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Is Social Media Addiction in Covid-19 Pandemic Affecting Students' Academic Performance and Health?

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Abstract: *The objective is to see how social media addiction affected students' academic performance and physical health in covid-19. In addition, the moderating impact of psychological well-being on the relationships between personality traits and social media addiction is also studied. Data collection is conducted through an online survey with 506 Pakistani students. Results are analyzed through the partial least squares method. The findings revealed that social media addiction is strongly linked to the big five personality traits. Furthermore, the findings indicated that social media addiction has a major impact on academic performance and physical health. Also, the findings discovered that psychological well-being moderates the impact of such personality traits on social media addiction. The implications of these results are also explored, and possible research strategies are suggested.*

Keywords: *Conscientiousness, Openness to Experience, Agreeableness, Extraversion, Neuroticism, Social Media Addiction in Covid-19, Academic Performance, Physical Health, and Psychological Well-Being.*

Introduction

Over the last decade, scrolling through social media has become a popular activity. Regardless of location social media could be used anywhere in the world. By providing accessible yet free interaction with people, social media has recently gained much popularity. The most used forms of social media are social networking sites, discussion forums, content creation platforms, blogging networks, shopping platforms, and interest-based platforms. However, social networking sites have the highest usage associated with social media addiction in students is the social networking sites. Recently, researchers (Bányai et al., 2017; Mahmood, Zakar, & Zakar, 2018) have found out that this activity of connectivity has turned into an excessive and compulsive disorder. Social media addiction is much like substance abuse that includes modification in mood, salience, tolerance, withdrawal, conflict, and relapse.

The recent global health issue is the ongoing pandemic of covid-19. It rapidly spread all around the world by devastating the image of public health. As its curve peaked and marked its territory all around the world, emergency lockdowns were adopted. The lockdowns reduced the spread and deaths due to covid-19; it sure noticed the deterioration

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of mental and physical health. In addition, the restrictions enforced a stay-at-home order for the public to reduce the cases. Unfortunately, as these orders increased, it also increased the amount of social media usage.

The excessive usage of social media is more common among the younger generation for connectivity and expressing their identity. The evolution of technology has made social media handy and cheaper that has eventually increased its usage. According to Bányai et al. (2017), it is hard to measure how problematic social media usage has become. Students are more involved in the usage of social media in light of covid-19. For instance, a study conducted by Geçer, Yıldırım, and Akgül (2020) in Turkey reported that in the early stages of the covid-19 high level of social media is used. A survey concluded that students in the United States were spending most of their time using Facebook and Twitter. Moreover, literature on students' excessive usage of social networking sites states that it harms academic performance and physical health.

Research conducted previously (Kuss & Griffiths, 2011; Marino, Finos, Vieno, Lenzi, & Spada, 2017; Marino, Gini, Vieno, & Spada, 2018) has found that social media addiction is associated with behavioral addiction contains emotional, relational, health, and performance issues. Griffiths (2000); Starcevic (n.d.) claim that social media as an addiction exhibits an impulsion to use social media at an extreme level. People having social media addiction feel an uncontrollable urge to check on their socials. It is supposedly possible that social media addiction has contributions from different personality types, affecting health and academics.

During the covid-19 pandemic, connectedness through social media has brought people closer by making isolation more tolerable. Not only connectivity with closed ones, but it has also been a decisive way in continuing education. Based on Gómez-Galán, Martínez-López, Lázaro-Pérez, and Sarasola Sánchez-Serrano (2020); Lim and Richardson (2016); Maldonado, García, and Sampedro-Requena (2019) research, it is hypothesized that being connected with a device (mobile phone or tablet) people in isolation were inclined towards social media. Research conducted by Gómez-Galán et al. (2020) also claimed that people with food and alcohol addiction showed symptoms of social media addiction.

The process of Social media addiction is explained through 6 characteristics, namely: salience, tolerance, (Andreassen, Pallesen, & Griffiths, 2017) relapse, mood modification, withdrawal symptoms, and conflicts. Permanently thinking about social media is the salience phase. To experience positive emotions- more time is deliberately spent on social media is the tolerance phase. Mood modification occurs when the mood is improved while and after using social media; on the other hand, returning to social media after various attempts to reduce social media usage is known as relapse in social media addiction. This further leads to being uncomfortable and nervous due to the absence of social media usage. Finally, this develops conflicts that are the interpersonal issues triggered by social media usage.

The excessive usage of social media often makes an individual anxious after temporarily leaving social media (Bányai et al., 2017). The characteristics are similar to addictive behavior, yet social media addiction is still recognized as an authorized psychological diagnosis. However, more research is being conducted regularly in various countries, it is not advisable to ignore the negative consequences of social media addiction (Kaye, 2019;

Marino et al., 2018). Current studies show the importance of focusing on social media addiction by claiming that it is equivalent to alcohol and substance addiction (Seabrook, Kern, & Rickard, 2016; Wegmann, Stodt, & Brand, 2015).

Considering these findings on challenging social media usage, it is presumed that there are certain individuals, especially the young generation who engage in social media to reduce their upsetting surroundings by escaping from the real world into a fictional world. As mentioned by Gómez-Galán et al. (2020), a similar situation happened in covid-19. According to Gao et al. (2020), an increase in social media usage is measured since the outbreak of covid-19. There is no doubt that the usage of social media helps people to withstand the pandemic. However, has contributed to the expansion of its addictive nature in the longer term by impacting students' physical health and academic performance (Andreassen et al., 2017; Brailovskaia, Teismann, & Margraf, 2020).

The objective behind conducting this research is to find how social media addiction in covid-19 affected students' academic performance and physical health. This includes the impact of the big five personality traits on social media addiction. In addition, psychological Well-being is further used as a moderator to evaluate their impact and relationship.

Following the introduction, the second chapter, the literature review discusses the analysis of the research question emphasizing the theoretical foundations of the paper's hypothesis. Further, the third chapter, methodology illustrates the techniques used for the investigation of analysis. The fourth chapter discusses the data collection and the outcomes that are gathered. Finally, the research is concluded in the fifth chapter that reflects the research outcomes with future suggestions, and the weaknesses of the paper for future researches.

Literature Review

Theoretical Background

The Uses and Gratification Theory has various roots that date back to the 1940s. The UGT is an approach used to understand the reason behind selecting specific media to satisfy specific needs. It is considered an audience-centered method to evaluate mass communication. UGT is useful for understanding the concept of 'what people do with media?' It proposes that media is a free product and people are the customers. In line with this perspective, Katz in 1970 proposed that to satisfy a particular need, people seek out specific social media. Similarly, Katz (1979) engaged UGT to determine whether the users are generally active or use media to fulfill their personal needs. Since then, the theory has been used widely to observe the features of social media users.

Uses and Gratification Theory highlights how the use of media sources has changed with advanced developments in technology. UGT explains the motives of people behind the usage of social media in different ways.

The theory explains why people chose a specific media over any other option of communication and how that choice satisfies their psychological and social needs. UGT has already been applied in researches related to the usage of social networking sites and addiction to social networking sites. For instance, the research conducted by Papacharissi and

Mendelson (2010) discovered that some constraints motivate a user to use Facebook; comforting pastime, usual pastime, diversion, urge to share information, company, following updated trends, contact, professional progress, and connecting with people.

Likewise, the study of Chan, Wu, Hao, Xi, and Jin (2012) employed four major needs in line with U&G that motivates users to use Instagram (another social media platform). These needs somehow yield social media addiction and include the need for recognition, the need for information, the need for socializing, and the need for entertainment.

Various researchers have applied the UGT to diverse platforms of social media. For instance, Leung and Wei (2000) highlighted the UGT related to cellular phones. According to the research, young women with less education were inclined towards using cellular phones. Moreover, Sherry, Lucas, Greenberg, and Lachlan (2006) also used the theory to examine the use and gratification of video games. Likewise using this theory to social media addiction especially in covid-19, is necessary for research. Some research has already been conducted that relates to the uses and gratification of Facebook, Twitter, Instagram, and YouTube. However, there is not much result that conducts UGT of social media addiction in times of covid-19.

Hypothesis Development

Big 5 Personality Traits

Numerous literature has discovered the relationship between personality types and behavioral addictions related to social media. These personality types are related to the big five personality traits that include Conscientiousness, Openness to Experience, Agreeableness, Extraversion, and Neuroticism. The big five personality traits are suggested to be the behaviors that are present in human nature.

According to McCrae and John (1992), Conscientiousness stresses a person's goal-directed-ness, perseverance, and coordination. How open is an individual to creativity and innovation, as measured by openness to experience? Agreeability demonstrates how much an individual prioritizes the needs and desires of others above their own. Extraversion describes how motivated an individual is by the external world. Finally, Neuroticism exposes a person's vulnerability to stress and negative emotional causes.

A study conducted by Kaye (2019) explained that these traits have a major role in internet addiction. The study revealed that users who are less open to experience, agreeable, extroverted, conscientious, and more neurotic excessively use social media. Various studies use the big five personality traits to assess the relationship between personality traits and social media usage, including specific social networking websites. For instance, study by Wang, Chang, Yao, and Liang (2016) stated that social media addicts might have an extroverted personality. Marino et al. (2017) proposed that students with neurotic, introverted, and attentive nature are considerably troublesome Facebook users. Błachnio, Przepiorka, Senol-Durak, Durak, and Sherstyuk (2017) highlighted in their study that a low amount of openness to experience, low emotional security, and lower Conscientiousness in people is linked to Facebook addiction. Similarly, Kircaburun (2016) stated that students addicted to Twitter have introverted nature, less Agreeableness, and less Conscientiousness.

Concerning the personality traits, exiting literature suggests the common findings that a distinctive relationship is found between personality traits and the addictive usage of social media. Therefore, this study hypothesizes that personality traits have an impact on Social Media Addiction (SMA). Hence, the hypothesis is designed as follows:

H_1: Agreeableness has a significant impact on SMA in Covid-19

H_2: Conscientiousness has a significant impact on SMA in Covid-19

H_3: Extraversion has a significant impact on SMA in Covid-19

H_4: Neuroticism has a significant impact on SMA in Covid-19

H_5: Openness to Experience has a significant impact on SMA in Covid-19

Academic Performance

The measurement of students' achievement across various academic subjects is known as academic performance (AP). Although teachers and educationalists normally measure students' achievement based on their involvement, classroom performance, and graduation rates, assessment results from a set of standardized tests.

Students are the most common yet impotent users of social media. The overuse of social media has various impacts on the students' academics (Jha et al., 2016). Decreased academic performance is the common consequence of social media addiction. A study conducted by Upadhayay and Guragain (2017) on a group of medical students showed that participants whom overused social media had poor academic performance and a lower concentration level in lectures. A similar study in Qatar revealed that the students whom excessively used social media had lower grades than fellow students (Kumar et al., 2018). S. Y. Kim, Kim, Park, Kim, and Choi (2017) study in India portrayed a harmful impact on the academic performance of students who were social media addicts. Alike negative results were found in Korean research that studied students' academic performance. The correlation between Education burnout and internet addiction has also been discussed earlier in research by Imani et al. (2018).

The mentioned researches are although not conducted in times of covid-19 but do share a similar outcome of SMA i.e. decreased academic performance. Thus, the research is designed to highlight the correlation between SMA in covid-19 and the academic performance of students. Hence, the hypothesis is designed as follows:

H_6: SMA in Covid-19 has a significant impact on AP

Physical Health

The state of the physical body and how well it functions is known as physical health (PH). A traditional form of media and developed social media both have been correlated previously with physical health. According to existing literature, the most common impacts of social

media addiction on physical health effect are sleep, obesity in children, musculoskeletal issues, headaches, migraines, and ocular complaints (Domoff, Borgen, Foley, & Maffett, 2019).

The literature of Carter, Rees, Hale, Bhattacharjee, and Paradkar (2016) highlights that the updated form of media has a more damaging effect on students' sleep health. According to Berolo, Wells, and Amick III (2011), the addictive nature of social media produces musculoskeletal pain and distress. Additionally, LeBourgeois et al. (2017) mentioned that the light emitted from a smartphone while using social media has an unsettling amount of melatonin secretion.

Various studies have reviewed the effects of SMA on sleep conditions by studying the nature of sleep duration, night awakenings to use social media, and the overall quality of sleep. From various studies, Scott and Woods (2018) concluded that shorter sleep duration happened due to nighttime use of social media. Furthermore, Vernon, Modecki, and Barber (2017) highlighted that nighttime usage of social media is used to measure sleep quality. Moreover, Kenney and Gortmaker (2017) suggest that problematic use of social networks results in sleep disruptions.

Physical activity is further disrupted by SMA which results in obesity in children. As claimed by Mérelle et al. (2017), extreme usage of social media and gaming has a significant relation with obesity. Tsitsika et al. (2016) also claimed that youth who used more than 2 hours on social media was at the risk of being obese. Furthermore, other physical issues resulting from SMA are musculoskeletal complaints, Headaches or migraines, and Ocular complaints. As there is relevant literature on SMA, however, there is not much literature that studies the impacts of SMA in covid-19. Hence, the hypothesis is designed as follows:

H_7: SMA in Covid-19 has a significant impact on PH

Psychological Well-Being's Moderating Role

Psychological well-being (PWB), according to Waterman (1993), is characterized as a capacity to develop and improve one's personality. According to Cardak (2013), PWB entails a person's creation of ideas to feel content. Choi and Lim (2016) also refer to these concepts, and it further mentions that PWB involves positive feelings and an effective approach towards work. PWB is a psychological term that refers to the optimal level of function and experience, as Ryff and Keyes (1995) described. Hence, well-being refers to a person's capacity to work.

According to Huppert (2009), psychological well-being is the balance of working efficiently and feeling healthy and developing ideas that increase the level of comfort. According to Casale, Lecchi, and Fioravanti (2015), lower amount of PWB is equivalent to a reserved nature, placing a person at the possibility of Addictive behavior. Furthermore, various studies claim that there is a negative connection between psychological well-being and unhealthy internet use.

A higher amount of PWB, combined with the ability to fulfill specific goals, can protect a person from behavioral addiction (Casale et al., 2015). Thus, it is predicted that people who have a higher amount of PWB would have the ability to control their needs and stop

fulfilling them in the short run, instead of focusing on long-term approaches.

A person with a higher level of PWB, for instance, would choose to concentrate on goals and fulfill their recognition needs rather than using social media as a temporary fix. As a result, it has been hypothesized that psychological well-being and the Big Five personality traits and SMA, could interact. Hence, the hypothesis is designed as:

H_8: PWB moderates the relationship between C and SMA in Covid-19

H_9: PWB moderates the relationship between OE and SMA in Covid-19

H_{10}: PWB moderates the relationship between A and SMA in Covid-19

H_{11}: PWB moderates the relationship between EX and SMA in Covid-19

H_{12}: PWB moderates the relationship between N and SMA in Covid-19

Research Methodology

Research Model

Figure 1
Conceptual Model

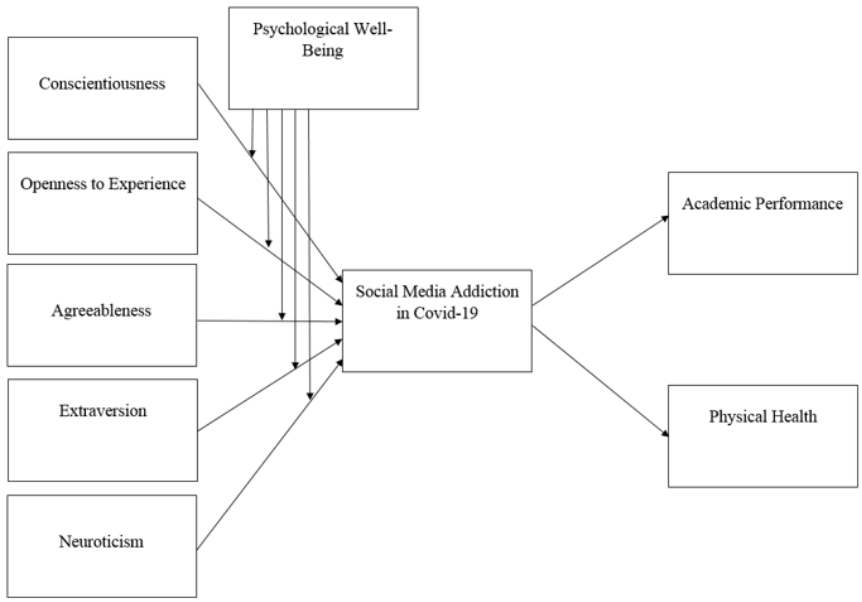


Figure 1 demonstrates the model presented. This model portrays Conscientiousness, Openness to Experience, Agreeableness, Extraversion, and Neuroticism. The impact of these traits on Social Media Addiction in Covid-19. This further explores Academic Performance and Physical Health. Moreover, Psychological Well-Being is the moderator.

Data Collection and Measurement of Variables

The study is based on the quantitative data that was completed through questionnaires. The tool for data collection was developed using a five-point Likert scale that ranges from strongly disagree to strongly agree. We targeted the students of Iqra University for the survey. Survey questionnaires were distributed online in Karachi, Pakistan. In total, 529 students participated, and after data screening, 23 responses were deleted due to absurd values. Thus, the final sample size is 506. Raza, Qazi, and Umer (2017); Raza, Umer, Qazi, and Makhdoom (2018) claimed that 50 is considered poor, 300 as good, 500 as very good and 1000 was regarded as an outstanding sample size. Hence, these recommendations were used.

The data collection instrument was developed using the items adapted from prior studies. For instance: Big Five Personality Traits were adapted from a prior study of Karim, Zamzuri, and Nor (2009). The items of Social Media Addiction from Ponnusamy, Iranmanesh, Foroughi, and Hyun (2020). The items of Academic Performance from the study of Hou, Xiong, Jiang, Song, and Wang (2019). The following studies have been used for the items of Physical Health, i.e., Xue et al. (2018). Lastly, items of PWB were adapted from S. Y. Kim et al. (2017).

The research questionnaire comprised of 10 sections. Independent variables are mentioned in section A-E. Section A comprises 10 items measuring Conscientiousness, and section B comprise 10 items measuring Openness to Experience. Section C comprises 8 items measuring Agreeableness, section D comprises 8 items measuring Extraversion, and section E comprises 8 items measuring Neuroticism. Further, section F includes five items of the dependent variable, i.e., Academic Performance. After that, 6 items of Physical Health are present in section G. Section H consists of 5 items measuring moderators' Psychological Well-Being. Social Media Addiction is measured with 17 items in section I. At last, section J consists of demographics items such as gender, age, and education.

Demographics

Information related to demographics is in Table 1. According to the gender ratio, the percentage of males is 52.4 percent, and females are 47.6 percent. According to the ration of age, 80.4 percent are between the 21-25 ages, 10.1 percent are between the 26-30 ages, 7.3 percent are between the 31-35 ages, and 2.2 percent of respondents fall at the age bracket 36-40. Educationally, 49.4 percent were undergraduate, 12.8 percent were graduate, 4.0 percent were postgraduate, and 3.8 percent are at the option of others.

Table 1
Demographics

	Frequency	Percent	Valid %	Cumulative %
Gender				
Male	265	52.4	52.4	52.4
Female	241	47.6	47.6	100
Total	506	100	100	
Age				
21-25	407	80.4	80.4	80.4
26-30	51	10.1	10.1	90.5
31-35	37	7.3	7.3	97.8
36-40	11	2.2	2.2	100
Total	506	100	100	
Education				
Undergraduate	402	79.4	79.4	79.4
Graduate	65	12.8	12.8	92.3
Post Graduates	20	4	4	96.2
Others	19	3.8	3.8	100
Total	506	100	100	

Data Analysis

Structural Equation Modelling and the support of statistical facts are used for validating the used theory (Ringle, 2005). For the Variance-based method, PLS-SEM is used to process the hypothetical model. Additionally, bootstrap resampling is used according to the criteria of Hair, Ringle, and Sarstedt (2011); Raza et al. (2017).

Furthermore, the study compared variance and covariance-based techniques and concluded that the technique has the least restrictions in sample size and residual distributions. Estimations are based on Anderson and Gerbing (1988)'s two-step approach. I.e. measurement model and structural model.

Measurement Model

Construct reliability, individual item reliability, convergent validity, and discriminant validity are in the measurement model to evaluate the proficiency of the model. Cronbach's Alpha, Composite reliability, Average Variance Extract (AVE) are used to assess the results. The criteria is highlighted in the variables of Cronbach's alpha and composite reliability mentioned in table 2. Fornell and Larcker (1981) criteria are used by average variance extracted (AVE) to calculate the convergent validity.

Cross-loading analysis, Fornell and Larcker criterion, and the Heterotrait-Monotrait ratio of correlations (HTMT) are used to measure the discriminant validity. Table 3 signifies the square root of AVE that is presented diagonally. Also, to explain the discriminant validity of adequacy; Table-4 displays loadings and cross-loadings. This follows the criteria of Gefen and Straub (2005). Moreover, the Heterotrait-monotrait ratio of correlations (HTMT) is displayed in table 5.

Table 2
Measurement Model Results

	Items	Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
A	**A1**	0.797			
	A2	0.773			
	A3	0.837	0.909	0.930	0.689
	A4	0.856			
	A5	0.876			
	A6	0.837			
AP	**AP1**	0.861			
	AP2	0.903	0.922	0.945	0.812
	AP3	0.949			
	AP4	0.890			
C	**C1**	0.829			
	C2	0.833	0.847	0.897	0.684
	C3	0.791			
	C4	0.856			
EX	**EX1**	0.856			
	EX2	0.903	0.904	0.932	0.773
	EX3	0.869			
	EX4	0.889			
N	**N1**	0.879			
	N2	0.867			
	N3	0.834	0.915	0.936	0.746
	N4	0.879			
	N5	0.860			
OE	**OE1**	0.835			
	OE2	0.855			
	OE3	0.796	0.887	0.917	0.688
	OE4	0.844			
	OE5	0.815			
PH	**PH1**	0.873			
	PH2	0.894	0.86	0.914	0.781
	PH3	0.883			
PWB	**PWB1**	0.832			
	PWB2	0.839	0.772	0.868	0.687
	PWB3	0.816			
SMA	**SMA1**	0.9			
	SMA2	0.935			
	SMA3	0.87	0.928	0.946	0.777
	SMA4	0.834			
	SMA5	0.866			

C: Conscientiousness, OE: Openness to Experience, A: Agreeableness,
EX: Extraversion, N: Neuroticism, SMA: Social Media Addiction in Covid-19,
AP: Academic Performance, PH: Physical Health, PWB: Psychological Well-Being

Table 3
Fornell-Larcker criterion

	A	AP	C	EX	N	OE	PH	PWB	SMA
A	**0.83**								
AP	0.743	**0.901**							
C	0.568	0.486	**0.827**						
EX	-0.532	-0.54	-0.435	**0.879**					
N	0.731	0.621	0.515	-0.537	**0.864**				
OE	0.64	0.743	0.506	-0.409	0.773	**0.829**			
PH	0.718	0.834	0.531	-0.537	0.771	0.778	**0.884**		
PWB	0.124	0.082	0.123	-0.088	0.085	0.095	0.093	**0.829**	
SMA	0.724	0.861	0.49	-0.503	0.688	0.767	0.941	0.089	**0.881**

Notes: C: Conscientiousness, OE: Openness to Experience, A: Agreeableness, EX: Extraversion,
N: Neuroticism, SMA: Social Media Addiction in Covid-19, AP: Academic Performance,
PH: Physical Health, PWB: Psychological Well-Being.
The diagonal elements (bold) represent the square root of the average variance extracted (AVE).

Table 4
Loadings and Cross Loadings

	A	AP	C	EX	N	OE	PH	PWB	SMA
A1	**0.797**	0.617	0.447	-0.400	0.605	0.540	0.598	0.100	0.602
A2	**0.773**	0.598	0.545	-0.444	0.580	0.541	0.585	0.126	0.558
A3	**0.837**	0.638	0.543	-0.447	0.630	0.527	0.621	0.104	0.615
A4	**0.856**	0.570	0.464	-0.391	0.561	0.504	0.548	0.118	0.563
A5	**0.876**	0.597	0.444	-0.445	0.584	0.535	0.586	0.114	0.574
A6	**0.837**	0.666	0.397	-0.509	0.666	0.539	0.628	0.063	0.678
AP1	0.700	**0.861**	0.506	-0.588	0.860	0.682	0.883	0.075	0.792
AP2	0.668	**0.903**	0.375	-0.420	0.879	0.647	0.784	0.064	0.900
AP3	0.725	**0.949**	0.433	-0.473	0.895	0.717	0.832	0.096	0.935
AP4	0.586	**0.89**	0.448	-0.480	0.867	0.635	0.767	0.059	0.870
C1	0.402	0.404	**0.829**	-0.412	0.412	0.391	0.432	0.079	0.375
C2	0.574	0.425	**0.833**	-0.293	0.447	0.454	0.456	0.111	0.429
C3	0.415	0.331	**0.791**	-0.278	0.369	0.357	0.376	0.107	0.355
C4	0.475	0.437	**0.856**	-0.449	0.465	0.461	0.481	0.107	0.449
EX1	-0.500	-0.565	-0.343	**0.856**	-0.563	-0.416	-0.558	-0.063	-0.532
EX2	-0.486	-0.495	-0.417	**0.903**	-0.493	-0.390	-0.487	-0.072	-0.472
EX3	-0.417	-0.417	-0.417	**0.869**	-0.408	-0.301	-0.407	-0.096	-0.373
EX4	-0.445	-0.362	-0.357	**0.889**	-0.368	-0.292	-0.384	-0.086	-0.332
N1	0.668	0.903	0.375	-0.42	**0.879**	0.647	0.784	0.064	0.900
N2	0.586	0.89	0.448	-0.48	**0.867**	0.635	0.767	0.059	0.87
N3	0.646	0.745	0.421	-0.336	**0.834**	0.706	0.873	0.114	0.834
N4	0.564	0.792	0.481	-0.505	**0.879**	0.676	0.894	0.058	0.866
N5	0.700	0.861	0.506	-0.588	**0.860**	0.682	0.883	0.075	0.792
OE1	0.586	0.641	0.430	-0.336	0.623	**0.835**	0.610	0.098	0.650
OE2	0.457	0.595	0.438	-0.315	0.608	**0.855**	0.575	0.042	0.597
OE3	0.633	0.662	0.451	-0.335	0.734	**0.796**	0.768	0.161	0.736
OE4	0.425	0.548	0.366	-0.316	0.603	**0.844**	0.609	0.051	0.599
OE5	0.520	0.619	0.402	-0.397	0.611	**0.815**	0.632	0.016	0.565
PH1	0.646	0.745	0.421	-0.336	0.834	0.706	**0.873**	0.114	0.834
PH2	0.564	0.792	0.481	-0.505	0.879	0.676	**0.894**	0.058	0.866
PH3	0.700	0.861	0.506	-0.588	0.86	0.682	**0.883**	0.075	0.792
PWB1	0.103	0.061	0.067	-0.040	0.070	0.064	0.076	**0.832**	0.072
PWB2	0.11	0.076	0.122	-0.094	0.077	0.069	0.087	**0.839**	0.076
PWB3	0.095	0.066	0.115	-0.083	0.064	0.103	0.069	**0.816**	0.073
SMA1	0.668	0.903	0.375	-0.42	0.879	0.647	0.784	0.064	**0.900**
SMA2	0.725	0.949	0.433	-0.473	0.895	0.717	0.832	0.096	**0.935**
SMA3	0.586	0.89	0.448	-0.48	0.867	0.635	0.767	0.059	**0.870**
SMA4	0.646	0.745	0.421	-0.336	0.834	0.706	0.873	0.114	**0.834**
SMA5	0.564	0.792	0.481	-0.505	0.879	0.676	0.894	0.058	**0.866**

Notes: C: Conscientiousness, OE: Openness to Experience, A: Agreeableness,
EX: Extraversion, N: Neuroticism, SMA: Social Media Addiction in Covid-19,
AP: Academic Performance, PH: Physical Health, PWB: Psychological Well-Being.
All self-loading is significant (bold).

Table 5
Heterotrait-Monotrait Ratio (HTMT)

	A	AP	C	EX	N	OE	PH	PWB	SMA
A									
AP	0.810								
C	0.645	0.550							
EX	0.576	0.577	0.495						
N	0.800	0.512	0.583	0.574					
OE	0.703	0.818	0.576	0.444	0.852				
PH	0.813	0.62	0.619	0.593	0.083	0.882			
PWB	0.150	0.096	0.15	0.107	0.102	0.112	0.114		
SMA	0.785	0.048	0.549	0.529	0.438	0.837	0.534	0.105	

Notes: C: Conscientiousness, OE: Openness to Experience, A: Agreeableness,
EX: Extraversion, N: Neuroticism, SMA: Social Media Addiction in Covid-19,
AP: Academic Performance, PH: Physical Health, PWB: Psychological Well-Being

The measurement model approves the convergent and discriminant validity; it approves that variables are unique. Therefore, it is useful to inspect the structural model.

Structural Model

Hypotheses are established in the structural model. The structural model is centered on regression. Additionally, in Table 6 and Table 7, there are 12 hypotheses. 7 depict significant impact from these hypotheses, but remaining 5 exhibits an insignificant relationship between the variables. Finally, Table 7 shows the results of moderation analysis. It depicts that PWB moderates the association between Conscientiousness, Openness to Experience, Agreeableness, Extraversion, and Neuroticism.

Table 6
Results of Path Analysis

Hypothesis	Regression Path	Effect type	SRW	Remarks
H1	A ->SMA	Direct Effect	0.029***	Supported
H2	C ->SMA	Direct Effect	-0.026***	Supported
H3	EX ->SMA	Direct Effect	0.037***	Supported
H4	N ->SMA	Direct Effect	0.997***	Supported
H5	OE ->SMA	Direct Effect	0.005	Not Supported
H6	SMA ->AP	Direct Effect	0.972***	Supported
H7	SMA ->PH	Direct Effect	0.940***	Supported
		Moderating role of PWB		
H8	C ->SMA	Indirect Effect	0.018**	Supported
H9	OE ->SMA	Indirect Effect	-0.011	Not Supported
H10	A ->SMA	Indirect Effect	-0.017*	Not Supported
H11	EX ->SMA	Indirect Effect	0.006	Not Supported
H12	N ->SMA	Indirect Effect	0.021*	Not Supported

Notes: C: Conscientiousness, OE: Openness to Experience, A: Agreeableness, EX: Extraversion, N: Neuroticism, SMA: Social Media Addiction in Covid-19, AP: Academic Performance, PH: Physical Health, PWB: Psychological Well-Being.
***p<0.01, **p<0.05, *p<0.10.

Lastly, a moderating effect is found between Conscientiousness with Social Media Addiction. However, no moderating effect is found between Openness to Experience, Agreeableness, Extraversion, and Neuroticism with Social Media Addiction.

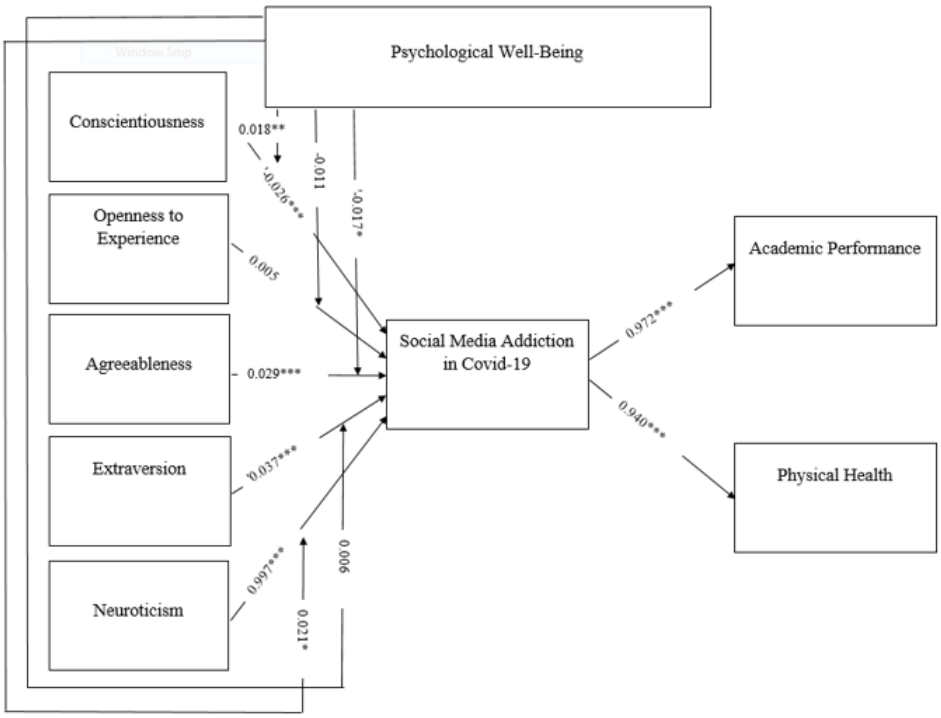
Discussion of the Results

Table 6 displays the results of path analysis that contain 7 hypotheses. The six direct hypotheses have a significant effect while one has an insignificant effect. In a study conducted by Mowen (2000), personality traits are recognized as risk factors that lead an individual towards different addictions: addiction to workouts, cell phones, the internet, Facebook, shopping, and social networking sites.

The results of the first hypothesis (A $\rightarrow$ SMA) show that Agreeableness has an impact on SMA (β = 0.029, p <0.01). According to Patrick (2011) Agreeableness deals with the orientation of empathy. In Tobin and Graziano (2020) research, individuals with high agreeableness nature tend to be more helpful and compassionate. Previous studies have found that Agreeableness and SMA are linked. As Agreeableness involves being pleasing and creating harmony with others, various studies indicated that the nature of this

trait thus impacts social media addiction. According to Nikbin, Iranmanesh, and Foroughi (2021) a higher amount of Agreeableness is a protective factor in developing behaviors-related addictions. The study by Nikbin et al. (2021) further claims that agreeableness and internet addiction are related.

Figure 2
Results of Path Analysis



The results of the second hypothesis (C → SMA) show that Conscientiousness has an impact on SMA (β= '-0.026, p <0.01). Błachnio et al. (2017) state that Conscientiousness is related to achievement tendency. Literature has shown a relationship between Conscientiousness and SMA. The study of Nikbin et al. (2021) explains that this relationship is negative by claiming that, conscientious individuals are already involved with their work. Thus, these individuals are less interested in activities related to social media.

The results of the third hypothesis (EX → SMA) show that Extraversion has an impact on SMA (β= 0.037, p <0.01). The quantity and intensity of interpersonal interaction relate to extroversion. Furthermore, the trait of extroversion is related to more engagement. According to Ahmad, Yusop, and Mat Aji (2018), extroverted individuals are more interested in social media usage. Past researches have claimed that more extroversion in an individual leads to more engagement through online platforms, such as social networking sites. Likewise, he further claimed that extraversion and overuse of smartphones are also related.

The results of the fourth hypothesis (N → SMA) show that Neuroticism has an impact on SMA (β= 0.997, p <0.01). Individuals with high Neuroticism tend to think negatively and have more negative experiences toward life and emotional instability. J. Kim, Lee, Chun, Han, and Heo (2017) and others have found a connection between Neuroticism and addiction. People with greater Neuroticism can use SM more to regulate their mood and seek help (Casale et al., 2015). Furthermore, according to studies, people with a high level of Neuroticism can use the internet in an unhealthy and dependency-like manner (Ahmad et al., 2018).

The results of the fifth hypothesis (OE → SMA) show that Openness to Experience has an insignificant impact on SMA (β=0.005, p >0.1). Openness is related to the imagination and insight of an individual. Individuals with higher openness are creative, while those with lower openness struggle with abstract thinking. Recent studies have revealed a connection between openness to experience and SMA. Individuals with a high degree of openness to experience, according to Nikbin et al. (2021), do not limit themselves to a single task. This happened as these individuals seek out new experiences.

The results of the sixth hypothesis (SMA → AP) show that SMA has an impact on Academic Performance (β= 0.972, p <0.01). According to Nikbin et al. (2021), the revised type of media has a deteriorating impact on sleep health. The addictive aspect of social media, according to Berolo et al. (2011), induces musculoskeletal pain and anxiety. Furthermore, when using social media, the emitted light from a smartphone has been identified as disrupting melatonin secretion. SMA makes physical activity much more difficult, resulting in childhood obesity. Social media and gaming, when used excessively develop obesity (Mérelle et al., 2017).

The results of the seventh hypothesis (SMA → PH) show that SMA has an impact on Physical Health (β= 0.940, p <0.01). Academic success is also harmed as a result of social media addiction. Upadhayay and Guragain (2017) studied a group of medical students. It was found that those who used social media excessively had poor academic performance and a lower degree of focus in lectures. Kumar et al. (2018) claimed that students who used social media excessively earned lower grades than their peers. S. Y. Kim et al. (2017) conducted research in India that found that students who used an increased amount of social media harmed their academic performance.

Moderation

Table 6 displays the results of moderation analysis; as in the present research, we have incorporated Psychological Well-Being as a moderator. It depicts the following results:

H8 (C → SMA) shows that Psychological Well-Being moderates the relationship between Conscientiousness and Social Media Addiction (β= 0.018, p <0.05). While H9 (OE → SMA) (β= -0.011, p >0.1), H10 (A → SMA) (β= -0.017, p <0.1), H11 (EX → SMA) (β= -0.006, p >0.1), and H12 (N → SMA) (β= 0.021, p <0.1) shows that Psychological Well-Being has no moderating effect.

Contrasting results from Ahmad et al. (2018) study claim that people who are not addicted to Facebook have lower Conscientiousness. Such findings highlight that practitioners could emphasize psychological well-being, behavioral addiction, and personality

traits to develop such behaviors. Previous findings of Cardak (2013); Casale et al. (2015) have emphasized the impact of PWB on addiction.

Research by Wang et al. (2016) has confirmed the moderating influence of PWB and predicted that PWB would interfere with personality traits in influencing SMA. It is a significant investigation because the collaboration allows the researcher to understand better the mechanism that underpins behavioral addiction.

Few studies have used PWB as a moderator between personality traits and any form of social media. However, similar results are not found. For example, the study of Nikbin et al. (2021) does not support the mediating role of Conscientiousness and Facebook. Similarly further contrasting results are found in Ahmad et al. (2018) study, which claims that PWB has a moderating effect between Extraversion and Neuroticism on Facebook. Thus, the literature and research findings do not find any moderating effect of PWB between some personality traits upon SMA.

Conclusion & Recommendations

Conclusion

The research showed that personality traits have an impact on the usage of social media. Social media addiction is found to be influencing both the academic health and physical health of students in the covid-19 pandemic. Furthermore, the results confirmed that PWB moderates the relationship between Conscientiousness and SMA. This research is the first attempt to present a quantitative study that describes the association between Conscientiousness, Openness to Experience, Agreeableness, Extraversion, Neuroticism, and SMA in Covid-19, AP, PH, and PWB in the context of Pakistan. Considering the number of young social media users in Pakistan, the research contributes to the research literature.

Implications

Research has various theoretical and practical implications. First, various studies specify the role of personality traits on SMA, but this is the first study that engages PWB as a moderator in the association between 5 traits of personality and SMA. The results specify that PWB moderates the relationship between Conscientiousness and SMA. Second, the study is extended by showing the effects of SMA on Academic Performance and Physical Health. There is no such research found that links SMA with Academic Performance and Physical Health. Our findings showed that SMA has a relationship with Academic Performance and Physical Health. Thus, this relation of Social Media Addiction helps in refining mechanisms of Social Media Addiction and how it affects and influences Academic Performance and Physical Health. Finally, the literature adds literature on SMA that relates to the big 5 personality traits, Academic Performance, Physical Health, and PWB in a country like Pakistan. The research fills in the gap by presenting rare evidence to understand the relationship of SMA with Academic Performance and Physical Health.

The practical implications include strategies for administrators of social media who could modify their features that the development of societies is encouraged. Moreover,

the findings also suggest that a user's guide for social media usage may help users not be addicted. Social media suppliers should also be conscious of their services' damage to users' that their services have on the physical and mental health. It is also practically suggested that social media users start keeping a track of their usage to avoid addiction. Finally, while conducting online classes in the lock down, the teachers must guide their students to engage in indoor activities instead of excessively using social media.

Limitations and Future Recommendations

Like other literary studies, this particular research also suffers from research limitations. However, these limitations help conduct new studies. First, the data collection process involved an online questionnaire due to social distancing. This self-reported measure has limitations of its own. Thus, other additional methods may provide more accurate and wide data. Secondly, the behavior of SMA used to measure AP and PH of students may have been perceived as undesirable by the respondents. Thus, this bias might have affected the results. Thirdly, as the study was conducted in Karachi, Pakistan the results cannot be generalized with different demographics. Future researchers could research with a different demographic profile for a comparative study of social media addiction. This could generate different hypotheses and results. Finally, this study considered 5 personality traits. There are other personality traits too that could be incorporated in future research.

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