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How compulsive and impulsive buying affect consumer emotional regulation. Is anxiety a differential element?

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Abstract

Purpose – Academic literature calls for research on the impact of psychological states derived from mental illness on detrimental consumer behaviour. The purpose of this study is to assess the impact of anxiety on the consumer's buying processes (compulsive and impulsive) and emotional regulation.

Design/methodology/approach – To carry out the statistical analysis, the data were obtained through an online survey (n = 726) of supermarket consumers. The treatment of the data was using partial least squares structural equation modelling (PLS-SEM).

Findings – The results obtained show that anxiety influences the generation of harmful behaviour, as it has a positive impact on compulsive and impulsive buying. In addition, compulsive and impulsive buying generate higher levels of consumers' emotional regulation.

Originality/value – This study contributes to the management of anxiety as a priority element to reduce harmful behaviour. Therefore, it provides useful information for marketing managers and professionals in psychological and healthy consumer processes.

Keywords Anxiety, Compulsive buying, Impulsive buying, Emotion regulation

Paper type Research paper

1. Introduction

The increase in psychological disorders has made mental health a priority objective for governments in all countries and for the population itself, as reflected in goal 3 of the 2030 sustainable development agenda. According to the Global Health Service Monitor (Ipsos, 2022), mental health is the biggest health problem faced by the Spanish population (51%), 16 points more than in 2021, thus placing it in the top 6 of the global ranking of countries most concerned about this issue, together with Sweden (63%), Chile (62%), Ireland (58%), Portugal (55%) and the United States (51%). Globally, despite a significant drop of 23 points in 2022,

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COVID remains the main concern for 47% of people, on average. Mental health (36%) comes second in the ranking, with an increase of five percentage points in those who consider mental health to be a major health problem.

The most common mental health problems are anxiety and depressive disorders (Santomauro *et al.*, 2021). According to the World Health Organisation (WHO), COVID-19 increased anxiety and depressive disorders by 26 and 28% in a single year (WHO, 2022a), which represents 76 million more people affected by anxiety than expected (Santomauro *et al.*, 2021). These figures clearly reflect that the impact of anxiety on mental health disorders goes beyond a temporary problem.

This epidemiological evidence has identified anxiety as an illness that was not discussed openly, and which now appears on television programmes, in newspapers and is even recognised by athletes, singers and celebrities (Sachdeva, 2022). It has in turn attracted the attention of academics in relation to consumer impact, which has led to an increase in research in this field (Blanco-González *et al.*, 2022). Anxiety disorders are characterised by excessive fear and worry and related behavioural disorders. Symptoms are severe enough to cause significant distress or functional disability (WHO, 2022b). Academic literature has identified that during COVID-19 in the US and Europe, people increased their consumption driven by panic or anxiety (Arumugam, 2020). Consumers compulsively increased their consumption of products such as food, hygiene products or DIY products (Blanco-Gonzalez *et al.*, 2022).

These mental disorders triggered by COVID-19 have led to changes in consumer behaviour, not only in the products that are purchased, but also in their purchasing behaviour (Blanco-González *et al.*, 2023). Previous research states that in these situations of perceived arousal, consumers developed positive behaviours towards compulsive and impulsive buying of products (Islam *et al.*, 2021). Compulsive buying is that which is addictive and uncontrollable, and impulsive buying is that which responds to a spontaneous and unplanned buying impulse (Darrat *et al.*, 2016). Previous reports indicate that the number of people who suffer from compulsive purchases is around 7% of the population, this data rises to 30% if we talk about a certain degree of lack of control, excessive purchases and not a disorder itself. Being women and young people between 18 and 30 years old, who present the highest levels of compulsive purchases (Top Doctors, 2020; World Health Organization, 2021). According to a study published by The NPD Group, 70% of purchases are made on impulse, with the 18–35 age group being the most likely to make impulse purchases (Start_Emprendedores|UC3M, 2021).

COVID-19 has been found to influence the life and thinking patterns of consumers, being a key factor in the impact on impulsive buying behaviour (Ahmed *et al.*, 2020). In turn, compulsive behaviour arises to reduce the level of stress, ignore or avoid negative mental pressures (Darrat *et al.*, 2016), such as anxiety caused by COVID-19. Other investigations have suggested that the level of purchases is linked to consumer anxiety, as an instrumental element that allows coping with their emotional disturbances (Kemp *et al.*, 2021). Kemp and Kopp (2011) identify this concept as consumer emotional regulation (ERC), which refers to the consumption of a good or service to alleviate, repair or manage a negative emotion, i.e. a situation of anxiety. However, this previous research has not shown whether anxiety is an antecedent of compulsive and impulsive buying, such that when the consumer perceives such a state of anxiety, it positively affects increased spontaneous and unplanned purchases. Moreover, these investigations have not identified whether impulsive and compulsive buying derived from a state of anxiety allow consumers to down-regulate these negative emotions derived from states of anxiety, and consequently, lead to a greater emotional balance of the consumer.

The aims of this study to fill these gaps are: First, to analyse the consequences of anxiety on two key consumer behaviour variables: compulsive and impulsive buying, and second, to analyse the effect of compulsive and impulsive buying on the positive aspects of emotions, i.e. consumer emotional regulation. Specifically, this research assesses: How can anxiety affect consumer behaviour? How do compulsive and impulsive purchases influence consumers' emotional regulation? The results derived from these questions will serve as a reference point to evaluate the validity of the implementation of marketing policies aimed at managing mental illnesses and the consumer's shopping experience to positively associate them with the emotional regulation of consumption.

This research shows an original contribution to the area of emotions and consumer behaviour in response to such an extreme psychological state as anxiety, which has an impact on countries around the world. It provides a new intellectual framework by identifying anxiety as a driver of compulsive and impulsive buying behaviour and investigates how buying behaviour impacts on emotional states of positive compliance. Ultimately, this research provides important insights for marketers to implement policies that help them positively tailor their purchasing processes and experience to consumer health.

The research is initially organised by the theoretical framework and hypotheses. Subsequently, the methodology and the results are presented. Finally, the results and implications for management are discussed.

2. Theoretical framework

2.1 Anxiety and compulsive buying

The data provided at the beginning of this study presents anxiety as a negative emotional state linked to depression, fear, and anger arising from a context of uncertainty (Wang *et al.*, 2021; Winter and Lavis, 2022). The concept of anxiety is associated with an imbalance caused by states of unease, tension, worry and fear of some event or situation that "may" occur (Roseman, 1984; Scherer *et al.*, 2001). It is a transient emotional disorder, representing physical arousal, tension, apprehension and fear of future events (Endler and Kocovski, 2001). Emotion Theory (Lazarus, 1991) states that emotions are the different cognitive, motivational and relational states that an individual expresses through the perception and evaluation of the environment. They are events that respond to changes in cognitive, attitudinal and behavioural components in response to the organism's evaluation of an internal or external, but relevant stimulus (Scherer *et al.*, 2001). In anxiety states, the evaluation of these internal or external stimuli provokes a "threat", even if it is not real (Stephan *et al.*, 1999). In other words, anxiety may not have an object, or the intensity of the negative feeling may not be in proportion to the to the actual events (Spielberger, 1975). Anxiety is the consequence of a threat, which has an impact on individual's happiness, self-esteem and ability to make sense of information from his or her experience (Dobson, 1985; Wagner and Morisi, 2019).

Compulsive buying is one in which the buyer feels concerned with "buying for the sake of buying" and is generated by frequent buying events or overwhelming impulses to buy, which are experienced as irresistible and meaningless (Müller *et al.*, 2015). From a psychological point of view, compulsive buying is a disorder in which an individual expresses the need to buy, which cannot be controlled (Faber, 2010). It represents a repetitive and uncontrolled shopping urge (Ridgway *et al.*, 2008). Compulsive shoppers show a lack of impulse control when shopping by expressing obsessive behaviour (Faber and O'Guinn, 1992; Kukar-Kinney *et al.*, 2016). Neurological research shows significant differences between compulsive and non-compulsive shoppers with respect to brain activity in regions known to be involved in control and decision-making (Raab *et al.*, 2011).

In the marketing field, this loss of control in compulsive shoppers is expressed by an extreme need to buy, greater awareness of shop prices, greater sensitivity to promotions, and propensity to use online shopping channels versus non-compulsive shoppers (Darrat *et al.*, 2016; Duroy *et al.*, 2014).

Academic literature has associated anxiety and compulsive buying with different theories (see for a review Redine *et al.*, 2023). Expectancy Theory establishes that a person has a predisposition to behave in a way according to the evaluation of reward that he expects to obtain (expectancy) after performing a behaviour (Vroom, 1964). Specifically, anxiety is a response caused by a stimulus (negative) that prevents relaxing behaviour and leads consumers to avoid certain behaviours (Omar *et al.*, 2021). Reactance theory states that when an individual's freedom is threatened, psychological reactance arises (Brehm and Brehm, 2013). Reactance is an emotional state aimed at restoring or ensuring freedom (Mühlberger and Jonas, 2019). Based on this theory, anxiety is explained as an emotional factor affecting consumer recovery. These theories provide a valid theoretical framework in considering the effects of anxiety on compulsive buying, since in these theories, consumers continue to buy to satisfy their internal psychological and social needs.

Previous research suggests that states of anxiety may be a cause to compulsive buying due to the continuous depressive state caused by anxiety (Darrat *et al.*, 2016). Medical studies have indicated that people diagnosed with depression have higher purchasing needs than those who are not (Duroy *et al.*, 2014). Compulsive buying is characterised by lack of control over concerns or impulses that lead to distress and may be related to mood and anxiety disorders (Black, 2022). In fact, compulsive buying behaviour should be classified as a type of impulse control disorder (Faber, 2010). The compulsive shopper is generally more anxious than the average shopper and tends to have lower self-esteem (Valence *et al.*, 1988). Japutra *et al.* (2019) report three causes that stimulate compulsive buying: material ideals, self-discrepancies and ideal-self buying motivation. Other authors suggest that compulsive buying occurs due to an emotional "failure" in the perception of the consumer and through the purchase they seek to correct this situation (Gallagher *et al.*, 2017). Along these lines, Duroy *et al.* (2014), point out that consumers engage in compulsive buying motivated by a lack of control of control and immediate feelings. Thus, it is likely that individuals who buy compulsively are characterised by pre-purchase anxiety. Therefore, the following hypothesis is determined:

H1. The level of consumer anxiety generates a higher probability of compulsive buying.

2.2 Anxiety and impulse buying

Impulsive and compulsive buying are two buying behaviours that are often incorrectly defined (Darrat *et al.*, 2016). Whilst compulsive buying is a recurrent loss of self-control in purchasing encounters, impulse buying is one that is generally sporadic (Faber, 2010). Impulsive buying arises when a consumer experiences an immediate, strong, and continuous impulse to buy (Rook, 1987). Impulsive buying represents unplanned and thoughtless purchasing decision making (Jones *et al.*, 2003). Therefore, impulsive buyers and compulsive buyers are on opposite ends. On the one hand, compulsive buying represents a continuous need to buy, and on the other hand, impulsive buying represents the urge to buy (Darrat *et al.*, 2016).

In relation to decision-making, impulsive buying represents a quick action in favour urgent consumption, in which consumers buy suddenly, thoughtlessly, immediately and quickly (Kacen and Lee, 2002). Previous studies have suggested that the increase in impulse buying may be motivated by situational elements such as increased availability of time and money (Jones *et al.*, 2003), but also by the psychological states of the consumer (Ozer and

Gultekin, 2015). Blanco-González *et al.* (2023) argue that consumer anxiety represents a psychological state of mind characterised by loss of control in the face of a "real or non-real" threat that leads to an increased desire in the purchase intention. Thus, if the impulsive consumer persistently reflects these behaviour, symptoms of lack of control are shown (Darrat *et al.*, 2016), i.e. anxiety. Previous research has pointed out that a core feature of anxiety is that it increases difficulties in managing uncertainty (Van den Bergh *et al.*, 2005). Thus, when consumers have high levels of anxiety, they are predisposed to make impulsive purchases in order to reduce uncertainty (Japutra *et al.*, 2022). Other studies have found that individuals with anxiety disorders showed significantly higher levels of impulsivity compared to those without an anxiety disorder (Japutra *et al.*, 2022). Therefore, when a consumer exhibits high levels of anxiety, and in order to reduce uncertainty, they are more likely to develop greater impulsive buying behaviour.

H2. The consumer's level of anxiety generates a higher probability of making impulse purchases.

2.3 Compulsive buying and emotional regulation

The consumer's emotional regulation specifically Consumer emotion regulation is specifically defined as the purchase of a product in order to alleviate, repair, or manage an emotion (Kemp and Kopp, 2011). Coping Theory states that individuals develop reactive behaviours to cope with stressful emotional states (Darrat *et al.*, 2016; Lazarus, 1991). Escape Theory suggests that when faced with certain negative emotional situations, individuals make compulsive purchases as a mechanism to alleviate that tension (Yi, 2012). Compulsive purchases are accompanied by pleasure, but also followed by remorse and guilt due to inappropriate spending behaviour and its negative consequences (Bui and Kemp, 2013). In this way, compulsive buying causes consumers to hinder the long-term negative consequences of their actions and to improve their emotional state in the short term due to the positive reinforcement that it provides (Faber and O'Guinn, 1992).

Different studies have associated compulsive buying with the consumer's search for emotional states. Compulsive buyers show a predisposition to distort objective reality, higher levels of depression, material consumption, and obsession in relation to non-compulsive buyers (Faber, 2010). Müller *et al.* (2015) claim that the compulsive consumer focusses on the pleasure produced by the process of buying, researching, choosing and ordering, but not on the use of the products. As a result, compulsive consumers can reach a high level of indebtedness leading to personal distress, family and social problems (Achtziger *et al.*, 2015). These situations create a negative and undesirable stress for the buyer that is only dissipated by the purchase (Faber, 2010). Darrat *et al.* (2016) state that compulsive shoppers express high feelings of negative affect and low positive affect, in which negative affect decreases after compulsive buying behaviour. Consequently, compulsive buying is configured more as a short-term pleasure of negative emotions than a demand to obtain certain products. This is why individuals who engage in compulsive buying are likely to show positive emotional states derived from the purchase. Therefore:

H3. Compulsive buying generates higher levels of consumer emotional self-regulation.

2.4 Impulsive buying and emotional regulation

Another relevant factor associated with emotional regulation is impulse buying. Impulsive buying as a predisposition to buy suddenly, thoughtlessly, and urgently; represents a behavioural characteristic associated with positive cognitive states (Kemp *et al.*, 2014). Previous studies have suggested that consumers show positive emotions when buying impulsively, such as feeling happy, joyful and lucky (Verplanken and Herabadi, 2001).

Furthermore, due to the positive feelings it generates in the consumer (Japutra *et al.*, 2022), people who experience negative emotions may also consume or buy impulsively with the purpose of restoring or "undoing" negative emotions, in other words, to achieve greater emotional regulation (Kemp *et al.*, 2021). Atalay and Meloy (2011) point out that consumers often use unplanned hedonic purchases to mitigate bad moods or strengthen good moods. Verplanken and Sato (2011) suggest that impulse buying is often linked with positive and negative emotions of psychological states, particularly as an instrumental self-regulatory mechanism. Kemp *et al.* (2014) demonstrated that when faced with negative emotional states, such as fear or anxiety, consumers make emotional regulation efforts to mitigate their effects through hedonic purchases. Therefore, impulse buying behaviour could be understood as an instrument that allows a search for positive emotions or to mitigate negative ones, i.e. a greater regulation of the consumer's psychological functioning. Therefore:

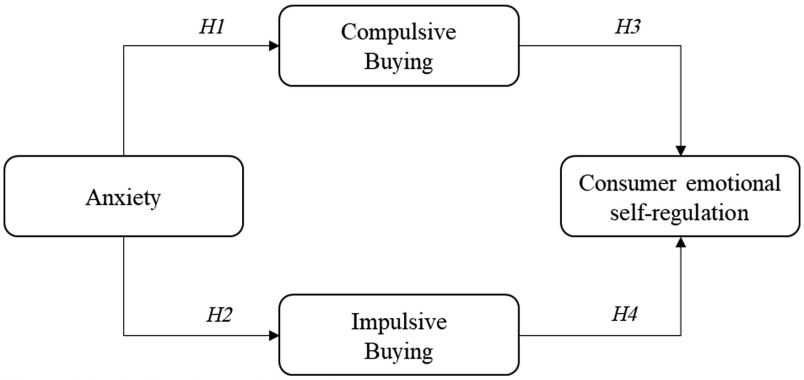
H4. Impulsive buying generates higher levels of consumer emotional self-regulation.

In relation to the literature review and the hypotheses proposed, the model to be tested with the empirical study is presented (Figure 1). The model shows graphically that anxiety has a direct and positive effect on compulsive buying (H1) and impulsive buying (H2); compulsive buying has a direct effect on consumer emotional self-regulation (H3); impulsive buying has a direct and positive effect on consumer emotional self-regulation (H4).

3. Sample and methodology

3.1 Sampling and data collection

To carry out our research, we focussed on the retail sector, specifically on Spanish supermarkets, such as Mercadona, Carrefour, Lidl, Dia, Eroski, Alcampo and Hipercor, since they represent over the 60% of the retailing market (Kantar, 2021). This is due to the fact that these establishments concentrate a large volume of purchases, as they are of primary necessity. These are companies where the purchase intention is frequent, unplanned, there is a strong interaction with service providers and other customers, and they have not been strongly affected by the online market (Panzone *et al.*, 2021). In addition, during periods of uncertainty and health crises, many customers have turned to supermarkets to make purchases derived from a state of anxiety due to a possible threat of stock-outs of certain products (Omar *et al.*, 2021) as mechanisms that allow them to regulate this emotional state. These reasons justify the choice of this type of establishment as a valid framework to



Source(s): Authors' own elaboration

Figure 1.
Proposed model and hypotheses

evaluate the effect of anxiety on compulsive and impulsive purchases and consumer emotional regulation.

Initially, an on-line pre-test was distributed, and 70 responses were gathered with the aim verifying the scale and adapt any unclear question of the questionnaire. After the analysis of the pre-test results, a few items of the final survey where modified. The final data were collected between June and November 2022 through an online questionnaire about the retail sector (specifically supermarket consumers). The online questionnaire was sent through a market research consultancy that ensured a probabilistic random method and representation of the Spanish population over 18 years old, 726 responses were obtained from regular consumers. This sample allows us to infer the population results with an error of ±3.64% for a level of confidence of 95% considering the situation of the most unfavourable population variance p = q = 50%.

Control variables (Table 1) were incorporated to the questionnaire related to: frequency of purchase, supermarket brand, and socio-demographic and socio-economic characteristics of the respondents. In addition, an IP address control was established to prevent the same user from sending more than one response.

The evaluation of data by means of PLS requires a minimum sample size with the objective of the method being robust and the results being valid (Hair and Alamer, 2022). Authors such as Chin and Newsted (1999) suggest using the power method instead of the traditional method of 10 cases (Barclay *et al.*, 1995), due to its low precision. The G*Power 3.1.9.2 software was used to obtain the minimum sample size necessary to have sufficient test power (Faul *et al.*, 2007), recommended by authors as Hair *et al.* (2018). The results require a

Characteristics	Total	(%)
Gender		
Male	348	48
Female	378	52
Age		
18–24	109	15
25–34	145	20
35–44	167	23
45–65	189	26
Over 66	116	16
Have you made any purchase of products for your home in the last 2 months in a supermarket?	Yes	100
	No	
Purchase frequency		
Rarely	3	1
Occasionally	62	9
Once a week	312	43
Twice a week	232	32
Daily	116	16
Name of supermarket		
Mecadona	240	33
Carrefour	174	24
Lidl	116	16
Dia	80	11
Others (Alcampo, Consum, Hipercor, etc.)	116	16
Total sample	*726*	–

Source(s): Authors' own elaboration

Table 1. Sample profile

minimum sample size of 68 cases for a power test of 80%, minimum requirement (Cohen, 1988). Our research meets these requirements by obtaining 726 valid cases, which shows a power test clearly superior to the minimum required.

3.2 Measurement of variables

Table 2 presents the measurement of the proposed variables, which was carried out through items adapted to those of previous studies. Likert-type scales (1–7) are used for all items, where 0 refers to strongly disagree and 7 to strongly agree.

3.3 PLS-SEM statistical analysis

Partial least squares structural equation modelling (PLS-SEM) was used for data processing and hypothesis testing. PLS-SEM, is a multivariate analysis method its main purpose is the prediction of dependent variables through the estimation of *path models* and is mainly designed for exploratory studies (Cachón-Rodríguez *et al.*, 2021; Henseler, 2017). Data

Construct	Item	Description	Source
Anxiety	AN1	When I buy in this supermarket, I feel anxious	Ekman *et al.* (1980), Kemp *et al.* (2021)
	AN2	When I buy in this supermarket, I feel stressed out	
	AN3	When I buy in this supermarket, I feel nervous	
	AN4	When I buy in this supermarket, I feel worried	
	AN5	When I buy in this supermarket, I feel uneasy	
	AN6	When I buy in this supermarket, I feel scared	
	AN7	When I buy in this supermarket, I feel fearful	
	AN8	When I buy in this supermarket, I feel alarmed	
	AN9	When I buy in this supermarket, I feel panicked	
Compulsive buying	CB1	I just want to buy products regardless of what it is	Darrat *et al.* (2016), Islam *et al.* (2021), Sneath *et al.* (2009)
	CB2	I buy products to make myself feel better	
	CB3	I buy products I can't afford	
	CB4	I buy products to distract me	
	CB5	I buy products that I do not use	
Impulsive buying	IB1	I buy products that are not necessary	Darrat *et al.* (2016), Islam *et al.* (2021), Sneath *et al.* (2009)
	IB2	I buy products that I would not often buy	
	IB3	I buy products and then don't know why I bought them	
	IB4	I buy products that I had no planned	
Consumer emotional self-regulation	ER1	I buy more products than usual in order to please myself	Kemp *et al.* (2014, 2021)
	ER2	I buy products, even if they are not very healthy	
	ER3	I buy products to calm myself down (e.g. food, drink, entertainment, leisure)	

Source(s): Authors' own elaboration

Table 2. Constructs and items used

processing using PLS-SEM involves assessing the (outer) measurement model (Chin, 1998). Secondly, the structural (inner) model analysis must be performed in order to confirm the proposed relationships. Specifically, we use the software SmartPLS4 V.4.0.8.

4. Results

4.1 Assessment of measurement model (outer)

Assessing the measurement model of the estimated constructs type-A (reflective) is developed through different statistics: (1) examine the loadings and the *p*-value of the items; (2) estimate constructs reliability; (3) evaluate average variance extracted; (4) and check discriminant validity through the Fornell–Larcker criterion and heterotrait-monotrait ratio (Hair and Alamer, 2022).

4.1.1 Reliability and convergent validity. Examine the loadings of the individual items require values above 0.7 and significant *p*-value 0.5 o below (Hair and Alamer, 2022). To estimate the constructs reliability are used: Cronbach's Alpha (CA), Composite Reliability (CR) and rho_A statistic, values above 0.7 are considered adequate (Dijkstra and Henseler, 2015). For average variance extracted values above 0.5 represent indications of convergent validity (Chin, 2010). As shown in Table 3, both reliability and convergent validity are within the indicated cut-off values.

4.1.2 Discriminant validity. For the evaluation of the discriminant validity through the Fornell Larcker criterion, the square AVE roots of each latent variable should be greater than the correlations that it has with the rest of the latent variables of the model (Fornell and Larcker, 1981). As can be seen in Table 4, none of the constructs presents validity problems according to Fornell-Larcker criterion.

However, Henseler *et al.* (2016) developed simulation studies to demonstrate that discriminant lack of validity is best detected by means of the heterotrait-monotrait ratio

Construct	Item	Loadings	CA	CR	rho_A	AVE
Anxiety	AN1	0.862***				
	AN2	0.829***				
	AN3	0.874***				
	AN4	0.794***				
	AN5	0.896***	0.953	0.960	0.957	0.730
	AN6	0.905***				
	AN7	0.894***				
	AN8	0.872***				
	AN9	0.747***				
Compulsive buying	CB1	0.850***				
	CB2	0.819***				
	CB3	0.825***	0.870	0.906	0.879	0.659
	CB4	0.708***				
	CB5	0.849***				
Impulsive buying	IB1	0.867***				
	IB2	0.847***	0.889	0.923	0.890	0.751
	IB3	0.876***				
	IB4	0.875***				
Consumer emotional self-regulation	ER1	0.859***				
	ER2	0.789***	0.806	0.885	0.825	0.719
	ER3	0.893***				

Note(s): $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$
Source(s): Authors' own elaboration

Table 3.
Reliability and validity

(HTMT). The HTMT ratio helped confirm more rigorously that all constructs achieved discriminant validity and that none of the confidence intervals contained a value of one, suggesting that all variables were empirically different. To check the discriminant validity HTMT ratio, previous studies have suggested a value less than 0.85 or 0.90 (Cachón-Rodríguez *et al.*, 2022; Kline, 2015). As evidenced by the data in Table 5, the constructs meet the discriminant validity criteria, so they are different from each other.

4.2 Assessment of the structural model (inner)

Once the reliability and validity of the measurement instrument has been evaluated, we evaluate the validity of the structural model. To do so, we examine: (1) the collinearity through the invariance inflation factor (structural VIF); (2) size and significance of the *path* coefficients; (3) R^2 coefficient of determination; (4) the effect size f^2; and (5) the test Q^2 (Hair and Alamer, 2022).

In relation to multicollinearity, the cut-off value of the structural VIF most conservative is 3.3 or less (Hair *et al.*, 2019). Table 6 shows that the correlations of the constructs are adequate to the range of scores indicated, so there are no collinearity problems. Previous studies (Kock, 2015) suggest that a VIF value greater than 3.3 also indicates that the model is contaminated by common method bias. Our inner model shows values less than 3.3, so the model can be considered free of common method bias.

Using bootstrapping to assess the significance of coefficients path through a re-sampling of 5,000 subsamples as recommended by Hair *et al.* (2018), Table 7 shows that anxiety

Table 4. Discriminant validity: Fornell-Larcker criterion

Construct	Anxiety	Compulsive buying	Emotional self-regulation	Impulsive buying
Anxiety	0.854	N/A	N/A	N/A
Compulsive buying	0.397	0.812	N/A	N/A
Emotional self-regulation	0.472	0.740	0.848	N/A
Impulsive buying	0.416	0.794	0.674	0.866

Note(s): N/A = Not applicable
Source(s): Authors' own elaboration

Table 5. Discriminant validity: Heterotrait-Monotrait ratio (HTMT)

Construct	Anxiety	Compulsive buying	Impulsive buying
Anxiety	N/A	N/A	N/A
Compulsive buying	0.419	N/A	N/A
Impulsive buying	0.444	0.847	N/A
Emotional self-regulation	0.493	0.760	0.790

Note(s): N/A = Not applicable
Source(s): Authors' own elaboration

Table 6. VIF results

Construct	Compulsive buying	Impulsive buying	Emotional self-regulation
Anxiety	1.000	1.000	N/A
Compulsive buying	N/A	N/A	2.088
Impulsive buying	N/A	N/A	2.088

Note(s): N/A = Not applicable
Source(s): Authors' own elaboration

Relationship	Standardised beta	*t*-value (Bootstrap)	Bias	Confidence intervals 5.0%	95%	f^2 (Effect)
H1: Anxiety → Compulsive buying	0.397^{***}	10.918	0.003	0.239	0.450	0.187 (Medium)
H2: Anxiety → Impulsive buying	0.416^{***}	11.203	0.002	0.348	0.471	0.209 (Medium)
H3: Compulsive buying → Emotional self-regulation	0.554^{***}	7.798	0.004	0.426	0.662	0.263 (Medium)
H4: Impulsive buying → Emotional self-regulation	0.234^{**}	3.122	−0.003	0.120	0.365	0.047 (Small)

Note(s): $R^{2:}$ 0.568 (self-regulation); 0.183(impulsive); 0.171 (compulsive)
Q^2: 0.196 (self-regulation); 0.167 (impulsive); 0.151 (compulsive)
$^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$ (based on t (4,999), one-tailed test)
Source(s): Authors' own elaboration

Table 7. Hypothesis testing and R^2, f^2, Q^2 statistics

positively and significantly influences compulsive buying (H1; $\beta = 0.397$; $p < 0.001$) and impulse buying (H2; $\beta = 0.416$; $p < 0.001$). The direct effect of compulsive buying on emotional self-regulation revealed a positive and significant influence (H3; $\beta = 0.554$; $p < 0.001$). Finally, the direct effect of impulsive buying positively influences emotional self-regulation (H4; $\beta = 0.234$; $p < 0.01$). Some researchers have proposed reporting confidence intervals along with t values. Confidence intervals have the advantage that they are a completely non-parametric approach and are not based on any type of distribution (Henseler *et al.*, 2009). Table 7 does not include the zero value for any confidence interval of the path coefficients; therefore, the proposed hypotheses are accepted.

Once it has been verified that there are no collinearity problems and that the path coefficients are significant, the determination coefficient R^2 is examined as a measure of predictive power. The R^2 coefficient indicates the amount of variance that is explained by the predictor variables of an endogenous construct. In the field of social sciences, values between 0 and 0.10 are considered weak, 0.11 to 0.30 modest, 0.30 to 0.50 moderate, and >0.50 substantial (Hair and Alamer, 2022). As shown in the footer of Table 7, compulsive and impulsive buying have modest values and self-regulation has strong explanatory power due to its predictors.

In addition, the coefficient f^2 evaluates the effect that an exogenous variable contributes to explaining an endogenous variable in terms of R^2. The guidelines for assessing f^2 values higher than 0.02, 0.15 and 0.35 depict small, medium, and large f^2 effect sizes (Cohen, 1988). Table 7 shows that the effect of anxiety on compulsive and impulse buying is medium. The effect of impulse buying on emotional self-regulation consumer is medium, and the effect of impulse buying on emotional self-regulation consumer is small.

In order to evaluate the model's predictive relevance, we also examine Stone–Geisser Q^2 value (Geisser, 1974; Stone, 1974). Q^2 values estimated by the blindfolding procedure larger than 0 suggest that the model has predictive relevance (Hair *et al.*, 2019). Table 7 displays Q^2 values of 0.151 (compulsive buying), 0.167 (impulsive buying) and 0.196 (emotional self-regulation consumer) so the model has relevance predictive.

5. Discussion and implications

5.1 Findings

The aim of this research is to assess the impact of anxiety on consumer behaviour, specifically on compulsive and impulsive buying. In addition, the effect of compulsive and

impulsive buying on the consumer's emotional regulation, i.e. the pleasure of making such harmful purchases is assessed. The structural model results showed a relationship between anxiety and a greater probability of making compulsive (addictive and uncontrollable) and impulsive (unplanned) purchases. This result empirically showed that the higher probability of compulsive and impulsive purchases between June and November 2022 was related to anxiety. This may be because those surveyed after COVID-19 feel greater anxiety that prevents them from having control over their purchasing behaviours. However, the results also showed that these less desirable behaviours (compulsive and impulsive) can be performed by the consumer to dampen the effects of a state of anxiety. Consequently, compulsive and impulsive purchases were related to measures that allow greater control through the generation of emotional regulation of the consumer.

5.2 Theoretical contribution

This study makes several contributions to the psychological effects on shopping behaviour. In particular, this study assesses whether anxiety leads to a loss of consumer control, expressed by negative behaviour such as compulsive and impulsive buying. In addition, it shows that people consciously engage in certain purchasing behaviours in order to mitigate their emotional consequences and provoke a positive emotional state. This aspect responds to the call in the academic literature as to whether psychological states resulting from mental illnesses produce detrimental consumer behaviours (Blanco-González *et al.*, 2023; Japutra *et al.*, 2022; Kemp *et al.*, 2021). This will provide managers with essential information to develop different strategies to avoid damaging consumer behaviour and improve relationships with the company.

The results show, firstly, the level of consumer anxiety generates a higher compulsive buying (Hypothesis 1). These findings reinforce the importance of Expectancy Theory in emotional states (i.e. anxiety) as evocative of the compulsive buyer's behavioural responses. According to the Blanco-González *et al.* (2023), anxiety is the result of aversive stimulation that prevents people from behaving in a relaxed and natural way and from performing certain behaviours that allow them to reduce it. Thus, the expectation of danger, fear or trigger motivates people to make compulsive purchases to cushion the negative effects of anxiety. Therefore, it is important to consider the role of response expectancy in the prevention of anxiety (Kirsch, 1997). Previous research have suggested that compulsive buying may be generated by negative psychological states such as depression or stress (Darrat *et al.*, 2016; Sneath *et al.*, 2009), showing that the findings are robust with previous research in other contexts. Understanding that anxiety drives compulsive buying is important from the consumer's point of view. If anxiety impacts on consumers making purchases with little or no consideration of their long-term consequences (i.e. compulsively), anxiety management should be a priority for the compulsive shopper. This is particularly relevant in situations or contexts of uncertainty (Japutra *et al.*, 2022). For example, during COVID-19, the greater the fear or anxiety about product shortages, the more compulsive purchases were made of hygiene or health-related products.

Second, the results reveal that the level of consumer anxiety generates a higher impulse buying (Hypothesis 2), which is inconsistent with findings suggested by previous research on other types of affective states such as depression (Sneath *et al.*, 2009). This is because psychological states may increase consumer pleasure seeking in uncertain or difficult circumstances (e.g. COVID-19), and unplanned purchases may be seen as a reward or a treat (Kemp *et al.*, 2021; Ramanathan and Menon, 2006). Thus, shoppers showing anxiety symptoms may have resorted to impulse purchases as a rationalisation tool, i.e. to reduce uncertainty.

Third, the results reflect that compulsive buying generates higher levels of consumer emotional self-regulation (Hypothesis 3). This reinforces Coping Theory (Faber, 2010), which identifies compulsive buying as an escape from negative emotional states by producing a state of self-regulation for the consumer. In other words, compulsive buying is an instrument that buffers the consumer's anxiety effect in the search for greater emotional self-regulation. Therefore, anxiety management is a key element that relieves the tension or reduces the effect of compulsive buying on emotional regulation.

Fourth, the results show that impulse buying generates higher levels of consumer emotional self-regulation (Hypothesis 4). This has confirmed what has been suggested in other studies, which argue that in an attempt to cope with negative emotions (anxiety), individuals regulate negative emotional responses through the purchase behaviour of hedonic goods associated with impulse buying (Bui and Kemp, 2013; Zheng *et al.*, 2019). These findings are in line with coping theory (Lazarus, 1991), where impulsive buying is seen as a means to achieve emotional regulation. However, impulse buying is not so harmless, as excessive consumption to mitigate negative emotions can be detrimental to consumers' health and well-being (Kemp *et al.*, 2021). This highlights that anxiety management is a priority element in the search for alternatives, different from impulse buying, to mitigate negative emotions.

5.3 Managerial contribution

The results have important implications for both marketing and consumer health managers. On the one hand, the question is whether compulsive and impulsive buying are behaviours that marketing managers should encourage in the spirit of building a stronger relationship with consumers. Obviously, the answer is no, managers should help to reduce harmful behaviours. The results show that these buying behaviours may be influenced by anxiety. In this state of anxiety, shoppers lose control, leading to overspending and resulting in financial, family and social difficulties. In this line, marketing managers should help the consumer to manage anxiety and avoid this buying behaviour. To this end, managers can support non-profit organisations that help consumers reduce their shopping disorder and anxiety. They can also develop programs with local entities that promote co-management of stress, fear or anxiety with appropriate financial planning at home. In addition, since different studies (Japutra *et al.*, 2019; Top Doctors, 2020) have shown that young consumers are more sensitive to compulsive and impulsive purchases, managers could encourage the development of financial education programs in schools and universities that help people manage their emotional states and their financial planning in purchasing behaviours. In this way, managers can also train and encourage their workers to participate in such financial education programs. They could also develop communication campaigns where the negative effects of anxiety on compulsive and impulsive purchases are shown (such as those related to poor planning or shown the erosion in family relationships). Since anxious consumers are more difficult to satisfy and demanding than non-anxious consumers (Japutra *et al.*, 2022), marketing managers can give priority to anxious customers in terms of return policies or complaint resolutions. Furthermore, anxious consumers tend to be receptive to social rewards, compared to financial rewards (Japutra *et al.*, 2022; Mende and Bolton, 2011). Thus, managers could also, for example, prioritise anxious customers when you have to make personal apologies derived from an error in the purchase process, avoiding negative comments that could influence other customers and therefore your financial results. From the communication side, marketing managers can track social media comments and promote messages that avoid compulsive and impulsive behaviour or even eliminate them. For example, messages could highlight that supermarkets help people to stock up on products but avoid stockpiling unnecessary products.

The findings of this research also show that many of the compulsive and impulsive purchases were motivated by a search for emotional relief (emotional regulation). Engaging in such behaviours can lead to financial, social or family problems, but it can also affect consumers' loss of coping skills, especially in those suffering from anxiety (Kemp *et al.*, 2014). In situations of high uncertainty or crises, consumers can be assisted in emotional regulation processes by re-categorising their needs (Poynor and Haws, 2008). Social marketers can promote actions that allude to non-purchasing activities in order to alleviate emotional pressure. This could be done, for example, by informing through social media about the importance of doing sport, spending quality time with family, catching up on career goals, and relaxation or breathing exercises.

5.4 Limitations and future lines of research

Whilst this research provides further insight into the effect of psychological processes and shopping behaviours on emotional states, it is not without limitations. One limitation is determined by the level of sample heterogeneity, as it is composed of purchases made in supermarkets over a period of time. If other products or organisations had been assessed, the results might have been different. We have also focussed on anxiety as a psychological process related to decision-making and emotional regulation. Therefore, future studies could, include and evaluate other psychological variables related to mental illnesses such as fear or stress. These futures could also consider evaluating the impact of these psychological aspects with other more specific marketing output variables such as perceived value, purchase intention or consumer satisfaction, as well as exploring possible mediating or moderating effects. Furthermore, from a different perspective, in line with a recent paper (Kakaria *et al.*, 2023), the effect of anxiety could be evaluated through a neurophysiological perspective. Finally, a greater heterogeneity of unobserved stakeholder groups or organisations could be considered: employees, managers, size of the organisation or industry, etc. as well as descriptive factors of the sample: age, gender, income level, etc.

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Further reading

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