

Materialism and Big-Five Personality Traits Shaping Low-Income University Students' Compulsive Online-Buying Behavior

Nik Ahmad Sufian Burhan^{1,2*}, J. S. Keshminder³, Mohamad Fazli Sabri², Fauzilah Salleh⁴, Asyraf Afthanorhan⁴ and Chan Joey²

¹*Institute for Social Science Studies, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia*

²*Faculty of Human Ecology, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia*

³*Faculty of Business and Management, Universiti Teknologi MARA, Selangor Campus, Selangor 42300, Malaysia*

⁴*Faculty of Business and Management, Universiti Sultan Zainal Abidin, Kuala Terengganu 21300, Malaysia*

ABSTRACT

Despite the immense benefits of online shopping in modern societies, it has also generated some concern about addiction among consumers, particularly the unemployed youth from low-income families. Thus, by conducting a path analysis on quantitative survey data of randomly sampled 439 respondents, this study examines the influence of materialistic behavior and the Big-Five personality traits on the compulsive online-buying behavior of university students from low-income families (the B40 income group). Among the five personality traits, an increase in neuroticism scores, openness to experiences, and conscientiousness was observed to raise the level of materialism significantly. Similarly, materialism, neuroticism, and extraversion exhibited a direct positive influence on the compulsive online-buying behavior of the students. These findings reiterate that individuals with higher neuroticism tend to display less self-regulation or emotion control. In contrast, more extroverted individuals tend to be engrossed with the interactive on-screen platform, which cultivates their obsession with online shopping. Importantly, the mediation test showed that materialistic behavior significantly mediates the effects of

neuroticism, openness to experience, and conscientiousness on compulsive buying. Overall, our findings projected neuroticism as dominating due to its direct and indirect influence on compulsive online-buying behavior in the path model.

Keywords: B40 income group, big-five traits, compulsive buying behavior, low-income household, materialism

ARTICLE INFO

Article history:

Received: 11 November 2021

Accepted: 21 October 2022

Published: 15 December 2022

DOI: <https://doi.org/10.47836/pjssh.30.4.24>

E-mail addresses:

nikahmadsufian@upm.edu.my (Nik Ahmad Sufian Burhan)

keshm967@uitm.edu.my (J. S. Keshminder)

fazli@upm.edu.my (Mohamad Fazli Sabri)

fauzilah@unisza.edu.my (Fauzilah Salleh)

asyrafafthanorhan@unisza.edu.my (Asyraf Afthanorhan)

chanjoey575@gmail.com (Chan Joey)

* Corresponding author

INTRODUCTION

The connectivity and usage of the internet have grown drastically in recent decades, thus facilitating information transfer, social and economic exchanges, and the development of virtual communities (Lissitsa & Kol, 2016). In addition, the complexity of financial services and digital media has made financial knowledge increasingly important (Mokhtar et al., 2020). However, this development has led to the problem of internet addiction with occupational, financial, and academic consequences for users. Since the first decade of this century, affected individuals often suffered mood and anxiety disorders following internet access restrictions (Shapira et al., 2003). The problem becomes serious when engaging in incessant online shopping adversely affects individuals' finance management. This unusual spending habit, often termed compulsive buying, is characterized by consumers' deficit of impulse control over buying, resulting in their obsession with repetitive buying (Ridgway et al., 2008).

Studies generally associate compulsive-buying behavior with mood (Moulding et al., 2017) and consider it a behavioral addiction (Mestre-Bach et al., 2017). Previous researchers have explored the role of Big-Five personality in developing compulsive online-buying behavior. In a meta-analytic review, Kayış et al. (2016) revealed that multiple recent studies have attempted to establish the connection between internet addiction and an individual's types of personality, i.e., the Big-Five personality traits. Similarly, the comprehensive review

of Wang and Yang (2008) proposed that agreeableness, openness to experience, extraversion, and conscientiousness promote people's obsession with online shopping activities. Individuals who score higher in agreeableness are more likely to trust others during online shopping. Extraverted individuals are more optimistic and curious and are thus more likely to be stimulated by interactive online-shopping activities.

Furthermore, Wang and Yang suggested that while people with higher conscientiousness are more organized, cautious, and disciplined, they are more likely to linger and engage in online-shopping activities. In general, empirical findings regarding personality traits and buying behavior are mixed. Otero-López and Pol (2013) found that compulsive buyers exhibit the highest score in neuroticism but the lowest in agreeableness and conscientiousness. However, Mowen (2000) demonstrated that neuroticism and agreeableness are the two personality traits that positively influence compulsive buying. On the other hand, George (2002), Mikolajczak-Degrauwe et al. (2012), and Thompson and Prendergast (2015) reported that agreeableness negatively affects compulsive buying but positively influences neuroticism and extraversion. Generally, all literature supported the superior influence of neuroticism on compulsive buying behavior compared to other personality traits. Similarly, Claes and Müller (2017), in a comprehensive review of buying behavior and temperament personality, suggested that a robust compulsive buying—neuroticism

relationship exists due to compulsive buyers' breakdown in self-regulation and emotion control. People with high neuroticism are more stressed and thus more likely to search for immediate gratification, which could influence their buying behavior (Mestre-Bach et al., 2017).

Buying behavior is associated with materialism or material desires. In a recent review, Moulding et al. (2017) asserted that although compulsive buying is related to the belief that buying goods reduce negative mood and enhances emotional security, buyers definitely perceive goods or materials as unique and essential before purchasing. Materialism refers to a set of centrally held beliefs about the importance of material goods in one's life, the values placed on possessions as a means of enhancing the self, and the use of material possessions to judge one's success and the success of others (Richins & Dawson, 1992). Along with the role of significant personality traits in regulating an individual's buying behavior, many empirical studies have compared the effect of materialistic desire to other social, financial, and psychological factors on compulsive buying. Several studies have established the materialism-compulsive buying association in the general population and clinical sample or high propensity group. For instance, Tarka's (2020) study on young Polish consumers reported that the connection between materialism and compulsive buying is stronger among compulsive buyers than the general or non-compulsive consumers. Additionally, Müller et al. (2014) found a significant

role of depression rather than materialism and temperament in the compulsive buying behavior of treatment-seeking patients. On the other hand, the earlier regression analysis by Müller et al. (2011) revealed that the materialism-compulsive buying connection is more substantial than the depression-compulsive buying relationship in a non-clinical sample or low-propensity group.

Overall, most recent empirical findings established that materialism possesses a more significant effect than other socio-psychological indicators in predicting compulsive-buying behavior in the general population. Despite the severe concern among researchers on internet addiction, Bhatia (2019) and Müller et al. (2011), through regression and path analysis, have confirmed that materialism was stronger than internet addiction in predicting compulsive-online buying. Similarly, in a recent study on undergraduate university students in the USA, Harnish et al. (2019) empirically showed that contrary to various indicators of social anxiety and social support, materialism is a stronger predictor of compulsive buying. The substantial impact of materialism rather than pathological narcissism, which is the extreme need for admiration and recognition of compulsive buying, was established by Zerach's (2016) study on Israeli adults. Harnish and Bridges (2015) corroborated the finding that materialism is more significant than irrational beliefs and narcissism in predicting compulsive buying. With respect to financial indicators, Pradhan et al. (2018) empirically verified that the

effect of materialism but not the frequency of credit card use was significant in exciting the compulsive-buying behavior in India. This finding supported path analysis results revealed by Garðarsdóttir and Dittmar (2012), which verified that materialism was stronger than money-management skills and income and debt levels in predicting compulsive buying among the Icelandic population.

Study Aim

This study examines the links between materialistic desire, the Big-Five personality traits, and compulsive online-buying behavior. As past studies have hypothesized that materialism was more substantial than other socio-psychological variables in determining compulsive buying behavior among the general population, we specifically postulate that materialism mediates the relationship between an individual's major personality types and buying behavior. Besides neuroticism, which significantly influences compulsive buying, other personality traits exhibit ambiguous and non-consistent effects throughout many studies. This thought strongly motivates our consideration of materialistic behavior as a channel through which the Big-Five personality traits influence compulsive-buying behavior.

THEORETICAL FRAMEWORK

Materialism was postulated as an individual value concerning the belief that material possessions in life are essential to happiness and well-being (Aw et al., 2021; Burhan et

al., 2014; Otero-López & Villardefrancos, 2013; Richins & Dawson, 1992; Sabri et al., 2021b; Sabri & Zakaria, 2015). Studies have revealed a strong connection between materialism and individuals' major personalities. For instance, Sharpe and Ramanaiah (1999) empirically showed that materialistic persons score higher on neuroticism but lower on extraversion, openness, agreeableness, and conscientiousness than low materialistic people. In supporting this argument, Watson (2014) highlighted that people with low agreeableness have less control over their materialistic desires. Conversely, neurotic individuals are more prone to develop materialistic impatience to compensate for negative emotions from past experiences. Moreover, recent literature established that materialism is an essential mediator in the connection between compulsive buying and antecedent psychological variables, such as identity confusion (e.g., Claes et al., 2016) and narcissism (e.g., Rose, 2007). From the sociological context, materialistic behavior has successfully mediated the effects of social comparison (e.g., Islam et al., 2018), peer pressure, media exposure, and celebrity endorsement through media and TV advertisements (e.g., Islam et al., 2017) on compulsive buying. These abovementioned findings further support our resolve to scrutinize the mediating role of materialistic desire on the relationship between the five personality traits and compulsive online-buying behavior.

Otero-López and Villardefrancos (2013) examined the function of materialism

in mediating the connection between the Big-Five personality and buying behavior of working Spanish adult women (aged 25–65; mean age = 38.4). They observed that materialism, neocriticism, and conscientiousness directly impact excessive buying, while the other three personality traits (agreeableness, openness, and extraversion) only influence the buying attitude via materialism. Although their study resembles ours, they differ in several ways. First, this study focused on compulsive online buying rather than excessive buying behavior. Second, the study sample consists of Malaysian undergraduate university students (male and female) aged 18–29 years. Third, the respondents were bachelors, unemployed, and dependent on family income or pocket-sized education loans or scholarships to support their livelihood. Moreover, they were from low-income families, i.e., the bottom 40% of the Malaysian income threshold (the B40 household income group).

The B40 refers to households with monthly income below RM4,360 (\approx USD 976). As observed by Sulaiman et al. (2020), the families of most university students in Malaysia fall into this income category. Universities or colleges in Malaysia are mostly concentrated in the city, thus requiring the migration of rural students who are foreign to the affluent urban culture. With university social activities and gatherings contributing to peer pressure (Yüksel-Şahin, 2015), students are easily influenced to accept or give up certain behaviors (Cushman, 2007; Ukwai et al.,

2012). Peer pressure influences students more significantly than parents (Chaplin & John, 2010). Since young and low-income consumers exhibit more assertive compulsive-buying behavior (Ergin, 2010), they can influence other young adults (Benmoyal-Bouzaglo & Moschis, 2010) and compel them to experience new things (Islam et al., 2017). More so, with the separation from families, better access to internet facilities, and greater exposure to online shopping, the university environment and lifestyle can provide greater freedom to students from rural areas.

Figure 1 presents the pathways for the theoretical effects of materialism and Big-Five personality traits on compulsive online-buying behavior. This model is formulated based on possible connections between variables learned from previous studies. For example, a similar model was employed by Otero-López and Pol (2013), who studied the effects of materialism and Big-Five personality traits on excessive buying behavior, rather than compulsive online-buying behavior, which the latter is a more-recent phenomenon or issue in the contemporary digital society. However, in the current study, the effects of Big-Five personality traits and materialism on compulsive online-buying behavior were controlled for the influences of gender, household income level, and time spent surfing the internet, all of which were not considered in Otero-López and Pol's work. These variables are necessary, as previous studies have shown that income and gender greatly influence individuals' financial well-

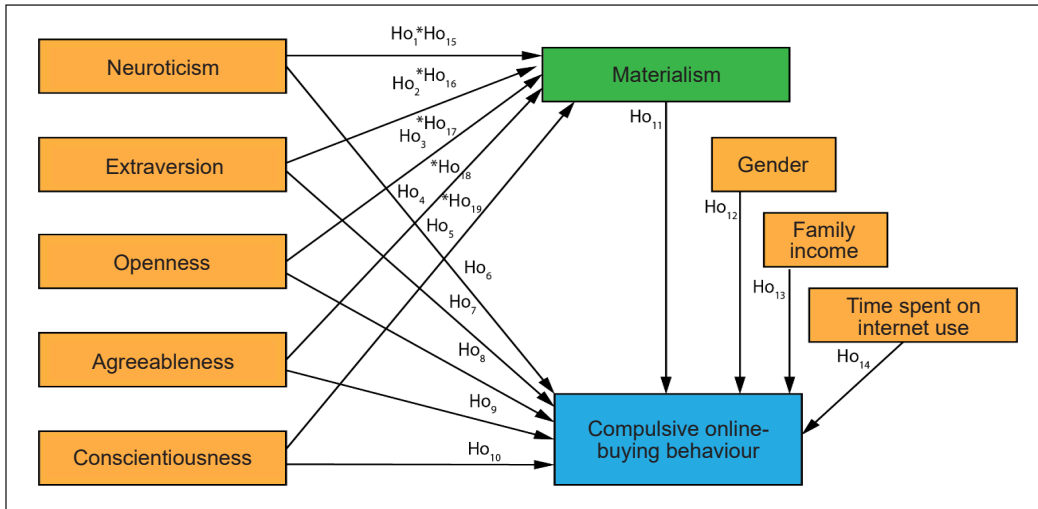


Figure 1. The pathways for the theoretical effects of materialism and Big-Five personality traits on the compulsive online-buying behavior
 Note. * = Mediating effect

being and spending behavior (e.g., Burhan et al., 2015; Hayhoe et al., 2000; Magli et al., 2020; Sabri et al., 2021a, 2022). Likewise, the number of hours of internet use per day largely influences the individuals' addiction to online activities (e.g., Kuss et al., 2013).

Based on the theoretical relationships between variables, this study proposed several null hypotheses as follows:

- Ho₁: There is no significant effect of neuroticism on materialism.
- Ho₂: There is no significant effect of extraversion on materialism.
- Ho₃: There is no significant effect of openness on materialism.
- Ho₄: There is no significant effect of agreeableness on materialism.
- Ho₅: There is no significant effect of conscientiousness on materialism.
- Ho₆: There is no significant effect of neuroticism on compulsive-online buying behavior.

Ho₇: There is no significant effect of extraversion on compulsive-online buying behavior.

Ho₈: There is no significant effect of openness on compulsive-online buying behavior.

Ho₉: There is no significant effect of agreeableness on compulsive-online buying behavior.

Ho₁₀: There is no significant effect of conscientiousness on compulsive-online buying behavior.

Ho₁₁: There is no significant effect of materialism on compulsive-online buying behavior.

Ho₁₂: There is no significant effect of gender on compulsive-online buying behavior.

Ho₁₃: There is no significant effect of family income on compulsive-online buying behavior.

Ho₁₄: There is no significant effect

of time spent on internet use on compulsive-online buying behavior.

H₀₁₅: There is no significant effect of materialism in mediating the effect of neuroticism on compulsive-online buying behavior.

H₀₁₆: There is no significant effect of materialism in mediating the effect of extraversion on compulsive-online buying behavior.

H₀₁₇: There is no significant effect of materialism in mediating the effect of openness on compulsive-online buying behavior.

H₀₁₈: There is no significant effect of materialism in mediating the effect of agreeableness on compulsive-online buying behavior.

H₀₁₉: There is no significant effect of materialism in mediating the effect of conscientiousness on compulsive-online buying behavior.

METHODOLOGY

Participants and Survey Method

Participants in this study were students from Malaysian public universities who belong to B40-income households. Most students in public universities in Malaysia are from families of B40 income category (Sulaiman et al., 2020). Other inclusion criteria include being unemployed, unmarried, and dependent on family income or education scholarships or loans for sustenance.

This study employs a simple random sampling technique. This approach requires little advanced knowledge of the population, and each individual from the population

has a precisely equal probability of being chosen. The individual university student is the sampling unit. A questionnaire survey was distributed randomly through an online platform, specifically Google Forms, and initial 701 responses were obtained.

Respondents underwent a screening process through several checklists in Google Forms to ensure they met all the participant criteria required in this study. Accordingly, 239 responses of participants were observed not from public universities, or they were from households of M40 and T20 rather than the B40 category. At the same time, the other 23 respondents were married and/or involved in a part-time job. Therefore, these 262 respondents were excluded due to violating the inclusion criteria of unemployment. Consequently, the final helpful number of responses was reduced to 439.

Measures

This study used a 5-point Likert-type scale (1 = Strongly Disagree and 5 = Strongly Agree) to measure the compulsive online-buying behavior, materialistic values, and the Big-Five personality traits. The first variable of interest, the compulsive online-buying behavior, comes from Manchiraju et al.'s (2017) Compulsive Online Shopping Scale (COSS), and the research instrument was adapted from Andreassen et al.'s (2015) Bergen Shopping Addiction Scale. It contains 28 items covering seven dimensions that reflect compulsive online shopping, such as salience, mood modification, conflict, tolerance, relapse, withdrawal, and resulting

problems. In the context of compulsive online shopping, salience refers to a person's obsession with a specific pastime activity (i.e., online shopping). Mood modification refers to using internet shopping as a coping mechanism. Tolerance indicates the experience of mood change with time when larger volumes of internet purchasing are required. Withdrawal symptoms are experienced when individuals stop or drastically lowers online purchasing, leading to unpleasant feelings or harmful physical effects. Conflict refers to disagreements that develop in other aspects of life due to excessive internet shopping, for example, interpersonal disputes. Relapse refers to the propensity to revert to past internet-buying habits. Finally, "resulting problems" denote the general symptoms of online shopping withdrawal, such as well-being.

Our second variable of interest is materialism. This study employed the Material Value Scale obtained by Richins (2004), initially designed by Richins and Dawson (1992). The instrument consists of 18 items covering three domains: *possession-defined success*, *acquisition centrality*, and *acquisition as the pursuit of happiness*. The possession-defined success is a condition where materialists prefer to evaluate their own and others' success based on the quantity and quality of their things. Acquisition centrality is where possessions and acquisition are at the core of materialists' existence. Finally, acquisition as the pursuit of happiness accentuates that materialists value goods and their acquisition because they believe they are necessary for their pleasure and well-being.

The Big-Five personality traits predicted materialistic values and compulsive online buying: neuroticism, extraversion, openness, agreeableness, and conscientiousness. The measure used in this study comes from Gerlitz and Schupp's (2005) Big Five Inventory (BFI) and consists of 15 items. The inventory known as BFI-S is a shortened version based on the original inventory proposed by John et al. (1991) and is composed of 44 items.

Moreover, the impacts of materialism and Big-Five personality traits towards compulsive online buying were controlled for the effects of gender (0 = male, 1 = female) and household (parents or guardians) income range per month (0 = Less than RM2500, 1 = RM2500–RM3169, 2 = RM3170–RM 3969, 3 = RM3970–RM4849). Finally, this study incorporated the third control variable, namely the average daily time spent surfing the internet (0 = Less than 1 hour, 1 = 1–2 hours, 2 = 2–3 hours, 3 = 3–5 hours, 4 = More than 5 hours).

FINDINGS

Descriptive Statistics

The descriptive statistics in Table 1 show that 97% of respondents aged between 18 and 25 years, most (75.6%) of whom are female. In addition, more than half (59.5%) of the respondents were from the lowest income category (less than RM2,500), while around 78% of them had spent more than 5 hours per day surfing the internet. Also, roughly one-third (32.8%) of the respondents had purchased items online 3

Table 1
Demographic characteristics of the respondents

Variable	Category	Observations (<i>N</i> = 439)	Percentage (%)
Gender	Male	107	24.37
	Female	332	75.63
Age	18–21	232	52.85
	22–25	192	43.74
	26–29	15	3.42
Race	Malay	264	60.14
	Chinese	142	32.35
	Indian	24	5.47
	Bumiputera	9	2.05
Family income range	Less than RM 2,500 (USD 560)	261	59.45
	RM 2,500–RM 3,169 (USD 560–USD 709)	88	20.05
	RM 3,170–RM 3,969 (USD 710–USD 888)	44	10.02
	RM 3,970–RM 4,848 (USD 889–USD 1,085)	46	10.48
Average daily hours spent on the internet	Less than 1 hour	3	0.68
	1–2 hours	14	3.19
	2–3 hours	22	5.01
	3–5 hours	59	13.44
	More than 5 hours	341	77.68
Number of times of purchasing items online during the last 12 months	1–2 times	100	22.78
	3–5 times	144	32.80
	6–10 times	110	25.06
	11–20 times	39	8.88
	More than 20 times	46	10.48

to 5 times during the last 12 months, while 19.4% had purchased more than 10 times.

Not presented in a table, the average scores for components of compulsive online-buying behavior among the sample (*N*=439) range from moderate to high based on the 5-point Likert Scale. Among the seven components, the participants scored highest for *mood modification* (mean=3.86), followed by *tolerance* (mean=3.82), *resulting problem* (mean=3.48), *conflict* (mean=3.45),

relapse (mean=3.40), *withdrawal symptoms* (mean=3.17) and *salience* (mean=3.17). The average value of the seven components is around 3.48, with their standard deviation values ranging from .80 to .84.

Table 2 presents mean values and correlation matrix for compulsive online buying, materialism, and the five personality traits. The average score for materialism (mean=3.97) was substantially high compared to other variables. Compulsive

Table 2
Correlation matrix for the main variables

Main variable	1	2	3	4	5	6	7
1. Compulsive online buying	1.00						
2. Materialism	.40**	1.00					
3. Neuroticism	.15**	.24**	1.00				
4. Extraversion	.05	.02	-.25**	1.00			
5. Openness	.07	.08	-.03	.13**	1.00		
6. Agreeableness	.07	-.04	-.09*	.12**	.28**	1.00	
7. Conscientiousness	-.01	-.11*	-.18**	.19**	.29**	.43**	1.00
Mean	3.48	3.97	3.15	3.12	3.63	3.67	3.41
Std. Dev.	.81	.65	.88	.95	.68	.68	.67

Note. Mean scores are based on a 5-point Likert-type scale (1 = Strongly Disagree or lowest score, 5 = Strongly Agree or highest score). Significance level: * $p < .05$; ** $p < .01$

buying was observed to be positively and significantly correlated with materialism ($r = .40$; $p < .01$) and neuroticism ($r = .15$; $p < .01$). On the other hand, materialism was positively correlated with neuroticism ($r = .24$; $p < .01$) but negatively associated with conscientiousness ($r = -.11$; $p < .05$). These findings demonstrated that compulsive buying and materialism are strongly related with neuroticism rather than the other personality traits.

Confirmatory Factor Analysis (CFA)

Figure 2 shows the pooled Confirmatory Factor Analysis (CFA) model. This model was executed using IBM SPSS-AMOS software, which generates the value of standardized loadings, constructs correlations, multiple square correlations, and fitness indexes. The results show that all factor loadings are above .70, which satisfies the recommended value suggested by Awang (2012) and Hair et al. (2019). In addition, the reported fitness indexes

fulfilled the criteria set by Hair et al., thus implying that the model is valid.

Discriminant Validity

The discriminant analysis was conducted to determine the discrepancy of each construct applied in the study. In addition, it enlightens the applied researcher on the uniqueness of each construct. Fornell and Larcker (1981) often recommend discriminant analysis across research fields for covariance structure analysis. Table 3 shows that the discriminant validity is achieved, as the value of construct correlations is lower than .85, and the value of square root AVE (diagonal value) is higher than all values of construct correlations.

Convergent Validity and Composite Reliability

Convergent validity and composite reliability were performed to assess the construct reliability and validity. As shown in Table 4, the measurement model is reliable since

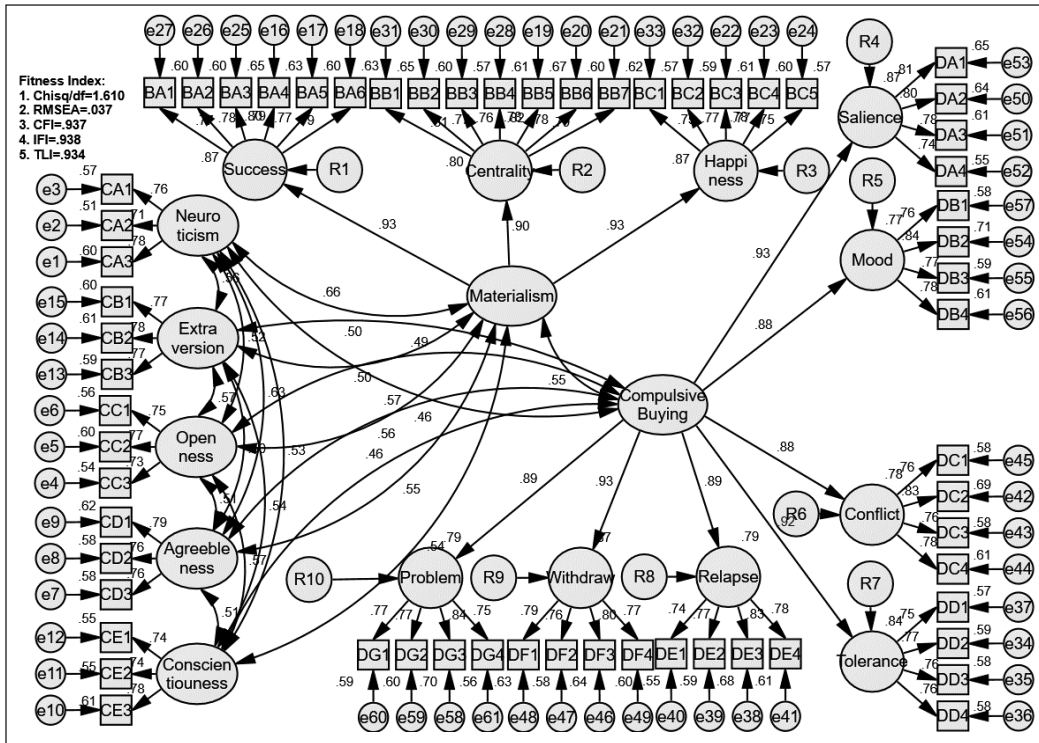


Figure 2. Summary of pooled Confirmatory Factor Analysis (CFA)

Note. Fitness indexes: Chi-sq/df=1.810<3.0; RMSEA=.037<.08; CFI=.937>.90; IFI=.938>.90; and TLI=.934>.90

Table 3
Results of discriminant validity analysis

	1	2	3	4	5	5	7
1. Neuroticism	.747						
2. Openness	.522	.750					
3. Agreeableness	.632	.508	.772				
4. Conscientiousness	.533	.567	.512	.757			
5. Extraversion	.562	.571	.497	.539	.774		
6. Materialism	.660	.562	.553	.537	.496	.919	
7. Compulsive buying	.571	.493	.459	.462	.502	.552	.904

the value of Composite Reliability (CR) is higher than .70 and valid when then the value of Average Variance Extracted (AVE) AVE is higher than .50 (Fornell & Larcker, 1981).

Path Analysis

Path analysis was conducted in this study through structural equation modeling (SEM) using the IBM SPSS-Amos program. Figure 3 shows the results of path analysis

Table 4
Results of convergent validity and composite reliability

			Estimate	Average Variance Extracted (AVE)	Composite Reliability (CR)
Success	<---	Materialism	.930	.844	.942
Centrality	<---	Materialism	.896		
Happiness	<---	Materialism	.930		
Salience	<---	Compulsive buying	.935	.818	.969
Mood	<---	Compulsive buying	.878		
Conflict	<---	Compulsive buying	.884		
Tolerance	<---	Compulsive buying	.919		
Relapse	<---	Compulsive buying	.889		
Withdraw	<---	Compulsive buying	.934		
Problem	<---	Compulsive buying	.890		
CA3	<---	Neuroticism	.775	.559	.792
CA2	<---	Neuroticism	.711		
CA1	<---	Neuroticism	.757		
CC3	<---	Openness	.734	.563	.795
CC2	<---	Openness	.771		
CC1	<---	Openness	.746		
CD3	<---	Agreeableness	.763	.596	.816
CD2	<---	Agreeableness	.765		
CD1	<---	Agreeableness	.788		
CE3	<---	Conscientiousness	.783	.573	.801
CE2	<---	Conscientiousness	.744		
CE1	<---	Conscientiousness	.743		
CB3	<---	Extraversion	.765	.599	.817
CB2	<---	Extraversion	.782		
CB1	<---	Extraversion	.774		
BA4	<---	Success	.791	.617	.829
BA5	<---	Success	.774		
BA6	<---	Success	.792		
BB5	<---	Centrality	.819	.631	.837
BB6	<---	Centrality	.777		
BB7	<---	Centrality	.786		
BC3	<---	Happiness	.782	.586	.876
BC4	<---	Happiness	.772		
BC5	<---	Happiness	.754		
BC2	<---	Happiness	.767		
BC1	<---	Happiness	.752		
BA3	<---	Success	.804	.616	.828
BA2	<---	Success	.777		
BA1	<---	Success	.773		

Table 4 (continue)

			Estimate	Average Variance Extracted (AVE)	Composite Reliability (CR)
BB4	<---	Centrality	.778	.607	.861
BB3	<---	Centrality	.756		
BB2	<---	Centrality	.774		
BB1	<---	Centrality	.808		
DD2	<---	Tolerance	.767	.578	.846
DD3	<---	Tolerance	.763		
DD4	<---	Tolerance	.760		
DD1	<---	Tolerance	.752		
DE3	<---	Relapse	.828	.609	.861
DE2	<---	Relapse	.768		
DE1	<---	Relapse	.740		
DE4	<---	Relapse	.782		
DC2	<---	Conflict	.828	.615	.865
DC3	<---	Conflict	.764		
DC4	<---	Conflict	.782		
DC1	<---	Conflict	.763		
DF3	<---	Withdraw	.800	.609	.862
DF2	<---	Withdraw	.759		
DF1	<---	Withdraw	.791		
DF4	<---	Withdraw	.772		
DA2	<---	Salience	.799	.614	.864
DA3	<---	Salience	.784		
DA4	<---	Salience	.742		
DA1	<---	Salience	.808		
DB2	<---	Mood	.843	.622	.868
DB3	<---	Mood	.767		
DB4	<---	Mood	.782		
DB1	<---	Mood	.762		
DG3	<---	Problem	.836	.613	.863
DG2	<---	Problem	.772		
DG1	<---	Problem	.770		
DG4	<---	Problem	.750		

predicting the compulsive online-buying behavior after controlling for the effects of gender, family income, and time spent on the internet. About $R^2=38\%$ of the variation in compulsive buying is explained by several

constructs of materialism, neuroticism, openness, extraversion, agreeableness, and conscientiousness, and the control variables. This value was higher than the 34% reported in Otero-López and Villardefrancos's (2013)

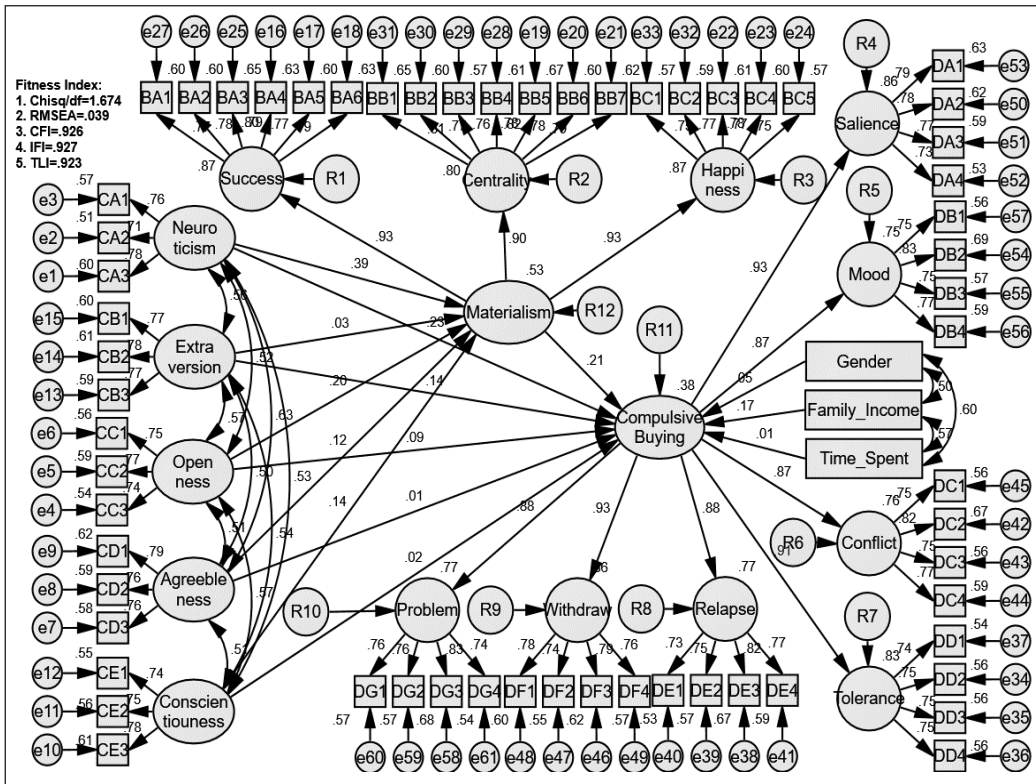


Figure 3. Results of path analysis (i.e., standardized estimates) determining the compulsive online-buying behavior

study on the effects of Big-Five personality traits and materialism on excessive buying behavior. This relatively higher R^2 value may be attributed to the strong impact of the family's income on compulsive buying.

Table 5 shows the standardized effects of variables based on the path analysis. Neuroticism ($\beta=.39$) and openness to experience ($\beta=.20$) strongly predict materialism at $p < .01$ level, while the effect of conscientiousness ($\beta=.14$) was significant at $p < .05$ level. Therefore, this study rejects the null hypotheses H_{01} , H_{03} , and H_{05} . Accordingly, there are significant effects of neuroticism (+), openness to experience (+), and conscientiousness (+) on materialism. In contrast, extraversion and agreeableness

had no significant influence on materialism among the students of low-income families. Thus, this study failed to reject the null hypotheses H_{02} and H_{04} . Compared to other traits, the effect of neuroticism on materialism was the largest, as indicated in Table 3. Similarly, neuroticism ($\beta=.23$; $p < .01$) and materialism ($\beta=.21$; $p < .01$) were the strongest in predicting the compulsive online-buying behavior, followed by the moderate effect of extraversion ($\beta=.14$; $p < .05$). Hence, this study rejects the null hypotheses H_{06} , H_{07} , and H_{011} . Alternatively, there are significant effects of neuroticism (+), extraversion (+), and materialism (+) towards compulsive online buying. Furthermore, this study confirms the non-

Table 5
Standardized coefficients of variables based on the path analysis

Direction of Effect		Estimate	Standard Error	Critical Ratio	P-value	Conclusion
Materialism	<--- Neuroticism	.392	.075	5.242	.000	Significant (Reject H_{0_1})
Materialism	<--- Extraversion	.033	.076	.435	.664	Not Significant (Failed to reject H_{0_2})
Materialism	<--- Openness	.202	.065	3.111	.002	Significant (Reject H_{0_3})
Materialism	<--- Agreeableness	.124	.068	1.833	.067	Not Significant (Failed to reject H_{0_4})
Materialism	<--- Conscientiousness	.141	.065	2.180	.029	Significant (Reject H_{0_5})
Compulsive Buying	<--- Neuroticism	.227	.080	2.848	.004	Significant (Reject H_{0_6})
Compulsive Buying	<--- Extraversion	.137	.067	2.057	.040	Significant (Reject H_{0_7})
Compulsive Buying	<--- Openness	.094	.075	1.252	.211	Not Significant (Failed to reject H_{0_8})
Compulsive Buying	<--- Agreeableness	.006	.067	.089	.929	Not Significant (Failed to reject H_{0_9})
Compulsive Buying	<--- Conscientiousness	.023	.064	.358	.721	Not Significant (Failed to reject $H_{0_{10}}$)
Compulsive Buying	<--- Materialism	.210	.068	3.098	.002	Significant (Reject $H_{0_{11}}$)
Control Variable						
Compulsive Buying	<--- Gender	.048	.054	.888	.374	Not Significant (Failed to reject $H_{0_{12}}$)
Compulsive Buying	<--- Family Income	.174	.053	3.297	.000	Significant (Reject $H_{0_{13}}$)
Compulsive Buying	<--- Time Spent	.009	.036	.248	.804	Not Significant (Failed to reject $H_{0_{14}}$)

significant effects of openness to experience, agreeableness, and conscientiousness on compulsive buying.

Thus, the null hypotheses H_{0_8} , H_{0_9} , and $H_{0_{10}}$ are rejected. Among the control variables, only the level of family income ($\beta=.17$; $p<.01$) was significant towards the buying behavior, while the effects of gender and times spent on the internet were trivial. Therefore, this study failed to reject the null

hypothesis $H_{0_{12}}$. This finding contradicts most previous studies, which found that, on average, 90% of women were prone to compulsive buying (see Dittmar, 2005). However, the result supports Sabri et al. (2020) and Sereetrakul et al. (2013), who found that gender does not affect individuals' financial behavior. Moreover, the significant direct effect of household income allows this study to reject the null hypothesis $H_{0_{13}}$.

Alternatively, there is a significant effect of household level of income on compulsive online buying. This finding is consistent with Hayhoe et al. (2000), who found that family income regulates people’s spending habits. Finally, this study failed to reject the null hypothesis H_{014} , which contradicts Kuss et al. (2013), who found that the number of hours of internet use per day greatly influences individuals’ addiction to online activities.

Next, this study conducted a mediation test using bootstrap analysis recommended by Preacher and Hayes (2008). The 1,000 resampling with maximum likelihood estimator was utilized to generate parameter estimates for each path. The results of the indirect and direct effects of variables are shown in Table 6. The mediation analysis was focused on neuroticism, openness, and

conscientiousness, as these three variables were significant towards materialism. We found that neuroticism has the largest indirect impact ($\beta=.082; p<.01$) on the level of compulsive buying, while openness to experience and conscientiousness were only significant at $p<.05$ level. Therefore, this study rejects the null hypotheses H_{015} , H_{017} , and H_{019} . Alternatively, the mediation analysis thus confirmed that materialism significantly mediates the relationships between compulsive online-buying behavior and the three major personality traits (neuroticism, openness to experience, and conscientiousness). Accordingly, the effects of neuroticism, openness to experience, and conscientiousness on compulsive online buying are partially channeled through the effect of materialism as a mediator.

Table 6
The results of the mediation test of materialism using 1,000 bootstrap resampling

	Pathways of Relationships				
	Neuroticism → Materialism → Compulsive buying	Extraversion → Materialism → Compulsive buying	Openness → Materialism → Compulsive buying	Agreeableness Materialism → Compulsive buying	Conscientiousness → Materialism → Compulsive buying
Indirect estimate (β)	.082	.006	.042	.026	.030
Indirect p -value	.006	.544	.012	.079	.017
Indirect significance	Yes	No	Yes	No	Yes
Mediation effect	Yes	No	Yes	No	Yes
Conclusion	Mediation effect was significant (Reject H_{015})	Mediation effect was non-significant (Failed to reject H_{016})	Mediation effect was significant (Reject H_{017})	Mediation effect was non-significant (Failed to reject H_{018})	Mediation effect was significant (Reject H_{019})

Note. The extraversion and agreeableness were non-significant on materialism. Consequently, their non-significant indirect effects on compulsive buying are presented but not discussed.

These findings are consistent with Otero-López and Pol (2013), who found that materialism neuroticism and openness to experience influence excessive buying behavior through the effect of materialism. However, the current study found the significance of materialism in mediating the effect of conscientiousness towards compulsive buying, which this connection was non-significant in Otero-López and Pol (2013). For extraversion and agreeableness, their direct results towards materialism were non-significant (see Table 5). For that reason, materialism did not significantly mediate the relationship between compulsive online buying and extraversion and agreeableness. Consequently, this study failed to reject the null hypotheses H_{016} and H_{018} . These results contradict Otero-López and Pol (2013), who verified the significant mediation effects of materialism on the relationships between excessive buying and the two personality traits, specifically extraversion and agreeableness.

DISCUSSION

This study examined the relationship between materialism and Big-Five personality traits and their effects on compulsive online-buying behavior. Path analysis was conducted to establish materialism as the channel for the five major personality traits influencing compulsive buying. One of the uniqueness of our sample is its inclusion of young respondents from the low-income family category. Furthermore, all the respondents were university or college students who were unemployed and

unmarried, thus allowing us to examine the online-buying behavior of Malaysian youth with limited financial sources. Regardless of their socioeconomic status, these young, vibrant students are thought to be influenced by the swift development of information technology and mobile-centric marketplace, which availed them access to online-purchasing activities.

In this study, the average value of the seven components of compulsive online-buying behavior was moderately high (around 3.48) based on the 5-point Likert scale. The results of path analysis demonstrated that neuroticism and materialism had strong positive effects on the level of compulsive buying, contrary to the moderate positive impact of extraversion. Furthermore, materialism was vital in the path model, as it significantly mediates the effect of specific personality traits (neuroticism, openness to experience, and conscientiousness) on buying behavior. In other words, through materialism, the three personality attributes affect the compulsive buying behavior of the respondents. These findings somewhat differed from those of Otero-López and Villardefrancos (2013), which found that materialism mediates the effect of agreeableness, extraversion, and openness on the excessive buying behavior of working adult women. The discrepancies in the results could be due to differences in the study sample and its characteristics. Moreover, the current study's findings were controlled for the strong effect of family income on buying behavior, which was ignored in the study of Otero-López and Villardefrancos.

Neuroticism substantially influenced compulsive online-buying behavior directly and indirectly via materialism. This finding is consistent with that of previous research, such as George (2002), Mikolajczak-Degrauwe et al. (2012), and Thompson and Prendergast (2015), which discovered that high neuroticism and extraversion positively influence compulsive behavior. However, this current study did not find a negative effect of agreeableness as observed in those studies. The strong impact of neuroticism on buying behavior is unquestionable because neurotic people frequently experience an emotional breakdown due to their lack of emotional control and thus turn to compulsive buying for instant gratification or emotional security (Claes & Müller, 2017; Mestre-Bach et al., 2017; Moulding et al., 2017). In contrast, individuals with higher extroversion are more likely to attain satisfaction from the on-screen interactive activity. Consequently, neuroticism and extraversion can be said to promote online-shopping activities.

Notably, the current study corroborated the strong positive influence of materialism in predicting compulsive online-buying behavior. This finding is comparable with those established in Müller et al.'s (2011) and Tarka's (2020) studies on a non-clinical sample. Similarly, respondents in the current study comprised the general population and had a moderately high average score of compulsiveness. Therefore, one can conclude that individuals' materialistic desire stimulates their compulsive online-purchasing behavior. Furthermore, except

for extraversion, which only has a moderate direct effect on buying behavior, the current study verified that neuroticism, openness to experience, agreeableness, and conscientiousness had smaller *p*-values (with larger critical ratios) towards materialism rather than compulsive buying. These discoveries advance materialism as a valuable route for the indirect influence of certain personality traits on compulsive online-buying behavior.

CONCLUSION

Generally, individuals who enjoy electronic commerce are likely to become addicted to online shopping. Through a path analysis, this study investigated the connection between materialistic behavior and the Big-Five personality traits and their influence on compulsive online buying behavior. In summary, it was established that increase in the scores of neuroticism, openness to experiences, and conscientiousness significantly raised the level of materialism among the youth in Malaysia, particularly those from B40 household income families. Furthermore, materialism, neuroticism, and extraversion have a direct positive effect on compulsive online-buying behavior. These findings strengthen the conception that neurotic individuals tend to experience less self-regulation or emotion control.

In contrast, extroverted individuals tend to be interested in the interactive on-screen platform, which encourages their incessant online-shopping activities. Notably, the mediation test showed that materialistic behavior significantly mediates the effects

of neuroticism, openness to experience, and conscientiousness on compulsive buying. Hence, the impact of neuroticism can be regarded as domineering, as it directly and indirectly influences compulsive online-buying behavior in the path model. Therefore, this study strongly recommends that future researchers consider materialistic behavior when studying the buying behavior in the population.

Based on the study's findings, the government needs to provide consumer and financial education for youth in the B40 income category. This necessary action can be implemented through mass media and formal education, such as at the college or university level, to encourage responsible behavior and rational attitudes among youth when they use digital platforms for online shopping. Consumer and financial education allow low-income households to make rational and informed decisions related to online purchasing activities. Indeed, the combination of values and knowledge can undoubtedly generate positive behavior among vulnerable youth. If implemented consistently, this government action would help individuals become more aware of sustainable consumer behavior practices in the global digital market. In this way, consumer and financial education programs will prevent excessive and compulsive online-buying behavior among the B40 youth and, simultaneously, prevent the negative consequences of personality traits on their financial well-being.

ACKNOWLEDGMENT

This study was funded jointly by University Putra Malaysia (UPMSTIAMI/2020/9300468) and STIAMI ILOMATA (019/LN/LAPP/X/2020/6380043) — Determinants of Financial Empowerment among Millennial University Students: Cross Country Evidence).

REFERENCES

- Andreassen, C. S., Griffiths, M. D., Pallesen, S., Bilder, R. M., Torsheim, T., & Aboujaoude, E. (2015). The Bergen Shopping Addiction Scale: Reliability and validity of a brief screening test. *Frontiers in Psychology, 6*, 1374. <https://doi.org/10.3389/fpsyg.2015.01374>
- Aw, E. C. X., Chuah, S. H. W., Sabri, M. F., & Basha, N. K. (2021). Go loud or go home? How power distance belief influences the effect of brand prominence on luxury goods purchase intention. *Journal of Retailing and Consumer Services, 58*, 102288. <https://doi.org/10.1016/j.jretconser.2020.102288>
- Awang, Z. (2012). *A handbook on structural equation modeling using AMOS*. Universiti Teknologi MARA Publication.
- Benmoyal-Bouzaglo, S., & Moschis, G. P. (2010). Effects of family structure and socialization on materialism: A life course study in France. *Journal of Marketing Theory and Practice, 18*(1), 53-70. <https://doi.org/10.2753/MTP1069-6679180104>
- Bhatia, V. (2019). Impact of fashion interest, materialism and internet addiction on e-compulsive buying behaviour of apparel. *Journal of Global Fashion Marketing, 10*(1), 66-80. <https://doi.org/10.1080/20932685.2018.1544502>

- Burhan, N. A. S., Mohamad, M. R., Kurniawan, Y., & Sidek, A. H. (2014). National intelligence, basic human needs, and their effect on economic growth. *Intelligence, 44*, 103-111. <https://doi.org/10.1016/j.intell.2014.03.007>
- Burhan, N. A. S., Salleh, F., & Burhan, N. M. G. (2015). National intelligence and private health expenditure: Do high IQ societies spend more on health insurance? *Intelligence, 52*, 1-8. <https://doi.org/10.1016/j.intell.2015.06.005>
- Chaplin, L. N., & John, D. R. (2010). Interpersonal influences on adolescent materialism: A new look at the role of parents and peers. *Journal of Consumer Psychology, 20*(2), 176-184. <https://doi.org/10.1016/j.jcps.2010.02.002>
- Claes, L., & Müller, A. (2017). Resisting temptation: Is compulsive buying an expression of personality deficits? *Current Addiction Reports, 4*(3), 237-245. <https://doi.org/10.1007/s40429-017-0152-0>
- Claes, L., Müller, A., & Luyckx, K. (2016). Compulsive buying and hoarding as identity substitutes: The role of materialistic value endorsement and depression. *Comprehensive Psychiatry, 68*, 65-71. <https://doi.org/10.1016/j.comppsy.2016.04.005>
- Cushman, K. (2007). Facing the culture shock of college: First generations college students talk about identity, class and what helps them succeed. *Educational Leadership, 64*(7), 44-47.
- Dittmar, H. (2005). Compulsive buying—A growing concern? An examination of gender, age, and endorsement of materialistic values as predictors. *British Journal of Psychology, 96*(4), 467-491. <https://doi.org/10.1348/000712605X53533>
- Ergin, E. A. (2010). Compulsive buying behavior tendencies: The case of Turkish consumers. *African Journal of Business Management, 4*(3), 333-338.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50. <https://doi.org/10.2307/3151312>
- Garðarsdóttir, R. B., & Dittmar, H. (2012). The relationship of materialism to debt and financial well-being: The case of Iceland's perceived prosperity. *Journal of Economic Psychology, 33*(3), 471-481. <https://doi.org/10.1016/j.joep.2011.12.008>
- George, B. (2002). The relationship between lottery ticket and scratch-card buying behaviour, personality and other compulsive behaviours. *Journal of Consumer Behaviour: An International Research Review, 2*(1), 7-22. <https://doi.org/10.1002/cb.86>
- Gerlitz, J.-Y., & Schupp, J. (2005). *Zur Erhebung der Big-Five-basierten Persönlichkeitsmerkmale im SOEP* [The measurement of the Big Five personality traits in the SOEP]. DIW Berlin. <https://www.diw.de/documents/publicationen/73/43490/m4.pdf>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2-24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Harnish, R. J., & Bridges, K. R. (2015). Compulsive buying: The role of irrational beliefs, materialism, and narcissism. *Journal of Rational-Emotive & Cognitive-Behavior Therapy, 33*(1), 1-16. <https://doi.org/10.1007/s10942-014-0197-0>
- Harnish, R. J., Bridges, K. R., Gump, J. T., & Carson, A. E. (2019). The maladaptive pursuit of consumption: The impact of materialism, pain of paying, social anxiety, social support, and loneliness on compulsive buying. *International Journal of Mental Health and Addiction, 17*(6), 1401-1416. <https://doi.org/10.1007/s11469-018-9883-y>
- Hayhoe, C. R., Leach, L. J., Turner, P. R., Bruin, M. J., & Lawrence, F. C. (2000). Differences in

- spending habits and credit use of college students. *Journal of Consumer Affairs*, 34(1), 113-133. <https://doi.org/10.1111/j.1745-6606.2000.tb00087.x>
- Islam, T., Sheikh, Z., Hameed, Z., Khan, I. U., & Azam, R. I. (2018). Social comparison, materialism, and compulsive buying based on stimulus-response-model: A comparative study among adolescents and young adults. *Young Consumers*, 19(1), 19-37. <https://doi.org/10.1108/YC-07-2017-00713>
- Islam, T., Wei, J., Sheikh, Z., Hameed, Z., & Azam, R. I. (2017). Determinants of compulsive buying behavior among young adults: The mediating role of materialism. *Journal of Adolescence*, 61, 117-130. <https://doi.org/10.1108/YC-07-2017-00713>
- John, O. P., Donahue, E. M., & Kentle, R. L. (1991). *The big five inventory—Versions 4a and 5a*. Institute of Personality and Social Research, University of California.
- Kayış, A. R., Satici, S. A., Yılmaz, M. F., Şimşek, D., Ceyhan, E., & Bakioğlu, F. (2016). Big five-personality trait and internet addiction: A meta-analytic review. *Computers in Human Behavior*, 63, 35-40. <https://doi.org/10.1016/j.chb.2016.05.012>
- Kuss, D. J., Van Rooij, A. J., Shorter, G. W., Griffiths, M. D., & van de Mheen, D. (2013). Internet addiction in adolescents: Prevalence and risk factors. *Computers in Human Behavior*, 29(5), 1987-1996. <https://doi.org/10.1016/j.chb.2013.04.002>
- Lissitsa, S., & Kol, O. (2016). Generation X vs. Generation Y – A decade of online shopping. *Journal of Retailing and Consumer Services*, 31, 304-312. <https://doi.org/10.1016/j.jretconser.2016.04.015>
- Magli, A. S., Sabri, M. F., & Rahim, H. A. (2020). The influence of financial attitude, financial behaviour and self-belief towards financial vulnerability among public employees in Malaysia. *Malaysian Journal of Consumers and Family Economics*, 25, 175-193.
- Manchiraju, S., Sadachar, A., & Ridgway, J. L. (2017). The compulsive online shopping scale (COSS): development and validation using panel data. *International Journal of Mental Health and Addiction*, 15(1), 209-223. <https://doi.org/10.1007/s11469-016-9662-6>
- Mestre-Bach, G., Steward, T., Jiménez-Murcia, S., & Fernández-Aranda, F. (2017). Differences and similarities between compulsive buying and other addictive behaviors. *Current Addiction Reports*, 4(3), 228-236. <https://doi.org/10.1007/s40429-017-0153-z>
- Mikolajczak-Degrauwe, K., Brengman, M., Wauters, B., & Rossi, G. (2012). Does personality affect compulsive buying? An application of the big five personality model. In G. Rossi (Ed.), *Psychology: Selected papers* (pp. 131-144). InTech.
- Mokhtar, N., Sabri, M. F., & Ho, C. S. F. (2020). Financial capability and differences in age and ethnicity. *The Journal of Asian Finance, Economics and Business*, 7(10), 1081-1091.
- Moulding, R., Duong, A., Nedeljkovic, M., & Kyrios, M. (2017). Do you think that money can buy happiness? A review of the role of mood, materialism, self, and cognitions in compulsive buying. *Current Addiction Reports*, 4(3), 254-261. <https://doi.org/10.1007/s40429-017-0154-y>
- Mowen, J. (2000). *The 3M model of motivation and personality: Theory and empirical applications to consumer behaviour*. Kluwer Academic Publishers.
- Müller, A., Claes, L., Georgiadou, E., Möllenkamp, M., Voth, E. M., Faber, R. J., Mitchell, J. E., & de Zwaan, M. (2014). Is compulsive buying related to materialism, depression or temperament? Findings from a sample of treatment-seeking patients with CB. *Psychiatry Research*,

- 216(1), 103-107. <https://doi.org/10.1016/j.psychres.2014.01.012>
- Müller, A., Mitchell, J. E., Peterson, L. A., Faber, R. J., Steffen, K. J., Crosby, R. D., & Claes, L. (2011). Depression, materialism, and excessive Internet use in relation to compulsive buying. *Comprehensive Psychiatry*, 52(4), 420-424. <https://doi.org/10.1016/j.comppsy.2010.09.001>
- Otero-López, J. M., & Pol, E. V. (2013). Compulsive buying and the Five Factor Model of personality: A facet analysis. *Personality and Individual Differences*, 55(5), 585-590. <https://doi.org/10.1016/j.paid.2013.05.005>
- Otero-López, J. M., & Villardefrancos, E. (2013). Five-Factor Model personality traits, materialism, and excessive buying: A mediational analysis. *Personality and Individual Differences*, 54(6), 767-772. <https://doi.org/10.1016/j.paid.2012.12.013>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879-891. <https://doi.org/10.3758/BRM.40.3.879>
- Pradhan, D., Israel, D., & Jena, A. K. (2018). Materialism and compulsive buying behaviour: The role of consumer credit card use and impulse buying. *Asia Pacific Journal of Marketing and Logistics*, 30(5), 1239-1258. <https://doi.org/10.1108/APJML-08-2017-0164>
- Richins, M. L. (2004). The material values scale: Measurement properties and development of a short form. *Journal of Consumer Research*, 31(1), 209-219. <https://doi.org/10.1086/383436>
- Richins, M. L., & Dawson, S. (1992). A consumer values orientation for materialism and its measurement: Scale development and validation. *Journal of Consumer Research*, 19(3), 303-316. <https://doi.org/10.1086/209304>
- Ridgway, N. M., Kukar-Kinney, M., & Monroe, K. B. (2008). An expanded conceptualization and a new measure of compulsive buying. *Journal of Consumer Research*, 35(4), 622-639. <https://doi.org/10.1086/591108>
- Rose, P. (2007). Mediators of the association between narcissism and compulsive buying: The roles of materialism and impulse control. *Psychology of Addictive Behaviors*, 21(4), 576-581. <https://doi.org/10.1037/0893-164X.21.4.576>
- Sabri, M. F., Aw, E. C.-Xi, Rahim, H. A., Burhan, N. A. S., Othman, M. A., & Simanjuntak, M. (2021a). Financial literacy, behavior and vulnerability among Malaysian households: Does gender matter? *International Journal of Economics & Management*, 15(2), 241-256.
- Sabri, M. F., Dass, T. M., Burhan, N. A. S., Wahab, H. A. R. A., Wijekoon, R., & Simanjuntak, M. (2021b). Determinants of life satisfaction among female-headed households in Malaysia. *International Journal of Business and Society*, 22(1), 276-295.
- Sabri, M. F., Wijekoon, R., Burhan, N. A. S., Rahim, H. A., Othman, M. A., & Magli, A. S. (2022). The antecedents of financial health in Malaysia with the mediating effect of financial vulnerability. *Malaysian Journal of Consumer and Family Economics*, 28, 100-129.
- Sabri, M. F., Wijekoon, R., & Rahim, H. (2020). The influence of money attitude, financial practices, self-efficacy and emotion coping on employees' financial well-being. *Management Science Letters*, 10(4), 889-900. <http://dx.doi.org/10.5267/j.msl.2019.10.007>
- Sabri, M. F., & Zakaria, N. F. (2015). Financial well-being among young employees in Malaysia. In Z. Copur (Ed.), *Handbook of research on behavioral finance and investment strategies: Decision making in the financial industry* (pp. 221-235). IGI Global.

- Sereetrakul, W., Wongveeravuti, S., & Likitapiwat, T. (2013). Gender differences in saving and spending behaviours of Thai students. *Research in Education, 90*(1), 68-81. <https://doi.org/10.7227/RIE.90.1>.
- Shapira, N. A., Lessig, M. C., Goldsmith, T. D., Szabo, S. T., Lazoritz, M., Gold, M. S., & Stein, D. J. (2003). Problematic internet use: Proposed classification and diagnostic criteria. *Depression and Anxiety, 17*(4), 207-216. <https://doi.org/10.1002/da.10094>
- Sharpe, J., & Ramanaiah, N. V. (1999). Materialism and the five-factor model of personality. *Psychological Reports, 85*(1), 327-330. <https://doi.org/10.1016/j.paid.2012.12.013>
- Sulaiman, N. F. C., Akhir, N. H. M., Hussain, N. E., Jamin, R. M., & Ramli, N. H. (2020). Data on the impact of socioeconomic status on academic achievement among students in Malaysian public universities. *Data in Brief, 31*, 106018. <https://doi.org/10.1016/j.dib.2020.106018>
- Tarka, P. (2020). Influence of materialism on compulsive buying behavior: General similarities and differences related to studies on young adult consumers in Poland and US. *Journal of International Consumer Marketing, 32*(3), 243-267. <https://doi.org/10.1080/08961530.2019.1695240>
- Thompson, E. R., & Prendergast, G. P. (2015). The influence of trait affect and the five-factor personality model on impulse buying. *Personality and Individual Differences, 76*, 216-221. <https://doi.org/10.1016/j.paid.2014.12.025>
- Ukwai, J. K., Eja, O. F., & Unwanede, C. C. (2012). Peer pressure and tobacco smoking among undergraduate students of the University of Calabar, Cross River State. *Higher Education Studies, 2*(3), 92-101.
- Wang, C. C., & Yang, H. W. (2008). Passion for online shopping: The influence of personality and compulsive buying. *Social Behavior and Personality, 36*(5), 693-706. <https://doi.org/10.2224/sbp.2008.36.5.693>
- Watson, D. C. (2014). Materialism: Profiles of agreeableness and neuroticism. *Personality and Individual Differences, 56*, 197-200. <https://doi.org/10.1016/j.paid.2013.09.014>
- Yüksel-Şahin, F. (2015). Predicting peer pressure levels among Turkish adolescents. *Procedia-Social and Behavioral Sciences, 191*, 1807-1812. <https://doi.org/10.1016/j.sbspro.2015.04.413>
- Zerach, G. (2016). The mediating role of emptiness and materialism in the association between pathological narcissism and compulsive buying. *International Journal of Mental Health and Addiction, 14*(4), 424-437. <https://doi.org/10.1007/s11469-015-9591-9>

