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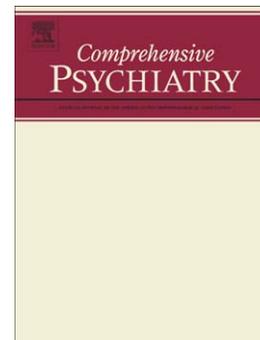
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Compulsive buying and hoarding as identity substitutes:**The role of materialistic value endorsement and depression**

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Abstract

Purpose: In the present study, we investigated whether the relationship between identity confusion and compulsive buying (offline/online) and hoarding is mediated by materialistic value endorsement and depression. **Procedures:** The community sample consisted of 254 Flemish adults who completed self-report questionnaires to assess identity confusion (Erikson Psychosocial Stage Inventory), compulsive buying tendencies (Compulsive Buying Scale/short-Internet Addiction Scale, adapted for shopping), hoarding tendencies (Saving-Inventory Revised), materialistic value endorsement (Materialistic Value Scale), and depression (Patient Health Questionnaire-9). **Findings:** We found significant positive associations between identity confusion, compulsive buying, and hoarding. The associations between identity confusion and compulsive buying was fully mediated by materialistic value endorsement; whereas depression mediated the association between identity confusion and hoarding. **Conclusions:** The results suggest that the collection or buying of material goods can be considered as identity substitutes.

Keywords: Compulsive buying, Hoarding, Identity, Materialism, Depression

1. Introduction

Buying and collecting possessions are widespread human behaviors. Like most human behaviors, buying can range from normal and adaptive to excessive or compulsive¹. In the current literature, there is an ongoing discussion about the medicalization or overpathologizing of buying behaviors^{2,3}. We agree with authors like DeSarbo and Edwards and Dittmar that there exists heterogeneity within buyers ranging from normal to pathological^{4,5}. Compulsive buyers are extremely preoccupied by buying which leads to malfunctioning on the intra- and interpersonal level of functioning; whereas this is not the case for buyers within the normal range. Compulsive buying is characterized by an extreme preoccupation with buying or the experience of irresistible, intrusive, and/or senseless impulses to buy, frequently purchasing unneeded items or spending beyond one's mean, spending more time shopping than intended; and experiencing negative consequences such as distress, impaired social or occupational functioning, and/or financial problems^{6,7}. The prevalence estimates of compulsive buying in the general population range from 5.8% to 7%^{8,9}. Most studies found significant gender differences^{10,11,12}, with more compulsive buying in females. Additionally, many studies have confirmed the negative relationship between compulsive buying and age¹³, that is, a decrease in compulsive buying by increasing age. Finally, compulsive buying occurs in conventional shops and stores, but there exists evidence that it increasingly migrates to the electronic marketplace¹⁴. Although the internet is becoming a significant buying context, studies on compulsive buying online are just starting to emerge^{14,15,16,17}.

One widely accepted definition of hoarding is “the acquisition of, and failure to discard a large number of possessions that appear to be useless or of limited value; living spaces are sufficiently cluttered so as to preclude activities for which those spaces were designed; significant distress or impairment in functioning is caused by the hoarding (p.

341)¹⁸. The Hoarding Disorder is nowadays categorized as an own psychiatric entity within the category Obsessive Compulsive and Related Disorders in the DSM-5 with the specifier “excessive acquisition” including excessive buying¹⁹. In a representative German sample, the prevalence of hoarding was estimated around 4.6%, with no significant gender and age differences^{1,20}. The European Study of the Epidemiology of Mental Disorders reported a lower life-time prevalence rate of 2% of hoarding among individuals with no mental disorders²¹. Others reported a lifetime prevalence of hoarding of 4%, which increased with age, and was twice as high in men than women²². Correlations between compulsive buying and hoarding measures in the general population were situated around $r = -.538$ ($p < .001$)²⁰. About 61% of participants classified as having compulsive hoarding, were also diagnosed as suffering from compulsive buying; vice versa 39% of participants with compulsive buying also reported hoarding²⁰. Among hoarding participants who met criteria for clinically significant hoarding, 61% met criteria for a diagnosis of compulsive buying and approximately 85% reported excessive acquisition^{23,24,25}.

In search for an underlying psychological mechanism that constitutes a vulnerability factor for both compulsive buying and hoarding, ‘identity-seeking’ was put forward as a potential factor. Cushman’s *empty-self theory*^{26,27}, for example, assumes that persons with a poorly defined sense of identity attempt to gain fulfillment and a more complete identity by the acquisition and consumption of nonessential goods²⁸. This empty self-theory was supported by findings that showed a positive association between materialism, compulsive buying, and lower self-concept clarity²⁸. Dittmar and Drury²⁹ referred to the *self-completion theory* of Wicklund and Gollwitzer³⁰ in which consumer goods are considered as means of acquiring and expressing a sense of self-identity³¹. The self-completion theory assumes that perceiving shortcomings in one’s identity produces motivation to compensate; and among those compensation strategies, acquiring and using material symbols are relevant²⁹. Based on

the perspective on compulsive buying as identity-seeking behavior, one found support for a 2-factor model of compulsive buying in women where the uncontrolled consumer behavior is jointly driven by self-discrepancies and materialistic values endorsement⁵. More recently, low self-esteem - besides low self-regulation, negative emotions and female gender – was described as a significant predictor of compulsive *online* shopping³². Similar tenets were forwarded in the domain of compulsive hoarding. Several authors argued that when individuals experience uncertainty about the self, they may attempt to restore their identities by seeing their possessions as expression of “who they are”^{18,33,34}. People who hoard, report that getting rid of a possession often feels like losing a part of themselves or their identity. It appears as though owning the possession, rather than using it, is integral to the hoarder’s sense of self³⁴.

The association between identity seeking and compulsive buying/hoarding behaviors would be mediated by high materialistic values endorsement, that is, the belief that material goods are central life goals, the main route to identity, success, and happiness³⁵. When materialistic values are important to a person, they lead to identity construction through material goods³⁶. A growing body of research³⁷, however, indicates that a materialistic value endorsement can be negatively associated with well-being³⁸ and positively with ill-being, such as depressive symptoms³⁹ and unhappiness⁴⁰. Well-being is particularly low for individuals who desire material possessions because they mistakenly believe that they will make them happier and move them closer to their ideal identity¹⁴. Also in hoarding individuals, saving possessions may be an attempt to regulate both anxious and depressive feelings related to identity issues^{18,33}. Finally, both materialistic value endorsement and depression have been shown to be positively correlated with compulsive buying⁴¹ and depression has been associated with compulsive hoarding⁴².

Several pieces of the aforementioned theory were tested separately; however, no study so far has tested the complete model. Therefore, the aims of the present study were to investigate the association between identity confusion and compulsive buying (offline/online) and hoarding in a Flemish community sample. Additionally, we examined whether materialistic value endorsement and depressive mood mediated the association between identity confusion and compulsive buying/hoarding. Finally, we tested whether the same model held for male and female participants given that the relationship between gender and compulsive buying/hoarding is not clear yet.

2. Method

2.1 Participants

Our sample consisted of 254 adults who are considered representative for the Flemish population concerning gender, age, and level of education, given that the study was also developed to validate the psychometric features of some instruments. One hundred twenty-four participants (48.5%) were female and 130 (51.2%) were male. Mean age was 39.37 years ($SD = 11.87$; range: 19-64 years), with no significant differences between males and females [$F(1,252) = .046, p = .83, \eta^2 = .00$]. Concerning civil status, 40 participants (15.7%) were unmarried and living with their parents, 19 were unmarried and living alone (7.5%), 59 were living together (23.2%), 120 were married (47.2%), 13 were divorced (5.1) and 3 reported “other” (2.3%); with no significant differences between male and female participants [$\chi^2_{(5)} = 1.508, p = .91$]. Finally, concerning educational level, 6 (2.4%) participants completed primary education, 132 (52.2%) secondary education, 71 (28.1%) higher education outside the university and 44 (17.4%) participants completed university education, and 1 person did not report his education level (with no significant gender difference [$\chi^2_{(3)} = .513, p = .92$]). No information was available concerning the participants’ income or socio-economic status.

2.2 Procedure

The participants were selected by three master theses students, based on their gender, age, and educational level. We used information of the distribution of gender, age and educational level of the Flemish population to determine the number of participants that the students needed to collect. The students prepared envelopes holding information about the study, assent documents, questionnaires, and a letter with phone numbers and e-mail addresses of professional help centers. On each envelop (300 in total) we wrote the gender, age and educational level of the participant who had to be found, to reach a distribution of participants according to the Flemish population (e.g., male, age between 20 and 30 year; university education). The participants were selected by the students in their environment based on this information written on the envelope, and the participants received the envelop and some short oral information about the study. If the contacted participants agreed to participate in the study, they anonymously completed the forms in private, they returned their questionnaires to the student-researchers in a sealed envelope and the data was put in by another student of the team, to protect anonymity of the data. The study was approved by the ethical board of the Faculty of Psychology and Educational Sciences (SMEC) affiliated with the first author. Participants were not compensated for participating in the study.

2.3 Instruments

Identity confusion/synthesis were measured using the 12-item identity subscale from the Erikson Psychosocial Stage Inventory (EPSI)^{43,44}, which measures the extent to which participants have a clear sense of who they are and what they believe in. Six items are worded in a “positive direction” (toward identity synthesis) and six items are worded in a “negative direction” (toward identity confusion). The response scale used for the EPSI ranges from 1

(strongly disagree) to 5 (strongly agree)⁴⁴. In the present study, we found Cronbach's alpha coefficients of .73 for identity synthesis and .79 for identity confusion.

Compulsive buying was assessed by means of the Compulsive Buying Scale (CBS; translated into Dutch with written permission)⁶. The CBS consists of seven items representing specific behaviors and feelings associated with CB ($\alpha = .69$ in the present study). Six items (e.g., "Bought myself something in order to make myself feel better") are answered on a 5-point scale ranging from 1 (very often) to 5 (never). One item "If I have any money left at the end of the pay period, I just have to spend it" is answered on a 5-point scale ranging from 1 (strongly agree) to 5 (strongly disagree). The authors (1992) developed a scoring system involving a regression equation with item weighting to determine the cut-off score for compulsive buyers⁶. Lower scores indicate a higher level of CB, whereas a cut-off score equal to -1.34 or lower indicates the person has CB. A cut-off score of -1.34 was able to correctly discriminate 92.2% of the normal controls and individuals with CB. We multiplied the CBS score with "-1" so that higher CBS scores indicated higher levels of CB.

The short Internet Addiction Test (s-IAT)⁴⁵ was used to assess subjective complaints in everyday life due to internet usage, adapted for internet/online buying ($\alpha = .80$ in the present study). The questionnaire consists of 12 items that have to be answered on a 5-point Likert scale from 1 (never) to 5 (very often). For example, "How often do you find that you stay online longer to shop than you intended?" A total s-IAT score of more than 30 refers to problematic online buying, and a total score of more than 37 to pathological online buying.

The Saving Inventory-Revised (SI-R)⁴⁶ is a 23-item self-report questionnaire developed to assess hoarding ($\alpha = .90$ in the present study). Items are scored on a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree), for example "To what extent do you have difficulty throwing things away?". The total SI-R and its subscales (acquisition problems, difficulty discarding and clutter) are reliable, demonstrate convergent, discriminant

and divergent validity, and are sensitive to treatment effects¹. A cut-off of 41 for the total SI-R score is used to assess compulsive hoarding⁴⁷. In the model testing, we removed the acquisition scale from the total SI-R scale (SI-R Clutter/Difficulty Discarding: $\alpha = .90$ in the present study) to reach an optimal discrimination between compulsive buying and hoarding.

The tendency to adhere to materialistic values was measured by means of the 11-item Materialistic Values Scale-Short Form (MVS)^{35,48} ($\alpha = .78$ in the present study). The MVS measures three core dimensions of materialism: central life goal (“I like a lot of luxury in my life”), success (“I admire people who own expensive homes, cars, and clothes”) and happiness (“My life would be better if I owned certain things I don’t have”). All items are rated on a five-point scale ranging from 1 (not at all applicable) to 5 (very applicable). We removed item 6 of the MVS, given that its content refers to buying (i.e., “I’d be happier if I could afford to buy more things”; $\alpha = .74$).

Finally, depression was assessed by means of the Patient Health Questionnaire-9 Depression Screener (PHQ-9; Dutch version also provided by Pfizer ©)⁴⁹. The PHQ-9 is the nine item depression scale of the Patient Health Questionnaire ($\alpha = .82$ in the present study). In the PHQ-9 each of the nine DSM-IV criteria for depression are scored on a scale ranging from “0” (not at all) to “3” (nearly every day).

2.4 Analyses

The prevalence of compulsive buying (offline/online) and hoarding was calculated by means of descriptive statistics and the reported cut-off scores (see instruments). The associations between the different study variables were calculated by means of the Spearman correlation coefficient. Structural equation modeling in Mplus 6 was used to examine our primary models. To deal with non-normal data distributions, Maximum Likelihood Mean Variance (MLMV) was used as a robust estimation method⁵⁰. To evaluate model fit, we used

the χ^2 index, which should be as small as possible, preferably non-significant; the Root Mean Square Error of Approximation (RMSEA), which should be less than .08; the Comparative Fit Index (CFI), which should exceed .90; and the Standardized Root Mean Square Residual (SRMR), which should be less than .09⁵¹. In all models, age and gender were included as control variables by regressing all study variables on these variables.

In a first model, identity synthesis and confusion were modelled as predictors of the three outcome variables (compulsive buying offline, compulsive buying online, hoarding Clutter/Difficulty Discarding); covariances between identity synthesis and confusion and covariances among the three outcome measures were estimated. This model was saturated (i.e., zero degrees of freedom), and, by definition, it provided a perfect fit to the data. In a second model, materialistic value orientation and depressive symptoms were added as potential mediators; further, materialistic value orientation was modelled as a predictor of depressive symptoms³⁹. Both a full (i.e., without the direct paths from identity variables to the outcome variables) and partial mediation model (i.e., including the paths from identity variables to the outcome variables) were tested⁵². The significance of the indirect effects (i.e., from identity to outcome measures via materialistic value orientation or depressive symptoms) was tested using the Model Indirect command available in Mplus.

3. Results

Overall, 2.4% of the participants engaged in compulsive buying as measured with the CBS and 1.2% in compulsive hoarding. No participants scored in the pathological range of compulsive buying online, as measured with the S-IAT.

Table 1 displays the correlations between the study variables. Overall, we found significant positive correlations between identity confusion and compulsive buying (offline/online) and hoarding; the opposite holds for identity synthesis. Identity confusion was

also significantly related to materialistic value endorsement and depression; whereas identity synthesis was negatively related to depression. Further, materialistic value endorsement and depression were both positively related to compulsive buying (offline/online) and hoarding. Additionally, compulsive buying (offline/online) and hoarding were all positively related. Finally, compulsive buying (offline/online) were both related to younger age; and compulsive buying (CBS) to being female. Hoarding was not related to gender nor age. After removing the Acquisition Scale of the total hoarding scale, the correlational pattern remained similar although we saw a stronger decrease in the correlations with compulsive buying (offline/online), as expected.

With respect to the primary analyses, in a fully saturated path model, identity confusion (but not identity synthesis) was a significant positive predictor of all three outcome variables (as displayed in Figure 1); hence, identity synthesis was deleted from all subsequent model estimations. Second, the full mediation model displayed in Figure 2 had an excellent fit to the data ($df=3$; $\chi^2=1.80$, $p=.61$; RMSEA=.000; CFI=1.000; SRMR=0.013). Identity confusion positively predicted materialistic value orientation and depressive symptoms, which, in turn, both predicted all three outcome variables (except for the path from depressive symptoms to compulsive buying, which was non-significant). Contrary to expectations, materialistic value orientation did not significantly predict depressive symptoms. The standardized indirect effects from identity confusion to the outcome variables through materialistic value orientation were significant for compulsive buying (estimate = .128, S.E. = .025, $p < .001$) and internet compulsive buying (estimate = .066, S.E. = .024, $p < .01$); and marginally significant for hoarding_clutter/difficulty discarding (estimate = .041, S.E. = .021, $p = .05$). The standardized indirect effect from identity confusion through depressive symptoms was significant for hoarding_clutter/difficulty discarding (estimate = .199, S.E. = .041, $p < .001$) and for internet compulsive buying (estimate = .070, S.E. = .035, $p < .05$) but

not significant for compulsive buying as measured with the CBS (estimate = .04, S.E. = .037, *ns*). Third, when adding the direct paths from identity confusion to the three outcome variables in a partial mediation model, none of these paths were significant, pointing to full mediation. Finally, multi-group analyses indicated that all paths in the final full mediation model were invariant for men and women ($\Delta\chi^2(9) = 7.71, p = .56$).

4. Discussion

In the present study, we investigated whether materialistic value endorsement and depression mediated the associations between identity confusion and compulsive buying/hoarding in a Flemish community sample. In terms of categorical diagnoses, 2.4% of the participants engaged in compulsive buying and 1.2% in compulsive hoarding. These prevalence rates were lower as reported in other population based sample^{8,9,21,22}. None of the participants were diagnosed with compulsive buying via the internet. However, it also remains important to investigate predictors of subclinical forms of compulsive buying and hoarding to prevent the evolution to pathological forms of these behaviors. On the dimensional level, compulsive buying and hoarding were significantly positive correlated (even after removing the acquisition subscale of the hoarding scale), confirming the findings of previous research²⁰. Additionally, compulsive buying as measured with the CBS was more prevalent in females¹⁰, whereas compulsive buying via internet decreased with increasing age⁹. Compulsive hoarding was not related to gender and age.

Confirming the empty self-theory^{26,27} and self-completion theory^{30,31}, we found significantly positive relationships between identity confusion and compulsive buying (offline /online) and hoarding. Participants with higher levels of identity confusion seem to collect or acquire more materials goods to identify themselves with – thus using material goods as

potential identity substitutes³⁴. This finding supports earlier assumptions pertaining to material goods as identity substitutes^{14,53}.

The results of our mediation analyses clearly show that materialistic value endorsement significantly mediates the associations between identity confusion and compulsive buying (offline /online). This suggests that more perceived identity confusion makes individuals more vulnerable to beliefs in the idea that material goods are the main route to identity, success, and happiness, which increases the probability that individuals engage in acquisition (buying) of material goods offline or online^{26,27}. This is in line with the 2-factor model proposed by Dittmar⁵. On the contrary, the association between identity confusion and hoarding_clutter/difficulty discarding was most strongly mediated by depressive mood. Several studies have shown a positive association between identity issues and depressive mood⁵⁴, and between depressive mood and hoarding (e.g., when hoarders think about discarding or have to discard their collected items)^{18,33,34}.

Similar to Dittmar (2004, 2005), we can conclude that both, compulsive buying offline or online is significantly related to identity confusion and materialistic value endorsement, confirming the empty-self^{26,27} and self-completion theory^{30,31}. The positive relation between identity issues, depressive mood, and hoarding_clutter/difficulty discarding seems to confirm the self-uncertainty theory of hoarding^{18,34}.

Despite its strengths, our study is not without limitations. First, we used a relative small sample of adults of the Flemish community population between 18 and 65 years, of whom only a limited number were diagnosed with compulsive buying/hoarding. Future studies should replicate these findings in samples of patients with compulsive buying and/or hoarding. Additionally, all variables were assessed by means of self-report instruments, which could increase their interrelations due to shared method variance. Future studies should include, besides such self-report measures, also interview- or and/or observer-based measures

of the variables under study. Third, no information was available about the participants' income or socio-economic status, variables which could have interacted with materialistic value endorsement and/or identity. So future studies should include measures of socio-economic status. Finally, our study was cross-sectional in nature, so we could not formulate conclusions about the directionality of effects. Future studies should therefore be longitudinal in nature, in order to make predictions about the direction of the associations between the variables under study.

Notwithstanding these shortcomings, our study was among the first to investigate an integrated model linking identity confusion, materialistic value endorsement, depressive mood, and compulsive buying (offline/online) and hoarding in a community sample of adult participants.

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ACCEPTED MANUSCRIPT

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Legend:

Figure 1. Associations between identity confusion and compulsive buying (offline/online) and hoarding (clutter/difficulty discarding) controlled for gender and age.

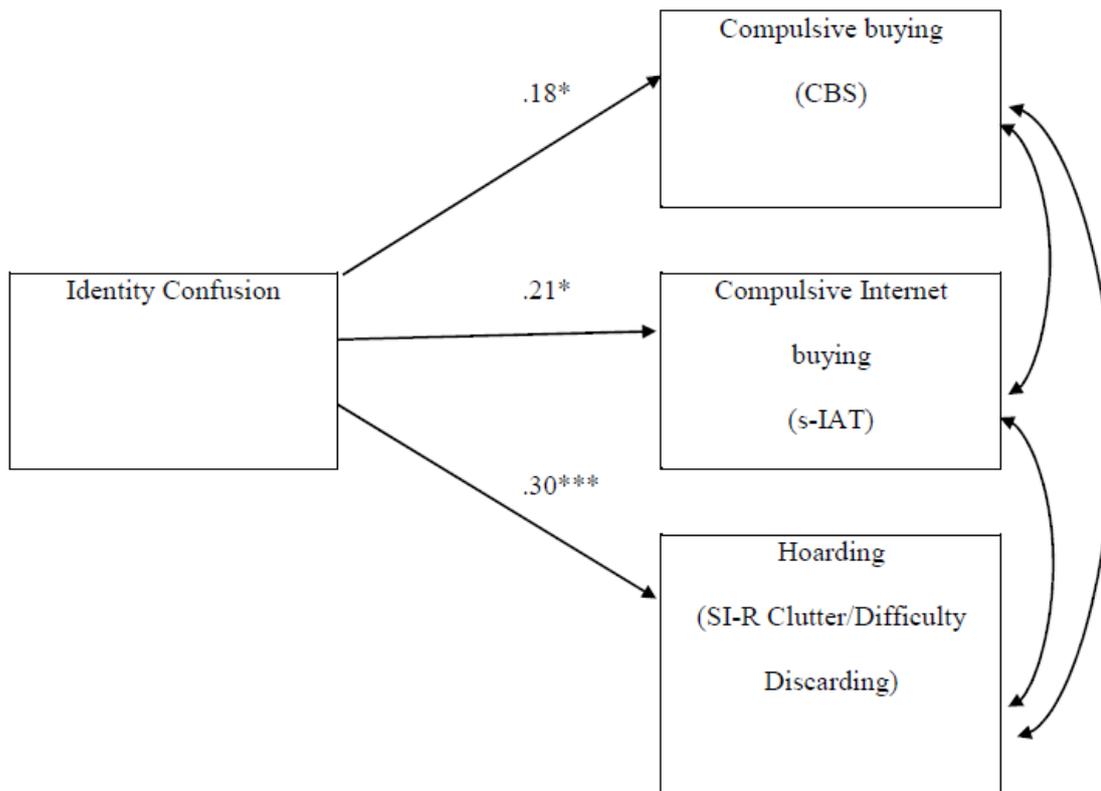
Figure 2. Partial mediation model from identity confusion via materialistic value endorsement and depression to compulsive buying (offline/online) and hoarding (clutter/difficulty discarding) controlled for gender and age

Table 1. Correlations between identity measures, materialism, depression, compulsive buying (offline/online), hoarding, gender, and age.

	EPSI_ Conf.	EPSI_ Synth.	MVS – item 6	PHQ-9	CBS	s-IAT	SI-R Total	SI-R_ Clutter/ Dif. Discardi ng	Gender	Age
EPSI_ Conf.		-.56***	.36***	.50***	.20**	.28***	.35***	.33***	.06	-.22**
EPSI_ Synth.			-.08	-.40***	-.10	-.15*	-.23***	-.19**	-.09	.13*
MVS				.26***	.41***	.31***	.25***	.21**	-.04	-.25***
PHQ-9					.23**	.18**	.38**	.36***	.18**	-.13*
CBS						.39***	.34***	.27***	.13*	-.15*
s-IAT							.36***	.30***	.07	-.32***
SI-R								.97***	.04	-.07
Total										
SI-R									.02	-.03
C/DD										
Gender										-.03

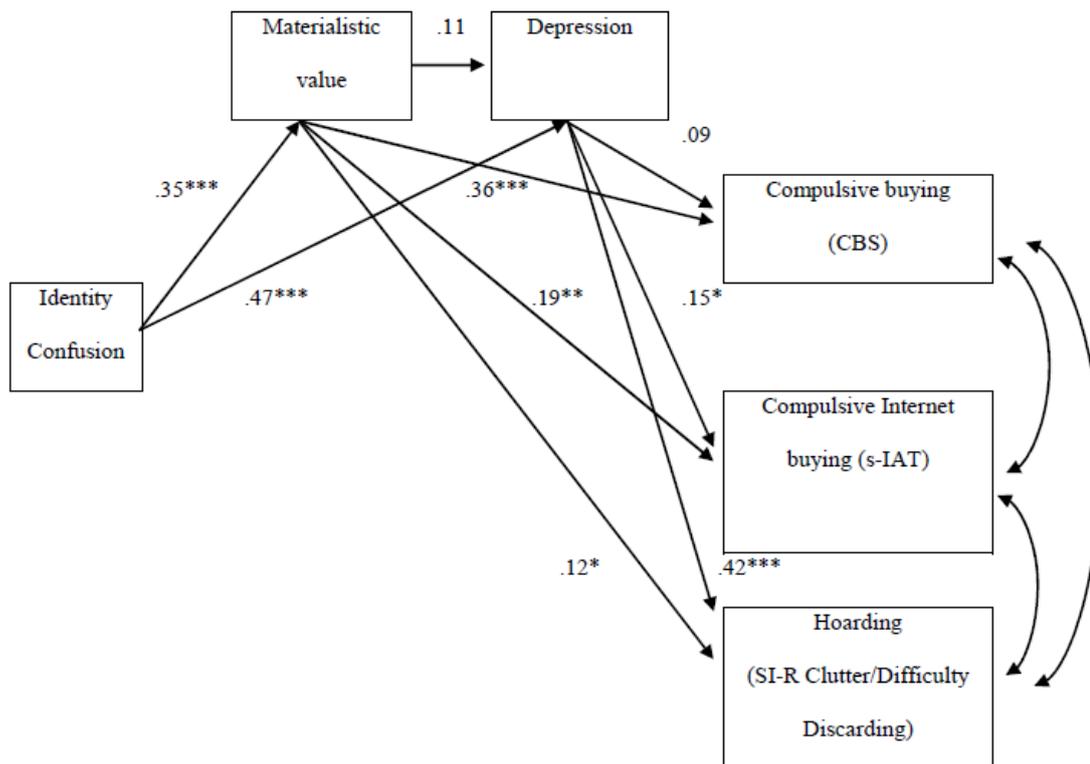
EPSI = Erikson Psychosocial Stage Inventory; MVS = Materialistic Value Scale; PHQ-9 = Patient Health Questionnaire-9 Depression; CBS = Compulsive Buying Scale; s-IAT = short Internet Addiction Test (online buying); SI-R = Saving Inventory-Revised (hoarding); SI-R C/DD = Saving Inventory-Revised (Hoarding_Clutter/Difficulty Discarding); Gender (1 = male, 2 = female).

* $p < .05$; ** $p < .01$, *** $p < .001$



* $p < .05$, ** $p < .01$, *** $p < .001$

Figure 1



* $p < .05$, ** $p < .01$, *** $p < .001$

Figure 2