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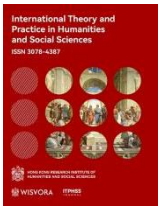

The Constructive Effects of Algorithms on Adolescent Consumption Patterns — A Study Based on TikTok

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Abstract

In the digital age, short video platforms, particularly TikTok, have emerged as a significant driving force influencing adolescent consumption behaviors, while profoundly reshaping their consumption patterns. However, existing research has paid less attention to this emerging consumer sector. This study employs a mixed-methods approach combining In-depth interviews, questionnaires and participatory observations methods to investigate how TikTok's algorithmic mechanisms reconstruct traditional consumption behavior among adolescents. The findings reveal that adolescent consumption on short video platforms is characterized by impulsive purchasing, high-frequency micro-spending, influencers and socially endorsed purchases, and decentralized consumption. In terms of influencing mechanisms, platform algorithms guide adolescent consumption through user data analysis, content recommendation, and contextual media strategies. Furthermore, the platform leverages psychological drivers, behavioral reinforcement, and promotional strategies to further consolidate and intensify these consumption patterns. To effectively address the impact of algorithms on adolescent consumption behaviors, this study proposes strategies such as optimizing algorithm design, enhancing media literacy, and strengthening multi-stakeholder education to help adolescents develop healthy and rational consumption habits.

1.Introduction

In the era of accelerated digital transformation, short video platforms—particularly TikTok—have emerged as a major driving force shaping social consumption behavior. According to the 2023 Autumn Report on China's Mobile Internet by QuestMobile, TikTok maintains its leading position in the industry with 743 million monthly active users and a year-on-year growth rate of 5.1%. Among them, 129 million users have made purchases through the platform, with 70% belonging to the youth demographic. This massive user base and high level of consumer engagement underscore TikTok's significant role in promoting the development of China's digital

economy.

However, beneath the growing body of consumer data lies a set of potential risks. Numerous news reports and academic studies have pointed to a range of concerning negative effects associated with TikTok's influence on youth consumption. On major e-commerce platforms such as Taobao and TikTok, young consumers have become key participants in livestream-based purchasing, exhibiting a strong willingness to pay. Research indicates that 11% of teenage users spend more than 1,000 yuan per month on tipping during livestreams—a behavior characterized by herd mentality, impulsiveness, and other signs of irrational consumption (Lu & Wang, 2022). Such tendencies not only result in blind consumption and irrational spending, often disregarding family or individual financial conditions, but also may trigger financial stress or even household economic crises, raising significant social concerns.

From a practical standpoint, the author's personal shopping experience, along with that of many peers, suggests that promotional campaigns and algorithm-based recommendations on the platform exert a powerful influence on consumption behavior. TikTok utilizes algorithms that integrate user preferences and browsing history to frequently induce "beyond-need consumption," resulting in excessive product accumulation and potential waste. Even more striking is the "matching effect"—for instance, products promoted as "worn by influencers," "endorsed by celebrities," or "owned by peers"—which significantly fuels teenagers' purchasing desires. These consumption patterns, shaped by the interaction between algorithmic recommendations and mechanisms of social identification, not only challenge traditional consumption models but also exert complex and far-reaching impacts on adolescents' value systems and consumer perceptions.

On a global scale, the rapid rise of short video platforms such as TikTok reflects the pervasiveness and international impact of algorithm-driven consumption models. Balancing the economic benefits of platforms with user well-being—particularly the protection of youth as a special consumer group—has become a critical issue facing the international community amid the digital wave. In response to the phenomenon of alienated consumption on TikTok, existing research has analyzed the issue from multiple perspectives:

First, the infiltration of consumerist culture. Short video platforms are imbued with strong consumerist tendencies, embedding commodified values into users' consciousness. Adolescents, in particular, are vulnerable to the vast amount of commercial content, and may prematurely adopt distorted, consumption-driven values.

Second, the algorithm-induced "information cocoon" effect. TikTok's recommendation system may cause users to be repeatedly exposed to the same type of content, trapping adolescents in an information bubble and limiting diversified thinking. This content closure not only hampers cognitive depth but also fosters social comparison. For example, some adolescents, due to frequent exposure to luxury-related content, may come to equate conspicuous consumption with success and admiration, thereby developing impulsive purchasing behavior.

Lastly, algorithmic control under capital logic. Driven by capital interests, TikTok's algorithm further reinforces "algorithmic hegemony" and fuels the growth of a predatory advertising industry. This system stimulates irrational consumption impulses, encourages conspicuous consumption among young users, and may lead to personal financial crises. On a broader level, it contributes to the alienation of consumption and obstructs the development of a sustainable consumption culture.

Nonetheless, existing studies still demonstrate several important limitations. To begin with, most research is based on philosophical epistemology and lacks empirical data to validate its theoretical claims. Moreover, the theoretical conclusions often address overly broad populations, with limited focus on adolescents in particular. In addition, much of the current literature emphasizes the binary relationship between capital platforms and users, while overlooking other crucial factors in adolescents' online social networks—such as the influence of parents, teachers, and peers—that may play an even more significant role in shaping their consumption behavior.

In summary, short video platforms represented by TikTok have exerted a profound impact on both individual and societal levels of consumer behavior. While its algorithmic recommendation system effectively stimulates user purchasing desires, it also carries the potential to induce irrational consumption and generate social risks. Accordingly, this study proposes to investigate the impact of TikTok's algorithmic mechanisms on adolescent consumer behavior, aiming to explore the broader social functions of algorithms and to provide theoretical and practical insights for fostering a healthy and rational consumer culture.

The specific research questions are as follows:

(1) What are the main characteristics of adolescent consumption patterns on short video platforms? How do these differ from other forms of consumption?

(2) Why are algorithms able to exert such a profound influence on adolescents' consumption behaviors? How do platform technologies and platform strategies mutually reinforce each other?

(3) In response to the impact of short video platforms on adolescent consumption patterns, what room for action do various social actors have in mitigating potential risks and promoting a healthy consumption culture?

The framework of this study is illustrated in Figure 1. The following sections will first provide a literature review and describe the research methodology. The core analytical chapters will then address the three research sub-questions outlined above in turn.

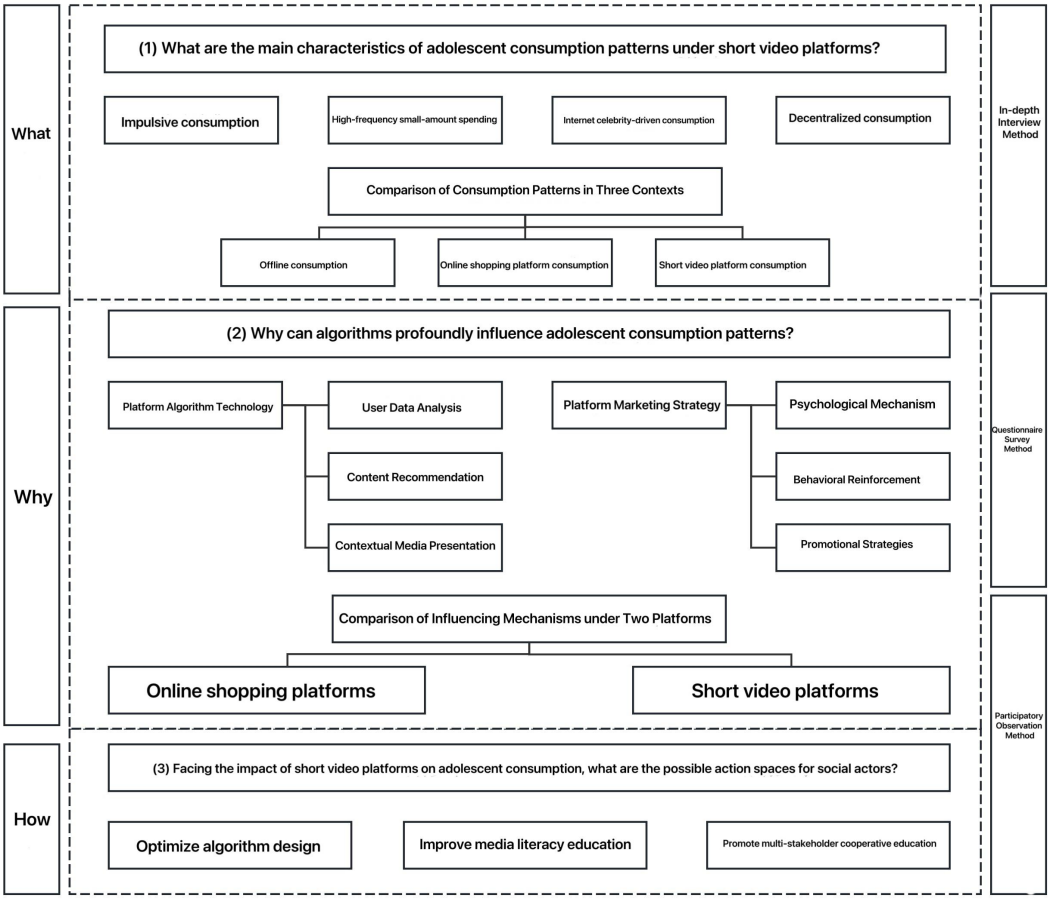

Fig 1. Framework

2.Literature Review

2.1 Adolescent Consumer Psychology

In today's consumer market, adolescents have emerged as a significant subgroup whose consumption psychology and behavior have attracted extensive scholarly attention (Anirvinna et al., 2021; Rzayeva et al., 2023). Understanding the psychological characteristics of adolescent consumers is essential for a more nuanced analysis of app algorithmic mechanisms. One of the most prominent traits of adolescent consumer psychology is the pursuit of fashion.

Adolescents are in a stage of rapid physical and psychological development. They are eager to integrate into prevailing social trends and to express individuality and modernity (Croes & Bartels, 2021). Fashionable items such as clothing and electronic products often become their top choices. For example, when a brand releases a newly designed pair of sneakers, adolescents are likely to follow the trend and purchase them quickly, as such items help them gain peer recognition and satisfy their curiosity and desire for novelty. This pursuit of fashion accelerates the turnover of adolescent consumer goods, compelling businesses to continuously innovate to keep pace with shifting youth preferences. According to a survey (Liu Yan, 1999), the youngest age group (12–19 years) showed the strongest agreement with hedonistic and status-oriented

consumption values, and the lowest agreement with price-sensitive and cautious consumption attitudes. Adolescents aged 12–29 share common consumer psychological traits, including a stronger inclination toward hedonic consumption, a notable rejection of bargain-hunting behavior, and a high degree of internal consistency in these attitudes (Deutsch & Theodorou, 2010; Wilska, 2017; Lu Shujian & Cheng Qian, 2022).

Another key trait in adolescent consumption is the emphasis on individuality. Existing studies have found that, due to their relatively marginalized social status compared to adults, adolescents often seek alternative means of self-expression to assert their individuality (Liao Wen & Wan Xinyi, 2023). They are dissatisfied with homogeneous products and wish to express their personalities, interests, and values through consumption. Customized stationery, backpacks with unique patterns or logos, and other distinctive goods are particularly popular among adolescents. They are willing to invest more time and money to find unique items that represent who they are, such as Lolita dresses, JK uniforms, or products associated with cosplay communities. This pursuit of individuality reflects the awakening of self-awareness and the adolescent aspiration for an independent identity (Deutsch & Theodorou, 2010; Rzayeva et al., 2023).

Emotional expression also plays a crucial role in adolescent consumption. Adolescents often attribute emotional meaning to their purchases, using them as tools to communicate emotions with friends and family or to express inner feelings. Gift-giving is a common form of emotional consumption; adolescents tend to carefully select gifts with symbolic significance—such as handcrafted jewelry or limited-edition toys—to convey friendship, love, or familial affection. Additionally, products related to anime characters or celebrities adored by adolescents often carry emotional resonance, making them particularly appealing. According to research (Liao Wen & Wan Xinyi, 2023), adolescents tend to focus their consumption on entertainment-oriented items in everyday life, reflecting a hedonic consumption pattern. Through symbolic consumption, adolescents derive psychological pleasure by engaging with the cultural and emotional meanings embedded in material goods. Purchasing such items provides emotional satisfaction and comfort (Theodoridis & Miles, 2019; Paterson, 2020; Rzayeva et al., 2023).

In summary, existing studies have thoroughly examined adolescent consumer psychology in areas such as fashion-seeking, individuality, and emotional expression, revealing the underlying psychological motivations and demand tendencies behind their consumption behaviors. However, controversies remain regarding cross-cultural differences in adolescent consumer psychology, changes in psychological patterns across different socioeconomic backgrounds, and effective strategies for guiding adolescents toward rational consumption. Future research should broaden its perspectives, adopt mixed-method approaches, and delve deeper into these unresolved issues to provide more targeted and effective theoretical and practical guidance for the healthy development of the adolescent consumer market.

2.2 Algorithms and Consumption

Existing studies have demonstrated that algorithmic recommendation significantly influences consumer behavior across various platforms, especially on short video platforms, forming a crucial theoretical foundation for this study.

2.2.1 The Impact of Algorithms on Consumer Behavior

Firstly, the pursuit of cost-performance ratio and product quality has become a core value among the new middle class. However, so-called "high cost-performance products" are often determined by consumers' purchasing power segments, rather than being the result of free comparison and rational evaluation by the consumers themselves (Zhou et al., 2010; Deng Ang, 2015; Feng Xing et al., 2024). Consumers are frequently swayed by slogans about discount coupons and tend to calculate immediate savings at checkout. Ironically, they often end up paying more for the original product, while the reusability of these coupons remains low. Moreover, consumers tend to be lured by the low prices of algorithmically recommended "value" products, leading to impulsive purchases of unnecessary items. In livestreams, influencers frequently set prices far below the regular rates and emphasize the discount by comparing them with those in physical supermarkets or on other online platforms. This strategy is highly appealing to consumers: on one hand, it draws a large viewership to the livestream, and on the other, the ultra-low pricing stimulates a rush to purchase, even when the products are not truly needed (Sun Yuyang, 2023).

Secondly, in the algorithmic era, the personalization of products leads to the commodification of identity, turning goods into symbolic items centered around individual expression. Consumption transcends the functional value of products and becomes symbolic, causing a dislocation of value goals and resulting in a loss of personal identity (Beer, 2018; Kenney & Zysman, 2020; Bansal & Bansal, 2023). As noted, “Traditional interpersonal relationships have been profoundly reshaped by consumer circle affiliations, and a ‘better life’ has increasingly become one that can only be shared within specific consumer communities,” indicating that algorithms play a significant role in shaping consumer networks and in symbolizing consumption goods (Yue Aiwu & Chen Wenyi, 2023). The erosion of consumer autonomy in algorithm-driven environments occurs in both explicit and implicit forms. Explicitly, platform operators interfere directly with consumer judgment through techniques such as personalized recommendation, filter bubbles, and collaborative filtering. Implicit manipulation refers to the covert influence on consumer decisions via embedded manipulative or deceptive algorithms. For instance, platform search engines that rely on bidding-based ranking systems limit the scope of consumer choices, as results are often skewed by paid ranking rather than relevance (Liu Ying, 2023).

Thirdly, algorithmic recommendations create an immersive shopping experience, where multi-dimensional communication structures enhance the efficiency of information dissemination. The consumption discourse shaped and disguised by algorithms further diminishes the perceived

presence of new consumerism, leading consumers to gradually internalize capital-driven consumption ideologies. As a result, consumers increasingly engage in entertainment-oriented and vulgarized consumer culture, which reinforces their dependence on algorithmically recommended consumption and makes them more susceptible to capitalist consumption traps (Yue Aiwu & Chen Wenyi, 2023). For example, college students often purchase products outside their original plans during livestreams, indicating that their capacity for rational consumption is gradually being weakened under the influence of TikTok streamers.

Moreover, the effects of personalized recommendations on consumer decision-making can be categorized into positive, neutral, and negative dimensions. On the positive side, the use of recommendation engines can reduce the number of products searched and the size of the choice set, thereby enhancing the quality of purchase decisions (Häubl & Trifts, 2000). The impact of personalized recommendations on product search behavior is moderated by product complexity—while recommendations may reduce search effort for low-complexity items, they tend to increase information search for complex products (Swaminathan, 2003). Online product recommendations intensify competition among products, heightening consumer price sensitivity and ultimately enabling lower consumer spending (Beauvisage et al., 2024).

From a neutral perspective, when exposed to product recommendations, consumers tend to convert their decision-making process into a selection-oriented activity, comparing currently recommended products with previously searched ones (Dellaert & Häubl, 2012).

On the negative side, when products are ranked according to their attractiveness, recommendation systems may paradoxically lead consumers to over-search, impairing decision quality and reducing their ability to distinguish among alternatives. When recommendations contradict consumers' initial impressions, they tend to experience lower decision satisfaction, greater decision difficulty, and are more likely to reject the recommended items (Fitzsimons & Lehmann, 2004).

2.2.2 Algorithmic Mechanisms on Short Video Platforms

Short video platforms employ algorithmic mechanisms to analyze user behavior data and deliver highly targeted content and product recommendations. The specific algorithms used in recommendation systems influence how consumers respond to personalized recommendations. Compared to recommendation systems that rely solely on collaborative filtering, consumers tend to place greater trust in hybrid recommendation systems and evaluate their perceived usefulness more positively.

Moreover, the effectiveness of recommendation algorithms is moderated by certain consumer characteristics. Consumers with greater knowledge of a product category tend to evaluate content-based recommendations more favorably, while those with limited product knowledge

respond better to collaborative filtering recommendations. Content-based personalized recommendations are generally more effective when consumer preferences are relatively stable.

Existing studies also suggest that recommendation algorithms can influence consumers' choices in terms of product quality, price sensitivity, and style preference. However, there is still ongoing debate regarding whether these algorithms can directly alter consumers' concrete purchasing behaviors (Sun Luping et al., 2016).

2.3 Platform Algorithms and Adolescent Consumption

2.3.1 Mechanisms of Platform Algorithms Influencing Adolescent Consumption

First, platform algorithms drive consumption behavior by satisfying psychological needs. Through personalized recommendation technologies, algorithms accurately capture adolescents' interests and behavioral preferences, thereby stimulating their desire to consume. Short video platforms and social e-commerce apps leverage users' demand for instant feedback and social recognition by designing highly engaging content that continuously promotes adolescent spending. Immersive consumption models create interactive scenarios that evoke emotional resonance, but also tend to lead to excessive consumption and may exacerbate familial conflicts (Lu Yaoxuan & Wang Yixuan, 2022; Zhang et al., 2023).

Second, platform algorithms shape adolescents' consumption values. Personalized recommendations not only promote purchasing behavior but also exert a profound influence on value formation. Social e-commerce platforms reinforce social comparison through algorithmic mechanisms, emphasizing the superiority of others' lifestyles and thereby promoting materialistic values. Meanwhile, recommendation systems foster consumption identification, making adolescents more susceptible to blindly following popular trends under the influence of influencers and platforms, resulting in a distorted understanding of consumption (Wu Yue et al., 2022; Yang Yunhong, 2022).

Third, platform algorithms foster irrational consumption behaviors. Adolescents are more prone to impulsive, short-term purchases under algorithmic influence. Live-streaming and recommended content stimulate the senses through novel formats, while marketing techniques such as discounts and virtual gifts further intensify consumption impulses. Such irrational behavior is influenced by both individual and product-related factors and requires intervention through education and platform regulation (Dong Wei & Wang Yijie, 2021; Zhao Dezhao et al., 2024; Beauvisage et al., 2024).

2.3.2 Strategies for Responding to Algorithmic Influence

Existing research suggests that optimizing algorithm design, enhancing media literacy, and strengthening family and educational guidance can effectively mitigate the influence of algorithms on adolescents' consumption patterns.

First, optimizing algorithm design. Scholars recommend refining algorithmic mechanisms to reduce their negative impact on adolescent consumption behavior. This includes increasing human oversight, restricting algorithmic recommendations of irrational consumption content, and improving content-pushing strategies to enhance the educational and social value of recommended content (Zhang Te & Yan Fangjie, 2022; Tao Xiandu & Li Xiaonan, 2024; Davis & Lee, 2024).

Second, enhancing media literacy. Educational systems and social institutions should focus on improving adolescents' media literacy by helping them recognize the marketing intentions and consumption risks embedded in algorithmically recommended content. Furthermore, it is important to advocate for rational consumption values and provide positive guidance on adolescents' value orientation (Theodoridis & Miles, 2019; Dogruel et al., 2022; Tang Yaojia, 2024).

Third, strengthening family and school-based educational guidance. Families and schools should take more proactive roles in guiding adolescent consumption behavior. Parents can supervise spending habits and engage in conversations about healthy consumption values, while schools should integrate media literacy and financial education into their curricula to comprehensively enhance adolescents' capacity to resist undue algorithmic influence (Yang Yunhong, 2022; Zhao Dezhao et al., 2024).

In summary, while existing research has analyzed the relationship between platform algorithms and adolescent consumption behavior, limited attention has been paid to the specific context of short video platforms. Compared with offline shopping and other digital commerce platforms, consumption via short video platforms exhibits distinct characteristics and shapes uniquely different consumption patterns among adolescents. This area remains underexplored and calls for further investigation to uncover the deeper mechanisms through which short video platforms influence adolescent consumption behavior.

3. Sbujects and Methods

3.1 Subjects

3.1.1 Adolescents: Core Participants for Data Collection

This study designed a questionnaire covering short video viewing habits, receptiveness to recommended content, and consumption behaviors. The questionnaire will be distributed through

a combination of online channels and offline collaborations, utilizing schools, community organizations, and other institutions to reach a diverse adolescent population and ensure the breadth and representativeness of the sample. After collecting the data, we will identify typical and representative consumption cases and conduct in-depth interviews to explore the psychological motivations and external influencing factors behind their consumption decisions. Collaborations with schools and communities will also facilitate questionnaire distribution and interview arrangements, ensuring the comprehensiveness and efficiency of data collection.

3.1.2 Platform Technologists and Designers: Technical Expertise from an Industry Perspective

This study engages technologists and designers from the TikTok platform to obtain expert insights into how short video recommendation algorithms influence user consumption behavior. Through direct outreach and formal invitations, we will clearly communicate the research objectives and modes of collaboration, inviting them to share key information regarding algorithm design logic, user behavior data collection, and analytical methods. This component will allow us to interpret the recommendation mechanism's impact on consumer behavior from a technical perspective, providing a solid empirical foundation for the study.

3.1.3 Adolescents' Family Members: Third-Party Observational Perspectives

This study also examines the role of adolescents' family members in shaping and interacting with adolescent consumption behavior. Through interviews and surveys, we seek to understand parents' perceptions of recommended content on short video platforms, their views on adolescent consumption patterns, and the role of family communication in consumption decision-making. As third-party observers, parents can offer unique insights into adolescents' consumption behaviors and platform usage habits, helping us analyze the multifaceted factors behind such behaviors. This component will further validate the potential impact of short video recommendation mechanisms on the family consumption environment, enriching the research with additional perspectives and empirical evidence.

3.2 Methods

3.2.1 In-Depth Interviews

In-depth interviews are employed primarily to collect qualitative data. For users of short video platform shopping features, interviews focus on the types of products purchased, shopping frequency, and behavioral changes before and after adopting the feature. For TikTok product

managers, the interviews aim to gather insights into the recommendation mechanisms, user engagement, and revenue performance of TikTok's shopping functions. Additionally, interviews with users who do not utilize short video shopping features help us understand their everyday shopping habits and perceptions of short video commerce platforms and their users. To date, three distinct interview guides have been developed for the three target groups, each consisting of 10 questions, and a total of 25 interviews have been conducted.

3.2.2 Questionnaire Survey

The questionnaire survey method is used primarily to collect quantitative data. For users who do not engage in shopping via short video platforms, the survey gathers information about their daily shopping habits, types of products purchased, shopping frequency, and attitudes toward short video shopping platforms. A structured questionnaire comprising 20 questions has been designed for this user group and distributed online. A total of 118 valid responses have been collected thus far.

3.2.3 Participatory Field Observation

To better understand the user experience and recommendation mechanisms of short video shopping platforms, a participatory field observation approach was adopted. Research team members registered individual TikTok accounts, each conducted 10 online shopping sessions, and collectively accumulated over 50 hours of platform usage. This method provides a deeper understanding of the recommendation algorithms and the user interaction dynamics embedded in the platform's shopping functionality.

3.3 Data and Materials Overview

3.3.1 In-Depth Interview

Between December 1, 2024 and January 4, 2025, the research team successfully conducted and collected valid in-depth interview data from 25 participants. The age range of the interviewees spanned from 15 to 51 years old and included three main categories: students, parents, and algorithm engineers. Among them, adolescents (students) accounted for 72% of the total sample (18 participants), forming the core demographic focus of the study.

Table 1. Interviews

No.	Date	Name of Interviewee (Pseudonym)	Gender	Age	Education Level	Occupation/Identity
1	2024/12/1	Lin	Female	15	High School	Student
2	2024/12/5	NingNing	Female	15	High School	Student
3	2024/12/6	Wu	Male	16	High School	Student
4	2024/12/11	Zhang	Male	16	High School	Student
5	2024/12/12	Chen	Female	16	High School	Student
6	2024/12/13	Qiu	Female	16	High School	Student
7	2024/12/13	Zhang	Female	49	/	Parent
8	2024/12/14	Pan	Male	50	/	Parent
9	2024/12/15	Pan	Female	15	High School	Student
10	2024/12/16	Ye	Female	16	High School	Student
11	2024/12/18	He	Female	15	High School	Student
12	2024/12/18	Lin	Female	16	High School	Student

13	2024/12/18	Liang	Female	11	Primary School	Student
14	2024/12/19	Huang	Male	14	Middle School	Student
15	2024/12/20	Lin	Male	51	Middle School	Parent
16	2024/12/21	Chen	Female	48	Middle School	Parent
17	2024/12/22	Chen	Female	16	High School	Student
18	2024/12/23	Gao	Female	16	High School	Student
19	2024/12/26	Zou	Female	17	High School	Student
20	2024/12/26	Xie	Female	16	High School	Student
21	2024/12/30	Zheng	Female	16	High School	Student
22	2025/1/2	Lin	Female	17	High School	Student
23	2025/1/2	He	Female	45	Bachelor's Degree	Parent
24	2025/1/2	Luo	Male	49	Master's Degree	Parent
25	2025/1/4	Chen	Female	28	/	Algorithm Engineer

3.3.2 Questionnaire Survey

A total of 118 valid responses were collected through the questionnaire survey. Of the interviewees, 67.78% (80 individuals) identified as female, while 32.22% (38 individuals) identified as male. In terms of age distribution, the majority of participants were born between 2000 and 2010. Regarding educational background, 39.83% (47 individuals) had completed high school, while 58.47% (69 individuals) held a college degree or higher. As for average monthly household income, 31.36% (37 individuals) reported earnings of 10,000 RMB or below, 33.05% (39 individuals) fell within the 10,000–30,000 RMB range, and 13.56% (16 individuals) reported monthly incomes of 90,000 RMB or above. The sample reflects considerable diversity across gender, age, education level, and income, contributing to the overall representativeness of the findings.

Table 2. Questionnaires

Demographic Attributes	Count	Percentage	Cumulative Percentage
Gender			
Female	80	67.78	67.78
Male	38	32.22	100
Year of Birth			
2000	3	2.54	2.54
2001	3	2.54	5.08
2002	4	3.39	8.47
2003	7	5.93	14.41
2004	10	8.47	22.88
2005	20	16.95	39.83
2006	28	23.73	63.56
2007	6	5.08	68.64

2008	19	16.10	84.75
2009	15	12.71	97.46
2010	2	1.69	99.15
Prefer not to answer	1	0.85	100
Education Level			
Middle school	1	0.85	0.85
High school	47	39.83	40.68
University or above	69	58.47	99.15
Not applicable / Prefer not to answer	1	0.85	100
Average Monthly Household Income			
￥10,000 or below	37	31.36	31.36.
¥10,001–30,000	39	33.05	64.41
¥30,001–60,000	15	12.71	77.12
¥60,001–90,000	11	9.32	86.44
¥90,001 or above	16	13.56	100
Total	118	100	100

4. Findings

4.1 Algorithm-Driven Reshaping of Traditional Adolescent Consumption Patterns on Short Video Platforms

4.1.1 Current Patterns of Short Video Platform Use and Consumption Behavior Among Adolescents

To explore how algorithmic recommendations on short video platforms are reshaping traditional consumption patterns among adolescents, this study conducted a survey and statistical analysis of adolescents' usage behaviors and consumption activities on such platforms. Key findings are summarized as follows:

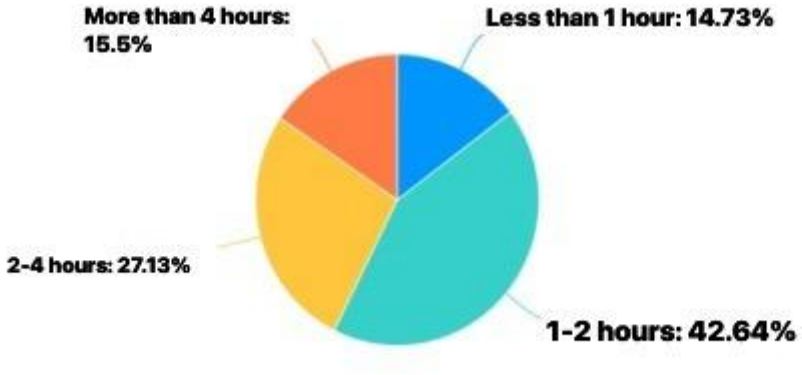

Fig 2. Time on short video platforms per day

On average, adolescents spend approximately two hours per day on short video platforms. The chart above presents statistics on daily usage time. Results indicate that 15.5% of interviewees use short video platforms for more than 4 hours per day, 27.13% use them for 2–4 hours, 42.64% for 1–2 hours, and 14.73% for less than 1 hour. Thus, most interviewees reported spending close to two hours daily on short video platforms.

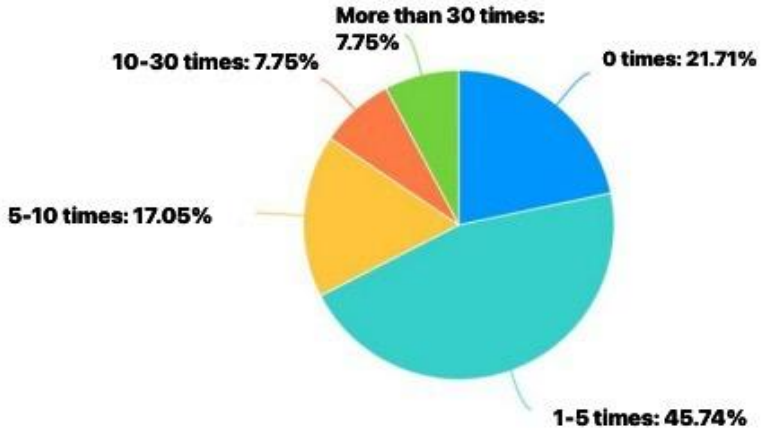

Fig 3. Purchases on short video platforms

In terms of consumption behavior, most adolescents reported having made purchases based on algorithmically recommended content. Specifically, 21.71% of interviewees stated they had never purchased a product due to short video content; 45.74% had made 1–5 purchases; 17.05% had made 5–10 purchases; and 7.75% had made 10–30 or more than 30 purchases. These findings

indicate that short video content significantly influences the consumption behaviors of the majority of adolescent users, with many exhibiting frequent purchase behavior.

4.1.2 Emerging Features in Adolescent Consumption Behavior

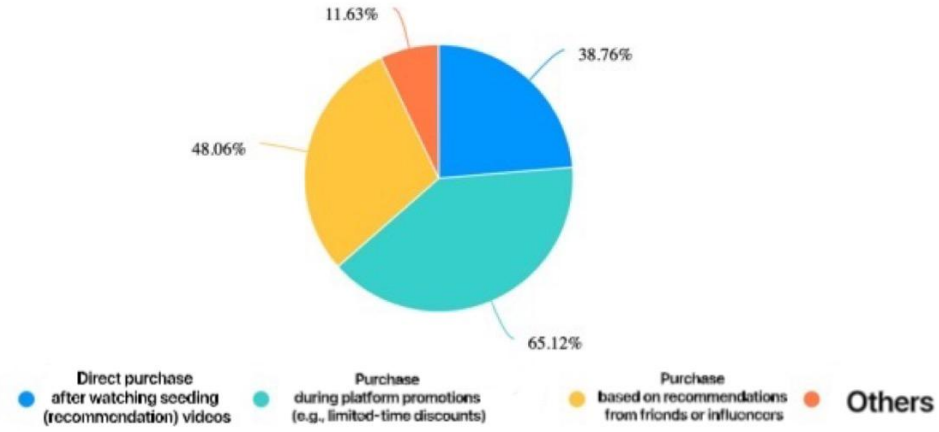

Fig 4. Preference for purchases on short video platforms

Adolescents show a clear preference for certain promotional strategies commonly used on short video platforms. The data show that 11.63% of interviewees would purchase a product immediately after watching a “recommendation” video; 38.76% are influenced by promotional campaigns (e.g., time-limited discounts); 65.12% make purchases based on recommendations from friends or influencers; and 11.63% make purchases under other contextual influences. Overall, price discounts and social endorsements from peers or influential figures play a decisive role in adolescents’ consumption decisions.

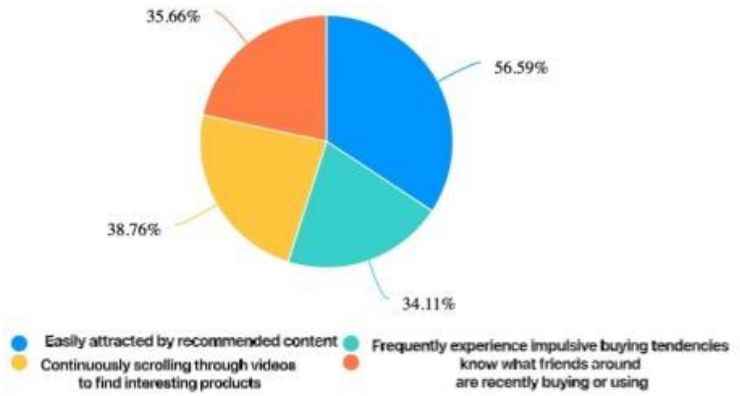

Fig 5. Factors influencing consumption

Adolescents are influenced by both algorithmic recommendations and personal preferences in forming their consumption decisions, either actively or passively. The survey results show that

35.66% of interviewees keep track of what their peers are buying and using; 56.59% are easily attracted by recommended content; 38.76% browse continuously for interesting products; and 34.11% frequently experience impulse to purchase. Over half of the interviewees reported being attracted by algorithmically recommended content, while around one-third acknowledged peer influence, product exploration behaviors, and susceptibility to impulsive buying.

4.1.2.1 Increased Impulse Buying

With the rapid development of shopping functionalities on short video platforms, adolescents' impulse buying tendencies have significantly increased. First, personalized content recommendations fuel adolescents' desire to buy. Algorithms on short video platforms capture users' interests with high precision—by tracking frequently viewed content and dwell time, the system triggers a desire for ownership, prompting impulsive purchases before fully evaluating necessity or practicality.

Second, social needs drive adolescent consumption. At this life stage, adolescents exhibit a strong desire for group belonging and often follow trends to integrate with peers, resulting in herd consumption behavior.

Finally, limited-time offers generate a sense of urgency. Flash sales and countdown discounts are common tactics on short video platforms. For adolescents with underdeveloped self-control, these strategies can be particularly persuasive. The fear of missing out on savings prompts hasty purchases, often without considering whether the product aligns with actual needs—leading to post-purchase regret after realizing the items were unnecessary.

4.1.2.2 A Shift Toward Small-Amount, High-Frequency Purchases

A second prominent feature is the trend toward low-cost, high-frequency consumption. This is primarily driven by two factors:

First, the accelerating digitalization of consumption. With the widespread adoption of mobile internet and digital payment tools, consumers now shop through mobile apps and social media platforms. Online shopping eliminates time and space constraints and offers an abundance of product choices, making micro-purchases on short video platforms faster, safer, and more convenient—thus fueling the development of small-amount, high-frequency consumption behaviors.

Second, increasingly diversified consumption scenarios. This trend has penetrated various aspects of daily life—such as food delivery, ride-hailing, digital entertainment, and in-game purchases—all of which have become common scenarios for small-scale, high-frequency consumption. These scenarios not only meet the diverse needs of consumers but also inject new vitality into the micro-consumption market.

4.1.2.3 Preference for Influencer-Endorsed and Socially Endorsed Products

With the development of the internet, consumers have increasingly turned to social media as a primary channel for obtaining information. Influencers vividly showcase products through short videos, images, and text, providing a more intuitive and personalized experience. For example, beauty influencers demonstrate cosmetic products by applying them on their own faces and show their effects directly to followers. This form of presentation is more persuasive than traditional text-based advertisements, as followers can clearly see the actual results.

Consumer trust in traditional advertising has gradually declined because such ads are often perceived as self-praise by merchants. In contrast, influencer endorsements and social proof create a sense of authenticity and relatability. Many consumers view influencers as peers who share similar interests or lifestyles, so their recommendations feel like genuine sharing among friends.

Consumers tend to favor brands frequently recommended by influencers. For emerging brands, influencer endorsements can rapidly boost brand awareness. For instance, a domestic skincare brand, previously relatively unknown, gained substantial consumer recognition in a short time after collaborating with multiple beauty influencers who provided trial-based recommendations. Trust in these brands is largely based on the credibility of the influencers, as consumers believe that brands chosen or endorsed by influencers have undergone a selective process and therefore possess a certain quality assurance.

When purchasing influencer-recommended products, consumers often prioritize platforms linked by the influencers. If shopping links are provided in the video descriptions, most consumers will follow these links to the store within the platform. Additionally, platforms like TikTok offer integrated shopping features, allowing consumers to buy influencer-recommended products directly within the app. This convenience further strengthens consumers' preference for influencer-endorsed and socially endorsed products.

"In TikTok's case, I think it's more about advertising. It's not so much about selling things directly; it's more like taking an ad and pushing it to you, then seeing if you have the need for it. I feel TikTok is more about advertising and promotion. It's not like JD or Taobao, which are specifically designed for selling goods. This platform is more for marketing and promotion."

— Interviewee18, 2024/12/23

4.1.2.4 Decentralization of Consumer Behavior

In traditional consumption models, commercial centers and large shopping malls serve as the core gathering places for consumption. Brands and consumers rely on hierarchical channel

systems to connect. However, with the development of the internet, consumer behavior is showing a trend toward decentralization. Consumers' decision-making processes, purchasing channels, and information sources have become more dispersed and diversified. Each consumer can interact directly with merchants, brands, and other consumers worldwide through the internet.

Online shopping breaks the constraints of time, allowing consumers to browse and make purchases during fragmented moments throughout the day. It also breaks the constraints of space, enabling shopping from any location with internet access. Additionally, online shopping grants consumers greater freedom in decision-making. In traditional shopping, interactions with in-store sales staff often heavily influence consumer behavior. In contrast, during online shopping, consumers can first view product details and user reviews by following links embedded in recommended videos before deciding whether to purchase. This process makes consumers feel their decisions are more autonomous. These factors collectively drive consumers toward more fragmented, online shopping choices.

"If I shop online, I have many products to compare. For example, when I search for coconut water on JD or Taobao, a lot of options come up. I can choose from one seller this time and another seller next time. After drinking it myself, I see which tastes better and then buy that one. I also compare prices."

— Interviewee6, 2024/12/13

4.1.3 Comparison Between Traditional Adolescent Consumption Patterns and Short Video Platform Consumption Patterns

In summary, adolescents' consumption patterns on TikTok have developed into relatively stable and distinctive models. Looking at the evolution of adolescent consumption over time, three main shopping modes can be identified: offline consumption, online shopping platforms, and short video platforms. These three modes exhibit a certain progressive relationship throughout the development of the times and adolescent growth (not a complete replacement, but an increasing proportion in sequence). This study summarizes their characteristics in the following table.

Table 3. Comparison Between Traditional and Short Video Platform Consumption Patterns

Characteristic	**Offline Consumption**	**Online Shopping (General Platforms)**	**Short Video Platforms**
Shopping	Physical stores	E-commerce	Content-driven

Environment	and malls	websites/apps (e.g., Taobao, JD.com)	shopping within video apps
Decision Influencers	Family, friends, and in-store ads	User reviews, search results, recommendations	Algorithmic recommendations, influencer marketing
Behavioral Traits	Strong planning, slower decision-making	Some planning, influenced by product suggestions	Highly impulsive, driven by entertainment and trends
Impulsiveness	Relatively low, requires physical presence	Moderate, influenced by ads and discounts	High, driven by visuals and "grass-planting" (desire-generating) content
Promotional Methods	Seasonal sales, discounts, membership cards	Coupons, flash sales, free shipping offers	Limited-time deals, influencer endorsements, live-stream discounts
Social Interaction	Face-to-face interaction	Limited—mainly via reviews and ratings	Comment interaction, real-time live chat during livestreams
Product Variety	Limited by physical inventory	Diverse, includes global stock	Limited, usually tied to displayed content
Convenience	Moderate—depends on location and hours	High—accessible anytime, anywhere	Very high—integrated with entertainment content

First, the shopping environments differ. Offline shopping relies primarily on physical stores and malls, where consumers must visit these tangible locations in person; the shopping environment is real and tangible. Online shopping (traditional platforms) occurs through e-commerce websites or apps (such as Taobao, JD.com), representing a virtual online shopping environment where consumers browse web pages or mobile applications to select products. Shopping on short video platforms (such as TikTok) takes place within video apps and is content-driven; consumers' purchase desires are stimulated while watching short videos.

Second, decision-making influencing factors differ. For offline consumption, decision-making is significantly affected by family and friends' recommendations as well as in-store advertising; consumers can physically see and touch products and communicate directly with sales staff. For online shopping (traditional platforms), the main influencing factors are user reviews, search results, and platform recommendations; consumers make decisions by viewing other users' feedback, searching for product information, and relying on personalized platform recommendations. On short video platforms, algorithmic recommendations and influencer marketing play a crucial role; the platform pushes related product videos based on users' browsing habits, while influencers promote products through their video content, impacting consumer decisions.

Third, regarding consumer behavior characteristics, offline consumption tends to be highly planned since consumers need to allocate specific time to visit physical stores, leading to relatively slower decision-making; consumers usually prepare and plan before shopping. Online shopping (traditional platforms) involves some planning but is also easily influenced by product recommendations; consumers may initially browse casually but develop purchase desires upon seeing recommended products. Short video platforms display highly impulsive consumption behaviors, driven mainly by entertainment and trends; consumers might immediately buy products featured and introduced in engaging videos while watching.

Fourth, regarding impulsive buying behavior, offline consumption is relatively low due to the need for physical presence; consumers tend to be more rational during the shopping process and are less likely to make impulsive purchases. Online shopping (traditional platforms) shows a moderate level of impulsivity, influenced by advertisements and promotional activities such as limited-time discounts and full-reduction deals, which may trigger impulse orders. Short video platforms exhibit a higher level of impulsive buying, driven by visual stimulation and "planting desire" content; vivid product displays in videos and influencer recommendations easily evoke consumers' impulse to purchase.

Fifth, in terms of promotional methods, offline consumption mainly involves seasonal promotions, discounts, and membership cards, promoted through physical store posters, flyers, and other offline advertising materials. Online shopping (traditional platforms) commonly uses

coupons, flash sales, free shipping offers, and other promotions conveyed via platform notifications and product page displays. Short video platforms utilize limited-time offers, influencer endorsements, live streaming discounts, and other promotional methods, leveraging short videos and live broadcasts to stimulate sales.

Sixth, concerning social interaction, offline consumers can interact face-to-face with sales staff and other customers, directly exchanging information about products and usage experiences. Online shopping (traditional platforms) mainly involves limited interaction through reviews and ratings; consumers learn about products by reading others' feedback, though direct interaction is relatively sparse. Short video platforms enable comment interactions below videos and real-time chat in live streaming rooms; consumers can comment and communicate with other users, and engage in live conversations with streamers to inquire about products.

Seventh, regarding product diversity, offline consumption is constrained by inventory, with product variety and quantity relatively limited depending on store size and stock. Online shopping (traditional platforms) offers diverse options, including global inventory; consumers can find a wide range of domestic and international products on platforms, providing broad selection. Short video platforms tend to have relatively limited variety, generally restricted to products promoted by platform influencers or merchants.

Finally, in terms of convenience, offline consumption is moderately convenient, dependent on location and business hours; consumers need to visit physical stores during operating hours. Online shopping (traditional platforms) offers high convenience, accessible anytime and anywhere with internet connection; consumers can shop via mobile phones or computers at their convenience. Short video platforms provide very high convenience by integrating shopping with entertainment; consumers can purchase interesting products instantly while enjoying video content, making the shopping process smoother and more seamless.

4.2 The Mechanism by Which Short Video Algorithms Profoundly Influence Adolescent Consumption Patterns

To further explore how short video algorithmic mechanisms affect adolescent consumption, we conducted a self-assessment survey. As shown in the figure below, 81.4% of interviewees acknowledged the presence of such an influence mechanism. Among them, 63.57% believed that short video platforms have a slight influence on their personal consumption behavior, 15.5% considered the influence to be considerable, and 2.33% regarded it as very significant. Overall, the majority perceive that short video platform algorithms affect individual consumption behaviors to varying degrees.

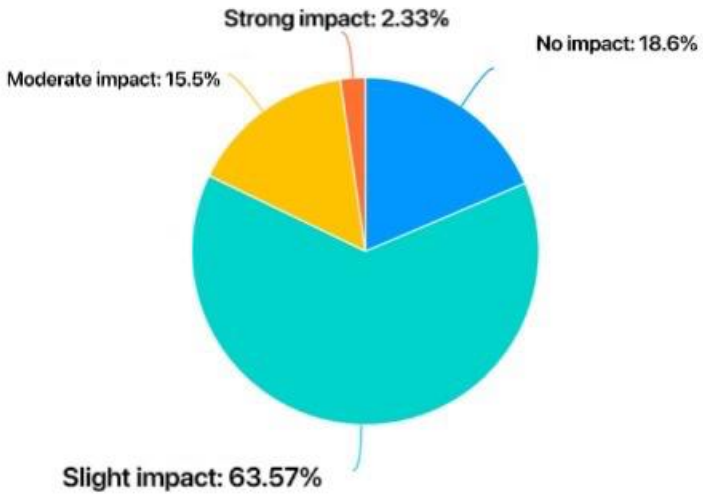

Fig 6. The impact of short video algorithmic mechanisms on consumption

4.2.1 Technical Mechanisms of Algorithmic Recommendations on Short Video Platforms

4.2.1.1 Behavioral Data Analysis

Short video platforms achieve precise recommendations by collecting and analyzing users' behavioral data. Such behavioral data includes browsing history, search keywords, likes, comments, shares, and more. For example, the algorithm used by Toutiao analyzes user behavior data such as browsing duration, frequency, likes, and comments on the platform to capture users' interests. If a user frequently views technology-related news, the algorithm may classify their interest within the tech domain. Additionally, the platform employs big data processing tools like Spark to efficiently process and analyze these data, constructing detailed user profiles to enable personalized recommendations.

4.2.1.2 Personalized Content Delivery

The platform recommends video content better suited to users' preferences, thereby increasing users' engagement time on the platform. Personalized content delivery refers to information service platforms utilizing personalized algorithmic recommendation technology to push information, achieved through artificial intelligence-based analysis and filtering mechanisms that deeply analyze massive datasets to match content accurately with users. This push method can recommend content that meets users' needs based on their interests, preferences, behaviors, and other personal information. The fundamental framework of personalized recommendation systems includes a recommendation engine, scenario engine, rules engine, and display engine. By integrating user interests, attributes, product attributes, content classification, and social relationships among users, the system uncovers users' preferences and needs and proactively recommends products of interest or necessity. Common personalized recommendation algorithms

include collaborative filtering, content-based filtering, and hybrid recommendation methods.

4.2.1.3 Contextualized Consumption Recommendations

Contextualized consumption recommendations refer to suggesting content that aligns with users' current needs and interests within specific contexts. For example, when users are at certain times or locations, the platform pushes related video content based on these situational cues. Such contextualized recommendations not only enhance user experience but also increase user interaction and engagement. For instance, Amazon's product review and recommendation system displays authentic user feedback and product usage outcomes to help consumers understand product performance, thereby influencing their purchase decisions.

"For example, on Taobao, if you search for study supplies such as notebooks or stationery, the platform will recommend products suitable for students based on your search time and browsing history, also showing evaluations and usage effects from other student users, making it easier for you to decide." (interviewee 25)

4.2.2 Mechanisms of Reinforcement Mode on Short Video Platforms

4.2.2.1 Psychological Changes

Firstly, Conformity Psychology and Social Identity Needs: Short video platforms use algorithmic recommendations to push popular content with high likes, comments, and shares to users. This conformity psychology makes users more likely to be attracted by trending content and engage in follow-the-crowd behavior. For example, when a video rapidly accumulates many likes and comments, the algorithm pushes it to more users, who then also like and comment, further amplifying the video's popularity. This conformity psychology satisfies users' social identity needs and enhances their sense of belonging within social circles. For instance, TikTok (TikTok China) uses user data such as likes, comments, and views to identify high-quality videos and promote them to higher traffic pools. This mechanism not only increases exposure to quality content but also leverages users' conformity psychology to involve more users in interacting with popular content.

Secondly, Pursuit of Instant Gratification: The algorithmic recommendation mechanisms of short video platforms can quickly provide content matching users' interests, creating a sense of instant gratification, which is a key driver for continuous platform usage. For example, when users encounter videos they find interesting, they experience immediate pleasure, and this short-term reward motivates them to keep browsing more content. Platforms like TikTok employ personalized recommendation algorithms to offer users videos aligned with their interests, enabling them to quickly access large amounts of relevant content. This instant gratification

facilitates deeper immersion in the platform and increases usage duration.

Thirdly, Adolescents' Sensitivity to Fashion and Trends: Adolescents are highly sensitive to fashion and trends. The recommendation algorithms on short video platforms can swiftly capture the latest trends and push them to adolescent users. For instance, when a fashion brand or trend becomes popular on the platform, the algorithm delivers related videos to teens interested in fashion, sparking their attention and imitation. For example, content creators on Bilibili share the newest fashion trends and lifestyles, attracting substantial adolescent audiences. Their videos not only showcase trends but also foster engagement and identification among youth through interactive comments and discussions.

In summary, short video platforms' algorithmic recommendation mechanisms profoundly influence users' consumer psychology and behavior through conformity psychology, instant gratification, and sensitivity to fashion trends. These mechanisms enhance user participation and satisfaction, while also promoting consumer behavior.

4.2.2.2 Behavior-Driven Mechanism

The platform enhances user engagement by understanding users' preferences and recommending video content better suited to their interests, thereby increasing users' time spent on the platform. Personalized content pushing refers to the use of personalized algorithmic recommendation technology by online information content service platforms. This technology employs artificial intelligence analysis and filtering mechanisms to perform deep intelligent analysis on massive amounts of data, achieving precise matching between information content and users. Such push mechanisms recommend content that aligns with users' interests, preferences, behaviors, and other personal information.

The basic framework of personalized recommendation systems includes recommendation engines, scenario engines, rule engines, and display engines. By comprehensively integrating users' interests, attributes, product attributes, content categories, and social relationships among users, the system mines user preferences and needs, proactively recommending products or content that users are interested in or require. Common personalized recommendation algorithms include collaborative filtering, content-based filtering, and hybrid recommendation methods.

Interest Clustering refers to grouping users by similar interests and behaviors through algorithms, thus forming communities with shared interests. This clustering not only satisfies users' demand for specific content but also enhances interaction and sense of belonging among users, thereby increasing user stickiness. For example, social media platforms recommend interest-related groups or topics to users and further categorize users by video tags to help them find like-minded individuals more easily, strengthening their dependence on the platform.

User data analysis is the foundation of personalized recommendation systems. By analyzing

users' browsing records, dwell time, clicking behaviors, and other data, platforms can build detailed user profiles to more accurately predict user interests. Common interest prediction algorithms include collaborative filtering, content filtering, and deep learning. For instance, collaborative filtering analyzes behavioral data to identify users with similar interests to the target user and then predicts the target user's preferences based on those similar users' likes.

The algorithm's self-reinforcement mechanism refers to the continuous optimization of recommendation algorithms through user feedback, making them more accurate and effective. Specifically, the recommendation system adjusts its recommendation strategy based on users' responses to recommended content (e.g., clicks, favorites, likes) to achieve self-optimization. For example, reinforcement learning algorithms learn how to perform optimal actions through interaction with the environment to maximize cumulative rewards. In recommendation systems, the agent can be understood as the recommendation system itself, the environment as the user behavior space, the state as different user conditions within the system, the actions as recommending various contents, and the rewards as user feedback to the recommendations.

Through this self-reinforcement mechanism, recommendation systems continuously learn users' preferences and behavior patterns, providing increasingly personalized content recommendations, thus enhancing user satisfaction and loyalty. For example, Amazon's recommendation system analyzes user behavior data to deliver highly customized advertising, thereby improving conversion rates.

4.2.2.3 Role of Promotional Strategies

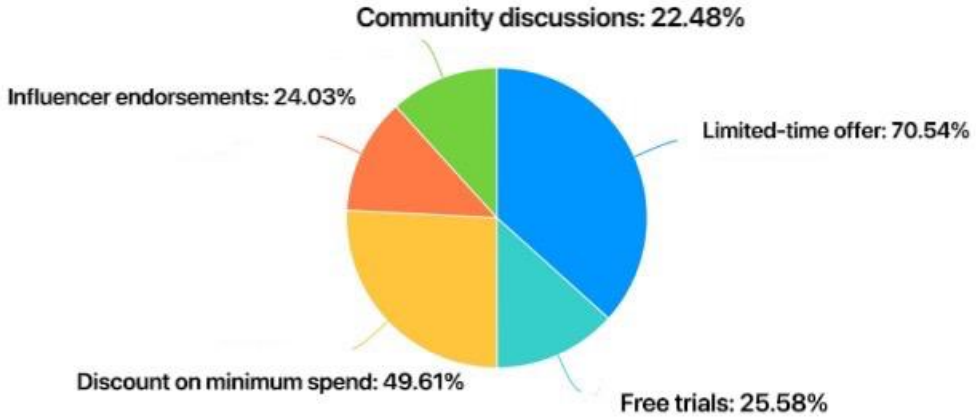

Fig 6. The impact of stimulation strategie on consumption

In the rapidly growing consumption scenario of short-video shopping, price stimulation strategies such as limited-time discounts and threshold-based promotions profoundly influence consumers' purchasing decisions. Approximately 70% of purchases occur under limited-time discount conditions. Limited-time discounts create a sense of urgency; when consumers see that a

desired product is offered at a special price for a short period, they fear missing out on the deal and are immediately triggered to make quick decisions. For example, a beauty product originally priced at 50 yuan drops to 30 yuan within one hour, prompting consumers to add it to their cart and check out impulsively. This impulse buying behavior is continuously amplified by the fast-paced information delivery of short video platforms. Meanwhile, about 49% of purchases are driven by threshold promotions (e.g., "spend X amount to get Y off"). These promotions motivate consumers to buy additional products to meet the spending threshold. They browse more items in the store, finding products that may not be urgently needed but fit the price criteria to qualify for the discount, thus raising the average order value. For example, a clothing store offering "50 yuan off on purchases over 200 yuan" can lead consumers who initially intended to buy only a top to also pick matching pants, achieving a significant increase in purchase volume.

Secondly, influencer endorsements and community effects act as two powerful engines that profoundly reshape consumers' purchasing decision pathways, continuously injecting momentum into this emerging consumption model.

Influencer endorsements help transfer consumer trust to products. Approximately 24% of consumers purchase items recommended by influencers. Influencers, through long-term content output on short video platforms, establish unique emotional bonds with their followers. Fans subconsciously believe that influencers will not risk their reputation by promoting poor-quality products, thereby reducing doubts about product quality and effectiveness, and greatly enhancing purchase willingness. Influencers usually have clear personal branding; beauty influencers, for instance, skillfully demonstrate makeup techniques and showcase a brand's lipstick application and durability in front of the camera, accompanied by vivid explanations that provide audiences with precise demonstrations of product usage scenarios. Consumers can visually perceive how products perform in contexts similar to their own needs. Compared with abstract advertising, this concrete demonstration makes it easier for consumers to judge product suitability, promoting rapid purchasing decisions.

About 22.5% of consumers make purchases driven by community discussions. Community effects drive group identity. Short video platforms have spawned numerous interest-based communities, and this sense of group identity acts as an invisible hand guiding consumers to follow mainstream community choices and strengthening their purchase determination. When a short-video shopping product sparks heated discussion within a community — for example, someone recommending a specialty snack in a food community — related information spreads virally. Members share purchase channels and consumption experiences in dialogue, exponentially increasing product exposure. More potential consumers become immersed in the information vortex and, influenced by overwhelmingly positive word-of-mouth, join the purchasing ranks without hesitation, accelerating the decision-making process.

Influencer endorsements and community effects intertwine in short-video shopping consumption decisions. Influencers ignite product popularity, while communities spread this

spark into a widespread consumption trend, jointly driving market prosperity and encouraging merchants to emphasize cooperative relationships with influencers and communities to maximize commercial value.

Additionally, within the short-video shopping ecosystem, “grass-planting” (i.e., product recommendation or seeding) content has become a highly explosive marketing force. Its unique dissemination model and significant impact on conversion rates are deeply reshaping the consumption market landscape. First, “grass-planting” short videos typically focus on solving life pain points or sharing enjoyable experiences. Coupled with concise and powerful copywriting and upbeat background music, they stimulate viewers’ curiosity and desire within a few dozen seconds, prompting users to actively stop and watch, initiating the first step of dissemination. Second, short video platforms’ convenient sharing features allow “grass-planting” content to spread like wildfire. When users see a recommended desirable product, they can instantly forward it to social groups on WeChat, Weibo, and other platforms. This social-relationship-based viral sharing rapidly penetrates different circles, greatly expanding the breadth of dissemination.

Finally, short video platform creators enhance the credibility of consumption content, helping to improve conversion rates. “Grass-planting” content posted by well-known beauty bloggers or professional digital reviewers enjoys high audience recognition due to their long-term accumulated industry reputation and professional image. For example, a digital blogger disassembling and analyzing the performance of a new smartphone provides objective evaluations of pros and cons, making viewers more willing to take purchasing actions based on trust. Conversely, if content contains obvious exaggerations or false advertising, consumers quickly detect it, and conversion rates plummet.

Short video platforms also improve the convenience of online shopping. The short-video shopping interface embeds direct purchase links, enabling users who become interested through “grass-planting” content to reach product detail pages and place orders with one click. This seamless shopping experience greatly boosts conversion rates. In contrast, if the redirection process is cumbersome or slow to load, consumers’ purchasing enthusiasm quickly cools, causing them to seek other convenient channels or abandon the purchase altogether, significantly reducing conversion rates.

4.2.3 Comparison of the Mechanisms by Which Algorithms Influence Consumption on Short video platforms versus Other Platforms

This study finds that although both short video platforms and other shopping platforms influence adolescent consumption through algorithms, the specific mechanisms differ, as detailed in the table below.

Table 4. Comparison of the Mechanisms on Short video platforms

Mechanism	Short Video Platforms	Other Shopping Platforms
Data Sources	User browsing behavior, likes, comments, and watch duration	User search history, purchase records, and reviews
Recommendation Logic	Algorithm analyzes user interests and gives real-time dynamic recommendations	Product recommendations based on historical behavior
Purchase Triggers	Visual stimulation and "grass-planting" content trigger impulsive purchases	Purchases triggered by active search or browsing
User Engagement	Immersive content viewing with direct product purchase links	Browsing product lists and detail pages
Promotional Strategies	Limited-time offers, livestream discounts, influencer endorsements	Coupons, full-discount deals, and membership discounts
Social Interaction	Comment interaction, real-time discussions in livestreams	Limited interaction via reviews and ratings
Psychological Drivers	Instant gratification, conformity, pursuit of trends	Rational comparison, functionality-oriented, price sensitivity

1. Data Sources.

Short video platforms primarily collect information based on users' in-platform browsing behavior, likes, comments, and viewing duration before video content. These data reflect users' real-time interest levels and preferences for different content types, providing precise inputs for

algorithmic recommendations. For example, if a user spends a long time watching and liking a makeup tutorial video, the algorithm infers their interest in the beauty domain. Other shopping platforms focus more on users' search histories, purchase records, and product reviews. These data represent users' active shopping intentions and satisfaction with purchased products, helping platforms understand long-term needs and preferences to make targeted product recommendations.

2. Recommendation Logics.

Algorithms on short video platforms dynamically and in real time analyze users' interest data to recommend content. For instance, if a user watches and likes multiple pet-related videos, the algorithm quickly identifies this interest and immediately recommends more pet videos or pet products, achieving precise and timely content delivery. Other shopping platforms base recommendations mainly on users' historical behaviors. For example, if a user frequently buys sports gear, the platform continuously suggests new sports shoes, apparel, and similar items. This recommendation logic is more stable and emphasizes uncovering users' potential repeat purchase needs.

3. Consumption Triggers.

Short video platforms trigger impulse purchases through visual stimuli and "seeding" content. Attractive visuals, engaging storylines, and influencer endorsements quickly capture users' attention and stimulate buying desires. For example, seeing an influencer showcase a newly launched lipstick with striking color and effect may prompt impulsive clicks on the purchase link. Other shopping platforms rely mainly on users' active searching or browsing product lists and detail pages to trigger buying behavior. When users have clear shopping needs, they search relevant products on the platform and compare details before making purchase decisions, a relatively more rational and purposeful process.

4. Modes of User Engagement.

Users on short video platforms mainly engage through immersive content viewing, while platforms embed product links to enable direct purchases during viewing. This participation mode allows users to enjoy content and shop easily, enhancing convenience and enjoyment. For example, when watching a cooking video, users can click embedded ingredient purchase links to learn and shop simultaneously. On other shopping platforms, users participate primarily by browsing product lists and detail pages. They carefully read descriptions, reviews, and other information to fully understand products before deciding to buy. This mode enables deeper product comprehension and more fitting purchase choices.

5. Promotional Methods.

Common promotional strategies on short video platforms include limited-time discounts, live-stream discounts, and influencer endorsements. Limited-time and live discounts create urgency, encouraging quick purchases; influencer endorsements leverage influencers' influence and trustworthiness to boost product credibility and attract more buyers. For example, a famous influencer recommending a skincare product during a live stream with exclusive discounts often drives fans to place orders out of trust. Other shopping platforms typically use coupons, threshold discounts, and membership discounts. These directly reduce purchase costs and improve value for money, stimulating users to increase purchase volume or buy higher-value products. For instance, threshold promotions encourage users to add items to reach a spending target to receive discounts.

6. Impacts of Social Interaction.

Social interaction is richer on short video platforms, where users exchange insights and recommendations via comments, real-time live chat, and other interactive features. This interaction enhances user engagement and expands product influence and reach. For example, viewers in live streams ask questions and share usage experiences in real time; hosts respond with explanations and recommendations, creating a lively shopping atmosphere. Other shopping platforms offer more limited social interaction, mainly through product reviews and ratings. These provide references for other users to understand actual product performance but lack the depth and form of interaction seen on short video platforms.

7. Psychological Driving Mechanisms.

The main psychological drivers on short video platforms are instant gratification, conformity, and trend chasing. Users achieve immediate satisfaction by purchasing liked content or products; influencer endorsements and mass popularity also induce conformity, prompting users to follow trends and buy trending items. For example, when an influencer's backpack frequently appears in short videos with positive reviews, users may buy it to fit in with the trend. Other shopping platforms emphasize rational comparison, function orientation, and price sensitivity. Users carefully compare features, performance, and prices to choose products that best meet their needs and budgets. They focus more on practical value and cost-effectiveness, making relatively cautious and rational purchase decisions.

4.3 Potential Approaches to Address Algorithm-Driven Consumption Patterns

Adolescents, as the primary user group of short video platforms, exhibit distinctive consumption behaviors driven by algorithmic mechanisms. Effectively responding to the negative

impacts of algorithms on adolescent consumption can be achieved by optimizing algorithm design, reducing AI's excessive intervention in irrational consumption, enhancing media literacy, and strengthening educational guidance within families and schools. These measures provide crucial support for building a healthy consumption ecosystem.

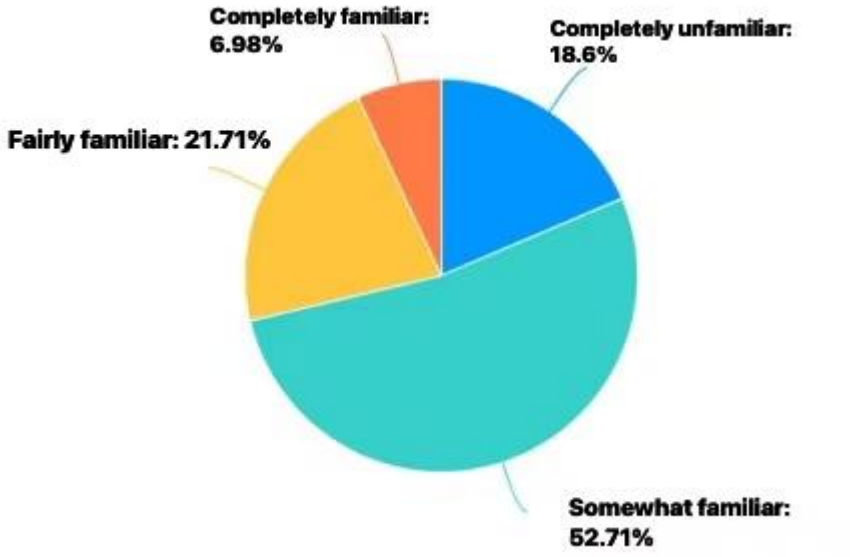

Fig 7. The extent of familiarity with algorithmic recommendation mechanisms

A survey investigating adolescents' short-video consumption behaviors and algorithm mechanisms revealed the following findings reflected in pie chart data: regarding understanding of the algorithmic recommendation mechanisms of short video platforms, 52.71% of interviewees reported being "somewhat familiar," 21.71% were "fairly familiar," while 18.6% stated they were "completely unfamiliar."

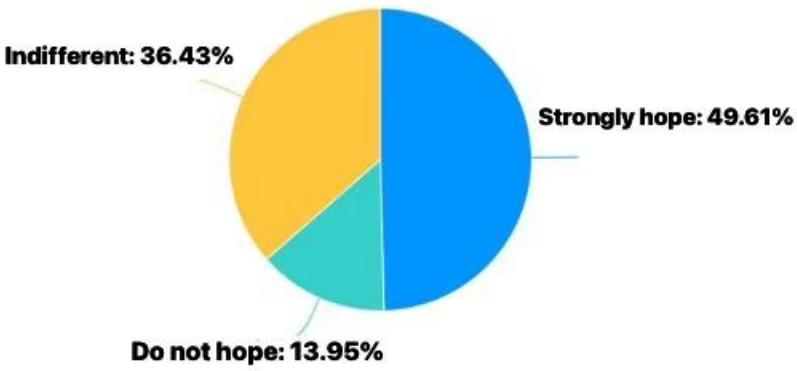

Fig 8. The expectations for algorithm transparency

Concerning expectations for algorithm transparency, 49.61% of interviewees "strongly hope" that platforms make their recommendation algorithms transparent, 36.43% felt "indifferent," and 13.95% "do not hope" for such transparency.

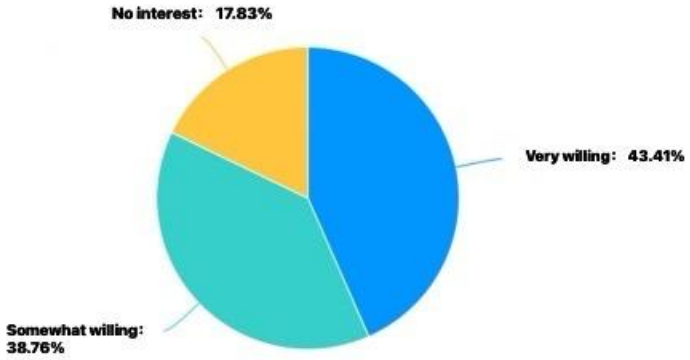

Fig 9. The willingness to participate in school courses related to digital consumption and algorithms

Regarding willingness to participate in school courses related to digital consumption and algorithms, 43.41% were “very willing,” 38.76% “somewhat willing,” and only 17.83% expressed “no interest.”

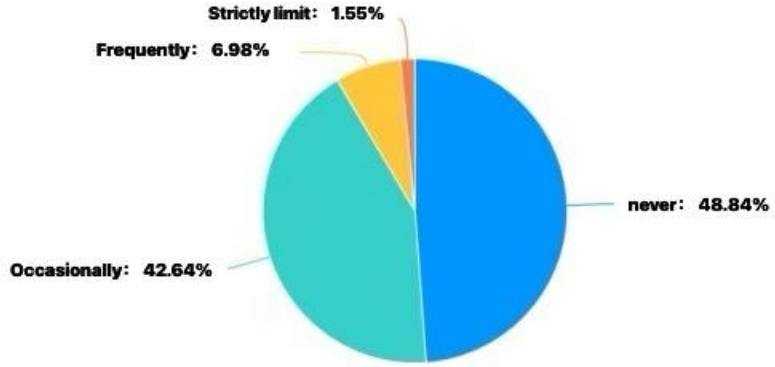

Fig 10. Frequency of family regulation of short-video consumption

Additionally, on the question of whether families limit or guide short-video consumption behavior, 48.84% of interviewees indicated “never,” 42.64% said “occasionally,” while the proportions for “frequently” and “strictly limit” were only 6.98% and 1.55%, respectively.

The data indicate that most adolescents have limited understanding of the algorithmic mechanisms on short video platforms and insufficient awareness of algorithm-related knowledge. Nearly half of interviewees express a desire for platforms to increase algorithm transparency, reflecting concerns about privacy and openness. Over 80% of interviewees hold positive attitudes toward schools offering related courses, underscoring the necessity of strengthening education on algorithms and digital consumption. Most families impose few restrictions on short-video

consumption, suggesting that adolescent consumption behaviors rely more on self-regulation and external environmental guidance.

4.3.1 Shortcomings in Algorithm Design Optimization

Currently, short video platforms demonstrate a significant lack of emphasis on recommending non-commercial and educational content, resulting in adolescents primarily encountering commercial and entertainment-oriented materials on these platforms. This deficiency leads to a scarcity of high-quality content related to scientific knowledge, cultural arts, and mental health. Such a homogenized recommendation pattern fails to adequately meet the comprehensive developmental needs of adolescents. Furthermore, algorithm transparency has not received sufficient attention; platforms lack regular disclosure practices regarding their recommendation logic, mechanisms, and commercial objectives. Adolescent users possess only a vague understanding of how algorithms operate and generally lack the ability to critically discern recommended content, making them vulnerable to the consumption traps of commercialized content. Additionally, existing regulatory efforts are insufficient, with inadequate oversight on the ethical standards of algorithmic recommendations and their alignment with adolescents' developmental needs. Consequently, algorithms have not fulfilled their potential role in promoting healthy consumption.

"Algorithm transparency is not merely a technical issue but a reflection of the platform's social responsibility. For adolescent users, platforms could try implementing educational interfaces or regularly push transparency reports that explain the logic and commercial purposes behind recommendation mechanisms. Meanwhile, we also suggest increasing the promotion of non-commercial content so that adolescents can be exposed to more high-quality knowledge-based and public welfare content while using the platform." (interviewee 25)

4.3.2 Insufficient Media Literacy Education

Enhancing adolescents' media literacy is considered a crucial approach to mitigating algorithmic influence, yet relevant education remains underdeveloped in practice. Currently, most schools have not integrated media literacy education into their standard curricula, and students have limited understanding of the logic and commercial motivations behind algorithmic recommendations. This directly results in a lack of critical thinking when confronted with recommended content. Simultaneously, family education shows significant shortcomings in guiding adolescents toward rational consumption. Many parents lack awareness of algorithmic technologies and the potential consumption risks they entail, rendering them unable to provide effective guidance. Moreover, media literacy promotion and educational activities at the societal

level are fragmented, lacking systematic coverage, and thus failing to fully leverage the role of public campaigns and practical activities in enhancing adolescents' algorithm recognition and consumption awareness.

"I think it would be really helpful if schools offered courses about algorithms and digital consumption. When we usually browse short videos, it's actually hard to tell which ones are recommended ads and which are content we truly like. If we could learn about how algorithms work through courses, it should reduce the impulsive purchases after 'getting influenced' and help us become more rational." (interviewee 4)

4.3.3 Insufficient Educational Guidance from Families, Schools, and Society

The support systems from families, schools, and society for adolescents' consumption behavior and internet use remain inadequate. At the family level, many parents have not established reasonable rules for internet use and lack sufficient attention to their children's consumption behaviors. Communication between parents and children is insufficient, failing to effectively guide adolescents to understand the characteristics and potential risks of algorithmic recommendations. At the school level, specialized courses and practical activities addressing algorithmic recommendation and consumption behaviors have low coverage, and the existing education system shows limited effectiveness in enhancing adolescents' ability to critically evaluate online information. At the societal level, laws and regulations protecting adolescent consumers are still underdeveloped, and supervision over recommended content on short video platforms is insufficient. False advertising and excessive commercialization targeting adolescents remain widespread, while community organizations have limited involvement and reach in adolescent education activities.

"As a parent, I feel that nowadays children are easily attracted by content online, especially ads and products recommended by algorithms. At home, I explain some knowledge about algorithms to my child, telling them about the potential risks behind these recommendations so that they can learn how to discern this information." (Interviewee 8)

"As an algorithm engineer, I see that many students do not understand how algorithms work, which makes them easily influenced by recommended content. We should help them strengthen their judgment of online information to avoid falling into the trap of excessive commercialization." (Interviewee 25)

In summary, platforms, families, schools, and society all face significant shortcomings in optimizing algorithm design, media literacy education, and the construction of comprehensive support systems. The existence of these issues not only intensifies the distortion of adolescent consumption behaviors but also places higher demands on platforms' fulfillment of their social responsibilities regarding algorithms.

5. Discussion and Conclusion

In the current era of artificial intelligence, algorithmic recommendation has inevitably and profoundly transformed the consumption patterns of the general public, especially adolescents. Although the rapid development of short video platforms has further enhanced the convenience, immediacy, and entertainment value of consumption, their potential risks in triggering impulsive and irrational consumption cannot be ignored. This study employs in-depth interviews and questionnaire surveys to explore the underlying mechanisms of this issue, proposing that a combination of technological self-regulation, educational promotion, and policy intervention is necessary to foster a new model of rational and sustainable consumption among adolescents in the future.

This research focuses on how short video platforms, particularly TikTok, reshape adolescent consumption behavior through algorithmic mechanisms. Based on a comprehensive analysis of survey data and in-depth interviews, the study reveals the key characteristics of adolescent consumption behaviors and the deep mechanisms by which algorithms influence them, providing important insights into how short video platform algorithms shape modern consumption behavior. The main findings are as follows:

First, adolescent consumption behavior exhibits four significant features: a marked increase in impulsive consumption; a trend toward small, frequent purchases; a strong preference for influencer-endorsed and socially endorsed products; and a gradual decentralization of consumption behavior that breaks through the limitations of traditional shopping scenarios. Compared with offline consumption and other shopping platforms, adolescent consumption patterns on short video platforms are characterized by higher immediacy and entertainment value, indicating a shift from function-driven to emotion-driven consumption.

Second, algorithms profoundly shape consumption patterns through multiple mechanisms: short video platform algorithms guide and reinforce adolescent consumption behaviors via user data analysis, personalized content recommendation, and contextualized media strategies. Additionally, platforms exploit adolescents' tendencies toward conformity, instant gratification, and trend sensitivity, using promotional strategies and behavioral reinforcement to further exacerbate irrational consumption tendencies. This systemic operation constructs a consumption ecosystem highly dependent on algorithms.

Third, the absence of education and regulation exacerbates the negative impacts of algorithms on adolescent consumption patterns: the study shows that most adolescents receive little to no systematic education related to algorithms and digital consumption during their schooling, lacking the ability to recognize algorithmic recommendation mechanisms. This cognitive gap not only amplifies the risk of consumption behavior alienation but also highlights the importance and urgency of interventions at educational and regulatory levels.

Based on these findings, the study proposes the following recommendations to address the potential negative impacts and alienation risks of short video platforms on adolescent consumption:

Firstly, platform optimization and technological transparency: short video platforms should proactively disclose algorithmic rules and promote transparency practices to enhance users' right to information and decision-making capabilities. At the same time, platforms should develop features allowing users to customize content preferences and limit the proliferation of commercial content, thereby reducing triggers of irrational consumption from a technical perspective.

Secondly, joint intervention from family and social education: families should play a more active role in cultivating adolescents' consumption habits by supervising consumption behaviors and setting rules for internet use to guide the formation of healthy consumption values. Schools and social institutions should strengthen media literacy education to help adolescents understand algorithmic mechanisms, cultivate critical thinking skills, and enhance their awareness of marketing strategies.

Thirdly, policy formulation and market regulation: policymakers need to strengthen regulation of algorithmically recommended content, clarify marketing restrictions targeting minors, standardize transparency requirements for influencer marketing, and improve the credibility of advertisements and endorsements. Introducing a more rigorous regulatory framework will maintain market integrity and fairness.

Against the backdrop of rapid global development in artificial intelligence and digital consumption, algorithmic recommendations on short video platforms are reshaping consumption behavior on an unprecedented scale, profoundly affecting the values and consumption perceptions of adolescent groups. This study explores the interactive mechanisms between algorithms and adolescent consumption behavior from multiple dimensions and proposes a combined approach of technological optimization, educational promotion, and policy intervention. It not only provides theoretical support for the healthy development of digital platforms but also points to practical directions for fostering a rational and sustainable consumption culture among youth worldwide.

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