non-Millennial respondents in terms of the Mann-Whitney U test (Z = -0.106; p = 0.292). The average score in the test of financial literacy on a scale of 0 to 5 reached M = 2.49 (Me = 2.0; SD = 1.12; IQR = 1) for Millennials and M = 2.39 (Me = 2.0; SD = 1.16; IQR = 1) for non-Millennials.

The H Kruskal Wallis test revealed significant differences in the scores of the financial literacy test between the four investigated generations (H(2) = 10.01; p = 0.018; eta2 = 0.01). To scrutinise the differences, we ran additional post hoc analysis using a Dunn test with Bonferroni correction of the significance level (Table 9). The ad hoc test showed a significant difference in actual literacy level between Baby Boomers and Gen Xers (p=0.022).

Table 9. Study 2: Differences in actual financial literacy between generations – the results of post hoc Dunn test with Bonferroni correction of the significance level

Compared generations	W	SE	SD(W)	p	$p_{sk.}$
Baby Boomers – Gen X	-62.93	21.67	-2.90	0.004	0.022
Baby Boomers – Silent Generation	8.19	51.64	0.16	0.874	1.000
Baby Boomers – Millennials	-47.63	23.36	-2.04	0.042	0.249
Gen X – Silent Generation	71.12	52.34	1.36	0.174	1.000
Gen X – Millennials	-15.30	24.86	-0.62	0.538	1.000
Silent Generation – Millennials	-55.81	53.06	-1.05	0.293	1.000

W – Dunn's test statistic; SE – standard error; p – significance level; $p_{sk.}$ – corrected significance level (Bonferroni correction); SD(W) – standard deviation of Dunn's test statistic

Financial well-being

The Mann-Whitney U test showed that Millennials differ significantly from non-Millennials in terms of reported financial anxiety (Z = -3.06; p = 0.002). The average reported value of this variable reached *M* = 11.73 (*Me* = 7.0; *SD* = 6.73; *IQR* = 7) for Millennials and *M* = 12.84 (*Me* = 10.0; *SD* = 6.80; *IQR* = 10) for non-Millennials.

Using the H Kruskal Wallis test, we also found significant differences in financial well-being between four generations distinguished in study 2. To learn between which pairs of generations these differences exist, we applied post hoc analysis using a Dunn test with Bonferroni correction of the significance level (Table 10). This additional test showed that Millennials reported significantly lower financial anxiety compared to Gen Xers (*p* = 0.029) and to Silent Generation (*p* = 0.038).

Table 10. Study 2: Differences in financial well-being between generations – the results of post hoc Dunn test with Bonferroni correction of the significance level

Compared generations	W	SE	SD(W)	p	$p_{sk.}$
Baby Boomers – Gen X	-14.36	21.52	-0.67	0.504	1.000
Baby Boomers – Silent Generation	88.79	51.27	1.73	0.083	0.500
Baby Boomers – Millennials	-55.06	23.20	-2.37	0.018	0.106
Gen X – Silent Generation	74.42	51.96	1.43	0.152	0.912
Gen X – Millennials	-69.42	24.68	-2.81	0.005	0.029
Silent Generation – Millennials	-143.84	52.68	2.73	0.006	0.038

W – Dunn's test statistic; SE – standard error; p – significance level; $p_{sk.}$ – corrected significance level (Bonferroni correction); SD(W) – standard deviation of Dunn's test statistic

5. Study 3: Purposive sample of married or cohabitating couples

Methods

Data and participants

Data for study 3 was collected from a purposive sample of married or cohabitating heterosexual couples (768 spouses and 232 cohabitants) aged 20 and over living in Poland (n=1,000) who were surveyed in December 2018. The sample selection procedure was commissioned to a professional market and opinion research agency – DRB Research in Poland. The sample was selected using a stratified sampling technique. Specifically, the respondents were selected from different voivodeships in proportion to the number of cohabitants and marriages living therein, with control for age and education. CAWI was used as the appropriate technique due to the sensitivity of some issues we inquired in the survey. Table 11 summarises the distribution of selected sociodemographic and economic characteristics in the sample.

Measures

Financial literacy

As in study 2, actual financial literacy was measured with the instrument used in the NFCS. Respondents' self-assessments of their financial knowledge on a scale of 1 to 7 (where 1 means very low, and 7 means very high) were used as a measure of perceived financial literacy.

Financial behaviour

In study 3 we used the financial management behaviour scale proposed by Dew and Xiao (2011). They report that this is the only financial management behaviour scale that so far has been psychometrically validated using a representative sample of adults. The scale consists of four subscales: (a) cash management, (b) savings and investment, (c) credit management, and (d) insurance. We used the subscales in their original forms, except for the credit management scale (see Appendix for the exact wording of the items included in these three subscales). In this sole case, we decided to develop a novel scale, because Dew and Xiao's (2011) instrument concentrates on credit card behaviour, which may be justified given the specificity of the US credit market where credit cards are widespread, but which hardly reflects borrowing practices of consumers in Poland. According to the Polish Bank Association (2017), only one in six adult Poles has a credit card.

Table 11. Study 3: Sample composition in terms of main sociodemographic variables

	Entire sample		Millennials	
	n	%	*n*	%
Educational attainment				
Primary	12	1.2	2	0.5
Junior high school;	3	0.3	2	0.5
Basic vocational school	93	9.3	15	4.0
General secondary school	108	10.8	43	11.6
Vocational secondary school	202	20.2	58	15.6
Post-secondary school	114	11.4	34	9.1
College (bachelor's degree, master's degree or equivalent)	434	43.4	203	54.6
PhD degree or more	34	3.4	15	4.0
Number of dependent children				
0	349	34.9	107	28.8
1	305	30.5	129	34.7
2	273	27.3	116	31.2
3	57	5.7	18	4.8
4	9	0.9	1	0.3
5	7	0.7	1	0.3
Financial dependency on parents				
Yes	852	85.2	331	89.0
No	148	14.8	41	11.0
Individual income (monthly, in PLN)				
Less than 1,500	114	11.4	36	9.7
1,500 – 2,500	239	23.9	85	22.8
2,500 – 3,500	303	30.3	108	29.0
3,500 – 4,500	173	17.3	68	18.3
4,500 – 6,000	97	9.7	46	12.4
Above 6,000	74	7.4	29	7.8
Household income (monthly, in PLN)				
Below 1,500	20	2.0	7	1.9
1,500 – 2,500	44	4.4	13	3.5
2,500 – 3,500	122	12.2	46	12.4
3,500 – 4,500	186	18.6	76	20.4
4,500 – 6,000	310	31.0	113	30.4
Above 6,000	318	31.8	117	31.5

In developing the credit management scale, we started with a literature review to select a set of credit- or debt-related behaviours examined as single variables by previous researchers. First, we followed the view of Hilgert, Hogarth, and Beverly (2003) as well as Allgood and Walstad (2016) suggesting that healthy borrowing behaviour manifests itself in careful comparison of available options. As a result, we included the following item in our credit management scale: 'I compared offers before applying for credit'. Next, we conformed one of the Dew and Xiao (2011) cash management items to credit specificity by adding a phrase related directly to a credit or a loan obligations ('I got behind on debt repayment, including interest on debt'). Following Salter (2014) we also assumed that a marker of unhealthy borrowing behaviour is when one applies for a loan or a credit to repay the former debt (this view was reflected in another item of our credit management scale: 'I borrowed to repay former debt'). The literature on problematic debt and overindebtedness indicates that it is hazardous behaviour when funds are borrowed concurrently from many different sources, particularly those that are less regulated. Therefore, we included the following item in our credit management scale: 'I borrowed simultaneously from more than one source (e.g. banks, personal loan/payday loan companies, instalment purchases, pawnshops, family etc.)'. Unsustainable borrowing behaviour may also involve running up a debt to finance wants rather than needs, as suggested by some authors (Y.-W. Chien and Devaney 2001; Almenberg et al. 2018). This view was the underpinning of another item added to our credit management scale: 'I borrowed for at least one of the following purposes (or for similar purposes): the purchase of expensive clothing or haberdashery (e.g. branded suit or purse), a holiday abroad, technological novelties or gadgets (e.g. the newest model of a cult brand smartphone)'. Finally, we retained two items from the original credit management subscale of Dew and Xiao (2011): 'I made only minimum payment on loans' and 'I paid off credit card balance in full each month'.

To validate the credit management scale, we ran an exploratory factor analysis (EFA) using the principal component method with Oblimin rotation. The Kaiser-Meyer-Olkin (KMO) test for sampling adequacy was 0.825, while the Bartlett sphericity test was statistically significant ($\chi^2(21) = 5781.56$; $p < 0.001$), which justifies carrying out the factor analysis. The analysis suggested retaining two factors with eigenvalues higher than 1. The two-factor model accounted for 69.91% of the variation, in total (whereby the first factor accounted for 50.35%, and the second factor accounted for 19.56%). Table 12 presents the pattern matrix for distinguished factors.

Eventually, the items B, D, E, F and G (with the lowest factor loading of 0.61 and the highest of 0.91) were included in the first factor, while two remaining items (A and C) comprised factor 2.

Table 12. Study 3: The pattern matrix for distinguished factors

Identification in the questionnaire	Items	Factor loadings	
		1	2
G	I borrowed simultaneously from more than one source (e.g. banks, personal loan/payday loan companies, instalment purchases, pawnshops, family etc.	0.909	0.052
E	I borrowed to repay former debt	0.902	0.085
D	I got behind on debt repayment, including interest on debt	0.875	0.041
F	I borrowed for at least one of the following purposes (or for similar purposes): the purchase of expensive clothing or haberdashery (e.g. branded suit or purse), a holiday abroad, technological novelties or gadgets (e.g. the newest model of a cult brand smartphone)	0.862	0.037
B	I made only minimum payment on loans	0.609	-0.208
C	I compared offers before applying for a credit	-0.058	0.827
A	I paid off credit card balance in full each month	0.070	0.798

Reliability was assessed using Cronbach's alpha (see Table 13). Both the full 7-item scale and the factor 2 scale had satisfactory Cronbach alpha scores. We decided to use the factor 1 scale in further analyses presented in the rest of this article.

Table 13. Study 3: The results of reliability analysis for credit management scale

	Cronbach's alpha
Factor 1	0.891
Factor 2	0.699
Full 7-tem scale	0.759

Financial behaviour in all four financial domains investigated in study 3 (cash management, savings and investment, credit management, and insurance) was measured by asking respondents to report on a scale from 1 to 5 (where 1=never and 5=always) how often they engaged in the activities composing these four domains in the last six months. Unlike the other three subscales, some items constituting the credit behaviour subscale were reversely coded, because they depicted negative (unhealthy) behaviours, as in the original instrument of Dew and Xiao (2011).

Financial well-being

To measure financial well-being, we asked respondents to assess on a scale of 1 to 5 (where 1=very dissatisfied and 5=very satisfied) how satisfied they are with their overall current financial situation. This single-item measurement of financial satisfaction is widespread in the financial literacy literature as well as in financial satisfaction research (see, e.g., Shim et al. 2010; Plagnol 2011; Robb, Babiarz, and Woodyard 2012; Archuleta, Dale, and Spann 2013; Hunter and Heath 2017).

Table 14 summarises the definitions and descriptive statistics of all variables used in study 3.

Table 14. Definitions and descriptive statistics of the variables used in study 3

Category	Variable	Method of calculation	Min	Max	Median	Mode
Financial literacy	Actual financial literacy	Ordinal variable estimated on 5-question single-choice test	0	5	2	3
	Perceived financial literacy	Ordinal variable estimated on 7-point Likert scale where 1 means very low and 7 means very high	1	7	5	5
Financial behaviour	Cash management	Ordinal variable estimated on 5-point Likert scale where 1 means never and 5 means always and comprising four items	4	24	16	20
	Savings and investment	Ordinal variable estimated on 5-point Likert scale where 1 means never and 5 means always and comprising five items	5	30	20	20
	Credit management	Ordinal variable estimated on 5-point Likert scale where 1 means never and 5 means always and comprising five items	1	25	15	25
	Insurance	Ordinal variable estimated on 5-point Likert scale where 1 means never and 5 means always and comprising four items	3	18	13	15
Financial well-being	Financial well-being	Ordinal variable estimated on 5-point Likert scale where 1 means very dissatisfied and 5 means very satisfied	1	5	3	3

Results

Financial literacy

A Mann Whitney U test showed a lack of significant differences between Millennials and non-Millennials both in the average score of actual financial literacy and in the average level of financial knowledge self-reported by surveyed participants (Table 15). We also established that Millennials do not differ significantly in terms of these two financial literacy measurements from any of the generations distinguished in our study and treated separately (Table 16).

Table 15. Study 3: U Mann Whitney test for significant differences between Millennials and non-Millennials – financial literacy, financial behaviour and financial well-being

	Non-Millennials (n = 628)			Millennials (n = 372)					
	M_r	*Me*	*IQR*	M_r	*Me*	*IQR*	*Z*	*p*	η^2
Financial well-being	458.51	3	1	571.39	4	1	-6.33	<0.001	0.04
Perceived financial literacy	490.68	5	2	517.08	5	2	-1.43	0.153	<0.01
Actual financial literacy	501.89	2	3	498.15	2	2	-0.20	0.840	<0.01
Cash management	507.69	16	5	488.37	16	4	-1.03	0.304	<0.01
Savings and investment	511.70	20	10	481.59	19	8	-1.60	0.111	<0.01
Credit management	376.66	16	11	345.14	14	10	-1.99	0.047	<0.01
Insurance	520.15	14	5	467.33	12	5	-2.81	0.005	0.01

M_r – average rank; Me – median; IQR – interquartile range; Z – Z score; p – significance level; η^2 – effect size

Table 16. Study 3: H Kruskal Wallis test for significant differences between Millennials and two previous generations – financial literacy, financial behaviour and financial well-being

	Baby Boomers (n = 231)			Gen X (n = 397)			Millennials (n = 372)					
	M_r	*Me*	*IQR*	M_r	*Me*	*IQR*	M_r	*Me*	*IQR*	*H*	*p*	η^2
Financial well-being	413.12	3	2	484.92	3	1	571.39	4	1	50.13	<0.001	0.05
Perceived financial literacy	479.68	5	3	497.08	5	2	517.08	5	2	2.60	0.273	<0.01
Actual financial literacy	523.53	3	3	489.30	2	2	498.15	2	2	2.18	0.336	<0.01
Cash management	505.23	16	5	509.12	16	5	488.37	16	4	1.08	0.582	<0.01
Savings and investment	510.88	20	13	512.18	20	10	481.59	19	8	2.55	0.280	<0.01
Credit management	404.96	18	12	363.79	15	10	345.14	14	10	7.55	0.023	0.01
Insurance	556.36	15	5	499.07	13	5	467.33	12	5	13.73	0.001	0.01

M_r – average rank; Me – median; IQR – interquartile range; H – Kruskal Wallis test; p – significance level; η^2 – effect size

Financial behaviour

We found that Millennials do not differ from non-Millennials in their cash management or savings and investment behaviours; however, significant differences between these two groups occur in behaviours related to credit management as well as to insurance (Table 15). An H Kruskal Wallis test showed additionally that behaviours in these two domains – that is, credit management and insurance – reported by the four generations distinguished in our study also differ significantly. A post hoc Dunn test with correction of the significance level revealed that these significant differences occur between Millennials and Baby Boomers (Table 17 and Table 18). Specifically, our surveyed Millennials exhibit significantly less healthy credit management behaviours and less healthy insurance behaviours compared to Baby Boomers.

Table 17. Study 3: Differences in credit management behaviour between generations – the results of post hoc Dunn test with Bonferroni correction of the significance level

Compared generations	W	SE	SD(W)	p	$p_{sk.}$
Baby Boomers – Gen X	-41.17	21.69	-1.90	0.058	0.173
Baby Boomers – Millennials	-59.82	21.77	-2.75	0.006	0.018
Gen X – Millennials	-18.65	17.25	-1.08	0.280	0.839

W – Dunn's test statistic; SE – standard error; p – significance level; $p_{sk.}$ – corrected significance level (Bonferroni correction); SD(W) – standard deviation of Dunn's test statistic

Table 18. Table 3: Differences in insurance behaviour between generations – the results of post hoc Dunn test with Bonferroni correction of the significance level

Compared generations	W	SE	SD(W)	p	$p_{sk.}$
Baby Boomers – Gen X	-57.29	23.75	-2.41	0.016	0.048
Baby Boomers – Millennials	-89.03	24.04	-3.70	<0.001	0.001
Gen X – Millennials	-31.74	20.71	-1.53	0.125	0.376

W – Dunn's test statistic; SE – standard error; p – significance level; $p_{sk.}$ – corrected significance level (Bonferroni correction); SD(W) – standard deviation of Dunn's test statistic

Financial well-being

The applied tests demonstrated that Millennials display a significantly higher level of financial well-being compared to not only non-Millennials as a whole (Table 15), but also relative to each of two other generations distinguished in our study (Table 17 and Table 19).

Table 19. Study 3: Differences in financial well-being between generations – the results of post hoc Dunn test with Bonferroni correction of the significance level

Compared generations	W	SE	SD(W)	p	$p_{sk.}$
Baby Boomers – Gen X	-71.80	22.57	-3.18	0.001	0.004
Baby Boomers – Millennials	-158.27	22.85	-6.93	<0.001	<0.001
Gen X – Millennials	-86.47	19.68	-4.39	<0.001	<0.001

W – Dunn's test statistic; SE – standard error; p – significance level; $p_{sk.}$ – corrected significance level (Bonferroni correction); SD(W) – standard deviation of Dunn's test statistic

6. Discussion

In this article, Millennials have been compared to other living generations in terms of financial literacy, behaviour and well-being. None of the three surveys used in this article revealed significant differences between Millennials and non-Millennials as to financial literacy – both actual and perceived. Our results in this regard seem to be particularly strong and robust, given that they were confirmed in all three studies and derived from two different measurement instruments. The NFCS test (used in study 2

and study 3) is more factual and knowledge-oriented, while the debt literacy test of Lusardi and Tufano (2015), used in study 1, emphasises skills supportive in household financial management, particularly in numerical abilities.

The lack of significant differences in financial literacy between Millennials and non-Millennials documented in our research alleviates the concerns about the unreadiness of Millennials to lead a healthy financial life. It is important to point out, however, that although Millennials do not differ significantly from other generations in terms of actual financial literacy, they have large shortcomings in this respect. In our three studies, the mean score achieved in financial literacy test reached, respectively: 0.7 on a scale of 0-3, 2.49 on a scale 0-5 and 2.41 on a scale of 0-5. By extension, Polish Millennials should be seen as financially illiterate rather than literate.

In the US, Millennials perform significantly worse compared to non-Millennials in financial literacy tests (Yakoboski and Lusardi 2018; Kobler, Hauber, and Ernst 2015; Global Financial Literacy Excellence Center and PwC 2015)[3]. The lack of such differences in Poland may call for an explanation. Although it was not within the scope of this article, we suspect that the inconsistency of the US and Polish findings may result from different historical experiences of Millennials and previous generations and related differences in the educational system in Poland. Polish Millennials received education in a country with a democratic system and free-market economy. The curriculum contents acquired by Millennials have been conformed to this new, post-Soviet reality. For instance, the entrepreneurship lessons were mandated in Polish post-primary schools at the beginning of the XXI century with a range of economic, financial and managerial issues in the curriculum. Former generations were educated exclusively (Silent Generation and Baby Boomers) or partly (Gen Xers) in a country with a communist system and centrally-planned economy. For this reason, their knowledge about free-market mechanisms, including financial market, that was learned at school, is undoubtedly poorer relative to knowledge of Millennials. Perhaps, better economic education of Polish Millennials – relative to earlier generations – allowed them to avoid the gap in financial literacy between them and the members of other generations. For comparison, in the US, successive generations – despite obvious and natural progress – have been educated essentially in the same environment, which consisted of a democratic system and free-market economy.

We found that Millennials – like other generations – rate their financial knowledge highly relative to their actual level of knowledge. On average, they self-assessed their knowledge as amounting to 4.5 in study 1 and 4.7 in study 3 (on a scale of 1-7 in both cases). The literature suggests that young individuals are less secure and self-confident compared to older ones (Bleidorn et al. 2016). This pertains equally to financial confidence (Xiao, Chen, and Sun 2015). Our studies showed, however, that the youngest cohort – i.e., Millennials – does not differ significantly from others in terms of perceived financial literacy treated as a proxy for financial confidence. To a degree, this

[3] Interestingly, the Canadian evidence reports a lack of significant differences between Millennials and previous generations in terms of financial literacy (Robson and Loucks 2018).

may result from the likely better economic and financial education of Millennials mentioned in the previous paragraph. Willis (2008) indicates that education has the power to inflate self-perceived financial competences. Also, one cannot rule out an influence of psychological features of Millennials on their self-reports of financial literacy. Millennials are deemed outstandingly self-confident individuals with very high self-esteem (Lusardi and Oggero 2017; National Endowment for Financial Education 2016).

Our research also brought no support for the claim of significant differences between Millennials and other generations in respect of these financial behaviours that relate to asset management and wealth accumulation (that is, savings and investment). The same applies to the most short-term, or current, financial behaviour (i.e., cash management, which can be equated with current household budget management). In all three domains, healthy behaviours prevail, both among Millennials and non-Millennials. For instance, in study 3 the average index of cash management in the subsample of Millennials reached 16 on a scale of 1-20, while the average index of savings and investment reached 19 on a scale of 1-25 (in both cases, the higher the index, the healthier the behaviour). Although this finding is optimistic, it is also somewhat unexpected. Generally, young age does not foster saving, partly due to objective forces delineated in the life-cycle hypothesis (Modigliani and Brumberg 1954). Despite this, Millennials participating in our studies appear to be determined to put aside some funds both for short- and long-run goals. Perhaps this results from pervasive dire warnings regarding the condition of the retirement system in Poland and the widely discussed consequences of this condition for young generations. Young adults are constantly addressed with the media news outlining a grim picture of life after retirement. It can be assumed that Millennials in Poland are deeply aware that they have to take the lead of their financial future.

We demonstrated that when compared to non-Millennials, Millennials exhibit significantly less healthy behaviours related to credit management and insurance. A closer investigation based on comparisons between isolated generations (that is, Millennials versus Baby Boomers and Gen Xers), in place of non-Millennials as a whole, revealed that these differences occur exclusively between Millennials and Baby Boomers. In other words, credit-related behaviour of Millennials is similar to credit-related behaviour of Gen Xers, but is distinct from that of Baby Boomers (the same applies to insurance behaviour). It is rather unlikely that these differences between Millennials and Baby Boomers stem from a gap in financial literacy between these two generations because we did not detect such differential in our datasets, as mentioned earlier in this section (especially that in study 1 we used a measurement instrument designed to capture strictly credit- and debt-related competences).

However, it seems likely that the differences between Millennials and Baby Boomers in some specific financial behaviours found in our study may correspond to significant differences between these two (and only these two) generations in respect of two psychological dispositions – impulsivity and risk aversion. Specifically, Millennials turned out to be significantly more impulsive and less risk-averse compared to Baby Boomers. The first (that is, increased impulsivity) may explain Millennials' higher likelihood to exhibit unhealthy credit- and debt-related behaviours (e.g., borrowing money without a thorough examination of all pros and cons as well as careful

consideration of all available options; borrowing money simultaneously from multiple sources; borrowing money to purchase of expensive clothing or haberdashery (e.g. branded suit or purse), a holiday abroad, technological novelties or gadgets (e.g. the newest model of a cult brand smartphone, etc.). The latter (i.e., higher risk tolerance) may justify lesser propensity to insure against contingencies.

At the same time, the surveyed Millennials reported significantly higher financial well-being than any other generation. Compared to the Silent Generation and Gen Xers, Millennials also report significantly lower financial anxiety. Finally, they do not differ significantly from other generations in terms of subjectively perceived debt burden (they also display overall life satisfaction which is significantly higher than in reports of any other generation, although we do not report these results in the article). If the self-reported measures of financial well-being applied in our research can be treated as an ultimate indicator of a standard of financial life or quality of life, then Millennials live a happier financial life compared to other generations, despite worse credit management and insurance behaviours. Kim, Anderson, and Seay (2019, p. 197) explain the lack of an adverse effect of worse financial behaviours on financial well-being by arguing that 'Millennials might not fully understand the financial challenges that are facing them or that they are judging their own situations relative to those in their peer group'. In light of our results, however, two other explanations seem to be plausible.

First, to an extent, the comparatively high financial well-being of Millennials which is coupled with worse financial behaviours relative to earlier generations may result from Millennials being the most networked generation of all studied in this article. In study 1 we demonstrated that Millennials significantly more often than non-Millennials report that they refer to their individual social capital resources made available as a help, a support or a form of assistance that can be received from family and friends in a situation that relates to financial matters (e.g., escaping the vicious circle (spiral) of debt; temporarily sharing a flat or a house; contacting a financial/credit advisor; recommending a credit product; etc.). Drever et al. (2015, p. 14) indicate that 'Differences in access to resources (…) are no doubt responsible for much of the variation in financial well-being across consumers'. This can be clearly seen, for instance, in the readiness of young generations' parents to support them materially for a long time after the children come of age (Szlendak 2019).

Second, our results suggest some interesting relationships between continuous long-run trends and Millennials' personality features, financial behaviours and financial well-being. These relationships deserve much closer attention in future studies. One of the trends that are critical in the context of intergenerational differences is technological progress. Although it influences all generations, the impact is different depending on the birth cohort, with younger generations being more open to innovations (Kurz, Li, and Vine 2018) and more subject to tech-addiction. Haefele, Smiles, and Carter (2017) indicate that potential side-effects of the tech-shaped environment is the culture of instant gratification. Millennials are referred to as an 'instant-gratification generation' by some authors (de Bassa Scheresberg and Lusardi 2014; Barton, Fromm, and Egan 2012), though others argue that this is just a stereotypical view (Haefele, Smiles, and Carter 2017). UK evidence shows that young individuals are more relaxed about borrowing, and especially about using borrowed funds to finance their lifestyles rather than needs, and do not feel stigmatised even by a bankruptcy (Standard Life 2007).

Hence, the increased impulsivity of Millennials – compared to the generation of their parents – that goes hand in hand with more unhealthy credit management behaviour in our research seems to have support in continuous technological change. Szlendak (2019) argues that the youngest generations are formed within an entirely new socio-technological environment. The environment is based on 'new social machines', such as Instagram or YouTube, which force individuals to extract almost all actions through a filter of pleasure. The lack of pleasure results in a quick withdrawal from the activity. This new socio-technological environment has led to the emergence of a completely new culture and a new personality which is aligned with the environment of social networks. In this new cultural framework, individuals are inclined to easily and quickly withdraw from responsibility for previously taken commitments. In light of these arguments, borrowing may be a means of pursuing instant gratification and may not necessarily deteriorate financial or overall life satisfaction. For instance, Aboagye and Jung (2018) observed that individuals who exceeded their credit card limits and those who received a cash advance in the past 12 months – namely, those who exhibited unhealthy credit card behaviours – were shown to be more satisfied with their overall life. They contend that despite the negativity of these behaviours in the long-term, 'the potential for them to provide immediate increases in liquidity possibly explain the positive association with the current level of financial satisfaction' (Aboagye and Jung 2018, p. 214). In other words, from a hedonistic point of view, at least some behaviours which we determined as being unhealthy in our research may lead to more financial and life satisfaction, at least in the short run, i.e., as long as the negative consequences of these behaviours are not fully revealed. It remains an open question whether the interlinks between technology, impulsivity, credit management behaviour and financial well-being are generation-specific or reflect continuous long-run trends affecting the whole population regardless of age.

Higher inclination to risk among Millennials compared to other generations – both in Poland and in the US – has been previously indicated by Hays (2014) and Mottola (2014). As mentioned earlier in this section, we believe that risk tolerance may be a potential explanation of the lower propensity to insure against contingencies in the Millennial generation compared to Baby Boomers which was found in our study. At the same time, there is evidence showing that being less risk-averse is positively associated with financial satisfaction (Aboagye and Jung 2018; Jeong and Hanna 2004). Additionally, Chalise and Anong (2017) showed that this may be objectively paying off attitude: respondents with above-average risk tolerance were less likely to be financially distressed. Nevertheless, the relationship between risk-taking attitude, financial behaviour and financial well-being require more research. It seems unlikely that risk tolerance is objectively and unambiguously connected to positive financial attitude, as suggested by its strong link to financial well-being. Little is known about how actual risk-taking – and its resultant outcomes – affect financial well-being.

7. Conclusions, implications, limitations and future research

All in all, our results show that the only hallmark of the Millennial generation in Poland in terms of its financial profile is increased self-reported financial well-being that is justified neither by an advantage in financial literacy nor an edge in financial behaviour. It is probable that some psychological mechanisms that refer to the personality of

Millennials play a key role in explaining this specificity. In financial terms, Polish Millennials are quite similar to Gen Xers, but with the significant difference relating to financial well-being. The Millennial generation differs more visibly from the generation of its parents, i.e. Baby Boomers. However, this is understandable, given the large differences in socio-economic systems within which these two generations were coming of age.

As to policy implications of our findings, the increased inclination of younger generations towards unhealthy credit management behaviours calls for more attention that should be given in financial education programs to those credit- and debt-related behaviours that are undesired. Given that in our research the increased propensity for unhealthy credit management behaviours co-occurs with more impulsivity and more risk tolerance, it may be reasonable and beneficial to embed the educational contents addressed to Millennials within a context of psychological determinants of consumer decision-making.

As usual, there are some limitations to the present study that, at the same time, suggest directions for future research. The goal of the study was to examine differences between Millennials and non-Millennials in terms of financial literacy, behaviour and well-being. Therefore, the appropriate statistical tests of significant differences were used. However, such tests do not explain the causes of potential differences. For this reason, the application of more advanced methods (e.g., regression models) is recommended.

It cannot be ruled out that different birth years applied when defining Millennials would result in different findings. It would be beneficial to test our findings at differently set birth years of all investigated generations. At the same time, it would be interesting to split the Millennial generation into younger and older birth cohorts and probe differences between them – as well as vis a vis other generations – in terms of financial literacy, behaviour and well-being.

To a large extent, our survey used respondents' self-reports as measures of key variables (the exception is the actual financial literacy test). As a result, we cannot rule out the social desirability effect. It is recommended to attest our findings in future research with measures other than self-reports. In particular, objective measures of financial behaviour and financial well-being would be welcomed.

Finally, one needs to remember that out of the three essential variables we focused on in this article, only financial behaviour can be thought of as resilient to age-specific factors. Both financial literacy and financial well-being have been proven to depend on such factors, as indicated in the section Economic and financial status of Millennials. Hence, future studies should compare not only behaviour but also literacy and well-being at the same stages of respondents' lives.

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Appendix

Table 20. Sample composition in terms of main sociodemographic variables

	Polish population*		**Sample used in study 1**		**Sample used in study 2**		**Sample used in study 3**	
	%	*N (mln)*	*%*	*n*	*%*	*n*	*%*	*n*
Gender								
Male	48	18.6	48.3	505	47.7	509	50	500
Female	52	19.8	51.7	541	52.3	558	50	500
All	100	38.4	100	1,046	100	1,067	100	1,000
Place of residence								
Village	40	15.3	34.7	363	---	---	---	---
Town up to 20,000	13	5	9.2	96	---	---	---	---
City 20,001–50,000	11	4.3	9.9	104	---	---	---	---
City 50,001–100,000	8	3	10.9	114	---	---	---	---
City 100,001–200,000	8	3.2	8.4	88	---	---	---	---
City 200,001–500,000	20**	7.6**	10.8	113	---	---	---	---
City 500,001 or more			16.1	168	---	---	---	---
All	100	38.4	100	1,046	---	---	---	---
Educational attainment								
Primary school	13	4.9	0.67	7	1.3	14	1.2	12
Junior high school	5	1.5	0.67	7	0.5	5	0.3	3
Basic vocational school	18	7	9.18	96	15.9	170	9,3	93
Secondary (uncompleted)	-	-	3.15	33	40.1		31.0	310
Secondary	28	10.7	27.63	289		428		
Post-secondary school	-	-	10.71	112	9.6	102	11.4	114
Bachelor's degree	-	-	7.27	76	31.5		43.4	434
Master's degree (uncompleted)	-	-	2.29	24				
Master's degree	23	8.8	37.76	395		336		
PhD or higher	-	-	0.67	7	1.1	12	3.4	34
All	87***	32.9***	100	1,046	100	1,067	100	1,000

Note: *Source: Statistics Poland (2018); **Data available for cities 200,001 or more; ***Only citizens completed primary school at least

Table 21. V Cramer test for significant differences between Millennials and two previous generations – network resources

		Baby Boomers		Gen X		Millennials				
		n	*%*	*n*	*%*	*n*	*%*	X^2	*p*	*V*
Borrowing several thousand PLN	family	143	63.8	252	65.1	295	67.8	1.24	0.538	0.03
	friends	91	40.6	177	45.7	181	41.6	2.04	0.361	0.04
	acquaintances	41	18.3	98	25.3	99	22.8	3.98	0.137	0.06
Escaping the vicious circle (spiral) of debt	family	121_a	54.0	$225_{a,b}$	58.1	282_b	64.8	8.12	0.017	0.09
	friends	73_a	32.6	167_b	43.2	$177_{a,b}$	40.7	6.81	0.033	0.08
	acquaintances	41_a	18.3	110_b	28.4	$107_{a,b}$	24.6	7.82	0.020	0.09
Temporarily sharing a flat or a house	family	135_a	60.3	$250_{a,b}$	64.6	307_b	70.6	7.68	0.021	0.09
	friends	81_a	36.2	$166_{a,b}$	42.9	208_b	47.8	8.26	0.016	0.09
	acquaintances	36_a	16.1	99_b	25.6	$103_{a,b}$	23.7	7.66	0.022	0.09
Contacting a financial/credit advisor	family	77_a	34.4	$148_{a,b}$	28.3	192_b	44.1	6.55	0.038	0.08
	friends	63_a	28.1	153_b	39.5	$161_{a,b}$	37.0	8.32	0.016	0.09
	acquaintances	67_a	29.9	168_b	43.4	$160_{a,b}$	36.8	11.31	0.004	0.10
Recommending a credit product	family	$76_{a,b}$	33.9	129_a	33.3	189_b	43.4	10.62	0.005	0.10
	friends	64_a	28.6	$143_{a,b}$	37.0	173_b	39.8	8.12	0.017	0.09
	acquaintances	48_a	21.4	143_b	37.0	147_b	33.8	16.38	<0.001	0.13
Recommending how to invest funds	family	80_a	35.7	140_a	36.2	203_b	46.7	12.00	0.002	0.11
	friends	63_a	28.1	132_a	34.1	188_b	43.2	16.18	<0.001	0.12
	acquaintances	52_a	23.2	133_b	34.4	$139_{a,b}$	32.0	8.59	0.014	0.09
Help in evaluation of credit contractual agreements	family	80	35.7	143	37.0	190	43.7	5.57	0.062	0.07
	friends	60	26.8	136	35.1	146	33.6	4.76	0.093	0.07
	acquaintances	59_a	26.3	142_b	36.7	$136_{a,b}$	31.3	7.27	0.026	0.08
Help in reducing the indebtedness	family	89_a	39.7	157_a	40.6	221_b	50.8	11.47	0.003	0.11
	friends	76	33.9	151	39.0	177	40.7	2.89	0.236	0.05
	acquaintances	59_a	26.3	147_b	38.0	$153_{a,b}$	35.2	8.78	0.012	0.09
Bringing a claim against a lending institution	family	62_a	27.7	$124_{a,b}$	32.0	167_b	38.4	8.39	0.015	0.09
	friends	53	23.7	124	32.0	140	32.2	5.96	0.051	0.08
	acquaintances	48_a	21.4	133_b	34.4	139_b	32.0	11.84	0.003	0.11

n – number; % – percent of the whole sample; χ^2 – chi-squared test; p – significance level; V – V Cramer test – size effect; if two different generations are marked by different letters – one is marked by 'a' and the other is marked by 'b', or vice versa – then the difference between these generations is statistically significant; if the generations are marked by the same letter, then there is no statistically significant difference between them

Table 22. φ test for significant differences between Millennials and non-Millennials – network resources

		Non-Millennials		Millennials				
		n	%	*n*	%	X^2	*p*	φ
Borrowing several thousand PLN	family	395	64.6	295	67.8	1.14	0.287	0.03
	friends	268	43,.9	181	41.6	0.53	0.468	0.02
	acquaintances	139	22.7	99	22.8	<0.01	0.997	<0.01
Escaping the vicious circle (spiral) of debt	family	346	56.6	282	64.8	7.12	0.008	0.08
	friends	240	39.3	177	40.7	0.21	0.646	0.01
	acquaintances	151	24.7	107	24.6	<0.01	0.966	<0.01
Temporarily sharing a flat or a house	family	385	63.0	30,7	70.6	6.49	0.011	0.08
	friends	247	40.4	20,8	47.8	5.65	0.017	0.07
	acquaintances	135	22.1	103	23.7	0.36	0.547	0.02
Contacting a financial/credit advisor	family	225	36.8	192	44.1	5.67	0.017	0.07
	friends	216	35.4	161	37.0	0.30	0.582	0.02
	acquaintances	235	38.5	160	36.8	0.31	0.581	0.02
Recommending a credit product	family	205	33.6	189	43.4	10.60	0.001	0.10
	friends	207	33.9	173	39.8	3.81	0.051	0.06
	acquaintances	191	31.3	147	33.8	0.75	0.390	0.03
Recommending how to invest funds	family	220	36.0	203	46.7	11.99	0.001	0.11
	friends	195	31.9	188	43.2	13.99	<0.001	0.12
	acquaintances	185	30.3	139	32.0	0.33	0.563	0.02
Help in evaluation of credit contractual agreements	family	223	36.5	190	43.7	5.48	0.019	0.07
	friends	196	32.1	146	33.6	0.26	0.614	0.02
	acquaintances	201	32.9	136	31.3	0.31	0.578	0.02
Help in reducing the indebtedness	family	246	40.3	221	50.8	11.43	0.001	0.11
	friends	227	37.2	177	40.7	1.34	0.247	0.04
	acquaintances	206	33.7	153	35.2	0.24	0.625	0.02
Bringing a claim against a lending institution	family	186	30.4	167	38.4	7.18	0.007	0.08
	friends	177	29.00	140	32.2	1.24	0.265	0.03
	acquaintances	181	29.6	139	32.0	0.65	0.420	0.03

n – number; % – percent of the whole sample; χ^2 – chi-squared test; p – significance level; φ – size effect

Debt literacy test of Lusardi and Tufano (2015)

Q1. Suppose you owe PLN 1,000 on your credit card and the interest rate you are charged is 20% per year compounded annually. If you didn't pay anything off, at this interest rate, how many years would it take for the amount you owe to double?

1. 2 years
2. **Less than 5 years (*correct*)**
3. Between 5 and 10 years
4. More than 10 years
5. Do not know

Q2. You owe PLN 3,000 on your credit card. You pay a minimum payment of PLN 30 each month. At an Annual Percentage Rate of 12% (or 1% per month), how many years would it take to eliminate your credit card debt if you made no additional new charges?

1. Less than years
2. Between 5 and 10 years
3. Between 10 and 15 years
4. **Never, continue to be in debt (*correct*)**
5. Do not know

Q3. You purchase an appliance which costs PLN 1,000. To pay for this appliance, you are given the following two options:

a) Pay 12 monthly installments of PLN 100 each
b) Borrow at a 20% annual interest rate and pay back PLN 1200 one year from now.

Which is the more advantageous offer, in other words, which one will cost less?

1. Option a)
2. **Option b) (*correct*)**
3. They are the same
4. Do not know

National Financial Capability Study test

Q1. Suppose you had 100 PLN in a savings account and the interest rate was 2% per year. After 5 years how much do you think you would have in the account if you left the money to grow?

a) more than 102 PLN (*correct*)
b) exactly 102 PLN
c) less than 102 PLN

Q2. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in the account?

a) more than today
b) exactly the same
c) less than today (*correct*)
d) I don't know

Q3. If interest rates rise, what will typically happen to bond prices?

a) they will rise
b) they will fall (*correct*)
c) they will remain the same
d) there is no relationship between bond prices and the interest rate
e) I don't know

Q4. A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.

a) true (*correct*)
b) false
c) I don't know

Q5. Buying a single company's stock usually provides a safer return than a stock mutual fund.

a) true
b) false (*correct*)
c) I don't know

Financial management behaviour scales of (Dew and Xiao 2011)

On a scale of 1 to 5 (where 1 means never, 2 seldom, 3 sometimes, 4 often, 5 always) please indicate how often you have engaged in the following activities in the past six months. You also can say "Not Applicable (N/A)"

Cash management

a) Comparison shopped when purchasing a product or service.
b) Paid all your bills on time.
c) Kept a written or electronic record of your monthly expenses.
d) Stayed within your budget or spending plan.

Savings and investment

a) Began or maintained an emergency savings fund.
b) Saved money from every paycheck.
c) Saved for a long term goal such as a car, education, home, etc.
d) Contributed money to a retirement account.
e) Bought bonds, stocks, or mutual funds.

Insurance

a) Maintained or purchased an adequate health insurance policy (e.g., in the case of serious diseases).
b) Maintained or purchased adequate property insurance like auto or homeowners insurance.
c) Maintained or purchased adequate life insurance.

Financial anxiety scale of Archuleta, Dale, and Spann (2013)

On a scale from 1 to 7, where 1 means never and 7 means always, rate how often you experience the following:

a) I feel anxious about my financial situation.
b) I have difficulty sleeping because of my financial situation.
c) I have difficulty concentrating on my school / or work because of my financial situation.
d) I am irritable because of my financial situation.
e) I have difficulty controlling worrying about my financial situation.
f) My muscles feel tense because of worries about my financial situation.
g) I feel fatigue because I worry about my financial situation.