The Relationship Framework by Which Internet-Based Consumer Credit Products relate to Young People's Overconsumption Behavior

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Abstract. With the rapid development of digital finance, internet consumer credit products have significantly influenced the consumption behavior of young adults. To explore their relationship with overconsumption behavior, this study constructs an analytical framework incorporating platform stimuli, psychological characteristics, and environmental factors. Based on survey data from 350 young consumers in five cities, key influencing factors and their interactions are identified. The results indicate that platform stimulation, present bias, materialism tendency, and social comparison motivation are closely associated with overconsumption behavior, while self-control plays a moderating role. The proposed framework provides a useful basis for overconsumption risk evaluation and responsible consumption guidance.

Keywords: Internet consumer credit; Young adults; Overconsumption behavior; Guiding relationship framework; Behavioral path

1 Introduction

The rapid development of internet finance has accelerated the adoption of consumer credit products among young adults. Existing studies have examined credit availability, consumption decision-making, debt risk perception, and the influence of platform design on user behavior [1–5]. However, limited attention has been paid to the formation mechanism of overconsumption behavior under the combined effects of platform stimuli, individual psychology, and social environment [6][7]. Moreover, conventional evaluation methods mainly rely on static regression analysis and are unable to effectively capture the dynamic evolution of overconsumption behavior [4][8][9]. To address these gaps, this study develops a dynamic guiding relationship framework for young adults' overconsumption behavior by integrating platform stimulus effects, psychological characteristics, and behavioral factors. The proposed framework is used to identify key influencing factors and support overconsumption risk evaluation and intervention.

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2 Construction of the Young Adults' Overconsumption Behavior Model

2.1 Analysis of the Operation Relationship Framework of Internet Consumer Credit Products

Credit limit, repayment cycle, interest preference, and usage scenarios jointly affect consumption decisions. Therefore, platform stimulus intensity, psychological discount, and social comparison pressure are introduced to characterize the guiding effect of credit products. The coupling relationship is described by Equation (1).

$$C = \alpha \cdot S + \beta \cdot F + \gamma \cdot O \tag{1}$$

Where: C denotes the comprehensive guiding intensity; S represents platform stimulus intensity; F is the psychological discount rate; O indicates social comparison susceptibility; α, β, and γ are corresponding coefficients. Based on Equation (1), the evolution function of the guiding effect is established as Equation (2).

$$F(t) = \varphi(C) \cdot S(t) \cdot e^{-\lambda t} \cdot P(t) \tag{2}$$

Where: ψ(C) is the behavioral discriminant function; S(t) and P(t) denote platform stimulus and psychological discount at time t; λ is the attenuation coefficient. The consumption intention function is expressed as Equation (3).

$$I(t) = I_0 + \frac{k \cdot t}{1 + e^{\delta(t - t_0)}} \tag{3}$$

Where: I0 is the initial consumption intention; k is the growth coefficient; t0 is the inflection point; δ reflects the constraint effect of psychological budget. Based on the theory of planned behavior and self-control theory, the stage transition probability of overconsumption behavior is calculated by Equation (4).

$$p_{trans} = \frac{I(t)}{I_e + \eta \cdot I(t)} \tag{4}$$

Where: Ie is the individual self-control level; η is the inhibition coefficient of self-control on overconsumption. The basic overconsumption formation model is shown in Equation (5).

$$M = \mu \cdot \left[I(t) - I_0 \cdot \cos\theta - L(t) \cdot V \right] \tag{5}$$

Where: M is the formation model; θ denotes the deviation from rational consumption; μ is the behavioral transformation coefficient; L(t) represents learning ability; V denotes psychological cost.

2.2 Identification of Influencing Factors of Young Adults' Overconsumption Behavior

Based on the proposed model, influencing factors are classified into three dimensions: Platform factors: credit limit (L), repayment flexibility (F), promotion intensity (P), and interface design (D); Individual factors: materialism tendency (M), time discount rate (T), self-control ability (SC), and financial literacy (K); Environmental factors: peer consumption pressure (C), social media exposure (E), and reference-group influence (R). The identification model is expressed by Equation (6).

$$H = f(w_1 X_{platform} + w_2 X_{individual} + w_3 X_{environment}) \tag{6}$$

Where: H is the comprehensive identification vector of influencing factors; f represents the nonlinear mapping function; w1, w2, w3 are the weight coefficients of the three dimensions; X_platform, X_individual, X_environment are the feature vectors of platform, individual, and environmental factors respectively.

Table 1. Mapping between theoretical constructs and model variables

Theoretical construct	Observed indicator	Model input variable	Model output relevance
Platform stimulus intensity	Credit limit reminders, promotional messages	Stimulus feature vector	Overconsumption probability
Psychological discount	Preference for immediate consumption	Psychological feature vector	Consumption intention score
Social comparison pressure	Peer consumption relate to	Social relate to vector	Behavioral transition tendency
Self-control ability	Self-control scale score	Behavioral constraint variable	Risk moderation effect
Financial literacy	Financial knowledge test score	Cognitive feature variable	Risk resistance ability

2.3 Construction of the Coupling Relationship Framework of Overconsumption Behavior Formation

The coupling relationship is shown in Figure 1.

The coupling degree function is expressed by equation (7).

$$CP = \rho \cdot \sqrt[\tau]{I_{platform} \cdot I_{individual} \cdot I_{environment}} \tag{7}$$

Where: CP is the coupling degree; ρ is the coupling adjustment coefficient; I_platform, I_individual, I_environment are the integrated relate to indices of the three dimensions; τ is the synergy coefficient.

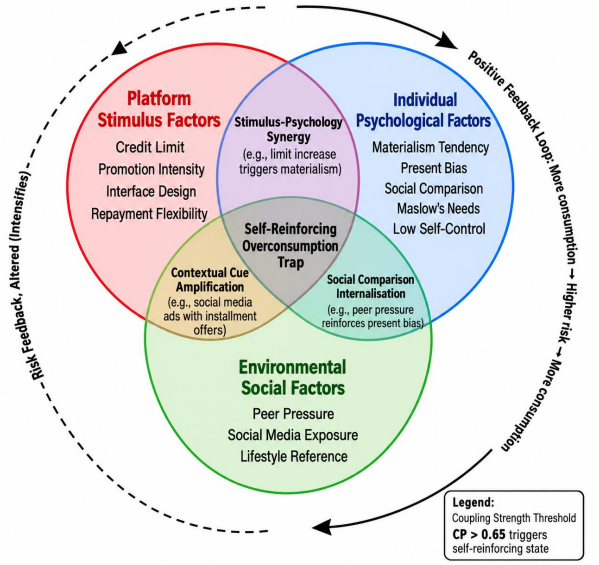


Fig. 1. Coupling relationship framework of multiple factors in the formation of overconsumption behavior

2.4 Stage Evolution Analysis of Overconsumption Behavior

The state transition probability matrix is given in equation (8).

$$T = \begin{bmatrix} p_{11} & p_{12} & p_{13} & p_{14} \\ p_{21} & p_{22} & p_{23} & p_{24} \\ p_{31} & p_{32} & p_{33} & p_{34} \\ p_{41} & p_{42} & p_{43} & p_{44} \end{bmatrix}, p_{ij} = \frac{n_{ij}}{N_i} \tag{8}$$

Where: T is the transfer matrix; p_ij is the probability of transitioning from stage i to stage j; n_ij is the number of individuals transitioning from stage i to stage j in the sample; N_i is the total number of individuals in stage i.

3 Identification of Key Characteristics of Internet Consumer Credit Products

3.1 Extraction of Platform Stimulus Features

Based on the proposed overconsumption behavior model, multi-source data fusion was employed to extract platform stimulus features [10]. To capture temporal characteristics of consumption behavior, an LSTM structure was used to model sequential behavioral patterns. The temporal feature extraction process is described by Equation (9).

$$h_t = LSTM(x_t, h_{t-1}) \tag{9}$$

Where ht is the hidden-state feature vector at time t, and xt denotes user interaction data. After temporal feature extraction, platform interface, consumption trajectory, psychological, and social features were integrated through an attention mechanism, as shown in Equation (10).

$$F_{fusion} = Attention(F_{interface}, F_{trajectory}, F_{psychology}, F_{social}) \tag{10}$$

Where F_fusion represents the fused feature vector, and F_interface, F_trajectory, F_psychology, and F_social denote the corresponding feature sets.

3.2 Identification of Young Adults' Consumption Psychological Characteristics

The measurement model is shown in Equation (11).

$$Psy_{vector} = g(\sum_j \theta_j Q_j) \tag{11}$$

The descriptive statistics are presented in Table 1. Materialism tendency, present bias, and social comparison motivation were positively associated with overconsumption frequency, whereas loss aversion showed a negative association. The observed relationships were statistically significant ($p<0.05$).

3.3 Analysis of the Synergistic Relationship Framework of Multidimensional Influencing Factors

Table 2. Descriptive statistics of psychological characteristics of the young adult sample

Psychological dimension	Mean score (1-7 scale)	Standard deviation	Correlation coefficient with overconsumption frequency
Materialism tendency	5.23	1.14	0.62**
Present bias	5.67	1.08	0.58**
Loss aversion	3.45	1.32	-0.21*
Social comparison motivation	5.89	1.21	0.71**

(* $p<0.05$, ** $p<0.01$)

The interaction effect between platform stimuli and psychological characteristics is shown in Equation (12).

$$Syn_{score} = \sigma \cdot Stim + \zeta \cdot Stim \cdot Psy \tag{12}$$

Where Syn_score represents the synergy score between platform stimulus intensity (Stim) and psychological characteristics (Psy), σ denotes the synergy coefficient, and ζ represents the interaction coefficient.

4 Valuation of Overconsumption Behavior Based on Behavioral Paths

4.1 Construction of Overconsumption Behavior Guiding Paths

A reinforcement learning framework is adopted to generate path decisions, and the policy network output π(a|s) is shown in Equation (13).

$$\pi(a|s) = SoftMax(W_{\pi} \cdot \varphi(s)) \tag{13}$$

Where π(a|s) denotes the probability of selecting action a under state s; Wπ represents the policy network parameters; and φ(s) is the state feature representation. The evaluation network estimates the expected effect of each guiding path, as shown in Equation (14).

$$V(s) = \mathrm{Re}LU(W_v \cdot \varphi(s)) \tag{14}$$

Where V(s) is the state value function, Wv denotes the network parameters, and ReLU is the activation function. Historical decisions and corresponding behavioral outcomes are stored in an experience pool to support policy updating. The representation of decision point Di is shown in Equation (15).

$$D_i = (s_i, a_i, r_i, s_{i+1}) \tag{15}$$

Where si, ai, ri, and si+1 denote the current state, selected action, immediate reward, and subsequent state, respectively. The contribution of factor j is expressed in Equation (16).

$$\varphi_i = \sum_{S \subseteq N \setminus \{j\}} \frac{|S|!(|N|-|S|-1)!}{|N|!} [val(S \cup \{j\}) - val(S)] \tag{16}$$

Where φj represents the contribution value of factor j; N denotes the set of all factors; S denotes a subset excluding factor j; and val(S ∪ {j}) − val(S) represents the marginal contribution of factor j. The guiding effect function E(t) is shown in Equation (17).

$$E(t) = E_{base} \cdot e^{-\lambda_E t} + \gamma \cdot (1 - e^{-\lambda_E t}) + \xi(t) \tag{17}$$

Where E(t) denotes the comprehensive guiding effect at time t; Ebase is the initial effect; λE is the decay coefficient; γ is the adaptation coefficient; and ξ(t) is a random disturbance term. The risk identification rule is shown in Equation (18).

$$Risk_{flag} = \begin{cases} 1, R(t) > \delta_1 \\ 2, R(t) > \delta_2 \\ 0, R(t) \le \delta_1 \end{cases} \tag{18}$$

Where R(t) denotes the comprehensive debt-risk index, and δ1 and δ2 represent the moderate-risk and high-risk thresholds, respectively. When the risk level exceeds the predefined threshold, corresponding interventions, including consumption reminders, credit management measures, and financial literacy guidance, are triggered. The effectiveness of the proposed framework is illustrated in Figure 2.

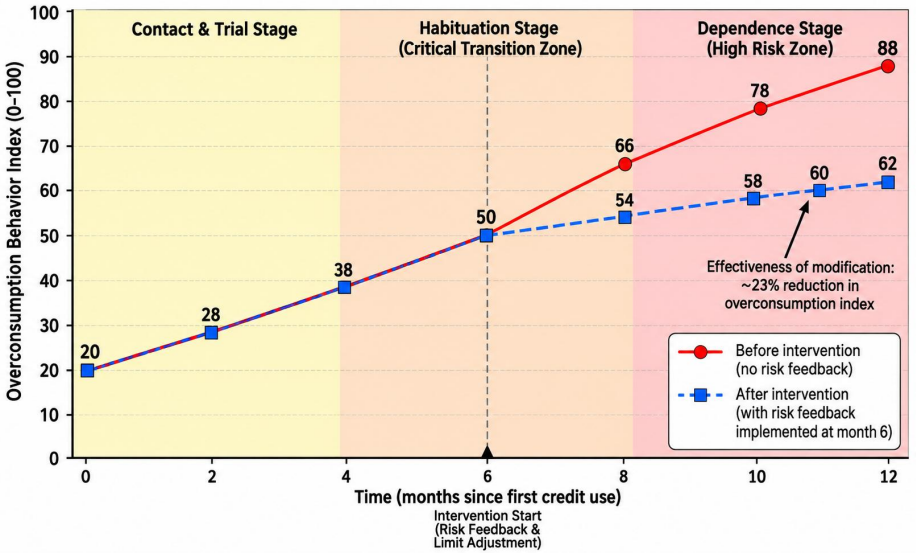


Fig. 2. Comparison of overconsumption behavior before and after the implementation of the risk feedback and modification relationship framework

5 Empirical Analysis and Discussion of Results

A total of 350 young adults aged 18–30 from Beijing, Shanghai, Guangzhou, Shenzhen, and Chengdu participated in the survey. The sample was obtained through a combination of stratified and convenience sampling and covered different gender, occupational, and income groups. However, some occupational categories were underrepresented, which may limit the generalizability of the findings. A questionnaire consisting of 45 items across five dimensions was developed using a 7-point Likert scale. Of the 385 questionnaires distributed, 350 valid responses were obtained. Reliability and validity tests showed satisfactory measurement quality, with a Cronbach's α of 0.89 and a KMO value of 0.87. In addition to questionnaire data, information on repayment frequency, credit utilization frequency, and monthly consumption changes was collected. Psychological variables, including materialism tendency, present bias, loss aversion, and self-control, were normalized to the interval

[0,1], while platform-related variables were derived from respondents' exposure to credit-product promotions and repayment reminders. The results indicate that psychological factors, platform stimuli, and self-control significantly affect overconsumption formation. Present bias, materialism tendency, and exposure to credit-consumption promotions were the strongest predictors of debt-risk consumption, whereas self-control showed a moderating effect. These results confirm the effectiveness of the proposed framework.

6 Conclusion

The findings suggest that platform stimulus characteristics, psychological traits, and environmental factors are significantly associated with young adults' overconsumption tendencies. The proposed analytical framework provides a useful perspective for understanding the relationships among these factors and identifying potential risk signals. However, the results should not be interpreted as evidence of strict causal effects because the empirical analysis primarily relies on questionnaire-based and monitoring data. Future studies should incorporate larger longitudinal datasets and real transaction records to further validate the proposed framework and improve its generalizability.

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