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Social Media and Sharing Fake News in COVID-19: Moderating Role of Psychological Distress among Students

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Abstract: The purpose of this study is to examine the determinants which led to fake news sharing over social media about COVID-19. Further, this study intends to analyze the moderating effect of psychological distress on the relationship between the considered motivators and gratifications in higher education Pakistani students. This paper aims to study the Uses and Gratification approach by adding other determinants. Additionally, it is significant to examine the impact of altruism and psychological distress as a moderator on sharing fake news about COVID-19 over social media among higher education students. This study acquired the sample through a questionnaire survey which was analyzed applying PLS-SEM version 3.0. The findings revealed that altruism, entertainment, and pass time are the significant gratifications that lead students to share fake news on COVID-19. In contrast, psychological distress strengthens the link between altruism, entertainment, socialization, and information-sharing with sharing fake news.

Keywords: Entertainment, Socialization, Information-seeking, Information-sharing, Psychological distress, PLS-SEM.

Introduction

Social media is determined as an effective medium to disseminate information across the globe (Kaya, 2020). Further, easy accessibility of the internet, stress-free sign-up, and easy connectivity with the audience have made social networking sites most efficient, and it is among innovative technologies to disperse information (Radwan, Radwan, & Radwan, 2020). Social media has helped a lot of people in the pandemic to gather information about the coronavirus. Through both negative and positive contributions, social media's role in the COVID-19 crisis has been undeniable. Recently, social media has been used to spread coronavirus information. Hence, the coronavirus information has raised various concerns because most of the information on social media are deceitful rumors, misinformation about the cures, vaccines based on conspiracy theories. Due to COVID-19, an

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increase in fake information on digital platforms has affected the government, policymakers, and the industrial sector. [Wardle and Derakhshan \(2017\)](#) stated that fake news builds suspicion, distrust, and hatred that further exploits the political, societal, and religious connotations. The after-effects of such acts adversely and severely affect one's mental and physical health. But what is fake news? According to [Duffy, Tandoc, and Ling \(2020\)](#), copied non-authorised news or information that is exhibited causally to grab people's attention to make them believe its legitimacy is concocted content or fake news.

[Apuke and Omar \(2020\)](#) analyzed that sharing fake news content has accelerated, especially in this crisis; thus, excessive analysis of the nature and motivation behind misleading/fake news dissemination through social media platforms is needed. Currently, limited assessment is conducted about possible factors due to which circulation of fake news takes place. Although studies emphasizing fake news are insufficient, though the interest in this scenario is increasing. However, there is a need to assess and study the motivation why people are spreading or sharing fake news content during this coronavirus pandemic. First, the effect of misleading content hazardously affects the well-being of society and the economy. [Lee and Ma \(2012\)](#) pointed out that social media users must be the main participants, unlike past studies that only emphasized the general population. Secondly, most of the studies based on fake news are in the context of developing countries. Hence the research in a different context and from a different perspective needs to be supported to comprehensively understand fake news sharing behavior.

Contrasting present studies that examined sharing of news considering the general public as respondents, we emphasized social media users. Therefore, this study is in Pakistan's higher education context, an underdeveloped country mostly not much emphasized. Understanding the worldwide issue of sharing fake news about COVID-19 from a different perspective is the prime focus in which we consider that social media users are mostly higher education students. Thus, we intend to study the determinants that lead students to share fake news. Moreover, the motivation behind emphasizing Pakistan is that the healthcare system of Pakistan is weak because of being highly populated and poor compliance with hygiene practices in Pakistan. The increase in the spread of fake news has caused panic, anxiety, and psychological distress among higher education students as they are uncertain about traditional classroom practices. Various people have assumed that the government is not disclosing the facts and figures. Based on critical circumstances, the study examines the factors that make people (higher education students) share fake content on COVID-19. The effect of such content leads to psychological issues. The study's finding provides valuable understanding and practical implications to prevent the dissemination of fake news about COVID-19 and highlight how dangerous fake content sharing or spreading is for one's health.

Secondly, Pakistan has a collective ownership culture in which people are majorly reliant on social assistance and social compatibility. Therefore, regardless of the serious warning issued by medical professionals and government officials to maintain social distancing, individuals struggled to understand the ferociousness of this highly infectious virus. It has created fear and psychological problems in individuals relatively than just limiting themselves isolated and quarantined to handle COVID-19. The psychological distress caused by isolation and social distancing has affected people in such an ad-

verse way that people have started to believe whatever is shared through social media and WHO (word of mouth), which has created serious confusion and stress (Mukhtar & Mukhtar, 2020).

Subsequently, it is significant to study psychological distress's impact on the determinants that lead to sharing fake news on social media, particularly COVID-19. In this context, past studies emphasized psychological issues' direct effect and revealed that the fear of pandemic is connected to intolerance of uncertainty (Mertens, Gerritsen, Duijndam, Salemink, & Engelhard, 2020). It indicates that lack of information on COVID-19 can cause panic and hence the anxiety of pandemic. Research conducted in India examined an average level of information on COVID-19 and sufficient information regarding its precaution among the people (Roy et al., 2020). The results pointed that majority of people did not have enough information about the highly infectious virus, which led to extreme levels of stress, anxiety, and fear of COVID-19; causing serious psychological issues. Hence, this motivated us to focus the impact of psychological distress on the Uses and Gratifications determinants which directs sharing fake news about COVID-19, a highly infectious virus on social media. As psychological distress, related studies in Pakistan are much needed to be examined. In accordance, this study emphasizes to examine the direct effect of "altruism, entertainment, socialization, pastime, information-seeking, and information sharing on sharing fake news about COVID-19". Secondly, the moderating effect of psychological distress on the stated variables assist us in determining the role of psychological distress in sharing fake news. In addition, this connection would add to the existing literature on the Pakistani higher education students being in isolation and access risk and preventive measures like verifying the authenticity of the news.

To understand the factors of spreading fake news through social media, we have adopted an inclusive model of Apuke and Omar (2021) based on the Uses and Gratification, also known as the U&G approach, by examining the moderating effect. We utilized this model and theory by including altruism and adding psychological distress as moderating factor. This study's contribution is that it will add the literature on COVID-19 and would help to examine the influence of psychological distress. Additionally, this paper focuses on the dearth of analysis of a moderator in the present literature. Therefore, we determine that the sense of enjoyment or fulfillment attained from previous news disseminating literature can be expanded to analyze fake news circulation due to social media's intrinsic participating nature. Following Pakenham et al. (2020); Yu et al. (2020), we added a moderating variable in this study. These studies examined the moderating effect of psychological distress on mental health and social support in the context of China and Italy during COVID-19. Based on the past studies, the post-traumatic signs in survivors after any serious event like an earthquake are most likely to report psychological distress issues. Therefore, considering this notion, we intend to access the moderating impact of psychological issues like restlessness, nervousness, and other similar issues among Pakistani students of higher education

Lastly, in this study, we access how psychological distress as a moderator strengthens the connection between altruism (ALT), socialization (SO), entertainment (EN), information-seeking (INSE), information-sharing (ISH), pass-time (PT), and sharing fake news (SFN) about pandemic on social media.

Literature review

Theoretical background

The Uses and gratifications theory (U&G) proposed by [Katz, Blumler, and Gurevitch \(1973\)](#) is used for this study's framework. It assists in studying the motivation behind an individual's use of particular media. [Halpern, Valenzuela, Katz, and Miranda \(2019\)](#) highlighted that this approach explains how and why a person intentionally favors and uses a particular medium and how they use it to get a sense of contentment. However, this approach limits the effects of that medium on people; it covers the aspect of analyzing the facilities offered by a platform, determining that people's motivation is the fundamental element. The methodology helps study the basic motivation to interact with others that subsequently influence the usage of a specific medium and understanding the information received from that medium.

However, the approach has been utilized by social media analysts to understand the gratifications a person obtains from the use of social media. As recognized, information seeking, EN, and relational interaction are some of the gratifications a person acquires through social media usage. Likewise, other factors such as information sharing, relationship communication, and peer acceptance were connected with the social networking sites' usage. Additionally, other gratifications linked with social media utilization were EN, information-seeking, and socialization but later also included apprehending information and knowledge sharing behavior. Some of the studies proposed that news-sharing behavior influences social mobility and information-seeking gratification. The person with the greater need for social mobility, socialization, and information-seeking results in circulating news regularly and frequently on social media platforms ([Lee & Ma, 2012](#)). Furthermore, [Balakrishnan, Ng, and Rahim \(2021\)](#) highlighted that altruism and EN significantly influence fake news sharing in the context of Malaysia. In contrast, [Adnan, Nawaz, and Khan \(2021\)](#) revealed that altruism, information sharing, socialization, information-seeking, and pass time considerably direct towards fake news sharing, particularly in South Asia.

Fake news on COVID-19 and social media

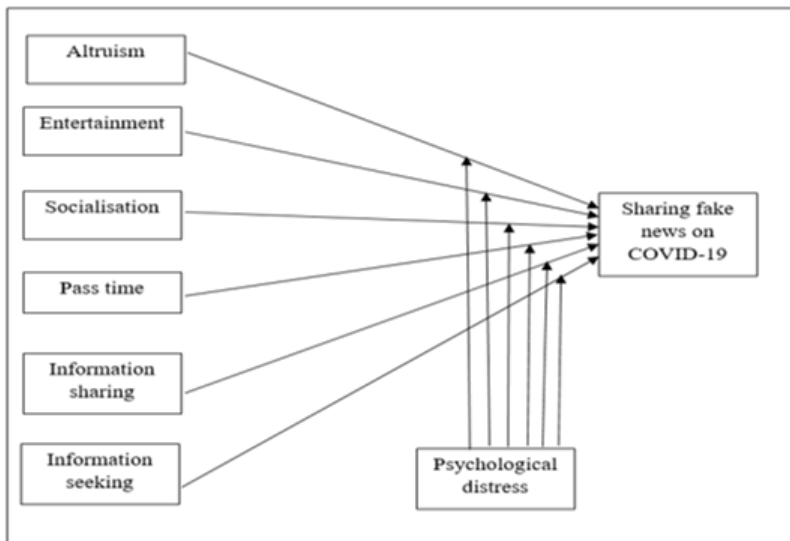
The act of spreading and sharing fabricated news is often reported in the department of health. Hence, dispersing unverified information risks others' security, indicating that people are decoyed into taking ineffective or wrong treatment measures to remain safe, which can be detrimental to health ([Pulido, Villarejo-Carballido, Redondo-Sama, & Gómez, 2020](#)). Since the emergence of coronavirus such act has increased, providing information regarding preventive measures, possible and immediate treatments, and tips to be safe from the deadly virus ([Pennycook, McPhetres, Zhang, Lu, & Rand, 2020](#)). Likewise, it is explored that false coronavirus news has made a massive chunk of the people trusting that consuming salty water, bleach, and oregano would cure them. Also, negative propaganda was at its peak about the Chinese government and US government that they have intentionally created the virus. Such fake news outraged the people and created mistrust

and hatred for the Chinese and US government for risking people's health.

Also, in the case of Taiwan, fake news were about the number of infected cases witnessed by the country that they have multiplied considerably. Further, the President of Taiwan has been infected, which was afterward with the thorough investigation was found to be untrue. [Pennycook et al. \(2020\)](#) investigated that various people in the US are involved in spreading fabricated because of their inability to verify the news's authenticity appropriately. Various wrong medical claims and predictions became viral on social media. For instance, being in the sun, continuous coitus, 45 million people would die in a pandemic, or Africans cannot contract the deadly virus, and many others were medically confirmed false but at large scale were disseminated worldwide ([Hasan & Bao, 2020](#)).

Certainly, an empirical assessment regarding fake news content dissemination and its impact is insufficient. Most past literature does not have a theoretical model that can exclusively direct us to conclude a meaningful interpretation about spreading fake news on social media intentionally or accidentally. Therefore, this study framework is based on the U&G approach and past studies to cover the literature gap. This study accesses the connection of the factors that focus on analyzing the determinants that incline social media users towards spreading fake news regarding coronavirus outbreak in this crisis (Figure 1).

Figure 1
Conceptual model



Hypotheses Development

Altruism- ALT

Plume and Slade (2018) defined ALT as the effort to disperse news and knowledge without any intention to get an incentive for such effort or act. The altruistic act has been analyzed and studied in terms of information, knowledge, and news sharing, indicating the significant influence of ALT on unintentional dissemination and spreading of information. Moreover, Duffy et al. (2020) considered that people involve in these activities are encouraged by emotional effect and impact of news on the person reading it.

Additionally, people habitually share, spread, and disseminate news to help others without analyzing its actuality and authenticity as long as it is about any precautionary treatment on a particular aspect. Subsequently, the connection between ALT and spreading fake news behavior can be predicted (Apuke & Omar, 2020). Therefore, it is claimed that individuals with a greater altruistic approach might tend to be inclined more towards spreading fake coronavirus news to pass on the information to others for their wellbeing. Thus, based on the literature, we propose the following hypothesis:

H₁: ALT gratification positively influences SFN on coronavirus on social media.

Entertainment -EN

According to Lee and Ma (2012), EN satisfaction is attained when a person uses social media to pass some time and get away from their routine life. According to this perspective, Baek, Holton, Harp, and Yaschur (2011) indicated that the dissemination in past studies found that people usually share such content on social networking sites for entertainment and amusement on Facebook. Hence, due to necessarily self-isolation being imposed globally, it is possible that the propensity of social media utilization for entertainment will accelerate. As people in quarantine would be analyzing and examining the circumstances of pandemic online and will try to be the initiator to share information about it. Therefore, it could result in posting unconfirmed unauthentic information by individuals. Thus, according to the literature, we propose the following hypothesis:

H₂: EN significantly influences SFN about coronavirus on social media.

Socialisation-SO

Socialization gratification is referred to as social interaction gratification comprising the need for relatedness (Lee & Ma, 2012). Sihombing et al. (2017) recognized that social media encourages communal interaction as it is a platform for communicating with others and forming a bond. To study the sharing and dissemination of fabricated or misleading information, a study indicated that socialization gratification can significantly predict the falsehood spreading. Based on this viewpoint, it is concluded that people are share news because they socialize more. Also, those people who desire to be socially active and be part of social groups have high chances to disperse content in terms of spreading and

sharing information that can be false, untrue or misleading. Similarly, in this current scenario, the majority would be inclined to share and participate in disseminating news that can increase the sharing of fake content. Thus, according to the literature, we state the following hypothesis:

H₃: SO significantly influences the SFN about coronavirus on social media.

Pass-time (PT)

Kircaburun, Alhabash, Tosuntaş, and Griffiths (2020) consider pass time an important factor that usually encourages social media usage. Del Vicario et al. (2016) determined a connection between pass time and misleading content dissemination as social media's utilization to kill time makes it less probable to confirm the authenticity of the information before spreading or sharing is less likely to take place. Other than socialization, the pass-time gratification is considered an important factor that encourages news sharing behavior (Choi, 2016). In this pandemic period, social media usage to pass the time has increased, which causes fatigue; therefore, verifying the accuracy of the content is less likely to occur before sharing content due to which the fake news sharing multiplies. Hence, we propose that:

H₄: PT significantly influences the SFN about coronavirus on social media.

Information-sharing (ISH)

McGonagle (2017) analyzed that social media usage has increased the dissemination of fabricated and falsehood content online. People share tweets and re-share deceitful and fabricated reports for informational objectives rather than entertainment. Based on this viewpoint, it is considered that because of massive content in terms of news, stories, and reports about coronavirus on social media, misleading information sharing is highly possible to occur, particularly when people do not confirm validity accurately. This study determines that in this period of highly infectious virus outbreak where every person wants to be the initiator of news, the likelihood of confirming the authenticity of content before disseminating is less likely to be reported. Hence, the hypothesis we proposed:

H₅: ISH significantly influences the SFN about coronavirus on social media.

Information-seeking (INSE)

According to Apuke and Omar (2021), INSE is determined as the degree to which news dispersed on social media platforms can provide people fundamental and updated information. On the other hand, Duffly et al. (2020) highlighted that people seek to be popular and known figures, which leads them to create and circulate fake news on social media. Furthermore, the emergence of COVID-19 crisis leads people to look for information on social media sites without determining authenticity. As they would consider that content

is informative and helpful, there is a high possibility that people would share it among their connections, ultimately multiplying the fake content such as myths and rumors. Therefore, the hypothesis we propose is:

H₆: INSE significantly influences the SFN about coronavirus on social media.

Moderating effect of Psychological distress (PD)

Li et al. (2020) highlighted that the social and economic problem that coronavirus outbreak has created is severely damaging for one's mental health. For instance, a study revealed that the entire frequency of anxiety indicators, depressive signs, and lack of sleep symptoms comprised 35.1%, 20.1%, and 18.2% in terms of people attacked by the deadly virus in China. Not only being on the frontline are believed to have psychological distress such as health workers, doctors, nurses but students have also determined to be in psychological distress that includes myalgia, dizziness, stress, anxiety, and depression (Wang et al., 2020). During the COVID-19 pandemic, people who seek information about pandemic on social media are more likely to portray symptoms of PD along with people who continuously think about the current scenario of COVID-19 in their leisure time their mental health is at high risk to be disturbed. As per the report, the time on social media has increased from 20% to 50% leading to extensive data traffic on COVID-19. It further indicates that users are at a higher risk of experiencing mental health issues because of the excessive information about COVID-19.

The negative impact of the coronavirus has become a root cause of various deaths, which has eventually affect our lifestyle, instilled a fright, and intensely limited our private and communal lives to restrain the dissemination of COVID-19 (Daniel, 2020). Higher education students were at a distant time of their education when an unexpected lockdown occurred. Few were prepared to take their final examination, few were waiting for their semester to get started/enrolled, and some students were prepared to get exposure to working in a practical field. The current circumstances' unpredictability triggered students' anxiety, fear, fright, and depression (Mahmood, Saleem, Subhan, & Jabeen, 2021). Worries related to the online education system, financial stress, and parents' anxiety regarding the prospect of their children were in addition to psychological issues.

Scholars and educators have exhibited that absence of privacy at home, forced distance socializing with peers, incompetence in connecting with friends, groups and professor's face-to-face, restricted permission to educational material, causes the students to encounter disinterest and dissatisfaction (Khan, Khan, Maqsood, Hussain, & Zeeshan, 2020; Goothy et al., 2020). A shift in the pattern of an educational system caused by the pandemic apprehended doubts related to students' future. A surplus of research declarations highlighted that chronic illness might worsen mental health issues such as misery, stress, and complete exhaustion. The existing studies pointed out that fear, nervousness, sadness, insomnia, and depressive thoughts are the most observed psychological issues people and specialists share (Ahmed et al., 2020; Mukhtar & Mukhtar, 2020). But above all, in this study, we intend to analyze the moderating effect of psychological distress between motivational factors that lead to spreading fake news content about COVID-19 on

social media. Therefore, we propose the following hypotheses to examine the moderating role of psychological distress:

H₇: PD moderates the connection between ALT and SFN about coronavirus on social media.

H₈: PD moderates the connection between EN and SFN about coronavirus on social media.

H₉: PD moderates the connection between SO and SFN about coronavirus on social media.

H₁₀: PD moderates the connection between PT and SFN about coronavirus on social media.

H₁₁: PD moderates the connection between ISH and SFN about coronavirus on social media.

H₁₂: PD moderates the connection between INSE and SFN about coronavirus on social media.

Research Methodology

Research Model

The U&G approach of [Katz et al. \(1973\)](#) focuses on purpose and people's self-perceived needs. The theory is categorized as a significant approach for media studies such as this theory explains the media use according to the gratification of psychological needs of the person. Similarly, to recognize the media's social and psychological properties, the theory provides 35 needs that encourage an individual to use media. It is classified into five categories i.e. cognitive needs, affective needs, personal integrative needs, integrative social needs, and tension release needs ([Katz et al., 1973](#)). Likewise, the four general motives behind media use are divided information, personal identity, integration, social interaction, and entertainment ([McQuail, 1983](#)). Thus, the theory provides appropriate factors to study the motive behind sharing news and information used in this study.

Data Collection and Instrumentation

The study respondents were all social media users who follow, search and share news content, and higher-education students of Karachi, Pakistan. The students of higher education responses for the study were collected through an online questionnaire. The questionnaire link was posted on various social media platforms, and the social media users were requested to provide their responses. Moreover, the students were eligible to be a part of the survey if they were 19 or less (means minimum 18 years) and above, able to read and attempt an online survey in English, having an active account of any of the social media platforms like Facebook, Twitter, Instagram, and others. Subsequently, providing their consent (online), respondents filled an online survey questionnaire.

Further, respondents were asked to share the questionnaire link among their social media users' contacts. This procedure was continued till we acquired the anticipated number of responses for the analysis. Hence, the sample size preferred for the data was according to the recommendations of [Comrey and Lee \(2013\)](#); [Sharif and Raza \(2017\)](#) that sample of 50 is not worthy enough, 300 as appropriate, 500 as very good, and more than 500 determines as excellent sample regarding the factor analysis. Thus, the sample collected for the

study comprised 511 responses. After removing the outliers (incomplete questionnaire), the total sample for data analysis was 502, which satisfied the stated criteria.

The items were adapted from past studies for scale development. The items selected for recording the response of variables were adapted from different sources. Like ALT from [Plume and Slade \(2018\)](#), entertainment, socialization, information sharing, and pas-time from [Thompson, Wang, and Daya \(2019\)](#), and information-seeking from [Lee and Ma \(2012\)](#). While psychological distress constructs were adapted from [Hasan and Bao \(2020\)](#) and sharing fake news from [Khan et al. \(2020\)](#). The measuring scale was based on the five-point Likert scales ranging from strongly disagree (1) to strongly agree (5), comprising 33 items.

Demographics

The description of the respondent's profile is depicted in demographic analysis in Table 1. As per the results, male students were 54.4%, whereas female students were 45.6% in gender distribution. In age section, less than and equal to 19 were 13.5%, 20-24 were 30.7%, 25-29 totaled to 36.5%, 30-34 were 14.5%, 35-39 comprised of 4.4% and over 40 years old were about 0.4%. Note: In the age group, the students referred to as less than and equal to 19 years were the minimum age of 18 years. In Pakistan, most students waiting for their Intermediate or A 'Levels result are enrolled in higher education, but their admission is confirmed after their results. The students falling under this criteria were also part of our analysis.

Furthermore, evaluating the participants' level of education showed that undergraduates were 56.2%, graduates totaled 42.2%, postgraduates were about 1.4%, and finally, 0.2% participants marked others. Note: The participant marked as others are part of any training or enrolled in any certified course/program that most universities offer in Pakistan.

Table 1
Respondent's Profile (N= 502)

Demographic Items	Frequency	Percentile
Gender		
Male	273	54.4
Female	229	45.6
Age		
Less than and equal to 19	68	13.5
20-24	154	30.7
25-29	183	36.5
30-34	73	14.5
35-39	22	4.4
Over 40 years old	2	0.4
Education		
Undergraduate	282	56.2
Graduate	212	42.2
Post graduate	7	1.4
Other	1	0.2

Data Analysis and Results

This study employs the PLS-SEM technique version of 3.0, commonly known as the partial least square structural equation modeling proposed by [Ringle, Wende, and Will \(2005\)](#). The study determines PLS-SEM technique as most appropriate due to various features: the model can analyze theoretically backed linear and additive causal frameworks. Secondly, it is user-friendly and reporting features are advance. The current study follows the criteria of [Hair, Ringle, and Sarstedt \(2011\)](#) therefore we performed bootstrapping technique with 5000 partial samples to evaluate the probability for every path coefficient. The PLS-SEM has been performed into the following steps: firstly, the measurement model has been evaluated, then the structural model has been assessed. In the measurement model, we analyzed the construct validity and discriminant validity standard, while in the structural model, the probability of path coefficients has been evaluated.

Measurement model analysis

In measurement model analysis, the scale's competency is examined used for research. The competency of scale is measured through Composite reliability (CR), Individual item reliability (IIR), Convergent Validity (CV), and the Average Variance Extracted (AVE). To verify the scale's reliability, Cronbach's alpha's value, as per the criteria set by [Tabachnick and Fidell \(2007\)](#) that is greater than 0.55, is followed. The values exhibited in Table 2 of Cronbach's alpha satisfy the criteria; therefore, the scale is reliable. Then we checked the composite reliability and the values were more than 0.7 as per the criteria said by ([Straub, 1989](#); [Hair Jr, Matthews, Matthews, & Sarstedt, 2017](#)).

Secondly, AVE's values also met the criteria set by [Fornell and Larcker \(1981\)](#); the values are more than 0.5. Individual reliability is assessed through loadings of every item greater than 0.5, which is safe to consider according to [Hulland \(1999\)](#). Therefore, they are considered to be reliable for research purposes.

Moreover, the Fornell-Larcker criterion (1981) is widely used and traditional method to evaluate discriminant validity. To assess the discriminant validity, the square root of the AVE of every latent variable must be higher than the latent variable correlation, also known as LVC. Table 3 depicts discriminant validity results, satisfying this study as the AVE square root for ALT, EN, INSE, ISH, PD, PT, SFN, and SO are higher than the consistent LVC ([Ali & Raza, 2017](#)).

The result shown in Table 4 assists in analyzing the construct validity of the PLS measurement model. Table 4 includes the questionnaire constructs employed as indicators of individual latent variables used in this study's model. The loadings and cross-loadings can be better accessed through factor loadings as these outcomes represent the factor analysis ([Sosik, Kahai, & Piovoso, 2009](#); [Raza, Qazi, & Umer, 2017](#)). Note: the loadings for every variable exhibited in Table 4 on its latent variable are higher than the cross-loadings on the other latent variables in the model. It verifies the construct validity. Similarly, all the items are loaded greater in their relevant construct than the corresponding variables. The results satisfy the criteria set by [Qazi, Raza, and Khan \(2020\)](#), as the cross-loading difference is greater than the proposed threshold of 0.1.

Table 2
Measurement Model Results

	Items	Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
ALT	ALT1	0.613	0.698	0.809	0.519
	ALT2	0.629			
	ALT3	0.779			
	ALT4	0.836			
EN	EN1	0.795	0.786	0.862	0.610
	EN2	0.798			
	EN3	0.721			
	EN4	0.806			
SO	SO1	0.748	0.787	0.849	0.529
	SO2	0.733			
	SO3	0.724			
	SO4	0.733			
PT	PT1	0.697	0.728	0.825	0.540
	PT2	0.705			
	PT3	0.749			
	PT4	0.750			
ISH	ISH1	0.737	0.866	0.903	0.651
	ISH2	0.771			
	ISH3	0.859			
	ISH4	0.827			
INSE	INSE1	0.825	0.752	0.839	0.637
	INSE2	0.746			
	INSE3	0.745			
	INSE4	0.727			
PD	PD1	0.910	0.856	0.902	0.698
	PD2	0.835			
	PD3	0.859			
	PD4	0.824			
SFN	SFN1	0.823	0.812	0.876	0.640
	SFN2	0.744			
	SFN3	0.845			
	SFN4	0.819			
	SFN4	0.788			

Table 3
Fornell-Larcker Criterion

	ALT	EN	INSE	ISH	PD	PT	SFN	SO
ALT	0.720							
EN	0.717	0.781						
INSE	0.182	0.180	0.798					
ISH	0.485	0.559	-0.011	0.807				
PD	0.710	0.702	0.226	0.487	0.836			
PT	0.346	0.495	-0.011	0.541	0.435	0.735		
SFN	0.583	0.638	0.089	0.535	0.595	0.458	0.800	
SO	0.665	0.745	0.103	0.710	0.700	0.672	0.598	0.727

Table 4
Loadings and Cross Loadings

		ALT	EN	INSE	ISH	PD	PT	SFN	SO
ALT1	"I share content related to COVID-19 on social media because I love helping others"	0.613	0.291	0.063	0.339	0.275	0.146	0.324	0.365
ALT2	"I share content related to COVID-19 on social media because it feels right to help others to resolve their issues"	0.629	0.319	0.043	0.303	0.309	0.135	0.304	0.379
ALT3	"I share content related to COVID-19 on social media because I want to offer information to others"	0.779	0.639	0.203	0.365	0.841	0.314	0.486	0.550
ALT4	"I share content related to COVID-19 on social media because I want to admonish others"	0.836	0.694	0.168	0.392	0.856	0.338	0.515	0.576
EN1	"I share content related to COVID-19 because I find it entertaining"	0.610	0.795	0.176	0.443	0.814	0.406	0.529	0.600
EN2	"I share content related to COVID-19 on social media because it is funny"	0.661	0.798	0.196	0.415	0.817	0.369	0.457	0.600
EN3	"I share content related to COVID-19 on social media because it is exciting"	0.422	0.721	0.056	0.452	0.495	0.389	0.472	0.511
EN4	"I share content related to COVID-19 on social media because it is enjoyable"	0.545	0.806	0.132	0.434	0.591	0.382	0.526	0.611
INSE1	"I share content related to COVID-19 to assist me to store valuable Information"	0.144	0.158	0.745	-0.007	0.176	-0.038	0.031	0.093
INSE2	"I share content related to COVID-19 because it is easy for me to retrieve information when needed"	0.092	0.139	0.727	0.002	0.149	0.003	0.05	0.061
INSE3	"I share content related to COVID-19 on social media to keep abreast on the current news and events"	0.184	0.152	0.910	-0.015	0.211	-0.006	0.099	0.096
ISH1	"I share content related to COVID-19 that might be valuable to others"	0.392	0.414	-0.042	0.771	0.366	0.412	0.377	0.653
ISH2	"I share content related to COVID-19 on social media to get feedback on the information I have found"	0.427	0.446	-0.005	0.859	0.399	0.453	0.442	0.692
ISH3	"I share content related to COVID-19 on social media to provide information"	0.382	0.443	-0.003	0.827	0.379	0.393	0.393	0.618
ISH4	"I share content related to COVID-19 on social media to share practical knowledge or skill with others"	0.367	0.465	0.000	0.825	0.389	0.497	0.397	0.592
ISH5	"I share content related to COVID-19 on social media to express myself easily"	0.380	0.469	0.003	0.746	0.414	0.419	0.511	0.475
PD1	"I often feel so restless that I could not sit alone when I think about COVID-19"	0.779	0.639	0.201	0.368	0.835	0.328	0.491	0.551
PD2	"I often feel so sad that nothing could cheer me up when I think about COVID-19"	0.832	0.693	0.172	0.392	0.859	0.334	0.513	0.577
PD3	"I often feel so nervous that nothing could calm me down whenever I think about COVID-19"	0.608	0.787	0.183	0.444	0.824	0.410	0.523	0.604
PD4	"I often feel hopeless because of the present situation of COVID-19"	0.658	0.792	0.203	0.421	0.823	0.383	0.455	0.607
PT1	"I share content related to COVID-19 on social media because I scarcely like to work around with social media"	0.270	0.389	0.000	0.636	0.316	0.705	0.361	0.658
PT2	"I share content related to COVID-19 on social media because it is a habit just something to do"	0.361	0.495	0.003	0.403	0.445	0.749	0.418	0.515
PT3	"I share content related to COVID-19 on social media because I have nothing much to do"	0.168	0.235	-0.019	0.247	0.217	0.75	0.254	0.370
PT4	"I share content related to COVID-19 on social media because I can pass the time away, especially whenever I am bored"	0.138	0.237	-0.026	0.190	0.217	0.737	0.246	0.340
SFN1	"I have shared information related to COVID-19 virus that I later found out as a hoax"	0.391	0.466	0.063	0.402	0.426	0.352	0.744	0.399
SFN2	"I have shared content on social media related to COVID-19 that seem accurate at a time and I later found was made up"	0.476	0.534	0.079	0.439	0.51	0.361	0.845	0.491
SFN3	"I have shared content on social media related to COVID-19 that was exaggerated, but was not aware it was exaggerated at the time of sharing"	0.505	0.506	0.088	0.45	0.465	0.401	0.819	0.516
SFN4	"I share content on social media related to COVID-19 without checking facts through trusted sources"	0.487	0.531	0.053	0.418	0.499	0.352	0.788	0.499
SO1	"I share content related to COVID-19 because I can freely talk about issues with others"	0.58	0.672	0.127	0.485	0.611	0.415	0.507	0.748
SO2	"I have a special alertness or sensitivity toward business opportunities in my environment"	0.682	0.722	0.215	0.396	0.733	0.368	0.55	0.733
SO3	"I share content related to COVID-19 because I can effortlessly interact with other members in my network when sharing"	0.375	0.418	-0.056	0.675	0.387	0.557	0.342	0.724
SO4	"I share content related to COVID-19 because I can easily exchange views with other members in my network efficiently"	0.33	0.366	-0.016	0.664	0.325	0.629	0.351	0.733
SO5	"I share content related to COVID-19 because it helps me keep in contact with other members in my network"	0.286	0.363	-0.007	0.626	0.304	0.594	0.322	0.697

At last, the heterotrait-monotrait ratio of correlations (HTMT) values are depicted in Table 5. All the values signify the discriminant validity criteria as none of them are greater than the suggested criteria of 0.9 (Raza, Qazi, Umer, & Khan, 2020).

Table 5
Heterotrait-Monotrait Ratio (HTMT)

	ALT	EN	INSE	ISH	PD	PT	SFN	SO
ALT								
EN	0.784							
INSE	0.218	0.238						
ISH	0.620	0.673	0.039					
PD	0.866	0.812	0.274	0.561				
PT	0.413	0.603	0.049	0.625	0.510			
SFN	0.744	0.796	0.094	0.627	0.711	0.561		
SO	0.806	0.878	0.159	0.834	0.783	0.875	0.703	

Finally, the reliability and validity of the scale have been confirmed through the measurement model analysis, the individuality of the model has been confirmed. Therefore, after determining it reliable and valid, we move towards the structural model analysis.

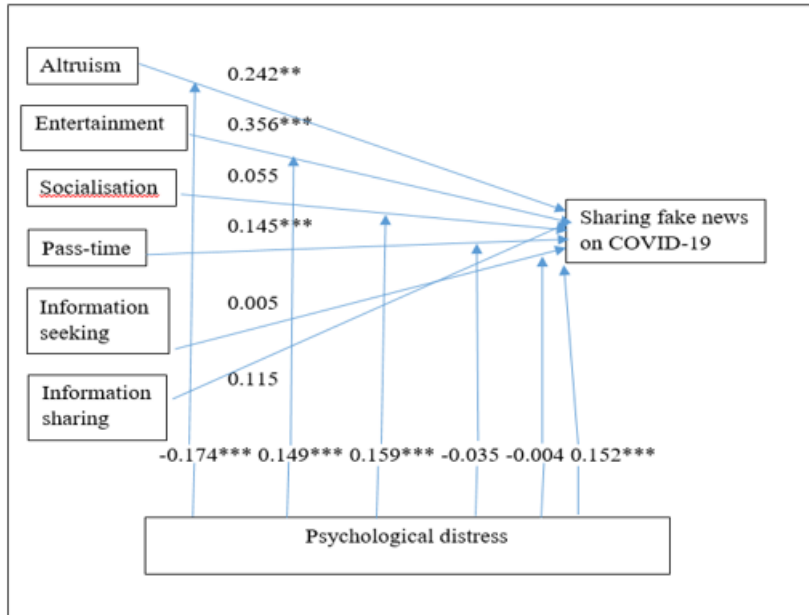
Structural model analysis

For the structural model, the path coefficient values are examined. Every individual path has been tested in the structural model linked to the hypotheses proposed in this study. The first-order analysis and moderating variable results are depicted in Table 6. Moreover, in Figure 2, the outcomes of Standardized Regression Weight (SRW) are shown.

Table 6
Results of Path Analysis

Hypothesis	Regression Path	Effect type	SRW	Remarks
A: Results of path analysis-first order				
H1	ALT ->SFN	Direct Effect	0.242***	Supported
H2	EN ->SFN	Direct Effect	0.356***	Supported
H3	SO ->SFN	Direct Effect	0.005	Not Supported
H4	PT ->SFN	Direct Effect	0.115	Not Supported
H5	ISH ->SFN	Direct Effect	0.145***	Supported
H6	INSE ->SFN	Direct Effect	0.055	Not Supported
B: Moderating role of Psychological distress				
H7	ALT ->SFN	Moderating Effect	-0.174***	Supported
H8	EN ->SFN	Moderating Effect	0.149***	Supported
H9	SO ->SFN	Moderating Effect	0.159***	Supported
H10	PT ->SFN	Moderating Effect	-0.035	Not Supported
H11	ISH ->SFN	Moderating Effect	-0.152***	Supported
H12	INSE ->SFN	Moderating Effect	-0.004	Not Supported

Figure 2
Results of path analysis



Discussion

In Table 6, the results of the first-order analysis are exhibited. The hypotheses studied display that the relationship between ALT ($\beta=0.242<0.01$), EN ($\beta=0.356<0.01$), and PT ($\beta=0.145<0.01$) tend to be positively and significantly connected with SFN. Consequently, H1, H2, and H4 have been accepted. It indicates that people share fake news about COVID-19 on social media due to ALT, entertainment, and pass-time.

Altruism (ALT) has a positive and significant effect on sharing fake news about COVID-19; this explains that an altruistic behavior makes people share the news to help others. But people do not usually confirm the authenticity of the news, due to which they become part of the dissemination of fake content and misleading information (Apuke & Omar, 2020; Plume & Slade, 2018). The intention to help others by sharing information, especially about possible treatment, cure, and any precautionary measure on a particular issue without determining if it's true or not, leads to sharing the news. Also, the sharing of news on social media platforms reflects social cohesion. These people are encouraged by the emotional effect and impact of the news on the readers. In the pandemic, people are terrified; the fake content to treat deadly viruses can damage one's health. Therefore, it is considered that an altruistic individual is more likely to share fake news on COVID-19 if the authenticity of content is not verified; in turn, they become disseminators of fake news that can have serious consequences.

Likewise, entertainment has a positive and significant effect on sharing fake news

about COVID-19; this means that people for entertainment purpose spread fake news. Similarly, people for entertainment, enjoyment, and social support use social networking sites (Kim, Sohn, & Choi, 2011; Lin & Lu, 2011). On the other hand, they post fake content for entertainment and misleading others. According to Kalsnes (2018), people share fake news to promote themselves on social media; they provide entertainment to gain popularity. In this crisis where restrictions are imposed, people spend most of their time on social media. Thus, for entertainment, people post fake content, especially about COVID-19. Therefore, entertainment can be determined as a significant variable due to which people share fake news on COVID-19.

Moreover, pass-time has a positive and significant effect on sharing fake news about COVID-19; it is determined that people use social media to pass the time, to verify the news before forwarding is less (Del Vicario et al., 2016; Choi, 2016). In contrast, Thompson et al. (2019) consider no effect of pass-time on sharing news. According to Talwar, Dhir, Singh, Virk, and Salo (2020), social media usage to pass time that results in tiredness anticipates sharing fake news, especially when pandemic, the chances are higher.

However, INSE ($\beta=0.005>0.1$), ISH ($\beta=0.115>0.1$), and SO ($\beta=0.055>0.1$) have a positive but insignificant effect on sharing fake news about COVID-19. Therefore, hypotheses H3, H5, and H6 have been rejected. It indicates that socialization, information sharing, and information-seeking do not affect sharing fake news about COVID-19. The results are inconsistent with the findings of Apuke and Omar (2021); Lee and Ma (2012). Previous results determine that social media users disseminate fake news to gain social support, social cohesion, and to be the first one to share novel information about the coronavirus, particularly at this time. The factors that discourage the sharing of fake news, such as trustworthiness, being socially active, having a huge number of followers, limit the sharing of fake content. It is a known fact that social media has been overburdened with excessive fake content about coronavirus. Therefore, socially active people before believing or sharing the content read it, and if it is not believable, they do not share it. If they are confused about its accuracy, they decide to use their common sense (Duffy et al., 2020).

Similarly, the socially active users having a huge fan following are less likely to disseminate misleading information on social networking sites. They also double-check it before sharing it with others as they determine that disseminating fake news would make them a laughing stock for others. It has the higher possibility that people would avoid socializing with them, leading to social discomfort (Tesser & Rosen, 1975). Likewise, Kaya (2020) considers that high awareness among social media users regarding disseminating fake news ensures that sharing such content is the lowest as people who intend to seek information should not be misguided. Moreover, as per the current situation, people who seek information or willing to share information analytically evaluate the news authenticity before forwarding it to others because if they unknowingly become part of such act, they usually end up being humiliated or losing friends; in short, they are socially boycotted.

Furthermore, analyzing the moderating effect of psychological distress on the connection between variables and sharing faking news on COVID-19 results are exhibited in Table 6. Based on the outcome, we conclude that psychological distress was found to moderate the association between ALT, EN, SO, ISH and SFN, which are significant.

Hence, H7, H8, H9, and H11 are accepted. Although, the outcomes revealed that psychological distress does not have a moderating effect on the connection of pass-time (PT) and information-seeking (INSE) with sharing fake news on COVID-19 (SFN). Therefore, H10 and H12 are not supported. It indicates that psychological distress strengthens the connection between variables.

Conclusion

The study utilizes the U&G approach; we examined the variables that motivate sharing of fake news. The respondents of the study were students studying in higher education in Pakistan. The study results, summarize that ALT, entertainment, and pass time are crucial factors that predict fake news sharing among students. Moreover, in our study, socialization, information sharing, and information-seeking were not significantly connected with sharing fake news on COVID-19. Secondly, the psychological distress moderates the connection between ALT, entertainment, socialization and information sharing with sharing fake news on COVID-19 through social media in Pakistan.

The conclusion is based on the selected gratifications. Hence, other probable characteristics can predict fake news dissemination, such as trustworthiness, analytic assessment, authentic source, popularity, and others. As per the study results, fake news in COVID-19 has an increased risk on people's physical and mental health. Thus, we suggest that social media users must verify the accuracy of the content they are forwarding, sharing, and posting on their social media account. It can be attained by analytically evaluating news or information content, reading between the lines, and using common sense to confirm the news from other sources like the government's official media portal. Thus, it would limit social media from being overburdened with fake content. The findings of the study can also be used to recognize the fake news sharing behavior in general. Our study extends the lack of literature for understanding fake news sharing motivation and accessing the psychological distress impact on Pakistani students. The increase in false and fabricated content dissemination, particularly in this crisis, creates uncertainty about the future causing panic; therefore, the added information about counterfeit news would help form efficacious policies that can protect the people from the danger of fake news dissemination.

Implications, Limitations, and Recommendations

The study provides various implications. First, the study has revealed that students' motivations for ALT, EN, and pass-time encourage them to disseminate fake news about COVID-19. Second, it indicates that these three factors were the significant predictors of sharing fake news among the respondents' i.e. higher education students, which needs some measures. We consider that social media users need to verify the authenticity before passing on the news, even if it is about preventive measures, possible treatments or cure, and EN or pass-time. The intentional or unintentional sharing of hoax content, myths, and rumors highly affect the community. Although, the significance of fake news respon-

siveness has been stressed in previous studies. This study again highlights its importance in limiting counterfeit news's harmful impact, especially in a pandemic.

Furthermore, due to a weak healthcare system and insufficient resources in Pakistan such as trained nurses, doctors, and other paramedical staff, the government must communicate with the public by providing authentic information on COVID-19. The government should publicize the correct information regarding COVID-19 through various mediums, especially online platforms, to reduce panic and anxiety among students and the public. It will help people verify news accuracy and decrease fake news sharing about cures, treatments, and preventive measures circulating on social media. The correct information is the need of the hour because to deal with coronavirus; it is necessary to take medical guidance. However, without proper and instant measures the coronavirus outbreak will become more difficult to control.

There are some limitations found in the study. Initially, the study is in Pakistan's context, emphasizing coronavirus outbreak and the sample collected from higher-education students. Therefore, the results may apply to other nations with the same cultural values and economic conditions as of Pakistan society, but these findings cannot be generalized. The studies to be conducted in the future can extend the model used in this study to examine the other scenario determining this study's results. According to the results, socialization, information sharing, and information-seeking gratifications do not influence the sharing of fake news in the first-order while in moderating effect out of 6, 4 hypotheses are accepted. In future, other variables can be added, such as trust issues, social cohesion, and social media usage. In addition, future researchers can use cultural background and demographics as variables to assess the moderating effect on sharing fake news. Moreover, for future research, the sample size can be increase to get more robust statistical results.

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