



How Impulsivity influences the Post-purchase Consumer Regret?

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Abstract

Background: The role of impulsivity in post-purchase consumer regret is unclear and intriguing because of the negative emotions that underlie both constructs. It is particularly important to examine the impact of impulsivity on the relationship between regret and the Emotionality dimension of the HEXACO model of personality.

Objectives: The purpose of this paper was to investigate the associations between consumer regret components: outcome regret and process regret, attention, motor and non-planning dimensions of impulsivity and Fearfulness, Anxiety, Dependence and Sentimentality domains of Emotionality.

Methods/Approach: The sample consisted of undergraduates from Zagreb, Croatia ($M_{age} = 25.93$, 56% females). The correlation and the regression analysis were performed. We used the Baratt impulsivity scale (BIS-11), the HEXACO-PI-R Emotionality scale and the Post Purchase Regret Scale (PPRS).

Results: The PPCR total score was associated with the BIS-11 total score, attention and non-planning impulsivity. Regret due to foregone alternatives was related to attention and non-planning impulsivity, while regret due to a change in significance was related only to attention impulsivity. Regret due to under-consideration positively correlated with non-planning impulsivity.

Conclusions: The results indicate that relations between impulsivity and consumer regret have an important role in understanding consumer behavior and that impulsivity has a moderate association between consumer regret and Emotionality.

Keywords: consumer regret, attention impulsivity, motor impulsivity, non-planning impulsivity, Emotionality

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Introduction

Customer satisfaction is getting a lot of attention from marketing managers. One of the key issues in consumer behavior refers to the understanding consumer emotions. Consumer regret plays a significant role in consumer behavior because it influences future consumer decisions for a particular product (Michenaud, 2008) and decreases the level of consumer satisfaction (Bui et al., 2011). Specifically, negative emotions

such as regret, remorse and anxiety, associated with a particular product lead to the avoidance of this product in the future as well as to the avoidance of a place of purchase (Lee & Cotte, 2009; Zeelenberg & Pieters, 2007).

Regret is a complex distressing emotion, which can be experienced about decision processes and decision outcomes (Zeelenberg & Pieters, 2007). Some of the most important components of regret are responsibility, self-accusation, and counterfactual thinking (CFT) (Lee & Cotte, 2009). CFT is a psychological construct that involves the tendency of creating alternative outcomes for what has already happened (Kahneman & Dale, 1986). Regret includes affective and cognitive elements. The affective elements of regret are related to negative mental health symptoms such as emotional distress, depression, anxiety and low level of well-being; Cognitive elements of regret are associated with positive and functional outcomes such as the positive impact on future behavior and improve decisions-making (Buchanan et al., 2016).

According to Decision Justification Theory (DJT) (Connolly & Zeelenberg, 2002) which is one of the most dominant theories of regret, decision regret consists of two components: self-blame regret and comparative outcome regret. Based on this theory, Lee and Cotte (2009) have developed the Post-Purchase Consumer Regret scale (PPCR).

Impulsivity is the predisposition for rapid, unplanned reactions to internal and external stimuli, regardless of the negative consequences (Moeller, 2009). Besides, it is a complex psychological construct, which includes different emotional and behavioral features (i.e., low inhibitory control, irresponsibility, impatience, a lack of planfulness and foresight, alienation and distrust) (Moeller et al., 2001; Stanford, et al., 2009). Multidimensional nature of impulsivity encompasses a range of maladaptive traits such as problems with the attention, thrill adventure-seeking, inability to delay gratification, antisociality, aggression (Smith et al., 2006), but also with depression, self-harming, suicide attempts (Swann et al., 2005; Swann et al., 2008) and substance abuse (Lane et al., 2007). According to these findings, it can be assumed that impulsivity is associated with both, externalizing problems (e.g. conduct disorders, antisocial behavior, rule breaking, aggression, defiance, substance dependence) (Achenbach & Rescorla, 2001; Verona et al., 2004) and internalizing symptoms (e.g. depression, anxiety, withdrawal) (Forns et al., 2001). Moreover, impulsivity and self-regulation is related to negative emotions such as regret (Shalev & Sulkowski, 2009).

The complex nature of impulsivity includes attention deficits, motor restlessness and lack of planning (Patton et al., 1995). One of the most used self-report measures of impulsivity, the Barratt impulsivity scale (BIS-11; Patton et al., 1995) measures three dimensions of impulsivity: attention, non-planning and motor impulsivity. Attention impulsivity manifests as an inability to pay (focus) attention, non-planning impulsivity reflects a lack of self-control (planning and careful deliberation), and poorly expressed cognitive complexity (enjoying complex mental tasks), and motor impulsivity is a combination of imprudence and inconsistent lifestyle.

The HEXACO model of personality (Lee et al., 2004) is a relatively new model in personality research consists of six dimensions: Honesty-humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to experience. This model is similar to the Big Five model of personality (McCrae & Costa, 1987). However, one of the key differences between these two personality models relevant to regret is Emotionality dimension. In the HEXACO model Emotionality dimension includes facets of Sentimentality and Fearfulness not represented in the Emotional stability dimension of the Big Five. Except for these facets, Emotionality dimension of the HEXACO model includes Anxiety and Dependence facets (Ashton et al., 2014).

“High scorers on anxiety tend to become preoccupied even by relatively minor problems” (Ashton et al., 2014, p. 142). Dependence facet of Emotionality reflects individual differences in tendencies to seek emotional support from others (Lee et al., 2004). Previous studies have showed that impulsivity was related to Neuroticism, Openness, Conscientiousness, Extraversion and Agreeableness (eg. Mao et al., 2018).

In order to extend what we know about the post-purchase consumer regret, it is valuable to examine consumer regret in relation to some relevant personality traits such as impulsivity and emotionality.

Literature review

The complex nature of consumer regret

The constructs of the consumer regret, as operationalized by the Post-Purchase Consumer Regret scale (Lee & Cotte, 2009) have previously been examined in relation to the Big Five model of personality. To date, only one study has examined relationships between PPCR and The Big Five Inventory (McCrae & Costa, 2008). This study (Zulkarnain et al., 2018) found positive but low correlations for all five Big Five personality dimensions (Neuroticism, Openness to experience, Agreeableness, Conscientiousness, and Extraversion) with outcome regret ($r = .24$ to $.29$) and with process regret ($r = .19$ to $.24$). Additionally, results of regression analysis in this study showed that Neuroticism and Agreeableness significantly positively predicted outcome regret ($\beta = .18, .17, p < .01$), and that only Neuroticism positively predicted process regret ($\beta = .24, .17, p < .01$). Bui et al. (2009) found significant direct effect between consumer regret and negative emotion ($\beta = .53, S.E. = 0.11, p < .001$) and satisfaction level ($\beta = -.54, S.E. = 0.09, p < .001$). Moreover, this study has shown that there is a mediating effect of negative emotions on the link between regret and the extent of satisfaction levels.

The link between impulsivity and emotionality

The relationship between impulsivity and emotionality is intriguing. At first glance, impulsivity could be related to some aspects emotionality. Findings from recent studies have shown that impulsivity as well as similar constructs such as disinhibition, and antisocial tendencies are mainly related to some indicators of emotional distress such as mood disorders (Swann et al., 2008), suicide attempts (Dougherty et al., 2004), depression (Van Den Eynde et al., 2008), anxiety (Xia et al., 2017), personal distress (Sokić & Ljubić Golub, 2019), negative emotional states (e.g. stress, anxiety and depression) (Međedović et al., 2018), anxious and avoidant attachment (Sokić & Wertag, 2018), emotion dysregulation (Garofalo et al., 2018), food addiction (Meule et al., 2017).

Various studies indicate that the BIS scales and Emotionality domain of the HEXACO model, demonstrate similar associations with relevant external correlates, such as antisocial and criminal behavior (Maneiro et al., 2017; Međedović, 2017a) and disinhibition (Gatner et al., 2016; Ruchensky & Donnellan, 2017). BIS scores are associated with normal and pathological personality traits. All three BIS subscales were negatively correlated with Conscientiousness; motor impulsivity was positively related to Extraversion, whereas attentional impulsivity was positively related to Neuroticism (Lange et al., 2017).

The BIS dimensions accounted for a significant amount of variance in criteria conceptually relevant to consumer regret. In percentage terms, BIS-11 total score and Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) explained

variance in personality disorders (PD) as follows: 39% in borderline PD, 24% in schizotypal PD, 18% in paranoid PD, and 15% in schizotypal PD (Garofalo et al., 2018).

The present study and hypotheses

First, it is of particular interest to study the relationship between impulsivity dimensions, post-purchase consumer regret and Emotional domains in light of recent findings that have shown similar relationships between these psychological constructs and indicators of emotional distress (see Bui et al., 2011; Garofalo et al., 2018; Lange et al., 2017; Mededović et al., 2018; Zulkarnain et al., 2018). The second reason for studying the relationship between the impulsivity dimensions and the post-purchase consumer regret is that the BIS model of impulsivity may help to clarify how and why dimensions of impulsivity differently predict certain aspects of consumer regret. A more specific aim of the study was to clarify the influence of impulsivity on the relationship between Emotionality and its domains (i.e., Fearfulness, Anxiety, Dependence and Sentimentality), and consumer regret. Finally, consumer emotions greatly influence consumer behaviour and attitudes, it is therefore important to understand the mechanisms underlying these emotions. Impulsivity is associated with an unhealthy lifestyle such as addictive, risky and hedonistic behaviors (Goodwin et al., 2016). Furthermore, impulsivity is positively associated with negative correlates of happiness, such as mood disorders (Swann et al., 2008), depression (Van Den Eynde et al., 2008) and anxiety (Xia et al., 2017). Furthermore, consumer regret is negatively associated with levels of satisfaction, and positively with negative emotions (Bui et al., 2009).

To the best of our knowledge, the relationship between the HEXACO dimension of personality and PPCR as well as the relationship between the BIS dimensions of impulsivity and PPCR components has not been investigated so we examined these relationships in this study. It is reasonable to assume that impulsivity and some other personality traits such as Emotionality influence on regret considering that these traits, as well as regret, include emotional reactivity and anxiety.

Consistent with the findings that BIS total score is associated with anxiety apprehension and preoccupation (Taylor et al., 2008); we expected that: *H1. PPCR total score will be positively associated with BIS-11 total score.*

Since Regret due to foregone alternatives is associated with a choice regardless of how good it was and includes self-blame and a sense of responsibility for making bad decisions (Lee & Cotte, 2009), and based on empirical evidence showing that attentional impulsivity is positively related to neuroticism (Lange et al., 2017), and non-planning impulsivity is related to depressive episodes (Swann et al., 2008), we predicted that: *H2. Regret due to foregone alternatives will be positively associated with BIS-11 total score, attention and non-planning impulsivity.*

Regret due to a change in significance is a part of outcome regret. The focus here is on whether a product can meet the changing needs of consumers. Based on the theoretical description that non-planning impulsivity reflects an inability to plan (Patton et al., 1995), we expected that: *H3. Regret due to a change in significance will be positively associated with BIS-11 total score and non-planning impulsivity.*

Regret due to under-consideration is a form of process regret for insufficient thinking before buying. This component of process regret occurs when an individual thinks that should have been made more effort in the decision-making process (Lee & Cotte, 2009). Based on findings showing that motor impulsivity is related to low conscientiousness (Malesza & Ostaszewski, 2016), low planning and low organization (Spinella, 2005), non-planning impulsivity is negatively related to index of executive function (Spinella, 2005), and that attention impulsivity includes cognitive instability (Patton et al., 1995), we predicted that: *H4. Regret due to under-consideration will be*

positively associated with BIS-11 total score and with attention and non-planning impulsivity.

When an individual feel regret for too much time and effort put into the buying process, it is about Regret due to over-consideration (Lee & Cotte, 2009). Based on the theoretical description of impulsivity (Patton et al., 2005) and regret (Connolly & Zeelenberg, 2002), we expected that: *H5. Regret due to over-consideration will be unrelated to BIS-11 total score and all of the BIS-11 dimensions.*

Based on a theoretical description that regret is aversive emotion (Lee & Cotte, 2009), empirical evidence showing that Neuroticism from Big Five model of personality positively predicted outcome and process regret and (Zulkarnain et al., 2018), as since regret is linked to symptoms of emotional distress such as depression and anxiety (Kraviness et al., 2017) we predicted that: *H6. PPCR total score will be positively associated with Emotionality (particularly Sentimentality, Anxiety and Dependence facets).*

Methodology

Participants and procedure

The sample consisted of 311 students from various universities in Zagreb (Croatia). The questionnaires of 39 participants were excluded from analyses due to missing data, and the final sample consisted of 272 students (56% females), ranging in age from 19 to 30 ($M_{age} = 25.93$, $SD = 4.78$). Consumer behavior, impulsivity and emotionality are often tested on the student population (e.g. Bui et al., 2009; Gatner et al., 2016; Međedović, 2017b; Stanford et al., 2009). Based on the above, we consider students sample as suitable in this study (see Pejić Bach et al., 2018).

The students participated on a voluntary basis and gave their written consent before completing the questionnaire. They were asked to complete a battery of self-report measures anonymously and they received no compensation for their participation. Respondents were informed that they could withdraw from the survey at any time. Average time to complete the questionnaire was 30 minutes. The study was approved by the ethics committee of the Faculty of Humanities and Social Sciences, University of Zagreb, Department of Psychology.

Research instruments

In this research, we used self-report questionnaires.

Consumer regret was measured by Post Purchase Regret Scale (PPCR; Lee & Cotte, 2009). PPCR is a 16-item self-report questionnaire assessing two regret components i.e., outcome regret which consists of two dimensions: regret due to foreign alternatives (e.g. *I now realize how much better my other choices were*) and regret due to a change in significance (e.g. *I wish I hadn't bought the product because it is now useless to me*), and process regret which captures regret due to under consideration dimension (e.g. *I feel that I did not put enough consideration into buying the product*) and regret due to over-consideration dimension (e.g. *I wasted too much time in making my decision*). Each dimension consists of 4 items. Items are rated on a 7-point Likert scale. Scores for each PPCR dimensions were calculated as sums of ratings on associated items.

To measure impulsivity, we used the Barratt Impulsivity Scale -11 (BIS-11; Patton et al., 1995). This 30-item self-report questionnaire assesses total score on impulsivity and three dimensions of impulsivity: attentional (8 items, e.g. *I do not "pay attention"; I "squirm" at plays or lectures*), motor (11 items, e.g. *I do things without thinking; I change jobs*), and non-planning impulsivity (11 items, e.g. *I save regularly; I am more*

interested in the present than the future). The items are rated using a 4-point Likert-type scale (from 1 = Rarely/Never to 4 = Almost Always/Always). The sum of the scores on the subscales shows the total level of impulsivity. The scale was used on samples from the clinical, forensic and general populations proved to be very reliable (Stanford et al., 2009).

The Emotionality dimension was measured using is a 10-item self-report scale from HEXACO-60 (Ashton & Lee, 2009; for Croatian version see Babarović & Šverko, 2013) conceptualized Emotionality. This scale yielding scores on four subscales of Fearfulness, Anxiety, Dependence, Sentimentality and a total emotionality score, by using a 5-point Likert scale, from 1 (*strongly disagree*) to 5 (*strongly agree*).

Statistical methods

The relationship between impulsivity, consumer regret and Emotionality was investigated through zero-order correlations. The contribution of impulsivity and emotionality in the prediction of consumer regret was explored through hierarchical multiple regression analysis in which scores for the three BIS-11 and Emotionality subscales were entered as predictors of criterion variables consisting of the four components of PPCR. Since there were gender differences on impulsivity and Emotionality, gender was included as control variable in each analysis. In all regression models, gender was entered at Step 1, Emotionality subscales were entered at Step 2, and BIS subscales at Step 3.

To explore potential significant interaction effects between dimensions of impulsivity and facets of Emotionality in predicting consumer regret, a series of hierarchical linear regression models were computed, using each criterion measure as the dependent variable, while impulsivity dimensions and Emotionality domains were entered as predictors. The standard scores on the BIS-11 and Emotionality subscales, gender and age scores were entered as predictors at Step 1, and BIS-11x Emotionality subscales interactions were entered in Step 2.

Results

Descriptive statistic

Results shown in Table 1 demonstrated corresponding psychometric characteristics for used scales; all skewness and kurtosis measures were in a range from -2 to +2, which is within acceptable ranges for these values (see Gravetter & Wallnau, 2014). Therefore, we can conclude that the normality distribution was not a problem in this study. The measures of consumer regret and emotionality showed adequate reliability except for measures of impulsivity, which showed some lower Cronbach's α values.

The variance inflation factors (VIF) through regression analyses ranged from 1.20 to 1.79, which indicates that multicollinearity was no problem in this study.

Table 1

Descriptive statistics and psychometric characteristics of all scales and subscales (N= 272)

	M	SD	Sk	Ku	α
PPCR	52.29	18.86	0.16	-0.21	.93
Regret due to Foregone Alternatives	12.32	5.54	0.56	-0.07	.92
Regret due to a Change in Significance	12.72	5.93	0.28	-0.80	.90
Regret Due to Under-Consideration	14.20	6.16	0.06	-0.70	.90
Regret Due to Over-Consideration	13.18	6.16	0.39	-0.56	.92
BIS-11	60.92	8.76	0.10	-0.30	.76
Attentional impulsivity	16.82	3.36	0.44	0.09	.60
Motor impulsivity	21.31	3.92	0.45	0.14	.61
Non-planning impulsivity	22.67	4.19	-0.08	-0.36	.60
Emotionality	31.72	6.28	-0.32	0.24	.76
Fearfulness	8.53	2.52	-0.15	-0.46	.60
Anxiety	7.40	1.85	-0.74	0.41	.56
Dependence	5.62	1.99	-0.03	-0.49	.63
Sentimentality	10.15	2.60	-0.23	-0.21	.70

Note: α = Cronbach's α . Sk - skewness, Ku – kurtosis, M - mean, SD - standard deviation.

Source: Authors' work

Relations among the PPCR, BIS-11 and Emotionality

As shown in Table 2, the results of bivariate correlations analysis partially supported our hypotheses. In accordance with Hypothesis 1, PPCR total score showed positive relationship with BIS-11 total score.

Table 2

Pearson's correlation coefficients among all variables (N= 272)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1.	-												
2.	.86	-											
3.	.86	.73	-										
4.	.86	.69	.75	-									
5.	.61	.36	.30	.28	-								
6.	.17*	.19	.15*	.17*	.04	-							
7.	.13*	.15*	.14*	.08	.08	.76	-						
8.	.08	.10	.09	.09	-.01	.79	.49	-					
9.	.15*	.16*	.09	.16*	.02	.74	.32	.32	-				
10.	-.01	-.05	-.09	.01	.04	-.03	-.15*	-.08	.12*	-			
11.	.04	-.01	.00	.03	.03	.09	-.02	-.02	.21	.73	-		
12.	.02	-.03	-.03	-.01	.13*	-.13*	-.08	-.17	-.06	.60	.33	-	
13.	.01	.04	-.01	.06	-.04	.09	-.03	.06	.14*	.68	.33	.21	-
14.	-.07	-.10	-.17*	-.03	.02	-.12*	-.27	-.10	.04	.75	.32	.26	.42

Note: 1. = PPCR total, 2. = Regret due to Foregone Alternatives, 3. = Regret due to a Change in Significance, 4. = Regret Due to Under-Consideration, 5. = Regret Due to Over-Consideration, 6. = BIS-11, 7. Attentional impulsivity, 8. = Motor impulsivity, 9. = Non-planning impulsivity, 10. = Emotionality, 11. = Fearfulness, 12. = Anxiety, 13. = Dependence, 14. = Sentimentality. Bolded values are significant at $p < .01$. * $p < .05$.

Source: Authors' work

We expected that regret due to foregone alternatives would be positively associated with BIS-11 total score, attention and non-planning impulsivity what was fully confirmed (Hypothesis 2). In line with Hypothesis 3, regret due to a change in significance was positively associated with BIS-11 total score and non-planning impulsivity. As expected, regret due to under-consideration showed positive

associations with BIS-11 total score and non-planning impulsivity but not with attention impulsivity (Hypothesis 4). In line with Hypothesis 5, results of the current study did not show bivariate correlations between regret due to over-consideration and impulsivity. Hypothesis 6 was not confirmed on the bivariate level.

Results of hierarchical multiple regression analyses (Table 3) demonstrated that, after controlling for age, gender, Fearfulness, Anxiety, Dependence and Sentimentality, dimensions of impulsivity additionally explained 4% of the variance in PPCR total score, 4% of the variance in regret due to foregone alternatives, and 4% of the variance in regret due to under-consideration. Multiple regression analysis also showed that only non-planning impulsivity uniquely and positively related to total results on PPCR total ($\beta = .19$), Regret due to Foregone Alternatives ($\beta = .19$), and Regret Due to Under-Consideration domains ($\beta = .20$). Results showed that Anxiety uniquely positively predicted regret due to over-consideration ($\beta = .15$), and that Sentimentality uniquely negatively predicted regret due to foregone alternatives ($\beta = -.18$) and regret due to under-consideration ($\beta = -.19$).

Table 3

Hierarchical multiple regression analysis of relationships between PPCR, BIS-11 and Emotionality dimensions and facets (N= 272)

	Regret due to...				
	PCSR total	FA	CS	UC	OC
<i>Model 1</i>					
Gender	-.13	-.11	-.01	-.06	-.15*
Age	-.02	-.05	-.12	-.05	.09
R²	.02	.02	.03	.01	.02
<i>Model 2</i>					
Gender	-.11	-.10	-.08	-.06	-.14
Age	-.03	.01	-.09	-.07	.06
Fearfulness	.07	.01	.10	.07	-.01
Anxiety	.07	.02	.02	.01	.15*
Dependence	.03	.10	.03	.05	-.07
Sentimentality	-.13	-.18*	-.19*	-.05	-.02
R²	.04	.04	.06	.02	.05
Change R²	.02	.03	.03	.01	.02
<i>Model 3</i>					
Gender	-.11	-.09	-.08	-.06	-.13
Age	-.04	.00	-.11	-.10	.07
Fearfulness	.03	-.03	.07	.03	-.03
Anxiety	.11	.06	.06	.06	.16*
Dependence	.00	.08	.00	.03	-.08
Sentimentality	-.11	-.16	-.17*	-.04	.00
Attentional impulsivity	.02	.05	.00	-.04	.08
Motor impulsivity	.03	.02	.06	.07	-.03
Non-planning impulsivity	.19*	.19*	.13	.20*	.04
R²	.08*	.09*	.08	.06*	.06
Change R²	.04*	.04*	.03	.04*	.01

Note: This table shows the standardized beta coefficients are presented. R2 = coefficient of determination. Change R2 = change for impulsivity dimensions entered in a separate step after controlling for gender, age and emotionality facets.

FA= Regret due to Foregone Alternatives, CS = Regret due to a Change in Significance, UC = Regret Due to Under-Consideration, OC = Regret Due to Over-Consideration

*p<.05, **p<.01.

Source: Authors' work

Impulsivity as a moderator of the relationship between post-purchase consumer regret and Emotionality

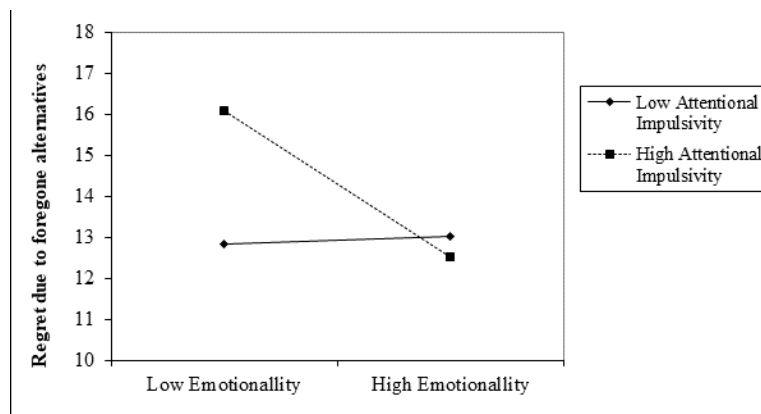
Results of this study showed four significant interaction effects between dimensions of impulsivity and facets of Emotionality in predicting consumer regret.

As can be see in the Figure 1, attentional impulsivity moderated the relationship between Emotionality and regret due to foregone alternatives ($\beta=-.18, \Delta R^2=.03, p<.01$). On the high level of attentional impulsivity, Emotionality showed a negative effect on regret due to foregone alternatives, while low-level attentional impulsivity showed a positive effect on this relationship.

As shown in Figure 2, attentional impulsivity moderated the relationship between Dependence and Regret due to foregone alternatives ($\beta=-.15, \Delta R^2=.02, p<.05$). On the high level of attention impulsivity, the negative relationship between Dependence and regret due to foregone alternatives was more pronounced, while the low-level attention impulsivity showed a positive effect on the relationship between Dependence and regret due to foregone alternatives.

Figure 1

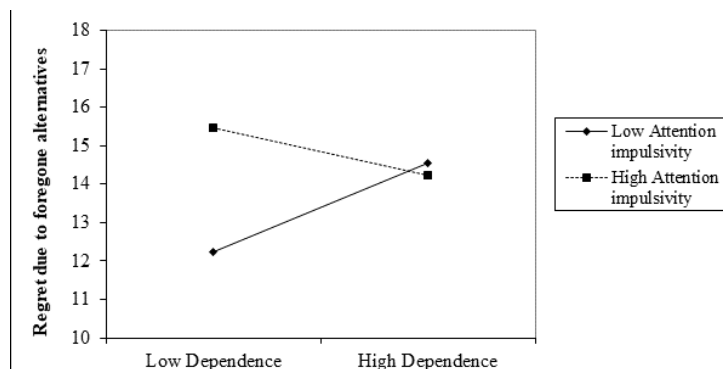
Interaction between Emotionality and attentional impulsivity in the prediction of regret due to foregone alternatives



Source: Authors' work

Figure 2

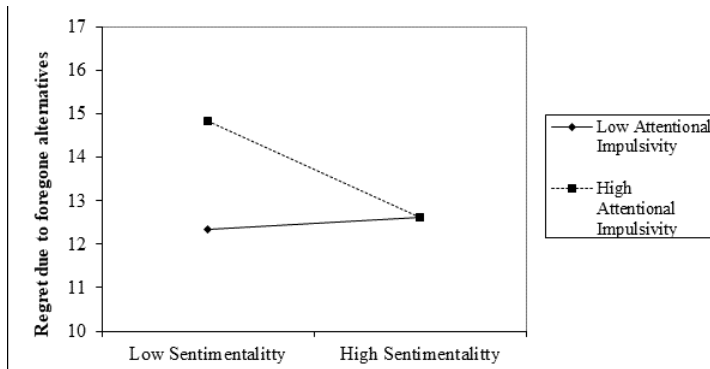
Interaction between Dependence and attentional impulsivity in the prediction of regret due to foregone alternatives



Source: Authors' work

Figure 3

Interaction between Sentimentality and attentional impulsivity in the prediction of regret due to foregone alternatives

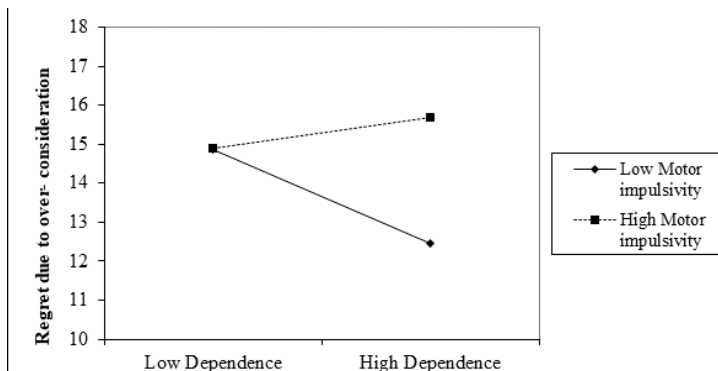


Source: Authors' work

Furthermore, as we can see in Figure 3, on the high-level attention impulsivity showed a negative effect on the relationship between Sentimentality and regret due to foregone alternatives ($\beta=-.13$, $\Delta R^2=.02$, $p<.05$).

Figure 4

Interaction between Dependence and motor Impulsivity in the prediction of regret due to over-consideration



Source: Authors' work

In contrast to attentional, motor impulsivity as moderator has the opposite effect on the relationship between Dependence and regret due to over-consideration (Figure 4); on the high-level motor impulsivity showed a positive effect on the relationship between Dependence and regret due to over-consideration ($\beta=.13$, $\Delta R^2=.02$, $p<.05$).

Discussion

The current study's aim was to investigate associations between consumer regret components, impulsivity dimensions and Emotionality domains. Considering that the PPCR scale was used in the Croatian language for the first time in this research, we will analyze internal psychometric characteristics and internal consistency of the PPCR scale. All PPCR subscales demonstrated adequate reliability (Cronbach's α was from .90 to .93), what is consistent with earlier studies (Lee & Cotte, 2009; Zulkarnain et al.,

2018). In line with the study by Zulkarnain et al. (2018), bivariate correlations between PPCR subscales were high, and ranged from .69 to .86, at the .01 significance level.

In general, the results partially supported the hypotheses and showed that the consumer regret components were differently associated with impulsivity dimensions, while there was no direct relationship between consumer regret and Emotionality.

As predicted, the PPCR total score was found to be positively associated with BIS-11 total score. This result is consistent with the conceptualisation of impulsivity as a specific personality trait underlying increased internalization characterized by negative emotions and distress (Evenden, 1999; Stanford et al., 2009). In addition, this result is in line with recent findings (Garofalo et al., 2018) showing a positive association between BIS-11 total score and all measures of emotion dysregulation (Garofalo et al., 2018). According to the theory of regret regulation (Zelenberg & Pieters, 2007) and in line with previous findings (Landman et al., 1995), regret is a complex distressing emotion associated with negative emotions and internalization symptoms (e.g. anxiety, depression, self-blame). Finally, our results showed that emotional dysregulation is a key link between impulsivity and consumer regret.

In accordance with Hypothesis 2, regret due to foregone alternatives was positively associated with BIS-11 total score, attention and non-planning impulsivity. This result is coherent with Decision Justification Theory (DJT) (Connolly & Zeelenberg, 2002) based on which Lee et al. (2009) developed the PPCR scale. Namely, regret due to foregone alternatives includes self-blame and a sense of responsibility for making bad decisions (Lee et al., 2009). Attentional impulsivity is positively related to neuroticism (Lange et al., 2017), and non-planning impulsivity is related to depressive episodes (Swann et al., 2008). These correlates of impulsivity encompass negative feelings such as self-blame which is one of the main components of regret due to foregone alternatives.

Hypothesis 3 was partially supported; the result showed that regret due to a change in significance positively correlated with BIS-11 total score and non-planning impulsivity, but not with attentional impulsivity. Given non-planning impulsivity reflects an inability to plan (Patton et al., 1995), these findings are in line with theoretical description by which regret due to a change in significance reflects regret caused by an individual's inability to predict the usefulness of a product in the future. Also, these findings are consistent with previous findings (Ekici & Dogan, 2013) showing that regret concerning after the process of purchasing which includes regret due to change in significance, was associated with self-assessment planning ability.

As predicted, regret for under-consideration was associated with BIS-11 and non-planning impulsivity but not with attention impulsivity, thus hypothesis 4 was partially confirmed. This result is in line with theoretical conceptualization regret due to under-consideration which assumes insufficient thinking before buying (Lee & Cotte, 2009) and findings which showed negative associations between non-planning impulsivity and indexes of executive functioning (Spinella, 2005).

As expected, (Hypothesis 5), regret due to over-consideration was unrelated to impulsivity. This is in line with the evidence which shows that impulsivity is related to low conscientiousness (Malesza & Ostaszewski, 2016) and "impulsive" decision-making (Reynolds et al., 2006), characterised by an incapacity to prevent adverse decisions.

Hypothesis 6 was partially confirmed. Our results showed that emotionality was not associated with regret at the bivariate level. However, results of regression analyses showed that anxiety uniquely positively predicted regret due to over-consideration and that Sentimentality uniquely negatively predicted regret due to foregone alternative and regret due to a change in significance. This is in line with notion that regret is aversive, irrational emotion (Lee & Cotte, 2009) linked to symptoms of

emotional distress such as depression and anxiety (Krainess et al., 2017), and evidence showing that neuroticism positively predicted consumer regret (Zulkarnain et al., 2018).

The lack of a stronger connection between Emotionality and regret is partly explained by the results of the moderating analyses. It seems that this relationship depends on the level of impulsivity. Namely, interactions between the impulsivity and Emotionality predicted different levels of consumer regret.

We found a negative effect of high attention impulsivity on the relationship between Emotionality and regret to due foregone alternatives. In the same way, high attention impulsivity moderates relations between Dependence and Sentimentality and regret to due foregone alternatives. Contrary, motor impulsivity has the opposite effect on the relationship between Dependence and regret due to over-consideration; on the high-level motor impulsivity relationship between Dependence and regret due to over-consideration showed a positive trend. These results indicated that motor impulsivity has a protective effect against negative emotions such as regret, while attention impulsivity increases these emotions.

Conclusion

Overall, the results indicate that impulsivity has an important role in understanding consumer regret as a multidimensional construct. Non-planning impulsivity has a particular impact on consumer regret because it uniquely predicted PPCR total score, regret to due foregone alternatives and regret due to under-consideration. Furthermore, attention impulsivity indirectly affects the relationship between consumer regret and emotionality: high level of attention impulsivity reduces the intensity of the connection emotionality and its facets of dependence and sentimentality with regret to due foregone alternatives. Motor impulsivity has the opposite effect on the relationship between dependence and regret due to over-consideration. High level of attention impulsivity enhances the relationship of these variables.

Results of this study showed importance of examining the impulsivity and consumer regret as complex constructs. Relationship between these constructs is influenced by some personality traits such as Emotionality and its domains. These findings are important for our understanding of consumer emotions that significantly affect their future consumer behavior. Furthermore, the results have practical and theoretical implications as they help create clearer insights into the mechanisms of irrational, impulsive buying that provoke negative post-purchase feelings and cause great financial problems for both, individuals and wider community.

Despite all the benefits, this research has some shortcomings and limitations. First, we used only self-report questionnaires, but not behavioral tasks that should be used in future studies. Second, the samples used are undergraduate students, which limits external validity. Therefore, future studies should also use general population samples and examine gender differences that can reasonably be expected from the measures used. Third, consumer regret was measured only by the PPCR Scale, which should be further validated by the comparative use of other measures of this construct.

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