

INSTAGRAM USE AND SOCIAL ANXIETY AMONG YOUNGSTERS IN PAKISTAN: SERIAL MEDIATION ANALYSIS

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ABSTRACT

Social media's technological developments have made it possible to extensively share visual content such as photos and videos to represent idealized beauty. Many studies conclude negative effects of Instagram on Social anxiety. However, the mechanism through which Instagram affects psychological wellbeing of youngsters is not studied adequately. Using Street's (2003) three-stage model of interactive media use, quantitative research methodology was designed. A survey of university youngsters (N=384) through a set of questions is conducted. Study followed a cross-sectional non-experimental research approach. Mediation path from Instagram usage to social anxiety was analyzed statistically applying Structural Equation Modeling (SEM). Investigations revealed that the direct relationship of Instagram usage with social anxiety was not significant. However, Instagram usage was linked to social anxiety through mediating factors. Social comparison as a proximal outcome and self-esteem as intermediate outcome were the mediating factors supported mediation framework. Gender and age were found insignificant in the relationship between the youngsters' Instagram usage and social anxiety. Finding would be helpful in developing a practical mechanism to cope with mental health issues of youngsters due to the use of online spaces in digital age.

Keywords: Instagram use, Three-stage model, Social comparison, Self-esteem, Social anxiety.

INTRODUCTION

Internet communication technologies, generally and social media platforms, specifically has revolutionized the communication patterns. Users can choose from a huge selection of social media networks and platforms (Tariq & Zeib, 2023). There are approximately 4.89 billion people who use social media around the world (Statista, 2023). While in Pakistan, there were 53.20 million social media adult users as of 2023, which was equivalent to 39.1 percent of the total population of that age. Pew research center's report demonstrates how using social media could affect teenagers and younger users. Most of the respondents reported that social media primarily had detrimental impact on their lives because it frequently encouraged bullying, excessive expectations of others' lives, peer pressure, and the spread of false information (Rainie & Duggan, 2015). There are over 1.36 billion Instagram users throughout the world (Statista, 2023). In Pakistan, there are 14 million Instagram users according to the statistics of December 2022. Instagram is known for its emphasis on visual content, which enables sharing of pictures and videos with their followers. Other users are urged to liking, commenting, and interacting with one another in reaction to their posts. Instagram has over one billion active users, and a majority of these users is young adults. Several studies explored the impact of social media on self-esteem of youngsters, but little investigation has been done on how it affects. This paper aims at understanding the association between youngsters' use of Instagram and social anxiety with mediatory factors.

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Instagram witnessed the most rapid growth in recent years among other social media networks (Anderson & Jiang, 2018). A growing number of people are concerned that the increased use of social media develops social anxiety among youngsters. People avoid social situations and restrict their selves interacting with others, if they suffer social anxiety (Schlenker & Leary, 1982). Researchers suggest that managing a sizable social media friends' network, feeling stressed of others' lifestyles, not able to express their choices and having a "fear of losing out" could all lead to social anxiety (Hampton, 2019; Zeib, 2021). Despite the concerns over negative consequences of social media, there are still many significant gap in existing literature. The phenomenon of social media use and social anxiety has not been given due consideration. The complex mechanism of how social media usage affects emotional health is ignored, because the direct link between social media and individuals' social anxiety has been the focus of these studies. Street (2003) emphasized the necessity to pinpoint particular mediators that can affect how interactive media affects health outcomes. Substantial indicators might be missed, if this underlying process of mediation is not taken into consideration. Second, the existing popularity of Facebook has never let the researchers focus on the emerging popular media 'Instagram'. With diverse technical features, Instagram is the fastest growing media. Due to the rapid development of social media's technological competences, newly developed social media platforms should be studied. Among many others, beautifying the photographs using a variety of filters is one of Instagram's defining features. These features have changed how people appear online, and their friends' representations of ideal beauty can affect users' emotional as well as psychological reactions (Chua & Chang, 2016). Finally, major studies on this subject were conducted in the perspective of US and West, but little focus of research is given in the Pakistani setting. The use of Instagram is rapidly increasing in Pakistan. The current study provides valuable insights into this phenomenon in respect to Pakistan.

We conduct a survey to find out how using Instagram might affect youngsters' social anxiety by probing the potential working mechanism in the setting of Pakistan. Based on the three-stage health promotional model using the features of interactive media as its foundation, we present the conceptual framework of the study.

Interactive media are implemented and used in Stage 1, which transitions into Stage 2's user-media-message interface. The characteristics of user, media, and message influence Stage 2 including (i) users' educational attainment, health, and information seeking desire, (ii) along with the media's usability, instructiveness, and modalities, and (iii) message's characteristics such as the topic, its format, readability, and reliability. Intermediate outcomes such as stimulation, knowledge, opinion building, and cognitive skills may be the result of user and the media message interaction, which then influence outcome in Stage 3, such as health betterment, lifestyle changes, and improved psychological well-being. However, we propose that indirect association between Instagram use and youngsters' social anxiety is mediated through (i) social comparison and (ii) self-esteem.

Study also put emphasis on Social Comparison Theory by Festinger (1957). According to the theory, people make self-comparisons with others, which creates negative perceptions about self and generates feelings of poor well-being. Social Comparison Theory puts the argument that positive self-assessments would, probably, creates positive psychological well-being, however, studies shows that both upwards and downwards social comparison are associated with detrimental outcomes on well-being. A review of previous literature highlights the suggested mediation mechanism.

REVIEW OF LITERATURE

Several studies have focused on social media's potential impacts on an individual's self-esteem. Overall, we found that Instagram use has varied nature of relationship with one's self-esteem, with some studies suggesting negative associations and others suggesting more nuanced or positive associations. Further research should fully understand Instagram's impact on individuals' self-esteem, and identify potential ways to mitigate any negative effects. The rise in mental health disorders also corresponds to the growing number of social media users. According to Vannucci et al. (2017), youngsters who use social media have more symptoms of anxiety and sadness and negatively associated with body image satisfaction (Fardouly et al., 2017). Additionally, some studies investigated the role of specific Instagram features on self-esteem.

Sharma et al. (2022) found that the frequency of liking and commenting is associated with increased image satisfaction and lowers anxiety level. The effects of Instagram use and its relationship to social comparison are explored in this study.

Path1: Instagram Use to Social Anxiety with mediation of Social Comparison

Several studies have specifically examined the association of self-esteem and the Instagram use of young adults. However, some studies have found more nuanced relationships of self-esteem with Instagram use. Another study by (Chang, 2019) found that Instagram use had positive association with self-esteem, but only among those who get a strong sense of social support and positive comparison from their peers.

Social anxiety is a feeling of discomfort or nervousness that arises in social situations. The personal evaluation of actual or imagined social settings leads to social anxiety (Schlenker & Leary, 1982). It can affect ability of a person to communicate effectively with others and may lead to negative perceptions of the self. According to earlier studies, in social contexts, social comparison may lead to anxiety.

People's biological tendency to judge the status, skills, and general identities in relation to others, based on the information they learn about others, is social comparison (Festinger, 1957). According to Gilbert et al. (1995), upward social comparison i.e. social anxiety may increase when the comparison is with those who are perceived better than others in certain perspectives. Because in case of poor performance, it might be simpler for them to have pessimistic thoughts about themselves in comparison to their interpersonal relationships, which would heighten their anxiety (Tan et al., 2016b). Even negative social comparison, such as comparing with those who are regarded as inferior, can exacerbate the level of anxiety. According to Lee (2022), those who have a larger tendency for evaluating themselves either being inferior or superior also concerns about how others assess them. Such concerns force them to shape their own behaviors according to standard norms, regardless of whom they compared themselves to.

Over time, social comparison makes individuals overly consciousness, which may cause someone to believe they lack abilities and have fear of facing others (Suls, 2011). Social comparison's link with social anxiety is positive, according to earlier empirical studies. Myers & Crowther (2009) and Laker & Waller (2022) found the association of lower self-esteem with Instagram use, and higher body dissatisfaction among young women. Similarly, a study by Schreurs & Vandenbosch (2022) found that Instagram usage was linked to appearance-focused social comparison and further, to decreased body satisfaction in young women. For instance, a survey study by Zarzycka et al. (2023) indicated that fear of isolation in gatherings and social anxiety were positively connected to social comparison. Fardouly et al. (2017) found that using Instagram for self-presentation purposes, such as showing off one's accomplishments, was associated higher body dissatisfaction and lower self-esteem

Goodman et al.'s (2021) experiment also resulted in positive relationship between social comparison and youngsters' social anxiety. However, in the systematic investigation of cognitive behavioral treatment, Gregory & Peters (2017) conclude that social anxiety issues among non-clinical subjects were significantly impacted by the beliefs related to social comparison. People frequently create their chosen identities or profiles such as emotions, personalities, or opinions, on social media platforms (Vogel et al., 2014).

Yu et al. (2020) revealed that the association between Instagram usage and self-esteem was stronger among those with lower self-esteem at baseline. Users may unintentionally and spontaneously compare themselves with others when they know about individual's life updates through postings on social networks (Gilbert et al., 1995). Moreover, social media display others' comments and comparisons on the bases of social media followers, frequency of likes, subscribers, discussions, and tweeting and retweeting. Additionally, people are better able to create rapid opinions about others based on the available information. Display of information on social media about comparisons with others is more obvious than on offline setting (Appel et al., 2016). Additionally, social media encourage maintaining offline social networks and also the creation of new online ones, which intensify how using social media affects social comparison (Gross et al., 2005). Additionally, individuals with prior mental health issues or if they are concerned about their appearance are more likely to get into social comparison, leading to body dissatisfaction (Tiggemann et al., 2018).

The instinct of making comparison with each other is encouraged by social media. For instance, de Vries & Kühne's (2015) study showed that greater intensity of Facebook use among youngsters in the Netherlands was linked to increased motivation to compare. Nevertheless, another study on Instagram use revealed the similar results, stating potentially significant relationship between individual differences and social comparison (Schneider & Schupp, 2014; Valls, 2022). Given the foregoing, social comparison is probably an indirect channel that connects Instagram use to social anxiety.

Thus, we propose:

H1: Instagram use is directly associated with social anxiety

H2: Instagram use is indirectly related to social anxiety, mediated by social comparison.

Path 2: From Instagram Use to Social Anxiety with mediation of Social Comparison and Self-Esteem

Self-esteem is a person's self-evaluation of how much they are worth anything (Smith, 2007). There is a propensity that low self-esteem makes people more anxious in many social situations. Such as people having poor self-esteem most frequently avoid social interactions, which impedes the expansion in their social networks, which are considered essential for one's wellbeing by sharing and collaborating (Fatima et al., 2017). Further, the individuals with poor self-esteem frequently seek approval from others to have better feeling about themselves. They may experience higher level of social anxiety because in a number of situations, they believe that people are making fun of them or criticizing them, and their reactions are negative (Dijk et al., 2018), and finally, People who inherently possess low self-esteem are subject to victimize themselves more frequently and keeps on blaming others for their problems rather than keeping themselves accountable for their failures.

Viewing images of physically attractive individuals or comparing them with the self on Instagram is linked with lower level of self-esteem. These behaviors would increase the likelihood of social anxiety by avoiding the people, fear of facing the strange situations, and social withdrawal generally (Tracy & Robins, 2006). Several empirical studies revealed that self-esteem is significantly but negatively associated with social anxiety. For instance, in the context of Pakistan, Fatima et al. (2017) examined the link between social anxiety and self-esteem and found a negative correlation with certain demographic variations. Additionally, gender differences significantly influencing this relationship, as the effect was stronger in men. In Chinese perspective, higher self-esteem revealed lower social interaction anxiety. This finding emphasizes the potential of building the techniques for enhancing self-esteem as a preventive measure for social anxiety and depression (Tan et al., 2016a).

Individual's engagement in social comparison may lead to Low self-esteem. The intensity of social media is correlated with the assumption that others are enjoying better lives, are happier and successful, because the information they display on social media raises social comparison standards, which lowers their self-esteem (Bergagna & Tartaglia, 2018). Another study (Murad, 2020) revealed that individuals with higher social anxiety suffer from lower levels of self-esteem in comparison to those who have lower level of social anxiety. Additionally, it is believed that the external circumstances and the standards set by others are considered more valued than one's intrinsic characteristics. The sense of self-esteem is likely to decrease if individuals believe that their intrinsic qualities are less valued and fail to seek attention and acceptance by others (White et al., 2006).

Many previous studies supported the argument that social comparison had negative relation with self-esteem. A study on College students revealed that those with higher scores on social comparison scale had lower self-esteem and imbalance opinion of self-perception (Vogel et al., 2014). Another poll revealed that individuals, who feel that their peer have better lifestyle, report lower self-esteem levels. Instagram enjoys the feature of sharing pictures and videos, in comparison to Facebook. Facebook possess textual orientation, where users frequently share multi-natured posts such as literary, political, intellectual, information sharing or social. Instagram has an edge because visual information can easily be recalled than textual type of information, leading to higher and instant impressions on others (Johnson & Knobloch-Westerwick, 2016). In comparison to Facebook, which has been the focus of investigation in previous studies, Instagram has certain unique capabilities that could engage the users in more comparison and more impact on self-esteem. For instance, Instagram provides technological facilitation such as filters to choose and display pictures and videos showing idealistic lifestyle. However, on Facebook This is not possible.

On Instagram, being photo sharing tool, social comparison on posts and its impacts on one's self-esteem has become more prominent. It has been discussed earlier, that our second hypothesis investigates the mediation route from Instagram usage to youngsters' social anxiety level i.e. the mediation of social comparison between individuals and self-esteem. Hypothesis is put forth:

H3: Instagram use is indirectly related to social anxiety, which is mediated by individuals' social comparison and self-esteem.

Overall, the literature suggests that the indirect link of Instagram use with individuals' self-esteem is complex and multifaceted, and that individual differences may affect differently in shaping this relationship along with other above-mentioned mediating factors. Hence, we hypothesize following.

H4: Gender will have significant influence on social comparison because of Instagram use.

H5: Age will have significant influence on social comparison because of Instagram use.

CONCEPTUAL FRAMEWORK

Theoretical framework of the study is partially based on Sharma et al. (2022). The model emphasizes the effects of prior individual characteristics, Instagram use, and mediatory psychological processes such as social comparison and self-esteem on youngsters' level of social anxiety. The entire framework was divided into two paths. First path describes the link of social anxiety and Instagram use, which is mediated by social comparison. However, the second path of the theoretical framework describes that social comparison on Instagram reduces the self-esteem, which on the other hand increases social anxiety. In SEM framework comprises of two types of variables, exogenous variable e.g. control variables of the study and endogenous variables e.g., Instagram use, youngsters' social comparison, self-esteem and social interaction anxiety. The framework only investigates the negatively affecting mediating variable. According to this theoretical framework, these factors directly or indirectly affect social interaction anxiety.

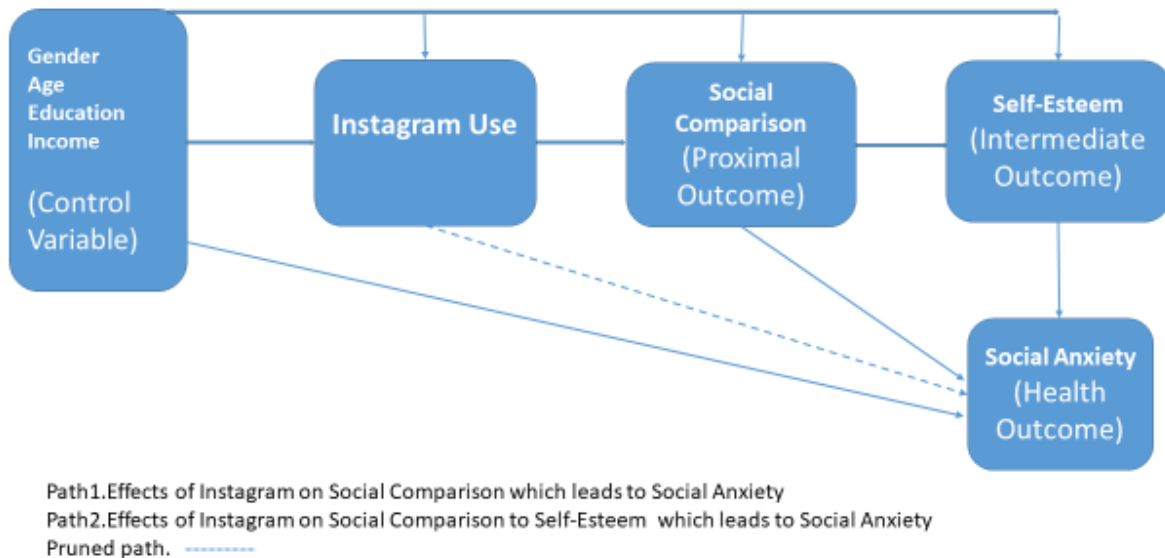


Figure 1. Conceptual Framework

METHODS AND MATERIAL

Method

The research methodology involves quantitative research design. A sample of young college and university students of Pakistan aged between 16 and 25 years was recruited to conduct survey for the study. Data was collected from February to March 2023. Participants were selected using simple random sampling

technique to ensure the unbiased representation of the population. Workable sample consists of 384 participants. The questionnaire was distributed to only those who use Instagram. The questionnaire comprised of five sections. The section 1 of the designed questionnaire measures demographics of the participants of the study. Section 2 comprises of Instagram use, section 3 comprises of social comparison, section 4 includes questions about self-esteem and section 5 comprises of social interaction anxiety scale. Table 1 shows descriptive statistics.

Measurement

Demographics include four items and are used as control variables e.g. gender (1= male, 2= female), age (M=20.8, SD=1.948), educational level (1= higher secondary, 2= Bachelors, 3= Masters, 4= above) and average family income (in rupees) of the participants (1= less than 29,999, 2=30,000-49999, 3=50,000-69,999, 4= 70,000-89,999, 5= above 90,000).

The scale for *Instagram use* was adapted from (Vannucci et al., 2017) and was based on a single item. Respondents were asked *about the time they spend while using Instagram in a day*, the options ranged from 1=less than 59 min to 5=more than 4 hours (M=2.72, SD=1.54).

The concept of social comparison was investigated using 11-item scale taken from the Iowa-Netherlands Comparison Orientation Measure by Schneider & Schupp (2014), such as '*I always pay attention on how I do things and how others do*', and '*I mostly compare how social I am (e.g., friendship, social skills and popularity) with other people*'. Respondents reported the degree of agreement measured on a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree), as it is more widely measured psychometric tool to quantify the traits in social science research. All the items were added then average was found (M=3.08, SD=0.41, Cronbach's alpha=.91) (Joshi et al., 2015).

Self-esteem was analyzed by using Rosenberg's Self-Esteem Scale adopted from (Rosenberg, 1965). A 10-point scale to measures positive as well as negative feelings about one's own image which measures self-esteem. The items include such as '*I think I possess many good qualities*' and '*I think I have as such nothing to be proud of*'. A 5-point Likert scale, 1=Strongly Disagree and 5=Strongly Agree, was used. Cumulative index of all items was created to measure self-esteem (M=3.15, SD=0.53), and Cronbach's alpha=.88).

Cumulative index of 6-items *was used to measure Social anxiety*, which has been extensively used in a plethora of previous studies. The scale was adopted from Mattick & Clarke (1998). The items were included such as '*I am confused if I have to discuss about myself and my feelings*' and '*I have difficulty making eye contact with others*'. Six statements were presented to the respondents, and they assessed their agreement level on a scale, where 1= strongly disagree to 5= strongly agree. All the items were added and cumulative index was found (M=2.03, SD=0.71), and Cronbach's alpha=.87).

RESULTS AND ANALYSIS

Descriptive Statistical Results

According to the collected data, male participants were 56% and female participants were 46 %, According to the Pakistan Bureau of Statistics (PBS), the data corresponds to the male and female students ratio enrolled at higher education level in Pakistan. Mean age of the study's participants was 20.8, 33% and the participants had monthly family income between Rs50,000 to 69,999 and 46% of the participants had income between Rs70,000 to 89,999. Similarly, 23% participants were studying at higher secondary level, 59% participants were studying at graduation level. However, students' average monthly family income is higher than that of our general population's family income (Rs.41, 545). This is because most of the low income families in Pakistan are unable to send their children for college or university education due to higher educational expenses. Detailed demographics are shown in Table.1

Instagram Use

Among the sample of N=384, 21 % use Instagram for less than one hour, 9 % use for 1-2 hours. However, the distribution toward higher use of Instagram is more, as 43% of the respondents use Instagram for 2-3 hours, 23% use for 3-4 hours and 4 % use Instagram for more than 4 hours a day.

Table 1. Descriptive Statistics.

Variable	Frequency	Percentage	Variable	Frequency	Percentage
Gender			Education		
Male	207	54	Higher secondary	89	23
Female	177	46	Bachelors	223	58
Age	M=20.8	SD=1.948	Masters	54	14
			Above	19	05
Monthly family Income			Instagram Use		
Less than 29,999	8	2	less than 59 min	81	21
30,000-49,999	23	6	2 hours	35	9
50,000-69,999	126	33	3 hours	165	43
70,000-89,999	177	46	4 hours	88	23
above 90,000	50	13	more than 4 hours	15	4

Variables Count (N = 384)

Statistical Analysis

Theoretical mediation framework was investigated using structural equation modeling (SEM), Path coefficient correlation was measured using Correlational matrix. Both, direct and as well as the indirect effects of both exogenous and endogenous variables were reported. The likelihood of estimation was set as maximum in covariance structure analysis. The detailed representation of both paths is drawn in Figure 1. First, the empirically tested effects were routed from students' Instagram usage to youngsters' social comparison, then from social comparison to youngsters' social anxiety. Second, the effects of Instagram use were routed from social comparison among youngsters to their self-esteem and from self-esteem to youngsters' social anxiety. Theoretical model also shows the path from exogenous to endogenous variables to observe the relationship between both. The internal reliability of the variables was measured through Cronbach's Alpha test, which was above 0.8 for all variables indicating good reliability measure (Cronbach, 1951). The PROCESS macro Model 6 (for serial mediation analysis) was used (Preacher & Hayes, 2004). Mediation analysis is supported, if there is no zero between lower and upper CIs (95%). The bootstrapped confidence interval (CI) was also generated. Direct and indirect nature and the significance of the relationship can be tested more effectively (less erroneous outcomes) using bootstrapping.

Statistical analysis using SEM should report at least the model chi-square, the RMSEA, the CFI and the SRMR (R. Kline & St, 2022). In a good SEM model, Comparative Fit Index (CFI) must have higher value than 0.90, Standardized Root Mean Square Residual (SRMR) should be below 0.08 (Asparouhov & Muth, 2018), and Root Mean Square Error of Approximation (RMSEA) should be greater than 0.06 (Hu & Bentler, 1999; Jiang & Ngien, 2020; R. Kline & St, 2022). The direct effect model of Instagram use and social interaction anxiety was failed, because it did not fit the good SEM criteria e.g. RMSEA was greater than 0.06, which is 0.091. Other parameters were $\chi^2(1) = 2.655$, $p = .109$ (90% CI = [0.000, 0.222], CFI=0.968 and SRMR=0.143. Hence, H1 was supported by the results. The failure of direct effect model ($\beta = .21$, $p = .812$) suggests the implications of mediated paths. McCoach (2003) suggests that eliminating the insignificant path can increase the parsimony of the pruned model. Hence, the results showed good fit to the pruned model e.g. $\chi^2(2) = 2.895$, $p = .211$, RMSEA = 0.038 (90% CI = [0.000, 0.150]), CFI=0.999, and SRMR=0.033.

While testing the Hypothesis 2, results indicate support for the said hypothesis. Table shows that Instagram use among students is positively related to social comparison among t ($\beta = .313$, $p < .001$), which, further, increases social anxiety ($\beta = .38$, $p < .001$). Bootstrapping also provides support for this path (95% CI = [0.0201, 0.0619]).

H3 posits the other mediation path i.e. Instagram use to social comparison, social comparison to self-esteem and self-esteem to social anxiety. This path was also supported by the results shown in Table 2. Social comparison was negatively and significantly associated with self-esteem ($\beta = -.31$, $p < .001$), similarly self-esteem has a negative and significant relation with social anxiety ($\beta = -.38$, $p < .001$).

Bootstrapping also provides support for this path (95% CI = [0.0021, 0.0319]). The fit indices for the mediated model illustrate that it shows adequate fit to the observed data. Our findings reaffirm that social comparison and youngsters' self-esteem both mediate the relationship of Instagram use with youngsters' social anxiety.

The model was also evaluated by drawing path 'from Instagram use to social comparison' influenced by the demographic differences (Age and Gender). The effects are, further, linked to analyze the relationship and dependencies, if exists any. Results revealed that there is no statistically significant relation (H4) between gender and social comparison on the use of Instagram ($p > 0.05$). Similarly testing H5 also revealed that the association between Age and social comparison on Instagram use is not significant ($p > 0.05$). The findings imply that the impact of Instagram use on social comparison is not different for males and female and on age variations among participants. Thus, our H4 and H5 are supported.

Table 2. Path Coefficient Correlation Matrix

	Effect	Gender	Age	Education	Income	Instagram use	Social Comparison	Self-esteem
Instagram use	Direct	-0.08	-0.12	0.21	-0.11			
	Indirect	NA	NA	NA	NA			
Social Comparison	Direct	0.06	-0.03	-0.05	-0.17	0.313***		
	Indirect	-0.02	-0.17	0.33	-0.21	NA		
Self-esteem	Direct	0.10	0.18	0.22**	0.10	NA	-0.31***	
	Indirect	-0.01	-0.08*	0.11	0.22	-0.05***	NA	
Social Anxiety	Direct	-0.04	-0.10	-0.17	0.03	P	0.38***	-
	Indirect	-0.01	-0.17	-0.10*	-0.05	0.06***	0.04**	0.38***
								NA

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. Summary of Hypotheses testing

Relationship	T statistics	P value	Confidence Interval	Result
Instagram Use -> Social Anxiety	0.34	0.56	[0.000, 0.222]	Rejected
Instagram Use -> Social Comparison -> Social Anxiety	7.01	0	[0.0201, 0.0619]	Supported
Instagram Use -> Social Comparison -> Self-Esteem -> Social Anxiety	7.86	0	[0.0021, 0.0319]	Supported
Gender -> Social Comparison	0.86	0.23	[0.014, 0.121]	Rejected
Age -> Social Comparison	1.43	0.16	[-0.0013, 0.0142]	Rejected

DISCUSSION

There are over 1.36 billion Instagram users around the world, and still experiencing phenomenal growth in terms of number of users (Sharma et al., 2022). People use it mostly to share pictures and videos, but it is also a tool for consuming and disseminating knowledge more quickly than before. This explains why people frequently represent or post images online about their personality and achievements. That is, only because they want to predict the reactions or thoughts of others about them. Similarly, when others post about their achievements, an impression creates as they are hardworking, successful, etc., which leads them to compare themselves socially. Few studies have looked into how users' emotional health is affected by Instagram use (Jiang & Ngien, 2020). However, the phenomenon of the use of Instagram and the significant effects on psychological well-being of youngsters did not get due attention. In studying social anxiety among youngsters of Pakistan through investigating complex mechanism, this study has made significant advances by filling the gap, which existed previously.

A significant finding revealed a potential mediating effect of social comparison between Instagram use and social anxiety. According to our research, frequent Instagram use was linked to greater social comparison. Building personal profiles, status updates and knowing about other's life events has been facilitated by the use of social media platforms (Fardouly et al., 2017). Instagram's technological facilitation is different among all social networking platforms. Such facilitation allows users to upload images and video in a number of ways for self-presentation. (Yang et al., 2018). These features could initiate social comparisons among users. Additionally, it is usual practice to leave Instagram profiles shown to everyone, even to those who they do not know directly. Which allows everyone to follow, view, like, and comment on persons. Additionally, the usage of hashtags making all images associated with them searchable and thus more available to a wider audience might encourage social comparison. Relationship between Instagram use and students' social comparison was positive and significant ($\beta = .313, p < .001$), the finding revealed by the study is the same as revealed by other studies (Jiang & Ngien, 2020).

Our findings also supported the argument that social comparison on Instagram raised social anxiety. Individuals have a basic instinct of comparing each other based on appearances, abilities and life accomplishment, which is supported by other studies (Feinstein et al., 2013). Such social and economic comparisons produce strong mental stimuli. Nevertheless, this is more apparent when other people decide to present information that is remarkable and uplifting.

The technological developments, in the shape of filter on Instagram venue, enable the users to modify and improve photos. Nevertheless, viewing these idealistic depictions of others can elicit unpleasant feelings that worsen emotional well-being of the individuals like social anxiety stated by many studies (Sherlock & Wagstaff, 2019).

Study also revealed important mediating role of self-esteem as well. Our research showed that self-esteem was much lower when there is higher social comparison. This finding relates to earlier studies such as Yang et al. (2018). Yang et.al. found that people who are involved in stronger social comparison experience poor perception of their selves, low self-esteem, and more negative emotional state. Social comparison lowers self-esteem through encouraging identity processing (Berzonsky, 2010). In normal situation, social comparisons make people more conscious of certain conspicuous norms, such as the standard of beauty and opinion making. However, when people feel that more they deviate from the social norms, more they receive a negative opinion of themselves. Such thoughts encourage them to adjust according to the standards and norms of whom they compare with. Nevertheless, choosing to avoid opposing point of views to disregard others' opinions in the long run, would isolate them from their social capital, which leads to low self-esteem (Yang et al., 2018; Zeib & Tahir, 2022).

Additionally, our study also discovered that lower level of self-esteem was linked to youngsters' higher levels of social anxiety, which is consistent with earlier studies (de Jong, 2002). As one's self-esteem declines, how they perceive themselves matter. Moreover, the perception of their inferiority may lead them to connect with social media negatively and interpret its replies negatively, which would increase the social anxiety of youngsters (Heatherton & Wyland, 1998; Tan et al., 2016b). On the other hand, high levels of self-esteem can help people overcome negative feelings about other people's reactions and lessen the likelihood of having unfavorable social interactions. One element that explains individual variances in emotional states, when engaging with others, is self-esteem.

Insignificant direct influence of Instagram use on youngsters' social anxiety is yet another major outcome of this study. The effects on social anxiety were significantly moderated by self-esteem and social comparison. In our research, we found that Instagram's effect on social anxiety is influenced by social comparison, which actually the user-media interaction. Particularly, when users view other Instagram users' enhanced images and videos, they will inevitably make comparisons between what they are and what they see and as a result, social media can have an emotional impact on users. Additionally, on Instagram, users share a series of carefully prepared shots, using filters and other software, in an effort to appear as "perfect" as possible (Chua & Chang, 2016). The majority of the time, people want to look consistent with their earlier action. A person may feel uneasy if there is any contradiction or disagreement. They would then attempt to adjust and lessen dissonance in order to lessen the imbalance state to get over this discomfort (Festinger, 1957).

According to the previous literature, age could be a key determinant, which put significant influence on social comparison. A key finding of the study is that study do not reveal the age as a significant factor determining Instagram use and Social Comparison. However, this finding do not support previous studies (Sharma et al., 2022), which conclude that the tendency of comparison on Instagram among younger people's lives will be more than others age groups. However, this study is conducted on the sample of 16-25 years of age group, which generally exhibit the same characteristics in terms of social media use, so the patterns of the use of Instagram would probably not be different among them.

We also found that gender differences did not significantly influence the relationship of Instagram use and social comparison, which refer to the previous studies (Thelwall & Vis, 2017). Both male and female use supporting apps to post photos and videos, but differently. For instance, men usually use photo-organizing applications to alter the photographs, whereas women, mostly, use filters and post their photos. Hence, both are involved in same type of social comparison process.

Nevertheless, the hypothesized path consists of both positive and negative associations, starting from Instagram use and leading to social anxiety. Therefore, this is a misunderstanding to generalize the outcomes of the study as being associated with positive or negative emotional health. However, the underlying complex mechanisms, through which the effects of social media are significant, should be understood.

This investigation is of great importance especially in reference to Pakistan, where more than 60% of its population is comprised of youngsters making up a sizable portion. Despite being a major segment of the whole population of Pakistan, yet serious attention is not paid to their mental health concerns. Frightening rise in mental health issues among young people is the result of neglected mental health care areas and the insensitive social stigmatization of mental health issues in Pakistan (DunyaNews, 2018).

The youth in Pakistan is considerably facing depression and anxiety issues, according to findings from numerous NGOs and studies. According to studies, 39% of the youngsters suffer from low mood and 36% are suffering with depression and anxiety (DunyaNews, 2018). These circumstances are the result of tense relationships between family members and friends, a sense of social exclusion due to many internal and external factors, and the nation's fragile political and economic situation, which has led to increased unemployment and poverty in Pakistan (Hamdani et al., 2021).

Limitations and future Recommendations

The study has many limitations. The study was based on investigating the causal relations among variable. However study design was cross-sectional. Future researches should focus on longitudinal research design to fully justify the intended investigation. Second the study design was based on the participants of specific age group. Catering the more diverse sample would help in identifying the discrepancies found in the use of Instagram among different age groups. Changing dynamics of every age group i.e. their habits of using Instagram, nature of posts and the mental processes involved, would call for more compelling results. Third, the study participants include only students; the study could have presented different results if non-educated youth would have been involved. Forth, the study measured Instagram use on a single item. Future studies should focus on more diverse parameters of Instagram use such as no. of hours used, nature of the use, no. of followers, no. of posts etc. Fifth, involving only the Pakistani youth also limits its generalizability. Since, this phenomenon is the global one, future research should focus on multi-cultural participants from different countries and provide a comparative analysis.

CONCLUSION

The relationship between Instagram use, social comparison, self-esteem and social anxiety has been explored in this study. The study also includes demographic factor affecting the relationships. This information can be used to develop strategies for promoting positive mental health outcomes among individuals who use social media, particularly those who struggle with social interaction anxiety. In relation to Pakistan, this study suggests insightful and practical implications of Instagram usage. The concerns about Instagram use and its effects on emotional well-being of youngsters has led to this study. This study looked at how using Instagram can affect someone's social anxiety. Our research revealed that using Instagram did not directly affect social anxiety. Moreover, social comparison and self-esteem entirely moderated its

impact. Many individuals are worried about whether Instagram's rising popularity will result in emotional burdens, such as stress and worry; or improved emotional wellbeing. Youth must understand that Instagram posts, especially, and social media posts, generally, reflect only a portion of reality or are only incomplete representations, however, this should not be used to make judgements and comparisons with others. Such mental health issues should not be stigmatized and proper health measure should be taken care in order to overcome these issues.

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