

ANDRZEJ CWYNAR  
University of Economics and Innovation, Lublin

WIKTOR CWYNAR  
University of Economics and Innovation, Lublin

KAMIL FILIPEK  
Maria Curie-Skłodowska University, Lublin

## **Debt Experience of Facebook Users in Poland. A Conceptual Model and Empirical Test**

*Abstract:* Negative debt experiences of individuals lead to costly social and macroeconomic tensions. This study examines the impact of four latent variables, namely financial education, debt literacy, personality, and online personal network, on the debt experience of Facebook users in Poland (N = 1,055). Based on some prior research, we proposed a Structural Equations Model (SEM) testing the relationships among variables hypothesised to be linked to debt experience. The findings indicate that debt experience is a complex phenomenon determined simultaneously by many diverse factors. Surprisingly, the personal networks of Facebook users have no significant impact on the debt experience of our respondents. The findings also suggest that results of any explanatory study on debt experiences may strongly depend on the measures used.

*Keywords:* debt experience, debt literacy, social networks, Facebook, SEM

### **Introduction**

Individual and collective debt experience is constantly and rapidly gaining the attention of researchers all around the world. For understandable reasons, the attention focuses on negative experiences engendered by borrowings, starting from excessive costs and repayment problems in general (Lusardi and Scheresberg 2013; Disney and Gathergood 2011), and ending with particular credit market phenomena, such as predatory lending (Volpe and Mumav 2009–2010; Hill and Kozup 2007), credit card hardship (Mottola 2013; Allgood and Walstad 2016), and tensions resulting from foreign currency loans (Yeşin 2013; Białowolski and Węziak-Białowolska 2016). Research in this field is aimed at explaining reasons for the adverse impact of debt on individuals' financial well-being, and proposing potential interventions that could mitigate and prevent negative consequences of this impact.

The existing literature shows that, in addition to external forces, negative debt experiences can be driven by the personality characteristics of borrowers (Norvilitis et al. 2006) as well as their financial preparedness resulting from completed education and financial literacy (Hastings et al. 2013). The latter in particular raises burgeoning concerns because empirical evidence shows that financial literacy worldwide is low while costs of financial

ignorance are high, leading to serious macroeconomic frictions (Disney and Gathergood 2011; Gerardi et al. 2010; Lusardi and Tufano 2009; Moore 2003). The recent global crisis, derived from the subprime mortgage market, has particularly emphasised shortcomings in debt literacy, an aspect of financial literacy, i.e. in the field of knowledge and skills in relation to borrowing contracts. Research suggests that individuals with better comprehension of finance, including debt matters, have better financial lives: they are more active in financial markets and exhibit better outcomes of their financial decisions (a wide-ranging review of studies in this strand can be found in Lusardi and Mitchell 2014, including discussion on the direction of causality). Accordingly, people with a poor understanding of debt issues have problems with debt management and are exposed to different forms of financial abuse and are more likely to make suboptimal borrowing decisions (Lusardi and Tufano 2009; Disney and Gathergood 2011; French and McKillop 2014).

Simultaneously, contemporary financial market participants active on the Internet have multiple occasions to acquire the information, knowledge and expertise required to make optimal borrowing decisions. Web-based learning is becoming increasingly popular worldwide due to instant and free availability of general knowledge and expertise. A significant contribution to online learning practices has been brought by social networking sites (Evans 2014; Mao 2014; Stephansen and Couldry 2014). Facebook is one of many online platforms offering its users a wide range of affordances stimulating diverse forms of learning and information gaining (Wang et al. 2011). Some scholars argue that Facebook's academic roots foreordain this site to serve diverse educational contexts and purposes (Downes 2007). Through multiple built-in functions, e.g. messaging, tagging and commenting, it encourages individuals to share information and knowledge that could be then accessed and mobilised by other users. Although there is research showing the positive impact of resources accessed through social media on diverse purposive actions, nothing is known about whether and how online social networks affect the borrowing decisions and debt experience of its users.

Given that the existing literature on determinants of debt experience is inconclusive in many respects and leaves room for proposing still new factors that can be responsible for the experience, we decided to explore the issue of debt experience within both explanatory and exploratory settings. The structural equations modelling (SEM, henceforth), that we used, seems to be a particularly well-fitted method to such a research goal. Specifically, we moved forward the discussion on drivers underlying households' debt experiences by checking whether the access to peculiar resources that can be mobilised through online social networks explains consumers' debt experiences in Poland. To the best of our knowledge, the extant literature has not yet investigated this issue. Given that the majority of Poles have access to the Internet (Czapiński and Panek 2015), it is assumed here that individuals exploit diverse online communication tools, such as Facebook, to access resources (e.g. information) that may have an impact on borrowing behaviours. Consequently, we narrowed the focus to Facebook users having current or past (no longer than 5 years) experience with debt and borrowing. Then, we used a set of variables informing about individuals' activity on Facebook (hours, friends, users-watched) along with a diversified set of other variables (financial education, debt literacy, and personality characteristics), considered as latent within the SEM framework, and suggested as important debt experience predictors by former researchers.

Ultimately, our empirical examination was designed to address the following questions, which also reflect the objectives of the article: (1) what factors explain best the debt experience of Facebook users in Poland?; (2) what is the contribution of Facebook activity and the shape of personal networks to the entire explanatory effect?; (3) can our study design and resultant findings shed additional light on some significant predictors of debt experience, known from previous studies, such as financial literacy?; (4) how can inclusion of another aspect of debt experience (i.e. debt abuse or deception) add to the current state of knowledge on consumers' behaviour in credit markets?

### **Literature Review and Hypotheses Development**

Empirical research proves that financial literacy is low and diversified across socio-economic and demographic characteristics, with low income, the youngest and the oldest individuals, women and minorities being the most financially illiterate (see Klapper et al. 2015 for worldwide results). The evidence also exists showing the link between financial literacy and financial market participation, behaviour and outcomes. Jappelli and Padula (2013) provided and empirically verified the theoretical framework linking financial literacy and participation in the financial market in which financial literacy is endogenously modelled by the financial choices individuals face. The choices engender incentives to become more financially sophisticated and they further induce people to 'invest' in the acquisition of financial knowledge and skills. Indeed, it was proved that more financially savvy individuals are more active in terms of saving (Lusardi and Mitchell 2006), and stock market investment (van Rooij et al. 2011; Yoong 2011; Bucher-Koenen and Ziegelmeyer 2011; Arrondel et al. 2012; Allgood and Walstad 2016), including retirement preparation planning (Crossan et al. 2011; Lusardi and Mitchell 2006; Sekita 2011; Alessie et al. 2011; Hastings and Mitchell 2011; Lusardi and Mitchell 2011), which leads to more sizeable wealth accumulated throughout life (Jappelli and Padula 2013; Behrman et al. 2012; van Rooij et al. 2012; French and McKillop 2014).

It has been further established that financial literacy is positively associated with more healthy credit market behaviour and debt position in terms of both debt levels or loads and costs entailed by loans. For instance, Norvilitis et al. (2006) found that financial knowledge turned out to be one of the strongest predictors of indebtedness, while French and McKillop (2014) determined that basic money management skills reduce debt-to-income coefficients. In this vein, Moore (2003) provided evidence that less financially literate individuals are more likely to select more expensive mortgages. Individuals displaying a low level of financial literacy are also more inclined to borrow informally, i.e. in the segment that is unregulated and therefore potentially more prone to abuse (Klapper et al. 2012). It was also found that less financially literate individuals are more often in arrears (Disney and Gathergood 2011) and are more likely to default on mortgages (Gerardi et al. 2010; Gerardi et al. 2013).

Although the bulk of research is focused on different aspects of financial literacy, little is known about one of the key dimensions of financial literacy, which is debt literacy, and its link to credit market experiences and factors behind the experiences. In their pioneering

paper, Lusardi and Tufano (2009) confirmed the main findings known from the field of financial literacy and its relation to credit market experiences. The application of their three-question debt literacy test showed that debt literacy shortcomings are costly and lead to households' financial distress. In accordance with these findings, Disney and Gathergood (2011; 2012; 2013) demonstrated that this is not just a US-specific phenomenon, as the adaptation of the slightly modified Lusardi and Tufano's instrument to national surveys of UK consumers brought similar results. However, their study (Disney and Gathergood 2012) also led to a puzzling conclusion. Contrary to former research on financial literacy, showing that literacy is positively linked to financial market participation, they found that debt literacy was lower among those who borrowed as compared to those who did not. Such dissimilarity from the evidence on more general financial literacy and its link to financial market involvement may indicate some peculiarities of debt literacy as an aspect of financial literacy that are potentially worth a more in-depth scientific investigation. The empirical outcomes achieved by van Ooijen and van Rooij (2014) point to another idiosyncrasy of debt-related issues, likewise potentially fruitful for scientific exploration. They observed that although aware of increased risk, more debt-literate households tended to take out mortgages with more risky characteristics. Van Ooijen and van Rooij (2014) concluded that, as a result, debt literacy can be perceived as both a blessing and a curse as it can induce people to make decisions jeopardising their financial well-being.

Problems arising from having debt to a predatory lending institution belong to the most negative credit market experiences. As Smith (2004: 77) states, 'financial literacy is often mentioned as an important tool (...) for preventing predatory lending.' However, the empirical research on the link between financial literacy and consumers' activity in this particular segment of the credit market that is threatened by predatory lending is very scanty. This can be explained, at least partly, by a difficulty of selecting the appropriate sample of predatory institutions' clients. Olson and Starr (2008), based on data concerning the recent subprime crisis, indicated an explicit cause-effect relationship between financial illiteracy, particularly in some groups—such as women, minorities and lower-income families—and the likelihood of being victimised by questionable financial practices. Lusardi and Tufano (2009) found that more financially literate individuals are less inclined to apply for loans that have predatory characteristics. Our study contributes to the current state of knowledge on the effect that financial education and literacy—along with other little scrutinised variables such as personality traits and online social networks—may have on predatory loans. We used responses to the question 'Have you ever been abused / deceived by a lender?' in one of our credit market experiences indices. Owing to this, we obtained not only a knowledge on the scale of the predatory practices, but also an insight into the link between debt literacy and being abused or deceived by a lending institution. Our investigation in this thread is exploratory to a large extent, because those respondents who reported an abuse or deception were further asked to indicate the type of the abuse. This allowed us to learn more about the most prevalent forms of predatory lending and make some initial designs of future research.

Moreover, the existing literature on financial and debt literacy indicates that researchers use diversified instruments to gauge these variables (good and comprehensive reviews of financial literacy construct measurements can be found in Huston 2010 as well as in Stolper

and Walter 2017). One of the key aspects of the discussion on such measurement instruments is the confrontation between making a financial literacy diagnosis in an objective way (i.e. through test scores) and diagnosing that literacy through using a self-reported measure (sometimes this is referred to as objective literacy vs. subjective literacy issue). The empirical evidence suggests that the relationship between the indications of both financial literacy measures—objective and subjective—does not need to be strong, as shown by Agnew and Szykman (2005). Allgood and Walstad (2016) proved that perceived financial literacy not only significantly affects financial behaviours but also can be more important in this respect as compared to objectively measured literacy. Self-reported skills in managing money were also used as a variable explaining debt experiences by French and McKillop (2014). Thus, we used both measures—objective and subjective—to identify the debt literacy of Facebook users in Poland. Following Jappelli and Padula's (2013) predictions, we posited that debt literacy and financially healthy behaviour of Facebook users in the credit market are positively related. Specifically, we hypothesised that more debt-literate consumers have bigger debts outstanding (H1a), are less likely to perceive their debt levels as excessive (H1b), and are less likely to report a debt-related abuse or deception (H1c).

The role of financial education in the formation of financial literacy and, ultimately, financial behaviour and experiences, is unclear. Many studies show that educational attainment in general—and financial education in particular—is a strong predictor of financial literacy (Mitchell and Lusardi 2015; Lusardi and Mitchell 2008). As a result, some authors use education as a proxy for financial literacy (Calvet et al. 2009). However, the results of some studies raise doubts about the role of financial education in enhancing financial literacy (see Hastings et al. 2013 for a review of such studies). Other authors claim that an individual can display low financial literacy while behaving effectively in financial markets, and vice versa (Gentile et al. 2016). The same can pertain to the link between financial education and financial behaviour. Such claims are not without grounds because financial behaviour can be shaped not only by financial education and literacy, but also by cognitive attributes of individuals (Brau et al. 2015). Therefore, consideration of financial education as a variable isolated from financial literacy—in terms of its presumable impact on financial behaviour—is warranted.

It was established in prior research that individual debt experiences depend on the general and financial educational attainment of credit market participants. For example, Moore (2003) found that better educated respondents were less prone to having a loan with risky terms, while less educated individuals were more likely to have a bad credit. As a consequence, Moore raised a strong need for a financial education that could help consumers to evaluate loans. In a similar vein, Campbell (2006: 1590) showed that 'poorer and less educated households are more likely to make mistakes than wealthier and better educated households'. Brown and associates (Brown et al. 2016) showed that mathematics and financial education modestly preserve young borrowers from negative credit experiences, e.g. delinquency and collections. Based on that, it is assumed here that financial education is associated with individual experiences of credit market participants. Better educated individuals with financial knowledge gained through obligatory or additional courses should be less exposed to negative consequences of suboptimal borrowing decisions such as high interest rate, high spread, overvalued collateral, mandatory insurance or change in terms

of existing loan. Thus, we hypothesised that consumers who were exposed to a financial education have bigger debts outstanding (H2a), are less likely to perceive their debt levels as excessive (H2b), and are less likely to report a debt-related abuse or deception (H2c).

Arguably the relation between financial literacy and financial market experiences is affected by psychological factors that shape human beings' behaviours. Gentile et al. (2016) convincingly claim that even high financial literacy cannot restrain individuals from making costly mistakes in the market. This is because of behavioural biases and framing effects people can be subject to, including those most financially sophisticated. For example, Brown and Taylor (2014) examined relationships between debt and five personality traits (the 'Big Five'), namely openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. They found that extraversion is significantly and positively associated with the size of the debt, while conscientiousness is inversely related to the level of unsecured debt. Ambiguous results have been presented by scholars examining the relationship between materialism and amount of debt. Watson (2003) found no association between those variables while Garðarsdóttir and Dittmar (2012) showed that materialism is not only related to the amount of debt, but also to frequency of financial worries. Garðarsdóttir and Dittmar (2012) further suggested that materialism is a greater predictor of debt than income or money-management skills. Their study appears to be novel and valuable as they proposed using SEM to examine the relationships between materialism, money-management skills, compulsive buying, financial worry and amount of debt. Accordingly, Daly et al. (2010) examined the associations between five personality traits ('the Big Five'), debt and risk willingness. It was found that risk inclination has a positive effect on levels of debt. Moreover, higher conscientiousness is related to lesser debt, while higher agreeableness is insignificantly associated with more debt. Finally, it seems intuitively obvious that individuals more susceptible to manipulation are more subject to negative market experiences. Therefore, we decided to add susceptibility to market manipulation as another personality characteristic into our study design, although such a variable has not been examined so far by former researchers. Thus, we hypothesised that individuals with higher scores of risk, materialism and susceptibility to market manipulation have more debts (H3a), more often perceive their debt loads as excessive (H3b), and more often report a debt-related abuse or deception (H3c).

It has been signalled above that Facebook may offer individuals access to diverse resources affecting personal experiences with debt and borrowing. Facebook users are connected with relatives, friends, acquaintances and others they may not know personally, through two types of relationships: friendship and following. Others may be a source of unique and valuable resources that impact users' purposive actions. Scholars have shown numerous advantages of social media use in different contexts. Ellison et al. (2007) suggest that Facebook offers its users opportunity to access different types of social capital. Resources of social capital appeared to be particularly beneficial for those with low self-esteem and low life satisfaction. Wang et al. (2011) demonstrated that Facebook groups rich in pedagogical, social and technological affordances may serve as a learning management system. Such a system based on social media effectively encourages reciprocity, mutual learning and students' engagement (Meishar-Tal et al. 2012; Stephansen and Couldry 2014). In a similar vein, Lampe et al. (2012) showed that Facebook could be a great source

of informational resources. However, the effect of information seeking depends on network characteristics and usage practices. Accordingly, Facebook may bring different opportunities to individuals searching for resources affecting their financial experience. For example, users heavily in debt may search on Facebook for information on how to reduce monthly instalments. One of many ways is to watch the experts sharing relevant knowledge (following). Another is to ask directly for help from users with potentially similar personal experiences in the financial market (friendship). Thus, the size and quality of their personal network on Facebook may have an impact on the debt experience of Facebook users. Those with greater and more diverse social networks may more easily find the resources they are searching for. Therefore, it is assumed here that users with greater personal networks (friendship and following) are less prone to negative credit market experiences. Specifically, we hypothesised that such users have greater amounts of debt (H4a), are less likely to consider these amounts as excessive (H4b), and are less likely to report a debt-related abuse or deception (H4c).

## **Method**

### **Data**

Data were collected between 28 May 2017 and 6 June 2017 through an online questionnaire (Computer-Assisted Web Interview) distributed among active Facebook users having personal experience with a formal loan. Only users with current debt or those having debt in the last 5 years were selected to the research. We assumed that users with debt that has been repaid more than 5 years ago may not remember some crucial borrowing details or may not be aware of many issues related to the debt due to rapid changes in the financial market. In total, we surveyed 1,055 Facebook users who had debt experience as described above. Detailed sample characteristics can be found in Table 1.

### **Measures**

We used three measures of debt experiences in order to build a comprehensive and diverse picture of individuals participating in the consumer credit market in Poland. Firstly, we asked respondents how they assess their current debt situation. To do that, we adapted Lusardi and Tufano's (2009) question on debt level (Appendix 1), in which respondents had the following options for selection: a) 'I have too little debt right now. I wish I could get more'; b) 'I have about the right amount of debt right now and I face no problems with it'; c) 'I have too much debt right now and I have or may have difficulty paying it off'. Table 2 presents the distribution of answers for this question.

Secondly, respondents were asked to assess their numerical amount of total current debt (i.e. resulting from all formal credits and loans). We adapted the Credit Information Bureau (2017) scale in the question (from 'Less than 1,000 PLN' to '200,000 PLN or more'). Again, detailed information on the distribution of answers for this question can be found in Table 2.

The last measure of debt experiences applied in our study appears to be novel. We asked respondents whether they had ever been abused or deceived by a creditor (Q11). The scale

Table 1

**Sample Characteristics in Terms of Key Socio-demographic Traits**

	%	<i>N</i>
<b>Gender</b>		
Male	52	511
Female	48	544
All	100	1,055
<b>Place of residence</b>		
Village	35	368
Town up to 20,000	9	98
City 20,001–50,000	10	104
City 50,001–100,000	11	114
City 100,001–200,000	8	88
City 200,001–500,000	11	114
City 500,001 or more	16	169
All	100	1,055
<b>Educational attainment</b>		
Primary school	0.7	7
Junior high school	0.7	7
Basic vocational school	9	96
Secondary (uncompleted)	3	33
Secondary	28	292
Post-secondary school	11	112
Bachelor's degree	7	76
Master's degree (uncompleted)	2	25
Master's degree	38	399
PhD or higher	0.8	8
All	100	1,055

of responses used in the question (from 'Decidedly no' to 'Decidedly yes') was designed to obtain a continuous measure of respondents' experiences labelled as *fin\_abuse* in the regressions. In the next question (Q12) we asked respondents to indicate the type of abuse or deception. Answers to this question were used in descriptive and exploratory analysis. We followed Hill and Kozup (2007) when designing the question on predatory lending ('What was the lending abuse / deception that you experienced?'). They indicate the following practices typical for institutions that offer credits or loans with predatory characteristics: (i) aggressive and deceiving marketing; (ii) high interest rates, excessive charge, and unjustified obligatory provisions (e.g. insurance); (iii) granting loans to consumers without careful consideration of their ability to pay the debt off; (iv) striving for foreclosures; and (v) large prepayment penalties. Any empirical research on predatory lending poses a serious challenge mainly because it is difficult to indicate predatory institutions. In Poland, where subprime turmoil was avoided, there is a stereotypical, unjustified conviction that predatory lending is almost exclusively the domain of non-banking institutions, particularly small, local payday loan companies, let alone pawnshops or clearly fraudulent institutions (known as 'parabanks' in Poland). However, banks and credit unions can also be predatory lenders, or at least can be perceived as such (European Financial Inclusion Network

2016). One of the most interesting questions in the debate over predatory lending is whether mortgages granted to Poles in Swiss francs can be considered predatory credits. Social discontent about these mortgages, articulated particularly by organised groups of borrowers, such as ‘Stop Banking Lawlessness’ (Buckley 2016), suggests that Swiss franc mortgages are perceived as predatory lending by some social groups, at least in Poland. Motivated by the lack of consensus on what is predatory lending, we checked respondents’ opinions in this regard. To do that, we used Hill and Kozup’s (2007) characteristics of predatory lending, then we modified these questions in order to increase respondents’ understanding, and complemented them with the option concerning the foreign currency exchange rate issue (a proxy for the problem of Swiss franc mortgages).

Table 2  
Applied Debt Experience Measures

	%	N
<b>Numerical amount of debt</b>		
Less than PLN 1,000	13	142
PLN 1,000 and less than PLN 4,000	20	208
PLN 4,000 and less than PLN 15,000	17	178
PLN 15,000 and less than PLN 50,000	11	112
PLN 50,000 and less than PLN 100,000	7	71
PLN 100,000 and less than PLN 200,000	7	72
PLN 200,000 or more	5	57
I do not know	1	14
Refuse to answer	4	37
All	84	891
<b>Subjective perception of debt load</b>		
I have too much debt right now and I have or may have difficulty paying it off	15	157
I have about the right amount of debt right now and I face no problems with it	62	654
I have too little debt right now. I wish I could get more	2	26
I just don’t know	3	30
Refuse to answer	2	24
All		891
<b>Debt abuse or deception</b>		
Decidedly yes	8	84
Rather yes	14	148
Decidedly no	54	568
Rather no	24	255
All	100	1,055

We used two measures of debt literacy. Following Lusardi and Tufano (2009), we applied a three-question single-choice test including questions on: (i) interest compounding; (ii) credit card workings; and (iii) time value of money. Correct answers were coded as 1, while both incorrect answers and ‘Don’t know’ or ‘Prefer not to answer’ responses were coded as 0. As a result, for each respondent we obtained a combined debt literacy measure (index) with values ranging from 0 to 3. Additionally, we used a self-reported measure of debt literacy, i.e. respondents’ assessments of debt literacy level on a 7-point Likert scale

(where 1 meant ‘Very low’ while 7 was ‘Very high’), which is a standard procedure in financial literacy research (Lusardi and Tufano 2009; Allgood and Walstad 2016; Porto and Xiao 2016). To assure credibility of responses, the question through which we gathered respondents’ self-reports of debt literacy preceded the objective diagnosis of the literacy based on the aforementioned three-question test.

Table 3

**Exogenous Variables Used in Structural Equation Model**

<i>Exogenous variables and their codes</i>	<i>Latent variable</i>	<i>Type of variable</i>
Debt literacy score (DL)	Debt Literacy	Ratio (summed result of three debt literacy questions)
Self-assessment of debt literacy (pers_fin_know)	Debt Literacy	Ordinal (1 to 7 Likert scale)
Financial education in school (fin_edu)	Financial Education	Nominal (‘Yes’ or ‘No’)
Additional financial education (add_fin_edu)	Financial Education	Nominal (‘Yes’ or ‘No’)
Risk attitudes (Risk)	Personality	Ordinal (sum of 3 items measured on 1 to 5 Likert scale)
Susceptibility to market manipulation (Markt_man)	Personality	Ordinal (sum of 3 items measured on 1 to 5 Likert scale)
Material orientation (Mat_orient)	Personality	Ordinal (sum of 3 items measured on 1 to 5 Likert scale)
Declared number of watched users (users_watched)	FB Personal Network	Ratio
Declared number of friends (friends)	FB Personal Network	Ratio

Based on prior research (Brown et al. 2016; Campbell 2006; Moore 2003) we introduced two measures of financial education that could be useful for those acting within the debt market. The first question examined whether interviewee had access to financial courses through the whole educational path. The second question asked for additional financial courses (free or paid) completed independently by respondents.

Three dimensions of a respondent’s personality have been selected and measured with nine items (3 for each dimension) on a 1 to 5 Likert scale. Those dimensions included: (i) risk attitude; (ii) susceptibility to market manipulation; and (iii) materialism. Table 4 presents the items used to diagnose respondents’ personality traits.

Additionally, we measured respondents’ propensity to save money and their trust in financial institutions but these dimensions were found to be insignificant.

This study is focused on Facebook users, therefore we introduced several measures aimed at diagnosing respondents’ activity on this social platform, their personal networks and relationship maintenance behaviours (Ellison et al. 2014). However, only personal network measures have been included to our SEM model because alternative models with additional items related to Facebook behaviours did not meet model fit criteria. Thus, the dimension of personal network is based on two items: (i) number of friends added to Facebook account; and, (ii) users watched on that platform. It is assumed that these two items are proxy to resources such as information, knowledge or expertise accessed by respondents.

Table 4

**The 9-item Instrument Used to Learn Respondent's Personality Characteristics**

<i>Statements evaluated by respondents</i>	<i>Personality traits</i>
I like to have money and buy what I want	Materialism
If I had more money I would feel better	Materialism
It is worth paying more for designer clothes	Materialism
I often change things for something newer (e.g. mobile phone, clothes)	Manipulation
I buy advertised things	Manipulation
We should buy promoted things as soon as possible	Manipulation
Life without risk is boring	Risk
I often exceed the speed limit	Risk
I visit dangerous places and countries	Risk

**Structural Equations Model**

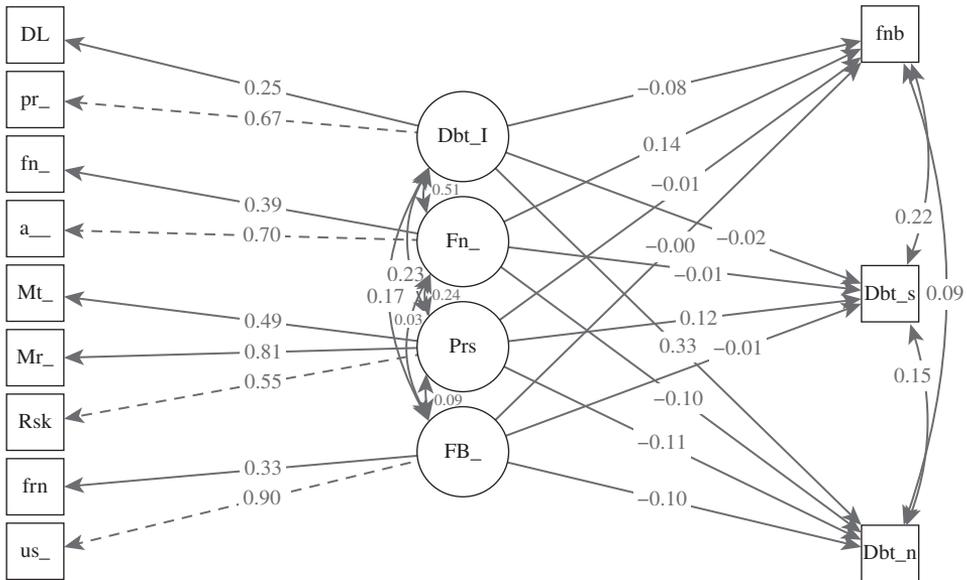
Guided by results of research on debt literacy (Lusardi and Mitchell 2014; Lusardi and Tu-fano 2009; Schuyler et al. 2015; van Rooij et al. 2011) and social capital of Facebook users (Ellison et al. 2007; Ellison et al. 2014; Filipek 2016) we proposed a conceptual model including variables referring to personality, financial education, debt literacy, and online personal network of Facebook users in Poland. This model assumes that debt experience is a multidimensional construct and cannot be diagnosed solely through debt literacy scores or financial knowledge and skills. We suggest that contemporary customers of financial institutions have access to different resources, e.g. money, knowledge and expertise through relations with online peers on social media platforms. Consequently, their debt experience might be a composite result of (i) quantity and quality of online personal networks, (ii) personality traits, (iii) financial education (iv) and debt literacy. However, we assumed that these variables cannot be directly observed (latent variables), therefore we measured them with the nine items presented in Table 2. In order to make sure that all dimensions are internally consistent, the Alpha-Cronbach test was applied. As a result, two items were removed from the analysis.

The primary goal of this article was to examine whether observed variables (9 items) influence three dependent variables we mentioned above through four latent factors (see Figure 1). Thus, we built an SEM with latent variables (Bollen 1989) to gain information about relationships among all types of variables identified in this research. As Schreiber et al. (2006) suggested, SEM helped us to 'reduce the number of observed variables into a smaller number of latent variables by examining the covariation among the observed variables'. The applied SEM was built with the R package 'lavaan' (Rosseel 2012). This package is a non-commercial alternative used to explore a wide range of latent variable models.

**Model Fit to Data**

Our SEM (Figure 1) has a good fit (Kline 2011; Schreiber et al. 2006) for sample data with the root mean square error of approximation revealed (RMSEA) 0.03, Comparative Fit Index (CFI) of 0.95 and Tucker-Lewis Index (TLI) of 0.91. Additionally, the alternative

Figure 1  
Structural Equations Model of Debt Experience Among Facebook Users in Poland



**Exogenous variables:** a) DL—Debt literacy score; b) pr—Self-assessment of debt literacy; c) fn—Financial education in school; d) a—Additional financial education; e) Mt—Material orientation; f) Mr—Susceptibility to market manipulation; g) Rsk—Risk attitudes; h) frn—Friends; i) Users watched.

**Latent variables:** a) Dbt\_I—Debt literacy; b) Fn—Financial education; c) Prs—Personality traits; d) FB—Facebook personal network.

**Endogenous variables:** fnb—Financial abuse; b) Dbt\_s—Debt situation; c) Dbt\_n—numerical debt.

model was tested (not shown) with different items referred to assumed dimensions having an impact on debt experience. In the alternative model, we added another latent variable related to socio-economic status. However, the alternative model was found to be a very poor fit to the sample data. Thus, we decided to examine debt experience based on the model with three dependent variables influenced by four latent variables indicated by 9 items.

## Results

### Descriptive Analysis

Our sample consisted of adults having loans (currently or in the last 5 years). The majority of respondents reported low amounts of outstanding debt in our study (62% of total sample had loans not exceeding PLN 50,000). Only 5% said that they had loans amounting to at least PLN 200,000. Such distribution of debt loads in our sample can partly explain the dominance of respondents who stated that they had a reasonable (i.e. just right) amount of debt (73%). In comparison to the findings of Lusardi and Tufano (2009), we obtained a slightly more ‘humped’ distribution of reports on self-assessment of debt load, with

a sharp dominance of respondents reporting reasonable amounts of loans. Overindebted respondents were more frequent (18% of total sample) among those who perceived their own amount of debt as suboptimal (i.e. not just right). The form of loan most frequently reported by our respondents was a domestic currency (PLN) loan taken from a bank (43%), followed by debt resulting from instalment purchases (28%) and credit card liabilities (20%). Foreign currency loans and debt owed to personal loan companies were rare among our respondents (6% and 9%, respectively).

Twenty-two per cent of respondents in our survey claimed that they were abused or deceived by lending institutions (however, only 8% selected the option 'Decidedly yes'). Interestingly, misleading advertisement was the most frequently indicated form of abuse or deception (30% of all responses reporting an abuse or deception). One out of five respondents among those perceiving themselves as having been abused or deceived reported deceptive information on expected foreign exchange rate fluctuations as the experienced form of abuse or deception. This confirms that concerns arising about hardship entailed by foreign currency mortgages taken by Poles, particularly Swiss franc mortgages, pose a serious social problem.

Unexpectedly, our respondents turned out to be financially well-educated, both in schools and through additional formal courses. As much as 52% of all respondents reported that they were exposed to a formal financial education (34% in school, while 18% in other forms of formal education, e.g. specialised courses). On the other hand, we obtained mediocre results from the debt literacy test in our sample. Almost half of the total sample (47%) answered all three test questions incorrectly, while as little as 1% answered all questions correctly. The mean of the debt literacy score for entire sample reached a mere 0.72 out of the maximum 3 points (i.e. only 24% of the highest possible score). This contrasts sharply with respondents' average subjective assessment of the debt literacy. The mean of the self-perceived debt literacy in our sample reached 4.59, which was almost 66% of the highest possible value, i.e. 7. Such results show a sizeable effect of overconfidence in the debt literacy of Polish users of Facebook. Respondents fared best on the interest compounding question (43% of total sample answered the question correctly) and worst on time value of money question (7% of respondents indicated correct answer to the question). Men outperformed women in debt literacy score (0.85 vs. 0.59 in terms of debt literacy score means) and displayed, on average, a higher level of debt-literacy self-confidence (4.77 vs. 4.42). Detailed information on the distribution of responses in our debt literacy test can be found in the Appendix 2.

### **Path Analysis**

This section summarises the results of regression models that could be found in our SEM. We decided to apply regressions as they enable more comprehensive information about associations among analysed variables, such as strength and direction, to be indicated.

We found that more debt-literate individuals had higher declared levels of debt ( $p < 0.05$ )—the result confirming our H1a. However, there was no significant relationship between debt literacy and two other variables—perceived debt situation and financial abuse—forming respondents' debt experience. This may suggest that our study brought no

support for hypotheses stating that more debt-literate individuals are less likely to report excessive debt loads (H1b) and less exposed to different forms of financial abuse (H1c).

Furthermore, we expected that financial education gained through profiled and additional learning safeguards respondents from negative debt consequences. However, our results suggest that more financially educated Facebook users more frequently report financial abuse ( $p < 0.05$ ). This means that H2c was not confirmed, however some additional comments could be found in subsequent sections. Accordingly, there is no significant relationship between financial education and two other dependent variables. Hence, we rejected H2a and H2b, too.

The impact of personality traits on debt experience of Facebook users in Poland has been found significant for two out of three dependent variables. More risk-averse individuals, who are less vulnerable to market manipulation and less materialistic, declared higher levels of numerical debt ( $p = 0.023$ ) and were more likely to report excessive debt loads ( $p = 0.005$ ). At the same time, personality traits had no impact on the declared financial abuse of our respondents. Consequently, H3a, H3b, and H3c are not confirmed. Instead, our results suggest opposite signs in causality compared to those found in existing literature.

Finally, in a proposed SEM model there was no significant impact of personal networks maintained on Facebook on the debt experience of interviewed respondents. This means that our findings support none of our hypotheses (H4a, H4b, H4c).

## Discussion

Overall, our research brought reassuring results in terms of the self-perceived debt experience of FB users in Poland. Both subjective measures of the experience applied in our study—subjectively assessed debt burden and debt abuse—showed that only a small share of our respondents reported negative effects of loans on them. Such results can be partly explained by the dominance of domestic currency loans taken from banks (i.e. not as problematic as other types of loans, such as foreign currency mortgages or payday loans) among all loans reported in our study, as well as by the prevalence of relatively low-value loans in the sample we studied. To sum up, our study shows that FB users in Poland hold, on average, small outstanding debts, rarely perceive the debt levels as excessive, and rarely experience an abuse or deception by the lender.

We found that those individuals who are more debt literate are more likely to borrow more. We posit two explanations for such a relationship. Firstly, the numerical amount of debt can be considered a proxy for credit market participation. In such a setting, our finding would confirm that more financially literate individuals are more likely to engage in activities in the financial markets—an effect known from previous studies (Yoong 2011; Xia et al. 2014) and consistent with the theoretical predictions of Jappelli and Padula (2013). Presumably, more indebted individuals may have stronger incentives to acquire debt literacy. On the other hand, our finding may also be in line with the assertion of van Ooijen and van Rooij (2014) that higher debt literacy can entail more risky behaviour. We cannot rule out such a possibility because in finance theory the level of debt is traditionally perceived

as an indicator of risk. Hence, more debt leads to—*ceteris paribus*—more risk. However, our study did not show an adverse effect of higher debt literacy—associated with higher amounts of debt and resultant risk—on self-assessment of the debt-induced burden and likelihood of debt-related abuse or deception. Nevertheless, our study neither showed that more debt-literate individuals have ‘better financial lives’ in terms of the way they perceive their debt loads as well as in terms of the likelihood of being abused or deceived by a lender.

Our research brought a puzzling result regarding the role of education in debt experience. We found that more financially educated individuals are more likely to report abuse or deception by a lender, which contradicts an intuitive and reason-based expectation. However, the finding may be consistent with the argumentation of Gentile et al. (2016) who posit that education can inflate self-confidence without improving decisions. Such an explanation seems to be plausible in our study because we noticed a strong effect of overconfidence in debt literacy, as mentioned earlier. To scrutinise the grounds for an explanation of this, we compared the self-assessed debt literacy of these respondents who reported that they were financially educated with the self-assessed debt literacy of other respondents. The outcome of the comparison revealed that financially educated individuals report a higher subjective debt literacy than those who were not financially educated (4.97 vs. 4.32 in terms of means). Additionally, we evidenced that financial education was not correlated with debt literacy in our sample, confirming the effect of financial education ‘fuelling confidence without improving competence’ (Gentile et al. 2016: 8). In this vein, our results can be seen to be consistent with the broader theoretical setting of classic behavioural finance, rooted in the work of Kahneman and Tversky (1979), which predicts that excessive confidence—as a behavioural bias—can result in the illusion of control and more risky actions. Perhaps this is the mechanism underlying our findings: the belief that financial education protects from market pitfalls makes individuals too confident in the appraisal of their financial competences, and ultimately results in less cautious and often misguided choices, leaving such consumers with a feeling of abuse or deception. Consequently, confidence and overconfidence are variables that require more attention in future research.

Our findings regarding the effect personality characteristics have on debt experiences show that there is a lot of room for studying this relationship in the future. Surprisingly, our results on the role of risk aversion are contradictory with observations made by former researchers (Daly et al. 2010). The impact of materialism on the level of debts appears to be complex as each of three studies examining such an impact—including our study—brought different results (no effect in the study by Watson 2003; a positive impact in the study by Garðarsdóttir and Dittmar 2012; a negative impact in our study). In light of our findings, the role of susceptibility to market manipulation for debt experiences seems similarly complex and deserves further investigation. We applied measures of materialism and risk aversion that were different from measures used by previous authors, therefore the outcome of our study may suggest that the sign and strength of the relationship between personality characteristics and debt experience is sensitive to the choice of measurement tool.

Finally, the impact of personal networks on the debt experience of Facebook users has not been confirmed. It may be of little surprise but we believe that the results of this study confirm the more prevailing trend. In the age of social media, the boundaries between online

and offline, public and private have become very fluid (Filipek and Chodak 2016). People use multiple digital devices such as smartphones, tablets or laptops and smoothly switch between offline and online domains. In such conditions it is difficult to recognise what resources could be accessed exclusively through social media. Thus, in a specific context, such as debt experience, social media users may not be fully aware of the benefits of online personal networks. Online peers are not perceived as an advantage that could affect debt experience. Yet, despite the insignificant relationship found in our research, the impact of social media on debt experience should not be under-estimated.

Apart from new knowledge on determinants of debt experience, our survey brought many additional findings. For instance, this study confirmed the low level of debt literacy of consumers reported by prior researchers and found that debt literacy shortcomings are particularly large with respect to time value of money—a phenomenon established by researchers in Western countries (Lusardi and Tufano 2009; Disney and Gathergood 2011; van Ooijen and van Rooij 2014). Also, our findings showed a moderate gender gap in debt literacy—a well-known phenomenon recognised worldwide (Klapper et al. 2015). Although average scores of the debt literacy test obtained in our study were even lower compared to scores recorded in the USA (Lusardi and Tufano 2009), the UK (Disney and Gathergood 2011) and the Netherlands (van Ooijen and van Rooij 2014), we found a more modest gender gap—in terms of scores obtained in the debt literacy test. This is in line with previous findings showing that post-Communist societies display a relatively small gender gap (less than that observed in more developed countries), perhaps because of the more egalitarian socio-economic roles of females and males forced by the regime (Bucher-Koenen et al. 2017). Interestingly, even though a gender gap exists in financial literacy, our findings do not bring conclusive results confirming that it also exists in financial behaviours. We noticed that females were less likely than males to report abuse or a deception by a lender (20% vs. 24%), yet at the same time females more frequently reported self-perceived excessive indebtedness as compared to males (16.5% vs. 13%). This may confirm that financial behaviours are determined not only by measurable financial competences, but also by less quantifiable cognitive attributes, which are different for females and males (Brau et al. 2015).

## Conclusions

Debt experience is a wide and dynamic concept with many possible dimensions that could be included in empirical research. This study provides methodological direction for future studies aimed at examining factors affecting debt experiences. The SEM we built to detect relations among variables suggested by the literature, was found to be useful and statistically significant. The three latent variables proposed by us, namely debt literacy, financial education and personality traits have an impact on the debt experience of Facebook users in Poland. Only one latent variable, i.e. personal network, did not influence dependent variables in the regression models we built. Despite this insignificance we have decided to include this latent variable in our model as it improves the fit parameters we apply to evaluate the SEM.

A major contribution of this study lies in the conceptualisation of debt experience and the key factors affecting it. Items included in the questionnaire were derived from the latest developments in the research methodology of economics, sociology and psychology. Such an interdisciplinary approach allowed diverse information to be gained, related not only to debt literacy measured with the Lusardi and Tufano (2009) test, but also to the personal characteristics and social environment surrounding borrowers in Poland. Thus, this study supports the assumption that debt experience depends on multiple factors including psycho-social dimensions. Nevertheless, we are fully aware that there are more variables either influencing debt experience or forming it. Alternate measures that better fit the contemporary financial market would make a good avenue for future research.

This study has limitations that need to be pointed out. First, the purposive sampling limits the ability to generalise our findings to the whole population of borrowers in Poland. We focused on Facebook users in Poland due to the numerous opportunities to gain knowledge and expertise that could affect the debt experience of social media users. Following some previous research documenting the impact of online resources on users' actions, it was expected that the population of Facebook users would have specific features that could be important when evaluating debt experience. The insignificant impact of personal network on debt experience that we have established should not be ultimately interpreted as meaning that Facebook users with debt experience are no different from the offline population. Future research should rather introduce new measures designed to display online and offline differences important to debt experience evaluation. On the other hand, it would also be valuable to conduct research among social media users (or Internet users) and borrowers not engaged in online communication and social relations.

An additional limitation of the study was the conceptualisation of debt experience. Existing research focuses on narrow aspects of debt experience, such as level of debt or repayment problems. This study tried to draw the wider picture based on variables related to different aspects of debt and borrowing: the numerical level of debts, self-assessed debt situation and financial abuse. However, there are other dimensions of debt that are worth consideration, such as the positive consequences of borrowing or non-institutional credit. Thus, future research focused on a different set of variables forming the debt experience of contemporary financial market participants could also bring interesting and valuable findings.

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*Biographical Notes:*

Kamil Filipek, (corresponding author) Ph.D., is a sociologist, Assistant Professor at Maria Curie-Skłodowska University (UMCS) in Lublin. His areas of interest include social implications of the Internet, social networks and social capital. He is also investigating the relationship between social media and sharing. In the past, he was carrying out quantitative social and market research in Poland and UK.

E-mail: [kfilipek@umcs.pl](mailto:kfilipek@umcs.pl)

Andrzej Cwynar, Ph.D., is Associate Professor at the University of Economics and Innovation (UEI) in Lublin (Poland). Former dean of Department of Economics at the UEI, founder and director of the Institute for Financial Research and Analyses (2010–2013), and editor-in-chief of the scientific quarterly *e-Finanse* (2004–2013). Business associate of Splentum Ltd. The author and co-author of several books and over 100 articles devoted mainly to financial issues. His main field of interest is corporate finance & financial management as well as financial literacy with special emphasis on debt issues.

E-mail: [andrzej.cwynar@wsei.lublin.pl](mailto:andrzej.cwynar@wsei.lublin.pl)

Wiktór Cwynar, Ph.D., is Assistant Professor with a demonstrated history of working in the higher education industry and corporate finance. Skilled in Business and Strategic Planning, Analytical Skills, Data Analysis and Business Development. His latest professional interest focuses on financial literacy issues.

E-mail: [wiktór.cwynar@wsei.lublin.pl](mailto:wiktór.cwynar@wsei.lublin.pl)

## **Appendix 1**

### **Debt literacy test (Lusardi and Tufano, 2009)**

Question 1: *Suppose you owe \$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?*

Answers:

- (i) 2 years;
- (ii) Less than 5 years;
- (iii) 5 to 10 years;
- (iv) More than 10 years;
- (v) Do not know.
- (vi) Prefer not to answer

Question 2: *You owe \$3,000 on your credit card. You pay a minimum payment of \$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?*

Answers:

- (i) Less than 5 years;
- (ii) Between 5 and 10 years;
- (iii) Between 10 and 15 years;

- (iv) *Never, you will continue to be in debt;*  
 (v) *Do not know;*  
 (vi) *Prefer not to answer.*

Question 3: *You purchase an appliance which costs \$1,000. To pay for this appliance, you are given the following two options: a) Pay 12 monthly installments of \$100 each; b) Borrow at a 20% annual interest rate and pay back \$1,200 a year from now. Which is the more advantageous offer?*

Answers:

- (i) *Option (a);*  
 (ii) *Option (b);*  
 (iii) *They are the same;*  
 (iv) *Do not know;*  
 (v) *Prefer not to answer.*

## Appendix 2

### SEM details

	Estimate	Std.Err	z-value	P(> z )	Std.lv	Std.all
<b>Latent Variables:</b>						
FB_persnet =~						
users_watched	1.000				0.906	0.895
friends	0.360	0.315	1.142	0.253	0.326	0.326
Personality =~						
Risk	1.000				0.555	0.555
Markt_man	1.465	0.150	9.761	0.000	0.812	0.813
Mat_orient	0.879	0.078	11.244	0.000	0.487	0.487
Fin_know =~						
add_fin_edu	1.000				0.695	0.696
fin_edu	0.562	0.113	4.981	0.000	0.391	0.391
Debt_literacy =~						
pers_finknow	1.000				0.672	0.672
DL	0.367	0.108	3.410	0.001	0.246	0.247
<b>Regressions:</b>						
Debt_num ~						
FB_persnet	-0.106	0.104	-1.021	0.307	-0.096	-0.096
<b>Personality</b>	<b>-0.191</b>	<b>0.084</b>	<b>-2.267</b>	<b>0.023</b>	<b>-0.106</b>	<b>-0.106</b>
Fin_know	-0.143	0.138	-1.035	0.301	-0.099	-0.099
<b>Debt_literacy</b>	<b>0.486</b>	<b>0.237</b>	<b>2.051</b>	<b>0.040</b>	<b>0.327</b>	<b>0.327</b>
Debt_sit ~						
FB_persnet	-0.009	0.061	-0.143	0.887	-0.008	-0.008
<b>Personality</b>	<b>-0.224</b>	<b>0.079</b>	<b>-2.829</b>	<b>0.005</b>	<b>-0.124</b>	<b>-0.124</b>
Fin_know	-0.009	0.096	-0.093	0.926	-0.006	-0.006
Debt_literacy	-0.037	0.112	-0.330	0.741	-0.025	-0.025
finabuse ~						
FB_persnet	-0.001	0.055	-0.024	0.981	-0.001	-0.001
Personality	-0.015	0.071	-0.213	0.831	-0.008	-0.008
<b>Fin_know</b>	<b>0.206</b>	<b>0.096</b>	<b>2.156</b>	<b>0.031</b>	<b>0.143</b>	<b>0.143</b>
Debt_literacy	-0.120	0.102	-1.170	0.242	-0.081	-0.081