

# The Effect of Algorithmic Recommendations on Female University Students' Willingness to Engage in Romantic Behaviour

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**Abstract.** With algorithmic recommendations becoming an important way and means of information distribution, social media platforms are developing rapidly, and students in colleges and universities today have become the main audience for their information access. In this paper, through the application of TPB model in the intention to fall in love of young female groups in colleges and universities, four variables, namely attention, attitude, subjective norm and perceived behavioural control, were studied in depth, and a research model of factors influencing the relationship behaviour of young female groups was constructed based on the theoretical model of planned behaviour. According to the results, the factor of attention did not have a significant positive effect on relationship behaviour intentions, and behavioural attitudes, subjective norms and perceived behavioural control (PBC) had a significant positive effect on relationship behaviour intentions.

## 1 Introduction

### 1.1 Background

Algorithmic recommendations are based on tracking a user's online behaviour and using mathematical algorithms to calculate personal characteristics, environmental characteristics and other relevant information, and thus to deduce what the user might like [1]. In terms of trust in sources, women trust community forums and algorithmic news apps more; the younger the user, the higher the trust in Weibo [2]. The younger the user, the higher the level of trust in Weibo [2].

According to the "2020-2021 China Mobile Social Industry Research Report" published by Ai Media Consulting, as the public's awareness of mobile social networking increases, the proportion of female users and their activity level gradually increases, and their initiative in mobile social life also tends to increase [3]. In the process of seeking positive relationship practices and developing their own view of marriage, in a subtle way, social media quietly influences the willingness of some female university students' relationship behaviours.

### 1.2 Research Analysis

According to the existing literature, many scholars at home and abroad have conducted relevant research on the psychology of university students' behaviour. The Theory

of Planned Behavior (TPB) has been applied to research [4], but the focus has been mainly on university students' job search and entrepreneurship, examination-based education and teaching research. Therefore, on the basis of the applicability of the TPB model in the study of algorithmic recommendation on female university students' intention to engage in romantic behaviour, this study proposes a hypothesis that the four dimensions of attention, attitude, subjective norms and perceived behavioural control will influence the behaviour based on the cognitive mediation model as well as the attention dimension. The influence of information in new media on personal thinking and value orientations has, to a certain extent, influenced the establishment of students' views on relationships [5].

### 1.3 Problem statement and objectives

The general structure of this paper is as follows: Firstly, we review and summarise the previously available literature and research. Secondly, based on the existing research, we present a theoretical model and our hypothesis. After that, analysed the survey process and the sampling data. Finally, an empirical test of the model and hypotheses of this study and the sharing of the findings.

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## 2 Literature Review

### 2.1 Algorithmic recommendations

Algorithms, as a new way of understanding communication and changing it, are a way of disrupting and transforming the existing status quo of communication [6]. In the 21st century, where social media and internet technologies are constantly evolving, this power is presenting itself in a more insidious and widespread way [7].

#### 2.1.1 important results

In the age of Internet media, as a comprehensive ability of media cognition and utilization, has become a basic quality necessary for the public [8]. Wang Yuchen believes that the young people are dependent on the new media for their thoughts and consumption, and use the messages conveyed by the new media as a reference point for moral reference and values, transforming them into internal spiritual beliefs and behavioural intentions over time [9]. At the same time, based on Li Qiaowen's view that personalised recommendations can lead to an imbalance in the values of the audience, which can eventually lead to extremes in thought and behaviour [10].

### 2.2 Theory of Planned Behavior

The Theory of Planned Behaviour (TPB) is widely used to explain and predict human social behaviour. "Intention to act" is "the main direct determinant of 'behaviour'". Behavioural intentions are "influenced by both internal and external motivational variables, with the internal motivational variable being "behavioural attitudes" and the external motivational variable being "subjective norms"". Behavioural attitudes" are "individuals' positive or negative evaluations of the outcome of their behaviour"; "subjective norms" consist of "the level of motivation to align with the opinions of those who have a significant influence on them".

#### 2.2.1 Important results

Li Yongqiang, Bai Xuan and Zeng Zheng made a study on the applicability of the Theory of Planned Behaviour in the study of college students' entrepreneurial intentions, illustrating the applicability and good predictive power of TPB in the college student population from different perspectives [11]. Meanwhile, Shaohui Liu has also studied the formation mechanism of college students' entrepreneurial intentions under the perspective of TPB theory, which gives us a new perspective [12].

##### 1.1 Attitudes

According to the Theory of Planned Behaviour, attitude is the degree to which an individual's cognitive and affective evaluation of a particular goal-directed behaviour, positive or negative, towards performing a particular behaviour, reflects the actor's willingness to perform that particular behaviour [13, 14, 15]. Therefore, we have the following conjectures.

H1: Attitudes towards algorithmic recommendations related to relationship information pushing are positively correlated with behavioural intentions

##### 1.2 Subjective norms

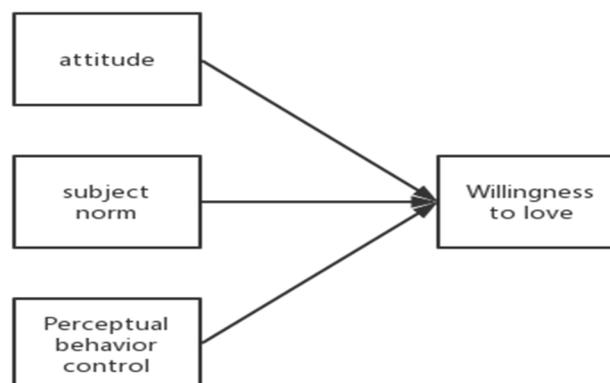
Subjective behavioural norms reflect an individual's willingness to perform a behaviour with the perceived influence of social pressure to behave or not to behave in a certain way [13]. therefore, the following conjecture was formulated.

H2: Subjective norms of willingness to fall in love behaviour are positively related to behavioural intentions

##### 1.3 Perceptual behavioural control

Perceived behavioural control refers to the judgement of an individual's ability to control. In this study, which will examine perceived behavioural control of willingness to act in love, our conjecture is as follows.

H3: Perceived behavioural control of relationship intentions is positively related to behavioural intentions



**Fig. 1.** Conceptual Model  
Source. Self collection of pictures

### 2.2.2 Summary.

Currently, new media networks are quietly changing our thinking patterns, behaviours and lifestyles, and have become the "third space" after classrooms and extracurricular activities [16]. The algorithmic recommendation is based on the accurate "portrait" of the user to achieve the accurate distribution of information needs of the user, and its logic has three main mechanisms, namely content-based recommendations, collaborative filtering recommendations and recommendations based on association rules [17].

In the new media environment, not only do college students' perceptions of love differ, and different individuals' relationship choices, motivations and attitudes vary widely, but various factors also influence college students' relationship patterns and attitudes at different levels and levels [18]. Nowadays, The bad talk of some online celebrity anchors and their close to "ruinous" view of love are like "poisonous tumours" that subconsciously influence the ideological and moral quality and behaviour of university students [19]. Therefore, exploring the relationship between algorithmic recommendations and the willingness of female university students to fall in love is an important topic in the current new media era and beyond.

## 3 Methodology

### 3.1 Research design

In this paper, the TPB Theory of Planned Behaviour was used to study the respondents' willingness to engage in romantic behaviour, and a questionnaire was used to collect

data. In order to ensure the scientific validity of the questionnaire, this study strictly follows Ajzen's questionnaire model for questionnaire design and theoretical modelling, and on top of this it also consults questionnaires from existing research on relationship behaviour for question setting.

### 3.2 Data collection

The research subjects of this paper are female university students who go on and read algorithmic news pushing content about relationship topics, and the online questionnaire survey was conducted through the questionnaire star platform in the first stage, and the data was statistically processed using spss26.0 software in the later stage. A total of 382 questionnaires were collected, excluding 28 invalid questionnaires (short response time, respondents who have used algorithmic recommendation media, etc.), the number of valid questionnaires was 354, with a valid return rate of 92.6%, according to which, this paper carried out data analysis and model testing.

### 3.3 Data analysis

After the questionnaires were returned, the data collected were screened to exclude those who did not meet the age requirement and those who had never used social media to view relationship-related topics, and the data were analysed and processed using SPSS 26.0 software (Table 1).

**Table 1.** Summary of measurement items

Measurement	Projects
Concerns	1. You often browse relationship topics 2. You are interested in the topic of relationships 3. Have you read relationship-related tweets
Attitude	4. How often do you get tweets about relationship-related content? 1. How much do you like the algorithm's recommendations for reading information on relationship topics? 2. What do you think about big data pushing relationship-related topics
Subjective norms	1. You believe that relationship-related content can give you some positive guidance on emotional issues 2. Publicity from online media influences you to pay attention to the content of relationship topics 3. Positive feedback from friends and family will influence you to use the algorithmic medium to read content on relevant topics
Perceptual behavioural control	1. You prefer to use big data recommendations to get content about relationship topics than other ways 2. I think the content pushed by Big Data can help me with my emotional problems
Willingness to act	1. I would like to read about relationship topics and gain experience and knowledge from them 2. When faced with relationship difficulties, you would consider talking openly with your online friends 3. Consider seeking advice and help from online friends when you are facing relationship difficulties 4. In your future life, you will draw on relevant relationship tweets to fall in love

*Data collection and statistics by authors*

The study found that the majority of the effective age group were in their undergraduate studies, accounting for 69.9%, with 137 female university students (36.9%) having had 1-2 relationship experiences. The percentage of female students who like to browse relationship content is

33.9%. 34.46% of female university students were tweeted once a day and 33.05% of female students were tweeted multiple times a day (Table 2).

**Table 2.** Status of individual projects

	Projects	Percentage of
Grade Level	Undergraduate studies (freshman and sophomore)	30.63
	Undergraduate studies (junior and senior year)	39.27
	Studying for a Master's degree	17.28
	Doctoral studies	12.83
Relationship experience	Single	27.75
	1-2 relationships	36.91
	3-4 relationships	20.16
	5 paragraphs or more	15.18
Push frequency	Multiple times a day	33.05
	Once a day	34.46
	Once a week	19.12
	Once a month	13.28
Likeness	Very unlike	6.78
	Dislikes	9.6
	General	16.1
	Likes	33.9
	Loved it	33.62

Source. Self collection of pictures

## 4 Results

The reliability of the current questionnaire was examined using the Cronbach alpha coefficient, and the results showed that the reliability of the total questionnaire was 0.943, which was above 0.9, indicating that the questionnaire was very reliable. The reliability of the attitude, sub-

jective norm, perceived behavioural control and behavioural intention among the subscales was above 0.85, and these four subscales also had a certain degree of reliability and stability (Table 3). In terms of construct validity, the KMO and Bartlett's sphericity tests conducted showed a KMO value of  $0.971 > 0.5$  and a Bartlett's significance of  $0.000 < 0.001$ , indicating a good fit for factor analysis (Table IV).

**Table 3.** Reliability statistics

Name	Kronbach	Number of items
Concerns	.058	2
Attitude	.860	3
Subjective norms	.853	3
Perceptual behavioural control	.872	3
Behavioural Intentions	.864	3

Source. Self collection of pictures

**Table 4.** KMO and Bartlett's test

KMO Number of sample suitability measurements.		.971
Bartlett Sphericity Test	Approximate cardinality	3754.746
	Freedom	91
	Significance	.000

Source. Self collection of pictures

In terms of correlation, SPSS 26.0 was used for correlation analysis, and the results showed that there were significant two-by-two correlations between attitudes, behavioural norms, perceived behavioural control and behavioural intentions, with all correlations above 0.80 and all

positive correlations. This indicates that the theoretical model constructed and the research hypotheses proposed are all reasonable (Table 5).

**Table 5.** Relevance

	Concerns	Attitude	Code of Conduct	Perceptual behavioural control	Behavioural Intention
Pearson Correlation	.704**	.889**	.863**	.862**	1
Significance	.000	.000	.000	.000	
Number of cases	354	354	354	354	354

Source. Self collection of pictures

For the regression analysis, R-squared, ANOVA and coefficient table tests were used, with an R-squared of 0.832 and an adjusted R-squared of 0.830, which showed a small deviation from the adjusted R-squared and more stable data (Table VI). The significance of ANOVA was 0, which was less than 0.05, indicating that the regression equation was significant (Table VII). In the coefficient ta-

bles, the significance of attitude, subjective norms and perceived behavioural control was less than 0.05, indicating that the variables had a significant effect on the dependent variable. The significance of the level of concern was greater than 0.05, indicating that the two variables had a non-significant effect on the dependent variable (Table VIII).

**Table 6.** Summary of the model

Models	R	R Square	Adjusted R-squared	Errors in standard estimates
1	.912 <sup>a</sup>	.832	.830	.460593487965111

a. Predictor variables: (constants), perceived behavioural control, attention, behavioural norms, attitudes  
Source. Self collection of pictures

**Table 7.** ANOVA<sup>a</sup>

Models		Square and	Freedom	Mean Square	F	Significance
1	Return to	365.935	4	91.484	431.229	.000 <sup>b</sup>
	Residuals	74.039	349	.212		
	Total	439.974	353			

a. Dependent variable: behavioural intentions  
b. Predictor variables: (constants), perceived behavioural control, attention, behavioural norms, attitudes  
Source. Self collection of pictures

**Table 8.** Coefficients<sup>a</sup>

Models		Unstandardised factor		Standardisation factor		Significance
		B	Standard errors	Beta	t	
1	(Constant)	.196	.148		1.331	.184
	Concerns	-.081	.043	-.041	-1.860	.064
	Attitude	.217	.055	.208	3.921	.000
	Code of Conduct	.450	.054	.435	8.276	.000
	Perceptual behavioural control	.329	.050	.311	6.563	.000

a. Dependent variable: behavioural intentions  
Source. Self collection of pictures

The adjusted R-squared of the independent variables on behavioural intention in the whole model is 0.830, which means that the degree of explanation of attitude, behavioural norms and perceived behavioural control on behavioural intention is 83.0%. At the same time, the significance p-values of attitude, behavioural norms and perceived behavioural control were all less than 0.05, indicating that attitude, behavioural norms and perceived behavioural control can all influence behavioural intention and are positive. In summary, hypothesis H1 H2 H3 is valid.

## 5 Conclusion

"Algorithmic recommendation technology has brought dividends and opened up a Pandora's Box of questions about the invasion of privacy and the bias of data [20]. In the context of algorithmic recommendation technology, new technologies are influencing the thinking, perceptions

and perceptions of the world of post-90s university students at an accelerated pace [21]. Through reviewing the literature and reading previous studies, the main focus of these studies has been mainly on students' guidance and reflection on psychological problems, and very few studies have looked at the issue from the students' own perspective [22].

In this study on the impact of algorithmic recommendations on female university students' intentions to engage in romantic behaviour, it explores whether the level of attention paid to algorithmically recommended networks by the female youth cohort affects their consumption intentions, and examines the impact on intentions to engage in romantic behaviour from four perspectives: information attention, attitudes, competent norms, and perceived behavioural control. In addition, the survey population for this paper's study was female university students at school, covering only a small social group. What could be considered in future research is to expand the research subjects

and further analyse the potential influencing factors of willingness to engage in romantic behaviour. In the course of the study, this research again validates the TPB theory and hopes that more excellent studies will emerge in the future.

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