

# The Influence of Personality Traits on the Adoption of Different Types of Mobile Apps: Postprint

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## Abstract

[Purpose/Significance] This study aims to investigate the influence of personality traits on the adoption and usage time of photo editing/beautification apps, gaming apps, shopping apps, and video apps, which contributes to a deeper understanding of the underlying mechanisms of mobile app usage. [Method/Process] Data were collected through a questionnaire survey of 520 valid respondents, and data analysis was conducted using variance analysis and correlation analysis. [Results/Conclusions] The findings reveal that agreeableness is positively correlated with the adoption of photo editing/beautification apps; conscientiousness is negatively correlated with the adoption of gaming apps; extraversion is positively correlated with the adoption of shopping apps, video apps, and photo editing/beautification apps; neuroticism is negatively correlated with the adoption of shopping apps and video apps; agreeableness is positively correlated with video app usage time; conscientiousness is negatively correlated with gaming app usage time; extraversion is positively correlated with video app usage time and photo editing/beautification app usage time; neuroticism is negatively correlated with video app usage time.

## Full Text

### Preamble

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**Title:** The Impact of Personality Traits on the Adoption of Different Categories of Mobile Applications

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## Abstract

**[Purpose/Significance]** This study investigates how personality traits influence the adoption and usage duration of four types of mobile applications: photography/beautification apps, gaming apps, shopping apps, and video streaming apps. The findings contribute to a deeper understanding of the underlying mechanisms driving mobile app usage behavior. **[Method/Process]** We collected 520 valid questionnaires and conducted variance analysis and correlation analysis to examine the relationships. **[Result/Conclusion]** The results reveal that agreeableness positively correlates with photography/beautification app adoption; conscientiousness negatively correlates with gaming app adoption; extraversion positively correlates with shopping, video, and photography/beautification app adoption; neuroticism negatively correlates with shopping and video app adoption. Regarding usage time, agreeableness positively correlates with video app usage duration; conscientiousness negatively correlates with gaming app usage duration; extraversion positively correlates with video and photography/beautification app usage duration; and neuroticism negatively correlates with video app usage duration.

**Keywords:** personality trait, Big Five model, mobile application, user adoption

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## 1 Introduction

With the advancement of mobile network technologies and the proliferation of smartphones, mobile applications have experienced rapid development. In practice, a vast array of mobile apps with diverse functions have permeated every aspect of daily life, profoundly influencing how people live, work, and interact [1]. According to iiMedia Research, in 2016, 45.3% of Chinese mobile internet users had installed between 20 and 49 apps per device [2]. Prior research suggests that personality traits significantly affect how users engage with mobile applications [3]. This raises an important question: How do different personality traits influence the use of different categories of mobile apps? Exploring this question will help uncover the intrinsic mechanisms underlying mobile app usage patterns.

Existing research has primarily examined the relationship between personality traits and general mobile app usage. For instance, D. J. Hughes et al. surveyed 300 Facebook and Twitter users and found that neuroticism positively correlated with Facebook usage, while openness to experience positively correlated with social use of Twitter [3]. W. K. Tan and C. Y. Yang argued that the easier, more popular, and less risky an application is, the weaker the influence of personality on usage levels [4]. C. Mori et al. proposed that extraversion positively correlated with gaming app usage, while neuroticism positively correlated with travel app usage [5]. R. Xu et al. found that individuals with higher conscientiousness were less likely to adopt music and photography apps, while those with lower agreeableness were more likely to adopt personalized apps [6].

However, although these studies have explored the impact of personality traits on mobile app usage, most have focused on only one type of app, with limited attention to how personality traits might differentially affect usage across various app categories. Given the diversity of mobile apps available, it is essential to reveal how personality traits influence adoption and usage patterns differently across app categories. Drawing on the Big Five personality trait model as our theoretical foundation, this study selected four popular categories of mobile apps in China: photography/beautification apps (e.g., Faceu), gaming apps (e.g., Honor of Kings), shopping apps (e.g., Taobao), and video streaming apps (e.g., iQiyi). We investigate the relationships between personality traits and user adoption of these different app categories to elucidate the underlying mechanisms connecting personality to mobile app usage behavior.

## 2 Theoretical Foundation

The Big Five personality trait model has been widely used to explain individual differences in personality and information system user behavior. The model identifies five core dimensions: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience [7]. Extraversion assesses the quantity and intensity of interpersonal interaction, activity level, need for stimulation, and capacity for joy. Agreeableness examines interpersonal orientation along a continuum from compassion to antagonism in thoughts, feelings, and behaviors. Conscientiousness evaluates the degree of organization, persistence, and motivation in goal-directed behavior. Neuroticism assesses emotional regulation and emotional instability. Openness to experience evaluates active seeking and appreciation of new experiences, as well as tolerance for and exploration of unfamiliar situations [8].

The behavioral manifestations of these five traits are well-documented: High extraversion individuals are sociable, outgoing, active, and talkative [6], whereas low extraversion individuals tend to be introverted, shy, and less socially engaged [9]. High agreeableness individuals are trusting, compassionate, and cooperative, while low agreeableness individuals are cynical, callous, and aggressive [10]. High conscientiousness individuals are detail-oriented, efficient, responsible, highly organized, and self-disciplined [11], whereas low conscientiousness individuals tend to be irresponsible, unreliable, and careless [12]. High neuroticism individuals are anxious, sensitive, and tense, while low neuroticism individuals are emotionally stable and less reactive to life stressors [6]. High openness individuals are imaginative, curious, emotionally rich, and willing to try new things, whereas low openness individuals prefer stability [13], are conservative, and lack broad interests and creativity [12].

The Big Five model has been extensively applied to understand technology adoption and use. T. Ryan and S. Xenos found that highly extraverted individuals were more likely to become Facebook users, and that extraversion correlated with behaviors such as posting comments and messages [14]. T. C. Marshall et al. suggested that individuals high in openness to experience were more likely

to use Facebook for information acquisition [15]. K. Moore and J. C. Mcelroy found that more conscientious Facebook users posted fewer updates [16]. Building on these findings, this study employs the Big Five model to investigate its influence on the adoption of four categories of mobile applications.

## 3 Research Design

### 3.1 Questionnaire Design

The questionnaire consisted of three sections: (1) demographic information including gender, age, academic discipline, and education level; (2) adoption status of each app category; and (3) measurement of personality traits. To assess app adoption, we asked two questions for each category. For example, for gaming apps, we asked “Do you use gaming apps?” and “How much time do you spend using gaming apps on average per day?” Personality traits were measured using the Big Five Inventory (BFI) developed by O. P. John and S. Srivastava [17], which comprises 44 items assessing the five dimensions. Each item was presented as a statement, with respondents rating their agreement on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree). Prior to formal distribution, the questionnaire underwent two rounds of pre-testing and was refined based on feedback from academic experts and a small pilot sample.

### 3.2 Data Collection

We surveyed students at Sun Yat-sen University using two methods: paper questionnaires distributed in libraries and classrooms, and electronic questionnaires distributed through the Wenjuanxing platform via social networks. A total of 612 questionnaires were collected, with 92 excluded due to incomplete responses, uniform extreme responses, or obvious response patterns. The final sample consisted of 520 valid questionnaires (85% response rate). Table 1 presents the demographic characteristics of the valid sample.

## 4 Data Analysis

### 4.1 Reliability and Validity Analysis

We used SPSS 18.0 for data analysis. Cronbach’s alpha was employed to assess reliability, with a threshold of 0.7 considered acceptable for this exploratory study [18]. In early-stage research, values above 0.5 may be deemed acceptable [19]. Table 2 presents descriptive statistics and Cronbach’s alpha values for each Big Five dimension. Except for agreeableness ( $\alpha = 0.681$ ), which was slightly below 0.7, all other dimensions exceeded the threshold. The overall Cronbach’s alpha for the scale was 0.738, indicating good reliability. The KMO measure for the scale was 0.885, demonstrating adequate structural validity [20].

## 4.2 Variance Analysis

We conducted ANOVA to analyze adoption behavior across the four app categories. The sample was divided into “adopters” and “non-adopters” for each category, and we compared mean scores on the five personality dimensions between groups. Results are shown in Table 3 .

For video streaming apps, extraversion positively correlated with adoption [ $F = 11.712$ ,  $P < 0.01$ ], while neuroticism negatively correlated with adoption [ $F = 6.377$ ,  $P < 0.05$ ]. Agreeableness, conscientiousness, and openness showed no significant relationships.

For photography/beautification apps, both agreeableness and extraversion positively correlated with adoption [ $F = 4.211$ ,  $P < 0.05$ ;  $F = 10.977$ ,  $P < 0.01$ ]. Conscientiousness, neuroticism, and openness showed no significant relationships.

For shopping apps, extraversion positively correlated with adoption [ $F = 6.122$ ,  $P < 0.05$ ], while neuroticism negatively correlated with adoption [ $F = 7.016$ ,  $P < 0.01$ ]. Agreeableness, conscientiousness, and openness showed no significant relationships.

For gaming apps, conscientiousness negatively correlated with adoption [ $F = 10.511$ ,  $P < 0.01$ ]. Agreeableness, extraversion, neuroticism, and openness showed no significant relationships.

## 4.3 Correlation Analysis Between Personality Traits and Usage Time

To further examine how personality traits affect usage duration, we conducted correlation analyses between the five personality dimensions and time spent on each app category. Results are presented in Table 4 .

Agreeableness positively correlated with video app usage time. Conscientiousness negatively correlated with gaming app usage time. Extraversion positively correlated with both video and photography/beautification app usage time. Neuroticism negatively correlated with video app usage time.

## 5.1 Results Discussion

This study applies the Big Five model to mobile app adoption research, exploring how personality traits influence both adoption and usage time across different app categories. The empirical results demonstrate that personality traits significantly affect adoption and usage patterns for specific types of mobile apps.

**Agreeableness and Photography/Beautification App Adoption:** The positive relationship between agreeableness and photography/beautification app adoption corroborates findings by S. Devaraj et al. [13] and C. Srisawatsakul et al. [21]. Highly agreeable individuals are more likely to use apps like Faceu,

which offer photo editing, beautification filters, and real-time animated stickers. Devaraj et al. found that agreeableness positively correlates with technology acceptance and perceived usefulness [13], suggesting that agreeable individuals are more likely to perceive the utility of these features and consequently adopt such apps.

**Conscientiousness and Gaming App Adoption:** The negative relationship between conscientiousness and gaming app adoption supports C. Mori et al.'s findings [5]. Highly conscientious individuals prefer to allocate their time to work rather than leisure activities [22]. Research also indicates that conscientiousness negatively correlates with video game addiction [23]. Individuals with higher conscientiousness exhibit stronger self-control and greater responsibility toward work and studies, leading them to avoid devices that might disrupt their productivity [24]. Given that Honor of Kings users averaged 47.2 minutes of daily playtime in 2016 [25], such time commitment could interfere with the schedules of highly conscientious individuals, making them less likely to adopt gaming apps.

**Extraversion and Multiple App Categories:** Extraversion positively correlated with adoption of video streaming, photography/beautification, and shopping apps. This finding extends previous research by R. Goldsmith [26] and T. Amiel and S. L. Sargent [27]. Studies show that socially active and extraverted consumers are more inclined toward online shopping [28]; Goldsmith found extraversion positively correlates with shopping behavior [26]. Platforms like Taobao facilitate sharing shopping experiences and discussing fashion, satisfying the social needs of extraverted users. Amiel and Sargent argued that highly extraverted individuals prefer entertaining online services [27]; Faceu enables users to create personalized photos and humorous videos to share on social media like WeChat, fulfilling both social and entertainment needs for extraverted individuals. Similarly, iQiyi provides diverse video content that meets the entertainment demands of extraverted users.

**Neuroticism and App Adoption:** Neuroticism negatively correlated with adoption of video streaming and shopping apps, confirming T. L. Tuten and M. Bosnjak's findings [29]. The inherent distrust among highly neurotic individuals may hinder their adoption of new technologies and services [6]. Using shopping and video apps often requires providing personal information (e.g., account registration), and the sensitivity and anxiety characteristic of neurotic individuals may discourage them from adopting these apps.

**Openness to Experience:** Openness showed no significant relationship with adoption of any of the four app categories, consistent with R. Xu et al.'s findings [6]. Their study examined personality traits' influence on seven app categories (including social and financial apps) and found openness affected none of them, though it might influence adoption of newly released apps. The four app categories in our study—photography/beautification, gaming, shopping, and video—are all currently popular, which may attenuate the influence of openness on their adoption.

Regarding usage time, we found that highly agreeable individuals spend more daily time on video apps, highly conscientious individuals spend less time on gaming apps, highly extraverted individuals spend more time on video and photography/beautification apps, and highly neurotic individuals spend less time on video apps.

## 5.2 Research Significance and Limitations

This study offers both theoretical and practical contributions:

**Theoretical Implications:** First, by applying personality traits to mobile app adoption research, our empirical findings confirm that personality traits influence adoption of specific app categories, enriching the literature on mobile app user behavior. Second, while few domestic studies have examined different app categories from a personality perspective, our research extends the literature on personality and mobile technology use by empirically validating the Big Five model's influence across four distinct app categories, providing a foundation for future research.

**Practical Implications:** The findings can inform app developers seeking to optimize product design, enhance user loyalty, and maintain competitive advantage. By understanding how personality traits relate to adoption tendencies and usage duration, developers can tailor recommendations based on user personality profiles, improving marketing precision and user satisfaction. For example, personalized app recommendations could increase engagement and retention.

**Limitations:** First, we used convenience sampling with university students, which may limit the generalizability of our findings to broader populations. Second, self-reported data on app adoption and personality traits may be subject to response biases. Future research should employ more diverse samples and objective usage data to validate these findings.

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## Author Contributions

Gan Chunmei: Research design, paper revision and finalization.

Zhang Chunfu: Questionnaire design and implementation, initial draft writing and revision.

Liang Xubin: Data analysis and initial draft writing.

*Note: Figure translations are in progress. See original paper for figures.*

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