

The impact of social exclusion on impulsive buying behaviour of consumers on online platforms: Samples from China

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ABSTRACT

Social exclusion is a common phenomenon in modern social life that has significant negative effects on those who were excluded. The excluded may adopt strategic impulsive consumption behaviors in order to gain a sense of belonging and repair social relations, and the rapid development of online shopping platforms has intensified the occurrence of impulsive purchasing behaviors. Therefore, the internal mechanism between the two needs to be clarified. This study utilised SPSS 26.0, Mplus8.0 and HLM6.08 to analyse the data from 417 questionnaires, focused on exploring the internal mechanism between social exclusion and impulsive buying behaviour, and yielded the following conclusions. (1) Social exclusion is positively correlated with impulsive purchasing behaviour. (2) Relative deprivation plays a mediating role between social exclusion and impulsive buying behaviour. (3) The need to belong plays an intermediary role between social exclusion and impulsive buying behaviour. (4) Self-control plays a moderating role between social exclusion and impulsive buying behaviour. These conclusions could provide a basis for enterprises to formulate rational marketing strategies and create consumer demand.

1. Introduction

Social exclusion refers to the phenomenon in which a person is ignored or rejected by other individuals or groups [1]. Social exclusion not only negatively impacts physical and mental health [2] but also affects people's consumption behaviour [3]. Impulsive buying is a type of unplanned behaviour caused by an internal, irrepressible desire and is characterised by the abrupt, passionate purchase of unnecessary items [4,5]. Impulsive buying is a special hedonic consumption behaviour. Although impulsive buying behaviour can make consumers feel immediate enjoyment and satisfaction (such as generating a sense of pleasure) [5], it also brings many adverse consequences to individuals. Such as guilt and disappointment after shopping, debt burden [6], etc. Therefore, it is particularly important to explore the influencing factors and mechanism of impulsive buying behaviour for individual physical and mental development and economic stability. Studies have shown that online shoppers are prone to impulsive buying behaviour [7]. With the rapid development of e-commerce platforms such as Taobao, Jingdong and Pinduoduo in China, online shopping has become an indispensable part of Chinese people's daily life. For example, the number of online shoppers in China continues to grow annually and reached 782 million in 2021. Therefore, samples of this study are mainly from online shoppers in China. At present, impulsive buying behaviour has become a hot topic for scholars to study, and there are still some areas that need to be further explored. On the one hand, previous scholars primarily study the causes of impulsive buying behaviour from two perspectives: exogenous (external) and

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endogenous (internal) causes. Exogenous factors include creating an appealing atmosphere [8]; merchant marketing activities [9]; and a shopping presence [10]. Endogenous factors include consumers' shopping motivations [11], emotions [12], and perceptions of available information [13]. The research on the impact of social exclusion in the field of marketing has emerged gradually in recent years, and some research results have been achieved [3,14]. However, there are relatively few studies on social exclusion as a cause contributing to impulsive buying [15,16]. On the other hand, in these limited studies, the influences of social exclusion on individuals' impulsive behaviors (such as impulsive buying behaviour) are mostly discussed from the perspectives of stress level [17,18], cognitive dysfunction [19] and personality characteristics [20]. Few scholars have explored the relationship between social exclusion and impulsive buying behaviour from the perspective of individuals' emotional belonging-need. Therefore, the internal mechanism between the two needs to be clarified.

In the internal mechanism between social exclusion and impulsive buying behaviour, there may be many other factors that play a role. Relative deprivation refers to a subjective cognitive and emotional experience in which an individual or group feels disadvantaged relative to a reference group and, as a consequence, experiences negative emotions such as dissatisfaction or anger [21]. Consumers with a relatively high sense of deprivation are likely to try to compensate for their inner imbalance by continuing to shop and buying more products than they need [22]. The need to belong refers to an individual's desire to have positive, stable interpersonal communications as well as to the aversion to being excluded [23]. Studies have shown that experiencing social exclusion can increase people's need to belong [24]. However, when their need to connect directly with others goes unmet, people connect indirectly through things, using consumption behaviours to eliminate discomfort and the sense of threat while satisfying their need to belong [24,25]. Thus, both a feeling of relative deprivation and the need to belong may have roles to play in the relationship between social exclusion and impulsive buying behaviour. Self-control is an important human psychological function for actively controlling thoughts, emotions and behaviours; resisting unreasonable impulses and conforming to social norms through self-control is conducive to achieving long-term goals and overcoming automatic responses [26,27]. Studies have shown that people with sufficient resources for self-control are capable of resisting temptation and making rational decisions [28]. Therefore, self-control may play some modulating, manipulating, and inhibiting roles between social exclusion and impulsive buying behaviour.

This study aims to clarify the internal mechanism of impulsive buying behaviour and its relationship to social exclusion. First, it explores the relationship between the above variables from a theoretical perspective, examines the mediating role of relative deprivation and belongingness needs, and the moderating role of self-control, and proposes relevant hypotheses. Second, this study conducts empirical analysis to verify relevant hypotheses. Finally, according to the results of empirical analysis, countermeasures and suggestions are put forward, which provides the basis for enterprises to develop reasonable marketing strategies by utilising social situations to create consumer demand.

2. Theoretical review and research hypotheses

2.1. Social exclusion and impulsive buying behaviour

Social exclusion has various manifestations, including direct exclusion, isolation, and rejection. All of these hinder the development of relationships and the search for belonging, negatively affecting individuals in many ways. The effects of social exclusion include emotional, behavioural, and physiological aspects, and most of the effects are negative [1,29–32]. First, social exclusion can trigger a wide range of negative emotions [33], such as anger, anxiety, sadness, and social distress [34,35]. Second, it may lead to cognitive dysfunction [19]. After being rejected, individuals automatically mobilise their cognitive resources to interpret the stressful situation and defend against it. This process consumes energy and resources that could have been expended elsewhere, and this is reflected in the greater difficulty these individuals have subsequently in logical reasoning, intelligence tests, memory, and other tasks involving complex cognitive processing. Thus, executive function [36], inhibitory control, working memory [37,38], and other functions are damaged. Finally, according to the general strain theory, social exclusion affects an individual's stress level [17]. After a person is subjected to social exclusion, negative emotions such as social anxiety, depression, and loneliness usually follow [39]. To re-establish social relationships, excluded individuals often adjust their behaviour [40].

Although behavioural change is one of social exclusion's effects, people make adjustments in a variety of ways, and some may respond with indirect strategies. Excluded individuals whose basic psychological needs have been frustrated seek other ways to compensate [41], and consumption is a common way to adjust to the threat posed to their self-concept or make up for the frustration of psychological needs [42]. Meanwhile, according to the view called "cognitive overload", people who have been ostracised are flooded by negative emotions they had previously repressed, which consume their cognitive resources and lead to self-defeating behaviours [43]. Thus, excluded individuals often exhibit impulsive traits [18]. Therefore, this study proposes the following hypothesis:

H1. Social exclusion is positively correlated with impulsive buying behaviour.

2.2. The mediating role of relative deprivation

A common negative social phenomenon, social exclusion leads individuals to feel that have been treated unfairly, perhaps because of membership in a certain group; they may also be deprived of the opportunity to establish good interpersonal relations along with important social connections and benefits, all resulting in a high level of relative deprivation [44]. Such a sense of relative deprivation is disadvantageous in multiple ways, harming an individual's mental state, physical health, and lifestyle [45–51]. Insecurity is one of the feelings experienced by an individual in a state of relative deprivation, and insecurity is the main driving force of materialistic

values [52]. Individuals in this state may feel unable to adapt well in life and may be motivated to try to eliminate or suppress their unpleasant emotions [53]. Materialistic values can provide a compensatory strategy to counteract the negative effects of insecurity. Impulse buying is a unique phenomenon within materialistic behaviour [54]. Studies have found that to a significant extent, an individual's state of relative deprivation can positively predict materialism [55] and is closely related to impulsive behaviour [56–58]. This also suggests that as a compensatory strategy, impulsive buying behaviour may effectively alleviate the negative emotions of people experiencing relative deprivation. Therefore, this study proposes the following hypothesis:

H2. Relative deprivation plays a mediating role between social exclusion and impulsive buying behaviour.

2.3. The mediating role of the need to belong

The demand threat model points out that social exclusion threatens an individual's connection to the surrounding environment, and people who are prevented from establishing social bonds within the surrounding environment lack a sense of belonging [59–61]. In Maslow's theory of the hierarchy of needs, the need to belong is explained as an individual's desire to be needed, recognised, and accepted by a group and is one of the basic requirements for maintaining good social relations in the social group. When the need to belong and to connect with others is not satisfied, this provokes a strong desire to rebuild social connections, motivating people to seek social connections that will satisfy their need to belong [62]. In other words, an unmet need to belong induces a social motivation that encourages people to engage in activities that can help them regain a sense of belonging [63]. However, because people are usually afraid of experiencing rejection and unpleasant emotions again, they shift their focus to activities that can establish social connections [59]; consumption is an activity that individuals commonly choose [59]. Based on the above analysis, we propose a third hypothesis:

H3. The need to belong plays a mediating role between social exclusion and impulsive buying behaviour.

2.4. The moderating role of self-control

Social exclusion can have a profound impact on individual behavior [64]. As a psychological compensation mechanism, consumption can alleviate the discomfort caused by exclusion [5,65]. But as a kind of irrational behavior, impulsive buying behaviour will also bring many negative effects to individuals [6]. Individuals with poor self-control are more likely to be attracted by the temporary pleasure and satisfaction of impulsive buying behaviour and tend to act on it [66,67]. In contrast, those with strong self-control are more inclined to measure the consequences of their buying behaviour from a long-term perspective [68,69]. Thus, impulse buying behaviour is reduced [66,67,70,71]. In other words, impulsive buying results from a failure of self-control, which may also be described as a triumph of self-will over the ability to control desire. Therefore, this study proposes the following hypothesis:

H4. Self-control plays a moderating role between social exclusion and impulsive buying behaviour.

Based on the above analysis, this study proposes the theoretical research model shown in Fig. 1.

3. Methods

3.1. Sample and data collection procedures

Data for this study were collected from February to April 2023. The questionnaire consisted of two parts. The first part contained procedural information and instructions, describing the study's purpose, promising to ensure the confidentiality of the participants' information, and explaining the requirements for completing the items in the questionnaire. The second part contained the items for the variables. To prevent participants from guessing the answers, we scrambled the order of the items belonging to different variables. Furthermore, to improve the authenticity of the data, we arranged for all participants to complete the entire questionnaire anonymously. Those who did so received a \$2 reward.

We use a combination of offline and online methods to recruit participants. Among them, offline recruitment was mainly carried

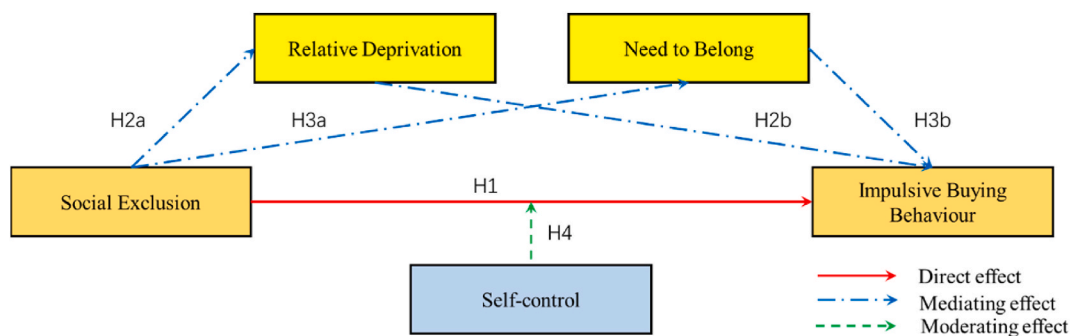


Fig. 1. Research model.

out in the form of distributing questionnaires to colleagues, friends and acquaintances around and on the streets at weekends, with a total of 200 participants were recruited; Online recruitment is mainly to invite participants on multiple social platforms such as Douyin, Kuaishou and XiaoHongshu, and participants were sent a link to the questionnaire and asked to complete it, with a total of 300 participants were recruited. Of the 500 questionnaires sent out, 452 were eventually recovered. After invalid questionnaires were excluded, 417 remained. As shown in Table 1. Among the 417 participants, 229 were female (54.9 %) and 188 were male (45.1 %). 112 were from factories (26.9 %), 76 from hospitals (18.2 %), 83 from shopping malls or supermarkets (19.9 %), 91 from universities (21.8 %), and 55 from other types of organizations (13.2 %); Mean age was 35.2 years, SD was 6.9 years; Among them, high school degree or below 107 (25.7 %), college degree 92 (22.1 %), bachelor degree 157 (37.6 %), and master degree or above 61 (14.6 %).

3.2. Measurement

Social exclusion was measured through a scale adapted from that compiled by Niu et al. [72,73]. Our scale's six items included these statements: "People do not share their moods or share their experiences with me" and "I feel like an outsider in activities".

Relative deprivation was measured through a scale adapted from that compiled by Callan et al. [74,75] also taking account of the results of Ma et al. [76]. Our scale's four component items included these statements: "I feel deprived when I think about what I have compared to what other people like me have" and "I feel privileged compared to other people like me".

The need to belong was measured through a scale adapted from that compiled by Li et al. [77]. Its five items included "I wish I had someone to turn to when I need help" and "I feel extremely annoyed when I am not included in other people's activity plans".

To measure self-control, we adapted the scale developed by Tangney et al. [78] and the results of Tan et al. [79]. This scale too had five items, for example, "I am good at resisting the temptation of promotional offers on shopping platforms" and "I can resist buying goods that are not very useful".

Finally, to measure impulsive buying behaviour, we adapted the scale developed by Jones et al. [3,80] and also employed the research results of Xiang and Zheng et al. [81]. Our scale included three items, for instance, "As I browse online shopping platforms, I often buy things online without thinking" and "I see it, I buy it" describes the way I buy things online via shopping platforms".

All items were measured on a 5-point Likert scale anchored at 1 = strongly disagree and 5 = strongly agree.

3.3. Tools

In this study, SPSS 26.0, Mplus8.0 and HLM6.08 were used for data analysis.

4. Results

4.1. Reliability and validity

As shown in Table 2, items' factor loading were above 0.64, the CR value of each variable was between 0.75 and 0.86, and the AVE was above 0.46, indicating good reliability and convergent validity. As shown in Table 3, the square root value of AVE was greater than the correlation coefficient between variables, indicating that the model has good differential validity.

Table 1
Descriptive statistics of respondents.

Feature	Mean	SD	Category	Sample	Percentage
Gender	/	/	female	229	54.9 %
			male	188	45.1 %
Organizations category	/	/	factories	112	26.9 %
			hospitals	76	18.2 %
			shopping malls or supermarkets	83	19.9 %
			universities	91	21.8 %
			other types	55	13.2 %
Age (years)	35.2	6.9	≤20	84	20.1 %
			21–30	127	30.5 %
			31–40	92	22.1 %
			41–50	77	18.5 %
			≥55	17	8.9 %
Education Background	/	/	high school or below	107	25.7 %
			college	92	22.1 %
			bachelor	157	37.6 %
			master or above	61	14.6 %

Table 2
Results of confirmatory factor analysis and reliability and validity tests.

Dim	Item	Parameters of significant test			Item Reliability	Composite Reliability	Convergence Validity
		Estimate	S.E.	Two-Tailed P-Value	SMC	CR	AVE
SOE	SOE1	0.72	0.03	***	0.52	0.86	0.51
	SOE2	0.64	0.03	***	0.41		
	SOE3	0.81	0.03	***	0.66		
	SOE4	0.69	0.02	***	0.48		
	SOE5	0.73	0.03	***	0.53		
	SOE6	0.66	0.03	***	0.44		
RD	RD1	0.77	0.02	***	0.59	0.83	0.55
	RD2	0.69	0.02	***	0.48		
	RD3	0.74	0.03	***	0.55		
	RD4	0.76	0.02	***	0.58		
NB	NB1	0.67	0.03	***	0.45	0.82	0.48
	NB2	0.74	0.03	***	0.55		
	NB3	0.71	0.04	***	0.50		
	NB4	0.68	0.03	***	0.46		
	NB5	0.65	0.04	***	0.42		
SC	SC1	0.65	0.02	***	0.42	0.81	0.46
	SC2	0.72	0.03	***	0.52		
	SC3	0.69	0.03	***	0.48		
	SC4	0.66	0.02	***	0.44		
	SC5	0.67	0.03	***	0.45		
IBB	IBB1	0.73	0.04	***	0.53	0.75	0.50
	IBB2	0.69	0.03	***	0.48		
	IBB3	0.71	0.04	***	0.50		

Note 1: SOE is for social exclusion; RD is for relative deprivation; NB is for need to belong; SC is for self-control; IBB is for impulsive buying behaviour. The same below.

Note 2: *** Indicates $P < 0.001$, ** Indicates $P < 0.01$, * Indicates $P < 0.05$, the same below.

Table 3
Variables' correlation coefficient and the square root of AVE.

Dim	Descriptive statistics		Convergence Validity	Discriminate Validity				
	Mean	S.D.	AVE	SOE	RD	NB	SC	IBB
SOE	2.65	0.66	0.51	0.71				
RD	2.83	0.69	0.55	0.61	0.74			
NB	3.28	0.72	0.48	0.55	0.46	0.69		
SC	3.61	0.54	0.46	-0.37	0.38	0.42	0.68	
IBB	3.13	0.68	0.50	0.42	0.34	0.31	-0.47	0.71

The bold diagonal font is the square root value of AVE, and the lower triangle is Pearson correlation coefficient.

4.2. Model fit

The model fit indices were $\chi^2/df = 2.74$, CFI = 0.93, TLI = 0.92, RMSEA = 0.05, and SRMR = 0.06, indicating that the model had a good fit.

4.3. Direct and indirect effects

As shown in Table 4, the total effect of social exclusion on impulsive buying behaviour was 0.44 ($p < 0.001$). The direct effect was 0.28 ($p < 0.001$), H1 was supported; the indirect effect was 0.15 ($p < 0.001$). Among the effects of social exclusion on impulsive buying

Table 4
Test of mediating effect.

	Estimate	Coefficients			95 % CI		Hypothesis
		S.E.	Est./SE	P-Value	Lower 2.5 %	Upper 2.5 %	(Y/N)
Total	0.44	0.04	10.25	***	0.22	0.67	
Dir	0.28	0.03	8.55	***	0.15	0.41	H1(Y)
Ind	0.15	0.03	5.14	***	0.09	0.21	
Ind1: SOE -> RD -> IBB	0.09	0.02	3.95	***	0.05	0.12	H2(Y)
Ind2: SOE -> NB -> IBB	0.06	0.02	3.13	**	0.03	0.09	H3(Y)

behaviour, the direct effect accounted for 65 % and the indirect effect accounted for 35 %. In the indirect effect of social exclusion on impulsive buying behaviour, the mediating effects of Ind1 (SOE -> RD -> IBB) and Ind2 (SOE -> NB -> IBB) were 0.09 ($p < 0.001$) and 0.06 ($p < 0.01$), respectively. The results of BOOTSTRAP 5000 times showed that the 95 % confidence intervals of Ind1 and Ind2 did not contain 0. Thus, H2 and H3 were supported.

4.4. Moderating effect

As shown in Table 5, the interaction between social exclusion and self-control was 0.07, and the standard error was 0.02 ($p < 0.01$). Therefore, self-control played a moderating role in the relationship between social exclusion and impulsive buying behaviour, which supports H4. Fig. 2 shows a moderating effect of self-control. The slope of the high self-control is larger than that of the low self-control. This means that the stronger the self-control, the stronger the moderating effect on the relationship between social exclusion and impulsive buying behaviour.

5. Discussion

5.1. Theoretical contributions

On the one hand, this study provided research results that enrich social exclusion theory and expanded it to the antecedents of impulsive buying behaviour. In the past, studies of the effects of social exclusion were conducted in fields such as sociology and psychology [16,82,83], and there has been scant research on social exclusion in the field of marketing. This study examines the effects of social exclusion by combining studies of sociology and psychology with marketing. In addition, studies of impulsive buying typically focus on the purchase of a certain product or service as a behaviour that is difficult to control [9–11,13], and the behaviour is rarely examined from the perspective of social exclusion. Thus, this study expands the antecedents of impulsive buying, deepening our understanding of the behaviour.

On the other hand, this study explored the internal mechanism between social exclusion and impulsive buying behavior from the perspective of consumer belonging-need. Previous studies on social exclusion and individuals' impulsive behaviors (such as impulsive buying behaviour), scholars usually viewed it from the perspectives of stress level [17,18], cognitive dysfunction [19] and personality characteristics [20], and few scholars explored the relationship between social exclusion and impulsive buying behaviour from the perspective of individuals' emotional belonging-need. Therefore, this study provides a new perspective for scholars to further explore the relationship between social exclusion and impulsive buying behaviour.

5.2. Practical implications

(1) The perspective of merchants

As a first implication from the perspective of merchants, these research findings can help merchants develop marketing strategies scientifically. Social exclusion is common in daily life, but its characteristics tend to vary across age groups and social communities, which accordingly different psychological needs and preferences. Enterprises should understand the group characteristics of different target customers because doing so will enable them to accurately grasp the link between social exclusion and consumer purchase behaviour and use that to shape brand positioning. It will also help them formulate more targeted publicity strategies to promote consumers' psychological identity, enhance purchase intentions, and better attract their target groups, thereby achieving twice the result with half the effort.

The second implication concerns the psychological needs of consumers. Psychological factors have an important impact on consumers' purchasing behaviour. If the product can better meet psychological needs, it can expand the consumer group, increase the brand audience, and bring more business value. For groups that are easily ignored, the brand's social affinity should be highlighted and its image should be warm and harmonious. If enterprises can accurately grasp the psychological needs of different social groups and use brand imaging and functional positioning to create a positive link between those needs and their products, they will increase their business opportunities.

The third implication concerns consumers' need to belong. Given continuous developments in society, people are no longer limited to choosing products according to practical criteria alone but can also try to satisfy higher-level needs. The material world's richness makes people increasingly aware of inner loneliness, and in their desire to express themselves, they urgently

Table 5
Test of moderating effect.

DV	IV	Estimate	S.E.	Est./S.E.	P-Value	Hypothesis (Y/N)
IBB	SOE	0.26	0.05	5.13	***	
	RD	0.19	0.04	4.47	***	
	NB	0.17	0.04	4.38	***	
	SC	-0.29	0.03	8.25	***	
	SOE*SC	0.07	0.02	2.97	**	H4 (Y)

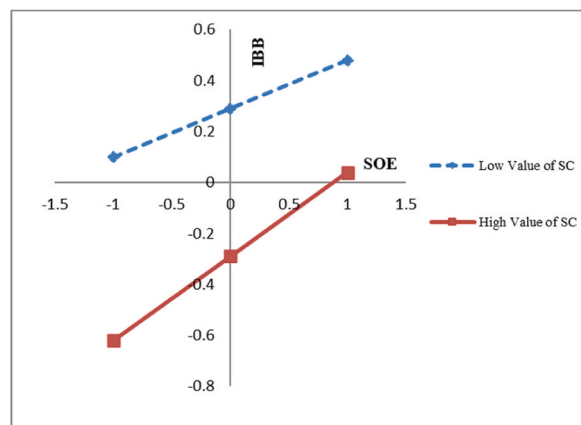


Fig. 2. The moderating effect of self-control (SC).

want to find their own group and establish a rapport. Therefore, as enterprises shape their brand's personality, they can seize the human desire for the need to belong, and by shortening consumers' psychological distance from the brand, they can strengthen attachments to the brand.

(2) The perspective of consumers

From the perspective of consumers, this study highlights the importance of continually improving the ability to exercise self-control. Cultivating self-control plays an extremely important role in personality development and strengthens adaptation in social development. With the advances in network technology, online shopping can stimulate people's desire for shopping through convenience and economy as well as novel characteristics. People with diminished self-control are unable to effectively resist the temptation generated by the online shopping environment, instead yielding to impulsive purchasing behaviours. Therefore, it is essential to firmly establish a prudent concept of consumption in daily life and continually improve the capacity for self-control, thereby reducing the probability of impulsive online purchases.

5.3. Limitations and directions for future research

Although the cross-sectional design adopted in this study has a sound theoretical basis and is also grounded on the results of previous studies, it cannot make reliable inferences about the causal relationships among variables or their internal mechanism. Future studies can use longitudinal studies to test this theoretical model of moderated mediation. Nevertheless, people's consumption behaviour may vary across cultural backgrounds. This study's samples were drawn mainly from China, and the question of whether the conclusions are applicable to consumers in other countries and regions requires further discussion. In the future, cross-cultural factors should be fully considered when discussing the internal mechanism of social exclusion on impulsive buying behaviour.

6. Conclusions

This study found that social exclusion had a significant predictive effect on impulsive buying behaviour, which supports the views of previous studies [19,84]. This study investigated the mechanism by which social exclusion interacts with impulsive buying behaviour. On the one hand, social exclusion can lead to a sense of deprivation and threaten people's sense of belonging, and those who suffer it may choose to buy products that can generate social connections, compensating for the adverse effects of social exclusion [85, 86]. Therefore, relative deprivation and the need to belong serve as mediators between social exclusion and impulsive buying behaviour. On the other hand, individuals with strong self-control can better control their own negative behaviours and by restraining their impulses, they can reduce the negative impact of external factors. Thus, self-control plays a moderating role in the relationship between social exclusion and impulsive buying behaviour, and supports the views of previous studies [84,87]. These conclusions could provide a basis for enterprises to formulate rational marketing strategies and create consumer demand.

Ethics approval and consent to participate

The studies was found to be in accordance to the ethical principles and the national norms in China.

The studies involving human participants were reviewed and approved by the Ethics Review Committee of Pingdingshan University's School of Economics and Management (approval number: EA-2023038). The participants provided their written informed consent to participate in this study.

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Data availability statement

Data included in article/supplementary material/referenced in article.

Items measuring relative deprivation

1. I feel deprived when I think about what I have compared to what other people like me have.
2. I feel privileged compared to other people like me.
3. When I see people like me in such privileged situations, I feel resentful.
4. When I compare what I have to what people like me have, I'm content with what I have now.

Items measuring need to belong

1. I try not to do things that would make people reject me or avoid me.
2. I want to have someone to turn to when I need help.
3. I don't like being alone.
4. I have a strong desire to belong to a group.
5. I feel extremely annoyed when I am not included in other people's activity plans.

Items measuring self-control

1. I am good at resisting the temptation of promotional offers on shopping platforms.
2. I can resist buying goods that are not very useful.
3. I know exactly what I want.
4. I am able to concentrate and exercise judgment.
5. I do not act without fully considering the consequences.

Items measuring impulsive buying behaviour

1. On mobile shopping platforms, I tend to purchase items that I didn't plan to buy.
2. When I make unplanned purchases on a mobile shopping platform, I rarely spend much time thinking about the decision before buying.
3. When I see items on a mobile shopping platform that I hadn't planned to purchase, I don't hesitate to buy them.

CRediT authorship contribution statement

Xiaoxue Zhang: Writing - original draft, Software, Methodology, Funding acquisition, Data curation, Conceptualization. **Jianpeng Fan:** Supervision, Investigation, Funding acquisition. **Ruixia Zhang:** Writing - review & editing.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Xiaoxue Zhang reports financial support was provided by Science and Technology Department of Henan Province. Jianpeng Fan reports financial support was provided by Pingdingshan University. Xiaoxue Zhang reports a relationship with Science and Technology Department of Henan Province that includes: funding grants. Jianpeng Fan reports a relationship with Pingdingshan University that includes: funding grants. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix

Items measuring social exclusion.
In general, others.

1. ... treat me as if I were invisible.
2. ... ignore me during conversation;
3. ... invite me to join their club, organisation, or association. (opposite)

4. ... include me in their plans for the holidays. (opposite)
5. ... invite me to go out to eat with them. (opposite)
6. ... invite me to join them for weekend activities, hobbies, or events. (opposite)

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