Relationship Between Big Five Personality Traits and Media Multitasking Behavior of the Indian Sample

Shanu Shukla
Indian Institute of Management Indore, Indore, India
ORCID: https://orcid.org/0000-0002-5602-8462, e-mail: shanu.shukla11@gmail.com

Media multitasking (MMT) is a growing phenomenon among Indian college students. Previous studies on other nationalities highlight that user’s personality traits play an important role in engaging them in this behavior. Using a sample of Indian college students, this study examined the relationship between MMT and the Big Five personality traits. It also examined the impact of age on the dynamics between personality and MMT. Results suggested that after controlling the socio-demographic factors, traits like openness to experience, extraversion, and neuroticism are positively related with high MMT. However, these observations are found to be moderated by age. These findings may help designing separate intervention techniques for alleviating excessive MMT behavior for different age groups considering their personality traits.

Keywords: age, Big Five personality, Indian students, MMT.

Funding. University Grants Commission (UGC), Government of India.
Acknowledgements. Indian Institute of Technology Indore for all the technical support.


Взаимосвязь «Большой пятерки» черт личности и медиа-многозадачности: исследование на индийской выборке

III. Шукла
Индийский институт управления Индаур, Индаур, Индия
ORCID: https://orcid.org/0000-0002-5602-8462, e-mail: shanu.shukla11@gmail.com

Медиа-многозадачность (media multitasking, MMT) — явление, всё чаще встречающееся среди студентов индийских университетов. Предыдущие исследования, проводившиеся на выборках других национальностей, показывают, что личностные черты пользователей играют существенную роль в возникновении такого поведения. В настоящей работе на выборке индийских студентов изучалась взаимосвязь между MMT и «большой пятеркой» черт личности, а также влияние возраста на их взаимодействие. Полученные результаты свидетельствуют, что, помимо социо-демографических факторов, положительно коррелируют с высоким MMT такие черты личности, как открытость опыту, экстраверсия и нейротизм. Вместе с тем обнаружена и возрастная специфика наблюдаемой корреляции. Результаты исследования могут оказаться полезными при разработке методик для коррекции поведения, связанного с MMT, ориентированных на разные возрастные группы и учитывающих различные конфигурации черт личности.

Ключевые слова: возраст, «Большая пятерка», индийские студенты, MMT.

CC BY-NC
Introduction

Advancement in technology and the penetration of new media have caused burgeoning growth of media multitasking (MMT) in our society. MMT is the simultaneous consumption of different media like print, TV, web etc. Some examples are listening to music while doing physical exercise, and text messaging while watching television. MMT is growing with leaps and bounds. Youngsters, particularly, are very tech-savvy, have lower self-regulatory skills and indulge in higher task switching activities [27]. High MMT can have positive and negative consequences. It may instil positive emotions like enjoyment, and satisfies user’s need for connectivity, and increases their well being [28; 30]. However, it may also make people depressed, anxious and can have long-lasting impacts on user’s cognitive abilities [2; 19]. Hence, it is essential to understand what factors lead to MMT. There are several external (or ‘forcers’, e.g. work requirements) and internal (or ‘drivers’, e.g. boredom avoidance) reasons for MMT [26]. Since they are mostly short term, and situation-specific, this paper considers the predictors focussing on more stable traits like the Big Five personality traits of media multitaskers. Besides, the results of the previous studies may not apply to India, and they do not study the influence of age on the dynamics between personality and MMT.

Hence, the present study particularly looks into: a) the relationship between the Big Five personality traits and MMT, and b) the impact of age on the dynamics between personality and MMT.

Media multitasking (MMT) habits of the Indians

MMT is gaining popularity around the world and in India, too [21]. Table 1 shows that many of the global social media users are Indians. Since media factors like the availability of media, and smartphone usages are flourishing rapidly, Indians may display high MMT, and young Indians may succumb more.

<table>
<thead>
<tr>
<th>Medium</th>
<th>Global</th>
<th>Indian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>2.4 billion</td>
<td>260 million</td>
</tr>
<tr>
<td>LinkedIn</td>
<td>675 million</td>
<td>64+ million</td>
</tr>
<tr>
<td>Instagram</td>
<td>1+ billion</td>
<td>80 million</td>
</tr>
<tr>
<td>YouTube</td>
<td>1.9 billion</td>
<td>245 million</td>
</tr>
</tbody>
</table>

Table 1: Social media usage: Global and Indian users

Media Multitasking

This study is based on the Ophir, Nass and Wagner [17] MMT concept. MMT is a trait multitasking which is a fairly stable attribute of behavior developed for a long time. It is measured through widely used Media Multitasking Index (MMI) [19]. Several researchers utilized MMI to measure MMT of a sample of students, and have studied its association with the cognitive abilities or academic performances. They found that MMT has predominantly negative effects on the cognitive abilities [17] and it also leads to poor academic outcomes [19]. However, MMT is increasingly being popular (especially among the youngsters) [28]. Hence, to understand users’ media choice, several researchers investigated individual differences variable like personality that helps identify the factors leading to MMT. The present study investigates this connection.

Personality as a predictor of MMT

There are several personality traits like sensation seeking and impulsivity which are positively associated with multitasking [18]. A study on smartphone multitasking suggested the ‘need for cognition’ to be an important predictor, and due to its interaction with sensation-seeking increases the tendency of MMT [13]. Hence, sensation seeking, impulsivity, and the need for cognition were considered to be general predictors of MMT. However, the relationship between personality traits and MMT should be analyzed using the Big Five factors. Personality psychologists agree that the five domains of the Big Five factors demarcate the individual differences in personality traits, and this model may be the basis of many other models. This study examines the relationship between MMT and the Big Five factors which arise from the Five Factor model of Personality. This highly comprehensive model consists of five higher-order, bipolar factors: openness to experiences, conscientiousness, extraversion, agreeableness, and neuroticism [11].

Openness to experience and MMT

Openness to experience reflects a curious, imaginative, artistic, and unconventional behavioural pattern. It positively influences motivational goals of self-direction and stimulation values (novelty and excitement). Some
studies [17; 20] found no relationship between MMT and openness to experience. Contrarily, others [6] demonstrated that an increase in openness to experience favors social media use. Also, openness to experience is inversely related to the completion time of an interrupted task [16]. Hence, high scores in openness to experience implies less time in completing an interrupted task. Since MMT involves interruptions, high scores in openness to experience may imply a high degree of MMT.

Hypothesis 1 (H1): Openness to experience is positively related to MMT.

Conscientiousness and MMT

Conscientious individuals are competent, self-disciplined, orderly, and non-impulsive [11]. They may have a structured internal plan helping them retrieve an interrupted task quickly. Since MMT demands an interruption of one or more tasks, it is intuitively expected that conscientiousness may be related with the MMT ability. Some researchers found a direct relationship between conscientiousness and the time to complete an interrupted task because of a self-control behavioral strategy when interruptions occur. But, some other [17; 20] found none. A study [5] inferred an indirect relationship between the two through impulsivity which is negatively related to conscientiousness, and is positively related to multitasking, and hinted that conscientiousness may be negatively related to MMT. Hence it may be expected that the more flexible an individual is in planning and personal structure, the less is the interruption cost. In contrast, a high level of conscientiousness may lead to high interruption cost hindering MMT.

Hypothesis 2 (H2): Conscientiousness is negatively related to MMT.

Extraversion and MMT

Individuals high on extraversion are sociable, energetic, optimistic, friendly and assertive [11]. Earlier studies on multitasking and task switching suggested that extraversion favors multitasking. For instance, highly extrovert participants perform better in multitasking situations due to their low baseline level of catecholamines (multitasking is assumed to be an arousing situation increasing the level of catecholamines). Contrarily, introvert participants failed to perform well in nonverbal decoding during multitasking [12]. A personality and social media use study [31] based on twenty countries found that extraversion is positively related to social media use. This may be because high extraversion helps people connect and socialize with others. However, it was also suggested that either extraversion is not a predictor of multitasking performance or has no significant relationship [17; 20; 28]. This may be explained if we consider that extroverts have a higher working memory capacity than others [12] which makes them successful multitaskers in demanding situations [28]. But, self-selected MMT behavior hardly requires the fullest of the working memory making extraversion less relevant in those situations.

Hypothesis 3 (H3): Extraversion is not related to MMT.

Agreeableness and MMT

Agreeableness leads to warm, co-operative, and considerate behavior. Individuals displaying high agreeableness are often altruistic, tender-minded, trustworthy, modest, straightforward, and compliant. Investigations could not establish a consistent relationship between multitasking and agreeableness so far [5; 17]. Researchers found that different types of multitasking (media-media, media non-media, non-media non-media) are not related to agreeableness [20]. However, a study [29] found that higher agreeableness among university lecturers (non college student sample) is positively related to higher MMT. Since the present study considers only college students (like the studies previously mentioned), we hypothesize that.

Hypothesis 4 (H4): Agreeableness is not related to MMT.

Neuroticism and MMT

Individuals high in neuroticism often are anxious, impulsive, depressive, vulnerable, and self-conscious. This trait is juxtaposed to the emotional stability of an individual. Researchers suggested that a high level of neuroticism is related to poor multitasking performance due to the anxiety generated while multitasking. Other studies found that neuroticism is not related with MMT, but both of them are closely related to depression and social anxiety [2]. However, some studies highlighted that neuroticism is one of the important predictors of multitasking behavior and neurotic individuals are more prone to MMT [28]. According to a study [15], highly neurotic persons in a workplace environment display shorter focus duration on computer screens and perform excessive task switching. Another study regarding driving and multitasking found that neuroticism is related to distraction due to high level of anxiety [10]. Others found a positive relationship between neuroticism and MMT during info seeking and sharing activities [8].

Hypothesis 5 (H5): Neuroticism is positively related to MMT.

Is the relationship between MMT and personality affected by age?

Researchers found that the personality traits vary with age. Youths and adults, despite sharing certain similar traits, have certain distinctive personality traits developed according to their environmental situations, circumstances and developmental trends. According to Soto (2015) [22], extraversion behavior of youths shows a steady decline across childhood and early adolescence.
However, in the male participants, the mean level of openness to experience is consistent from early to middle childhood, declines from middle childhood into late adolescence and then increases from late adolescence into early adulthood. Similarly, other personality traits like neuroticism, agreeableness and conscientiousness differ from early childhood to early adulthood. In a study on the British and German samples, agreeableness was observed to have a positive association with age, while extraversion and openness to experience were found to have a negative association [7]. A preliminary study on the Indian population [14] also reported an association between age and personality traits. Besides, a longitudinal study [1] on a sample of two groups of young participants suggested that activities like participation in sports and screen-time viewing (predominantly television and computer games) are associated with personality trait development among two groups of young participants. For example, an increased screen time among 10–12 years old group is related to an increase in introversion. Since MMT involves different media and screens, we suggest that the association of MMT with personality may differ with age. As there is a lack of research on this, we couldn’t pose any hypothesis, but simply expect that the relationship between MMT and personality traits differs with age.

In summary, we find that age may influence the personality traits of an individual, and it is a universal predictor of MMT. Unlike the older people, the younger generation grew up using modern media devices. So, differences in MMT may emerge among people from different age groups. We have also theorized that MMT behavior is closely associated with one’s personality traits. However, the studies reported so far have not examined whether the relationship between the personality traits and MMT varies with age group. Hence, we also investigate the following research question:

Research Question 1 (RQ1): Does the relationship between the personality traits and MMT vary when the age groups in a sample differ?

Methodology

1. Sample
152 hostellite students of 18—24 years of age pursuing Bachelor of Technology at an Indian institute of national importance voluntarily participated in the study. Participation was anonymous and informed consent was taken. As a note of thanks for their voluntary participation, small gifts were given to the participants. The research protocol was defended before a research progress committee of the Indian Institute of Technology Indore, India. Research progress was monitored periodically by the committee.

2. Measures

2.1. Socio-demographics
Each participant was asked to report their age (age was asked as an open-ended question and was included as a continuous variable in the analysis), gender (it had three options male/female/others), and the duration of ownership of media which had three response categories: category 1 (0 to 6 months), category 2 (6 months to 1 year), and category 3 (more than 1 year).

2.2. MMT

MMT of the participants was measured using the Media Use Questionnaire (MUQ) [17] addressing twelve media activities- print, television, computer-based video, music, non-music audio, video/computer/mobile games, fixed telephone/mobile phone voice calls, instant messaging (IM), SMS, e-mail, web-surfing, and other computer-based applications. A pilot study with five participants found the test-retest reliability (within a time gap of 10 days) to be 0.97 (p < 0.01).

Participants reported the total time spent by them on each media on an average day (during the past one month). They also reported the frequency of combining the use of a primary medium and other 11 media on a four-point rating scale with the following options: ‘most of the time’, ‘some of the time’, ‘a little of the time’, and ‘never’.

2.3. Personality Traits

Personality traits were measured through the Big Five Inventory (BFI) [11], a 44-item inventory that measures Big Five personality factors (dimensions) of an individual such as openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. In the current study the Cronbach’s alpha for each dimension was, openness to experience = 0.74, conscientiousness = 0.69, extraversion = 0.74, agreeableness = 0.70, neuroticism = 0.70.

3. Procedure

A pen and paper based cross-sectional questionnaire study was conducted in a strict laboratory setting. The study was administered in English which is the medium of instruction in participants institution. To avoid any recall-based errors, they were instructed to fill in the questionnaires taking into account their media multitasking activities in the past one month (starting from the date of conduction of study).

Results

Out of 152 students, the final data were taken from a sample of 120 (Male = 84) students. To understand the MMT behavior, MMI was calculated, and then multivariate analysis was performed. All analyses were done with IBM SPSS 20 software.

1. Media Multitasking Index (MMI)

Calculation of MMI involves calculating media use, and MMI.

1.1. Media Use

Participants reported the average time spent using twelve different media on an average media use day. We found that participants usually spend on average 14.57 hours in media-related activities, and they spend maximum time on web surfing, IM, and music.
1.2. MMI

The formula for MMI reads:

$$\text{MMI} = \sum_{i=1}^{12} \frac{m_i h_i}{h_{\text{total}}},$$

where $m_i$ is the number of media typically used with primary medium $i$, $h_i$ is the total number of hours spent on an average day using primary medium $i$, and $h_{\text{total}}$ is the total number of hours spent on an average media usage day with all primary media. From the individual MMI score we obtain a relatively normal distribution with a mean of 4.24 and a Standard deviation of 1.27. Hence, the participants use approximately 4 media simultaneously in their typical media usage hour. The Cronbach’s alpha reliability for the MMI is 0.78.

1.3. Gender and MMI

An independent sample t-test was conducted between male and female MMI and no significant difference ($t (118) = 0.241, p = 0.217$) in their MMT was found.

2. Relationship between Personality and MMT

Hierarchical multiple regression analysis was conducted to examine the relationship between Big Five factors of personality and MMT (Table 2).

Hypothesis H1 was supported. Openness to experience remains significant after controlling participants’ socio-demographic variables, $\beta = 0.28, p < 0.0005$. Thus, participants with higher openness to experience tend to be high media multitaskers.

Hypothesis H2, which suggested that conscientiousness was negatively related to MMT, is not supported, $\beta = -0.08, p = 0.17$.

Hypothesis H3, which stated that extraversion is not related to MMT, is not supported, $\beta = 0.14, p < 0.05$. Hence, people with higher level of extraversion tend to be higher media multitaskers.

Hypothesis H4, which suggested no relationship between agreeableness and MMT is supported, $\beta = -0.01, p = 0.90$. Finally, Hypothesis H5 is supported, $\beta = 0.33, p < 0.0005$. In sum, the block of the control variables of the model explained 39.8% (adjusted $R^2$ was 0.38) of the variance of MMI, $F (3, 116) = 25.57, p < 0.0005$. In the second block, when the five big factors of personality were included, $R^2$ increased to 68.1% (i.e. the variance explained increased by 28.3%) and this increase was statistically significant, $F (8, 111) = 29.596, p< 0.0005$.

3. Relationship between Personality and MMT in different Age groups

To examine if the relationship between personality and MMT is moderated by age, we used SPSS PROCESS version 3.5 Model 1. Five separate moderation analyses were conducted for each dimension of Big Five and MMI with age as a moderator.

The results suggest that age moderates the relationship between MMI and conscientiousness ($\Delta R^2 = 0.0325$, $F (1, 116) = 4.92, P = 0.02, P< 0.05$). To interpret the interaction among conscientiousness, age and MMI, a simple slope analysis was conducted (Fig.1). It suggests that younger participants having high conscientiousness have low MMI. On the contrary, older participants having high conscientiousness have high MMI.

Similarly, it is observed that age moderates the relationship between MMI and extraversion ($\Delta R^2 = 0.0193$, $F (1, 116) = 4.06, P = 0.04, P< 0.05$). On examining an interaction plot (Fig.2), it has been observed that MMI is higher for older participants when extraversion is low. However, this difference in MMT behavior among different age groups reduces when extraversion increases.

Further analysis reveals that age does not moderate the relationship of MMI and openness to experience ($\Delta R^2 = 0.0067$, $F (1, 116) = 1.49, P< 0.22$). Power of the moderation analysis is 0.24. Similarly, age does not moderate the relationship of MMI and agreeableness ($\Delta R^2 = 0.0029$, $F (1, 116) = 0.43, P = 0.51$), power is 0.10. Also, no moderation is observed for MMI and neuroticism ($\Delta R^2 = 0.0090$, $F (1, 116) = 2.19, P = 0.14$), power is 0.32.

Hierarchical multiple regression analysis\(^2\)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$B$</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.132</td>
<td>-6.044</td>
</tr>
<tr>
<td>Gender</td>
<td>0.134</td>
<td>0.357</td>
</tr>
<tr>
<td>Age</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Duration of Ownership of Media</td>
<td>1.404</td>
<td>0.630</td>
</tr>
<tr>
<td>Openness to Experience</td>
<td></td>
<td>0.092</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-0.31</td>
<td>-0.045</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-0.003</td>
<td>0.098</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>0.398</td>
<td>0.681</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.383</td>
<td>0.658</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^2\) Note. $N = 120$, $B$ = Unstandardized regression coefficient; $\beta$ = Standardized coefficient; * $p < 0.05$, **$p < 0.0005$. 

Table 2
Discussion

The study contributed to the literature by analyzing the relationship between simultaneous media use and the Big Five personality traits. Though some previous studies established relationships between MMT and several other personality traits, there was a dearth in understanding how the Big Five factors directly affect MMT. Those studies could not control the socio-demographic variables like gender, age and the duration of ownership of media. This study incorporated these controls and looked into the effect of the Big five factors on MMT. It involved college students from India which has one of the largest internet user bases in the world, but barely explored. The study also scrutinized whether the relationship between personality and MMT differs with age.

The study suggested that neuroticism, extraversion, and openness to experience are the predictors of MMT behavior. Earlier studies found neuroticism to be an important predictor of MMT [10; 15; 28] reemphasizing that emotional instability is an important antecedent of MMT. Neurotics are often at risk of showing behavioral dysregulation and impulsivity. They easily become victims of problematic use of smartphone, Instagram, etc. leading them to MMT.

In contrast with [28], this study found high extraversion to be related with high MMT behavior. People high in extraversion have a high desire to connect to people and need for belonging favoring MMT [31]. Since India
possesses a collective social structure in which socialization is much prevalent, MMT may be a prominent behavior in Indian society. The fact that the participants media multitask mostly with IM, and then with SMS in the current study, also favors the statement.

We observed a positive relationship between openness to experience and MMT, supporting other studies [e.g. 8]. College students with high openness to experience may indulge in MMT in search of new things and excitement.

With reference to conscientiousness and media multitasking, our study did not find any evidence of an existing connection. It, however, suggested a negative relationship between conscientiousness and MMT supporting a previous study [5]. Laziness, aimlessness or disorganized behavior may not be important for self-selected MMT which involves deliberate choice of media.

Lastly, consistent with the previous findings, agreeableness was not found to be related to MMT.

Among the control variables, duration of ownership of media is consistently significant in both the models (Table 2). This may be because frequent exposure of media might increase MMT. Future studies may explore more explicitly the role of type, or duration of ownership of media on MMT.

We also noticed that gender becomes significant when personality variables are added in the model. Since there is no gender difference in our study related to MMT, there is a possibility that it may moderate the relationship between personality and MMT. This may be an interesting research to pursue.

Since both MMT and personality traits differ with age, we further investigate the relationship between the former two, keeping age as a moderator. We observe that MMT is higher for older participants. This may be because India is very diverse which has a wide digital gap among the residents. Hence, students starting their undergraduate studies in an institute of national repute might have varying media usage experience.

We observed that the relationship between MMT and conscientiousness differs among different age groups. A highly conscientious young participant media multitask less than a highly conscientious old participant. This result differs from previous studies suggesting that conscientiousness is usually negatively related with social media, general internet use, or gaming behavior [3]. Researchers suggested that less self-disciplined individuals may be using different media as a source of distraction or for procrastination [4]. However, our study suggests that considering the similar educational environment, even self-disciplined older participants may show high MMT possibly due to peer pressure or to balance their hyper-connected lives. Future researchers may seek whether life satisfaction or mental health problems differ between high media multitaskers having high and low conscientiousness.

We also noted that age moderates the relationship between extraversion and MMT. Highly extrovert individuals of different age groups tend to indulge in high MMT.

Our study did not find any significant effect of age on the relationship between openness to experience/agreeableness/neuroticism and MMT. However, since the powers of the analyses are very low (0.24, 0.10, and 0.14 respectively), the study may be replicated with comparatively larger sample size.

6. Tokan Fatih Media as multitasking: An exploratory study on capturing audiences’ media multitasking and multiple

Литература


Level Age and Gender Differences in Parents’ Reports. Journal of Personality, 2015, pp. 1—14. DOI:10.1111/jopy.12168


