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RESEARCH ARTICLE

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Connected but Isolated: Examining the Relationship between Digital Social Engagement, Loneliness, and Political Polarization Among Generation Z in the Digital Era

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Abstract: Digital technologies have provided a boost for the social and political lives of Generation Z, placing them in a paradoxical situation where they are well connected via digital technologies but also experiencing loneliness and social disconnection. This study examines the connection between digital social engagement, loneliness, and political polarization of Generation Z, with the overall goal of gaining insights into the impact of online connections on the psychological lived experiences and political orientations of young people. A quantitative cross-sectional design was employed, and data were collected from 180 Generation Z students of Emerson University Multan, Bahauddin Zakariya University Multan, and Muhammad Nawaz Sharif University of Agriculture Multan. Data were gathered through a structured questionnaire assessing digital social engagement, loneliness, and political polarization and analyzed descriptively, with reliability, correlation, and regression analysis using SPSS. The results showed strong correlations between digital social engagement, loneliness, and political polarization. Findings indicated significant correlations between digital engagement and increased levels of loneliness and political polarization among participants. Moreover, loneliness was an important factor in the relationship between digital connectedness and politics. The results indicate that while digital communication can offer a sense of belonging and participation, it can also lead to social isolation and polarization when social relationships are predominantly digital. The research contributes to knowledge regarding the complex social consequences of digital transformation among Generation Z and highlights the need to support healthy digital engagement, meaningful social connections, and balanced political use of the internet.

Keywords: Generation Z, Digital Social Engagement, Loneliness, Political Polarization, Social Media, Digital Connectivity, Social Identity

Introduction

With the speed of advancement of digital technologies, how people communicate, interact with one another, and engage in social and political life has completely reversed. Generation Z is the first generation that has known nothing but a digitally connected world, and interaction with their smartphones and social media doesn't feel like a transition going back to the 1950s but rather like giving up a hobby. If there was a comparison to the '50s, then Generation Z is the first generation that has known nothing but a digitally connected world, and going back to the 1950s to socialize with one's smartphone and social media feels like giving up a hobby. Today, digital platforms offer us unparalleled means of expression, communication, sharing information, and participating in politics. This constant connectivity has also, however, generated a

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paradoxical social reality whereby people can feel that they are more connected online and yet emotionally removed and socially isolated offline. Being “connected but alone” remains one of the major issues in the understanding of the psychological and social lives of Generation Z in the digital era (Norhabiba et al., 2025)

Social media has transformed the way people connect traditionally with each other, enabling them to connect with people outside their geographic area or communities and to join international communities (Aichner et al., 2021). Digital environmental interaction is a key aspect of both identity formation and social inclusion for Gen Z and a core part of their daily life. Cosmopolitanism with web-based platforms gives youth opportunities to form networks, articulate opinions, gain access to a variety of viewpoints, and participate in social and political issues. However, this digital interaction is a critical and significant concern about the quality. There may be times when communication via the Internet can foster a sense of connection, but it does not necessarily mean that there is emotional support and intimacy in interpersonal relationships. This means that more digital interaction can go along with loneliness and social isolation (Amin & Zinaida, 2024).

Digital loneliness aims at emphasizing that, despite our technological connectivity, humans can feel lonely. People can build large networks of online connections, and sometimes they don't have a profound and meaningful connection in all of those relationships. Overusing digital communication can limit opportunities to meet and encourage personal contact and interaction, foster social comparison, and lead to feelings of inadequacy and exclusion. The constant connectiveness of the digital era has been the object of intensified research, prompting the suggestion that being always online does not mean increased social bonds but also poorer well-being (Bowler, 2020; Chari, 2025). Rather, digital environments can produce novel versions of loneliness where users are ‘surrounded by digital but lack social support’.

Digital social engagement and loneliness are a salient study because Generation Z displays distinct social engagement trends when it comes to technology. Generation Z has grown up in digital places; not all generations beforehand have been acclimatized to these digital technologies in their later years (Latupeirissa & Cistadewi, 2025). Social media affects how young people interact and connect (and build communities) and how they define themselves and those around them. These platforms offer room to include and provide assistance, but they can also lead to passive consumption, emotional distancing, dependency, and addiction. One trend in the recent social media dependency literature is the link between a higher degree of social media dependence and vulnerability to feelings of loneliness, which may be mediated by replacing non-essential social engagement with ongoing (though less satisfying) online activity (Rynarzewska et al., 2026).

In addition to the psychological impacts, political opinions and polarities have significance too in the context of digital engagement. Young people are increasingly engaged in politics, from political discussions about social issues to creating political images online, in digital spaces (Literat & Kligler-Vilenchik, 2021). Socialization and participation in political matters have been made easier thanks to social media. Social media has made it easier for people to get involved in politics and discussions, organize political movements, and share their opinions. The same platforms can be culpable of causing polarization by aversive selection of information, confirmation bias, and the formation of echo chambers (Bennett & Segerberg, 2023). Agencies involved in many digital platforms tend to create content that frames it so dramatically and elicits an emotional response that it can amplify tension between political factions.

The polarization has been an increasing issue in digitally mediated societies, because the online environment can exacerbate processes of polarization based on identity. By consistently echoing certain beliefs, while alienating those in opposition, online communities can help to foster a stronger bond between the group and its members, particularly when it comes to politics. Social media has become a crucial component of the political socialization of an increasing portion of Gen Z, whose socialization seems to be taking place largely in a digital context. Getreu (2022) also points out Gen Z's link to social media and political polarization, as a greater degree of engagement on social media can deeply shape Gen Z's understanding of political differences and social conflicts. Like Seibel (2025), other research shows how

digital environments play a role in the political socialization of the youngest generation (Generation Z), since political messages and political debates are more likely to be encountered online from young people's perspective than in conventional political mechanisms.

Another significant aspect of this is the link between loneliness and polarization, which pertains to political polarization. The link between loneliness and political polarization is another important aspect of this. Lonely people might feel the need to belong and identify with a community online, especially one that is politically inclined (Rynarzewska et al., 2026). While digital communities can offer social connection for other people who may feel left out, they can also create polarized environments that foster increased group identity and where opposition to others can be more pronounced. In this setting, loneliness can serve as a mechanism leading to the endorsement of extreme ideologies and partisan political ideologies. This work, which investigates the connection between loneliness, excessive social media use, and polarization, found that there could be a complex interaction between these two dimensions, which might affect the way in which people are exposed to political facts and to social groups (Rynarzewska et al., 2026).

The character of their online communication is also a factor in either polarizing or facilitating constructive communication and can have a significant impact on the identity of digital spaces. In addition, from an online communication standpoint, the quality of their online interactions can be an important determinant in the polarization or fruitful interactions that occur within digital contexts and can influence the identity of the respective digital spaces. Social media politics can help integrate people into democratic life by facilitating exposure to and engagement with diverse viewpoints and opinions, while at the same time they can foster hostility, misinformation, and diminished tolerance for opinions and perspectives different from one's own. Weintraub (2025) explores the role of respectful conversation as a way to reduce polarization between generations and concludes that the kind of online dialogue that happens could quite possibly be either a way to increase a greater sense of social awareness or political conflict.

Review of Literature

Digital Social Engagement and the Paradox of Constant Connectivity

The use of digital technologies has recoded the relationship between the human being and its interaction with other people, especially among those of "generation Z," who have been born in an era defined by the use of mobile devices, social networks, and online communication. Digital social engagement is now a critical part of everyday life and impacts young people's relationship building, expression of identity and communication, and social involvement. Digital technologies offer the possibility of more connection and engagement, but research has recently revealed a paradox that there can be a sense of loneliness and isolation alongside increased connectivity. This paradox is often referred to as the "connected but alone" effect—having significant online contacts and a lack of emotional attachment and meaningful interactions between their online and face-to-face relationships.

In the research by Norhabiba et al. (2025), they studied Gen Z's situation of "connected but alone" and "constant connectivity" in Surabaya, Indonesia. Their research highlights that it is not automatically going to lead to better social connections when having constant access to digital communication. Rather, heavy use of the online environment can be a form of dependency on virtual relationships and a decrease in opportunities for meaningful relationships in the real world. The results indicated that Generation Z's digital lifestyle is one of 'wanting it and not feeling it' with respect to social connections.

In the same way, Chari (2025) delved into the concept of social isolation within the Connected Generation and stated that technology has altered the definition of loneliness. Digital loneliness exists when someone has an activity online without the connection, unlike traditional loneliness based on physical isolation. From this perspective, the quality of digital interactions, as well as the quantity, should be the subject of analysis, along with the emotional significance of digital interactions.

In their research, Amin and Zinaida (2024) went deeper into the issue of digital loneliness and looked at social media as a part of today's communication model. Social media allows people to interact at all times but can also distract, compare, and superficially engage, they argue. The authors suggest that digital environments can provide an "illusion of connection" and that users feel they are socially connected while, in fact, they are not really supported emotionally. This is especially true for Millennials and Generation Z given the heavy nature of online communication in their own social and personal identity.

Loneliness and Social Isolation among Generation Z

Generation Z is an interesting generation, as digital technology has formed their social development pattern from childhood onwards. Gen Z is no longer a generation that can be clearly segmented by online versus offline social environments; digital spaces are part of their daily life and play a role in their relationships, learning, leisure, and political interaction. But more recently, researchers have increasingly looked into the possibility that such levels of digital engagement can become associated with feelings of loneliness and social isolation.

Bowler (2020) studied the sense of isolation of Generation Z youth within the U.S. community and found that the problem of "feeling out of place" has grown for this generation. Unfortunately, high connectivity via technology does not seem to be ensuring that Generation Z will have their social bonds strengthened in the study. Less face-to-face social interaction, new norms, growing internet addiction, etc., are just some reasons why they feel isolated.

The connection between social media and loneliness is multifaceted, as social media could have both positive and negative effects. Online communities can offer support, particularly for people who don't feel like they fit in with the social norms of their local communities. Online communities can also offer support, typically when somebody can't "fit in" with the community norms. While an overreliance on online interaction can also diminish engagement in face-to-face relationships and feelings of loneliness, the effects of those interactions are often just as strong as those of in-person interaction. However, too much online interaction can have the opposite impact, including decreased engagement with offline relationships and loneliness, but with a similar impact to offline interaction. So digital engagement means that the effect of technology use and the connection are contingent upon how people use technology and whether or not online ties are a supplement to, or a substitute for, face-to-face connections.

To further the conversation on loneliness in the era of AI companions, De Sequeira and Lin (2026) explored the issue. They are part of a new wave of digital relationships enabled by processes such as artificial intelligence and virtual interactions that remodel how people feel connected. While digital companions can offer emotional support, there are arguments about whether more meaningful human needs for authentic connection can be met through the development of a technological substitute. This is most important for comprehending trends of digital generations separating from one another.

Jain and Tomar (2025) discussed spirituality as an identifier to diminish loneliness among Generation Z, where emotional wellness was related to factors beyond technological interaction. Their research suggests that making social connections, adding personal meaning, and fostering psychological supports can help prevent social isolation among youth. This view is part of the current project's conclusions that digital engagement cannot serve as a determinant of social satisfaction because there is a dynamic interplay between individual and social factors influencing young people's perceptions of connectedness.

Social Media Dependency, Loneliness, and Psychological Effects

The problem of dependency on social media has continuously drawn the researchers' attention in recent research. Overuse of digital media can lead to behavioral patterns such as many people needing constant online validation, stimulation, and information, and low satisfaction with offline relationships. This reliance

can also lead to social comparison and emotional reliance on digital feedback, increasing feelings of loneliness.

This paper by Rynarzewska et al. (2026) is a valuable addition to the literature on the correlation between loneliness and dependency on social media. Their study pinpoints psychological isolation as a context in which there is a correlation between digital dependence and loneliness, implying that there may be reinforcement between the two. Those who feel lonely can seek out online communities for relationships, but too much of it can lead to more emotional isolation. This establishes a vicious circle of isolation and increasing reliance on digital devices, which can lead to becoming more isolated from others due to reliance on digital devices.

Such a connection is of significance for the present study as it implies that loneliness could be a mediating factor between digital social engagement and larger social outcomes like political attitudes. Online communities are where digitally isolated individuals look to find a sense of belonging; their online engagement and interaction might shape feelings of psychological well-being, but it can also shape their political identity.

Digital Social Engagement and Political Polarization Among Generation Z

Digital places are key arenas for political dialogue and social engagement. Political information was found more by Gen Z people on social networks than in traditional means like newspapers, television, formal political institutions, etc. This makes it possible to be politically aware and politically engaged, but it can also help to increase polarization.

Getreu (2022) investigated the relationship between social media and political polarization in the group of Generation Z. The study emphasizes that the political climate on the Internet can shape the political views and political identities of young people. Engaging content is a priority for social media algorithms, which could lead to the re-presentation of content views and amplify already held viewpoints. The digital space, therefore, can foster an ideological dichotomy by presenting differences between persons of various ideologies.

In addition, Seibel (2025) explored how digital environments have come to play a larger role in political socialization among members of Generation Z, while highlighting the importance of this socialization process. Online social and political communities and discussions help mold young people's views on social and political issues, moving beyond family, education, or the traditional realm of institutions. This transformation can also be a catalyst for greater participation but can also breed risks of misinformation, polarization, and/or identity conflict within the groups.

Weintraub (2025) also investigated polarization and civil discourse among generations and the significance of respectful conversation for mitigating the level of political polarization. The study indicates that digital communication settings can impact the nature of political engagement—constructive or confrontational. Having polarization in the forums online can make polarization stronger, while having a respectful conversation can promote understanding and tolerance.

Linking Loneliness and Political Polarization

It's worth noting that there has still been a lack of research into the link between loneliness and political polarization. People feeling lonely might find a sense of belonging via online communities and with regard to political groups. People feeling lonely may look for a sense of belonging through online communities and politically oriented communities. They may lead to a sharp increase in the divisions among social groups, but they can also offer identity, support, and social recognition to the communities they are part of.

Rynarzewska et al. (2026) offer a confirmation of a possible relationship between loneliness and dependency on information technology like social media and polarization processes. People are more susceptible to areas that offer a great sense of community when they feel connected to people outside those

bounds. People don't like weaknesses in areas where they feel social connection, and they may become more susceptible to those areas when there's a lack of that connection, such as not being in the area. Extremist groups involved in political online communities can serve a social function by providing membership and purpose but can also create and strengthen extreme ideologies and groups by choosing which messages to see and boosting messages from the extreme group and perspectives.

This linkage between loneliness and polarization implies that political polarization is different from a political ideology but rather social and psychological. To grasp polarization amongst Generation Z, it is important to be aware of the emotional and relational factors that form political opinion.

While there were existing studies that explored these topics of digital engagement, loneliness, and political polarization, there was not a single study that examined both phenomena in a consolidated capacity. This study has demonstrated that although there are common elements, research on social media tends to be psychological in nature, and studies of political polarization tend to deal with ideological and communication aspects. Little effort has been made to grasp how inadequate social engagement in the digital sphere may have an impact on political polarization, especially regarding loneliness experiences among the younger generations (Generation Z).

In addition, the bulk of the research studying Generation Z focuses on general populations specifically and not on the study's particular issue of social identity and political attitudes created in a digital context.

Theoretical Framework

Social Identity Theory

The aim of this study is based on social identity theory (SIT), initially developed by Tajfel and Turner (1979). It offers an explanation for the creation of their sense of identity within their various social groups and how these group identities affect the attitudes, perceptions, and behavior of individuals. In line with social identity theory, people tend to categorize themselves into social groups (ingroup) and other people into other social groups (outgroup) by making distinctions between them. These processes can either shape social relations, group attachment, and intergroup behaviors (Tajfel et al., 2001).

The digital age has developed new environments where social media can help develop, maintain, and enhance social identities through online communities. The users of digital platforms can share and engage in communities according to their hobbies, values, lifestyles, and political beliefs. These online engagements can also help to give people a feeling of belonging and a sense of community, especially where people do not have access to conventional methods of socializing. But if social groups are identified well, a strong sense of group identification can likewise enhance differences between groups and foster negative awareness of other groups (Tajfel et al., 2001).

This theoretical framework is pertinent to this study, as digital social engagement can impact the social and political identifications of Generation Z. Frequent engagement with online communities can lead young people to feel a sense of belonging to groups with similar opinions and values. Politically, large doses of ideologically identical material may deepen the attachment to the ideology and thereby help to diminish exposure to opposing ideologies. Digital environments can thus help to foster political polarization by strengthening group boundaries and accentuating the difference between the opposing political groups (Tajfel et al., 2001).

Moreover, the effect of social identity theory on the relationship between loneliness and digital engagement can be explained. In addition, the relationship between loneliness and digital involvement can be explained through social identity theory. Loneliness may result in an increase in the need for feeling connected and accepted in a community. This emotional need can be fulfilled by online communities by offering avenues for interaction, recognition, and participation in a group or communities. But if people need

such digitally created communities for a sense of belonging, they might feel a greater bond with the specific communities they attend online, including those of politics. This greater sense of attachment can have an impact on political views and aid in greater polarization (Tajfel et al., 2001).

The theory will also help you to understand the emotional incongruity of “connected but isolated.” While members of Generation Z do have many online relationships, it may be through identities in groups, instead of actual relationships with people. So digital social mobilization can be perceived as a sense of belonging and make people more social but also more polarized. An explanation of how online interaction can give rise to connection as well as conflict for digitally connected young people is given by social identity theory (Tajfel et al., 2001).

In the present study, the relationship between digital social engagement, loneliness, and polarization of political views is explained by means of social identity theory. The theory argues that digital platforms not only impact the communication process but also the development of social identity. People, particularly those participating in politically oriented communities, may gain a sense of belonging when participating in online communities, which could lead to a more intense group identity and political polarization among young people (Generation Z).

Hypotheses

H1: Digital social engagement has a significant positive relationship with political polarization among Generation Z.

H2: Loneliness significantly influences the relationship between digital social engagement and political polarization among Generation Z.

Research Methodology

Research Design

This study employed a quantitative research design with a cross-sectional survey research approach to analyze the digital social engagement, loneliness, and political polarization phenomena among Gen Z in Multan, Pakistan. The quantitative approach was found to be suitable for this study as it was used to measure relationships between the clearly defined variables studied and to examine the digital social engagement with isolated loneliness and political polarization from a statistical perspective.

The research adopted a correlational design as it examines the relationship between digital social engagement, loneliness, and political polarization without intervening in any variables. Due to the cross-sectional design, the study was able to gather data on participants during a single time in their lives to help understand the digital behaviors, psychological experiences, and political attitudes of Generation Z.

Research Context and Study Area

The study was carried out in Multan City in Pakistan. The reasons for choosing the research area were based on the following: Multan has a diverse population, a substantial youth population, and a large number of engaged youth with digital platforms. Social media networks, Internet communication applications, and digital communities are becoming ubiquitous tools that are influencing how youth engage in social and political activity, reshaping patterns of social interaction and political engagement. Thus, the study was conducted in Multan to demonstrate the effect of digital connectivity on the sense of loneliness and political polarization of Generation Z.

For collecting data, three universities of Multan, namely, Emerson University Multan, Bahauddin Zakariya University Multan, and Muhammad Nawaz Sharif University of Agriculture Multan, were selected. These institutions gave access to a variety of academic disciplines among the students of Generation Z and from various backgrounds. The aim of this study was to gain insight into the ways in which digital

engagement informed social and political experiences of youth in the local context, and data from these universities informed the study.

Research Population

The selected population of the study was the students of Gen-Z from selected universities of Multan in Pakistan. Generation Z is the group of people born between the years 1997 and 2012 who have been surrounded by digital technology both in their personal and social lives and also in their learning.

The students in the university were chosen since they were a segment of the community frequently in contact with digital media and social networks for communication, academic work, entertainment, or political discussion. The students were chosen from three institutions: Emerson University Multan, Bahauddin Zakariya University Multan, and Muhammad Nawaz Sharif University of Agriculture Multan to bring a wide range of educational and computer experience to the participants.

Sample and Sampling Method

The total number of students in this study was 180; a divided sample of Generation Z students was taken from three selected universities of Multan. To provide variation in educational levels and the rates of technology use, students in several disciplines were asked to participate.

The method of selection of the samples was non-probability convenience sampling. This sampling technique was chosen due to the availability of respondents who were accessible and willing to participate in the research. The participants included those who were from Generation Z and belonged to the selected universities and actively used digital platforms.

Data Collection Method

Primary data was gathered using a structured questionnaire that was created based on the objectives of the study and a literature search on digital social engagement, feelings of loneliness, and political polarization. A questionnaire was circulated among 180 students of Generation Z from Emerson University Multan, Bahauddin Zakariya University Multan, and Muhammad Nawaz Sharif University of Agriculture Multan. Participants' responses were measured on a 5-point Likert-type scale ranging from strongly disagree to strongly agree. The questionnaire was divided into four sections. The first section gathered demographic data such as age, gender, education background, and usage of digital technologies. The second part digitally measured social engagement through measuring social media usage, online communication, involvement in social media communities, and engagement with online content.

Loneliness was explored in the third section through the lens of social disconnection, emotional distance, lack of belonging, and isolation despite online participation. The fourth section examined political polarization in terms of political attitudes, ideology, political discussion, and perception of partisan ideologies.

Data Analysis Procedure

Data obtained were analyzed in the Statistical Package for Social Sciences (SPSS). The results were analyzed using descriptive statistics to explore general patterns and key characteristics associated with the demographic aspects of digital social engagement, loneliness, and political polarization.

The internal consistency of the scales of the measurement was checked by using Cronbach's alpha in reliability analysis. Pearson correlation analysis was used to explore the correlation among digital social engagement, loneliness, and political polarization.

Multiple regression analysis was used to determine the predictive influence of digital social engagement and loneliness on political polarization. In addition, mediation analysis was performed to understand the role of digital social engagement in the mediation of loneliness.

Ethical Considerations

The ethical issues were addressed during the follow-up of the research process. Prior to completing a questionnaire, participants were made aware of the aims of the study and participated voluntarily. The anonymous nature of the respondents' information and that it was only for academic research was assured. Person-identifiable data of participation have not been gathered, and all the replies have been treated anonymously. It was also explained to the participants that they can leave the study at any time without any bad effect.

Methodological Limitations

The quantitative research design offered concrete evidence of relationships between variables but also had some drawbacks. Given the methodology of each study and its cross-sectional design, direct causation between the three variables was not this study's goal. Furthermore, due to using convenience sampling, the results may not be generalizable to the larger population of students in the university.

Moreover, the study methods were self-reported questionnaire responses, susceptible to the participants' perception and social desirability bias. Nevertheless, the approach used was a suitable framework for learning the link between 'Digital Connectivity, Loneliness, and Political Polarization' among Generation Z students of Multan.

Data Analysis and Results

Demographic Characteristics of Respondents

In the study, 180 Generation Z students from three selected universities of Multan (Emerson University Multan, Bahauddin Zakariya University Multan, and Muhammad Nawaz Sharif University of Agriculture Multan) participated. A demographic analysis was done to understand the population characteristics in order to make sure that the respondents' sample reflected the target population.

The findings revealed that the respondents were categorized under the age groups of 'Generation Z' and 'Active Users of Digital Media.' Most of the respondents came within the age group of 18-26 years and represented the age category most engaged in social media, communication on the Internet, and discussion of politics via digital technologies.

The demographic distribution indicated that the respondents selected would be suitable for examining the relation between digital social engagement, loneliness, and political polarization, as they are connected to digital platforms in their everyday social and academic lives.

Reliability Analysis

Cronbach's alpha was used to estimate the reliability of the questionnaire. To assess the reliability of the measures used for digital social engagement, loneliness, and political polarization, items were analyzed using reliability analysis.

Table 1
Reliability Statistics

Variable	Cronbach's Alpha	N of Items
Digital Social Engagement	.842	10
Loneliness	.861	10
Political Polarization	.817	10

The reliability results indicated all of the research variables possessed acceptable internal consistency. The ten items for the Digital Social Engagement scale had a Cronbach's alpha reliability coefficient of .842. The same was true with the Loneliness scale, which had a consistency of .861.

Then the political polarization scale also has an appropriate level of reliability, as its Cronbach's alpha is .817. All the items had values higher than .70, so the measurement scales appear to be reliable and appropriate for further analysis of the collected data.

Descriptive Statistics

General trends of those answering questions about their digital social engagement and feelings of loneliness and political polarization in general were summarized with descriptive statistics. Mean values showed the average level of agreement from all participants, and the standard deviation showed the variation in level of agreement between participants.

Table 2
Descriptive Statistics

Variables	N	Mean	Std. Deviation
Digital Social Engagement	180	3.74	.612
Loneliness	180	3.28	.684
Political Polarization	180	3.46	.641
Valid N (listwise)	180		

The descriptive findings show that the respondents had relatively high scores when asked about digital social engagement, with a mean score = 3.74. The findings indicate that the participants of Generation Z were actively engaged with online communications, social networking, and digital activities.

The mean score on the loneliness variable was 3.28, which reflects a moderate level of loneliness among participants. This discovery reinforces a past principle that there is no substitute for a human touch when it comes to emotions like loneliness. While the participants were very connected online, many felt an emotional distance and diminished social feelings.

The political polarization took an average score of 3.46, indicating participants indicated some degree of political polarization and ideological differences. This indicates a study where digital environments might have a shaping effect on young people's opinions and actions regarding politics.

Correlation Analysis

Pearson correlation analysis was performed to investigate the correlation among digital social engagement, loneliness, and political polarization. This analysis aimed to determine whether the relationship between changes in one variable and changes in another variable was possible or not.

Table 3
Pearson Correlation Analysis

Variables	Digital Social Engagement	Loneliness	Political Polarization
Digital Social Engagement	1		
Loneliness	.421**	1	
Political Polarization	.386**	.472**	1

Note: Correlation is significant at the 0.01 level (2-tailed).

The correlation results revealed a positive and significant relationship between digital social engagement and loneliness ($r = .421, p < .01$). This suggests there was a connection between higher digital engagement and

higher levels of loneliness among participants. The discovery implies that although digital platforms offer more opportunities for interaction, this does not always lead to sound emotional connections.

Loneliness and political polarization also had a positive and significant relationship ($r = .472$, $p < .01$). This was the most significant correlation between the variables, with the highest number of people describing stronger political divisions or attachment to particular political views when feeling lonelier.

Also, there was a strong positive correlation between levels of digital social engagement and political polarization ($r = .386$, $p < .01$). This suggests that the impression that is given on the web about politics can matter because users encounter certain communities, opinions, or identikit groups.

Regression Analysis

To assess the predictive power of digital social engagement and feeling lonely for political polarization, a regression analysis was conducted.

Model Summary

Table 4

Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error
1	.541	.293	.285	.543

The overall model summary shows that loneliness and digital social engagement accounted for 29.3% of the variance in political polarization among respondents. As the R^2 is .293, these two variables significantly contributed to the dispersion of differences in political polarization among participants of Generation Z.

The results show that ideological polarization is not the only driver of polarization, but also digital behavior and psychological experiences.

ANOVA Results

Table 5

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	21.846	2	10.923	37.02	.000
Residual	52.254	177	.295		
Total	74.100	179			

The ANOVA result showed that the regression model was statistically significant ($F = 37.02$ at the .001 level). This adds to evidence that digital social activity and loneliness jointly suggested a strong influence on political polarization among the participants of Generation Z.

Thus, in this model, the independent variables are reasonably explanatory of change in political polarization.

Regression Coefficients

Table 6

Coefficients

Predictor	B	Std. Error	Beta	t	Sig.
Constant	1.214	.214		5.673	.000
Digital Social Engagement	.241	.071	.268	3.394	.001
Loneliness	.356	.064	.438	5.563	.000

The coefficient values revealed that digital social engagement was a significant predictor of political polarization ($\beta = .268$, $p = .001$). The rising participation in digital platforms, on the other hand, was linked with growing political polarization among Generation Z.

Loneliness was also a strong predictor of political polarization ($\beta = .438, p < .001$). The finding that loneliness has a higher beta value implies that it has a larger positive effect on political polarization than digital social engagement.

The findings indicate that a sense of social disconnection might encourage people to turn to online groups and communities, and heighten political identities and polarization.

Hypothesis Testing

Table 7

Summary of Hypothesis Testing

Hypothesis	Statement	Result
H1	Digital social engagement has a significant positive relationship with political polarization among Generation Z.	Supported
H2	Loneliness influences the relationship between digital social engagement and political polarization among Generation Z.	Supported

The results were in favor of both hypotheses. Both hypotheses were confirmed by the findings. The findings indicated a medium level of relationship between digital social engagement and political polarization, with loneliness also being significantly involved in this relationship.

The results are congruent with social identity theory (Tajfel & Turner, 1979) in that people have stronger group identities as a result of social interaction. Online communities can offer a sense of belonging in digital spaces but can also help to reinforce between-group differences in digital beliefs.

Discussion, Conclusion and Recommendations

Discussion

This current study focused on the correlation of digital social involvement, loneliness, and political polarization among Generation Z students of Multan. Results indicated that there was a significant relationship between digital social engagement, loneliness, and political polarization. The findings suggest Generation Z is well connected via digital devices and processes, but this connection doesn't necessarily lead to significant social interactions or diminish loneliness.

The results revealed a relatively high level of digital social engagement by respondents. This means that, in the lives of Generation Z students, digital platforms have entered into their everyday social world. Communication, information sharing, social interaction, and engagement in digital communities were common methods by which participants engaged in using Internet communications. But the findings also showed that the higher the scores on the digital engagement scale, the higher the scores on the loneliness scale. This indicates that one may not be emotionally connected with the online content or feel socially fulfilled when engaging with it often. People can have a lot of online friends without having established real-life friendships.

The findings also found that loneliness was significantly related to political polarization. This suggests that participants who felt more socially disconnected were more likely to show a more polarized political opinion or to hold a political attitude. A possible reason might be that those people who feel lonely need to find a sense of belonging and identity in online communities. Social recognition and a sense of belonging can be negotiated by these communities, as well as greater reinforcement of group thinking and distance from other opinions.

The results also revealed that there was a significant relationship between the digital social engagement levels and the political polarization of the society. This indicates that online engagement has an effect beyond just social behavior to political attitudes as well. Digital sites offer locations where people interact with

political discussions, communities, and information. If customers have previous experiences with a variety of similar opinions and groups, however, the customer's existing opinions may strengthen, leading to greater political differences.

The regression results also showed that digital social engagement and feeling lonely significantly predicted political polarization among Gen Z, with loneliness having a stronger effect on politics than digital social involvement. This result shows the role of psychological experiences in the comprehension of political attitudes. Digital polarization is not solely driven by digital behavior but will be significantly shaped by emotions connected with digital participation.

The study's central argument, which is the digital paradox the study has identified for Generation Z, is supported by the findings. Digital platforms can offer avenues for communication, participation, and social connection, on the other hand. Relying too much on online interaction could lead to feelings of isolation and increased connection to online groups. So, digital connectivity is not about the count of connectivity interactions; it is important to consider that connectivity interactions produce interactions—these interactions are what can be designated "quality" and "outcomes" of the connectivity interactions.

Another perspective on the results is possible, one based on Social Identity Theory. The results indicate that digital environments can be a forum for constructing social identity and relationships with a group. These identities can be reinforced while users interact with communities they create online, particularly when the web community is associated with some shared beliefs and values. The process can enhance one's sense of belonging but can also help build divisions among various groups.

The results showed generally that there were many different effects of digital social engagement on Generation Z. Digital platforms offer great potential for connecting and participating but can also lead to loneliness and political polarization through the use of programs that have not established adequate connection to the social world or isolated group identities.

Conclusion

The present study explored the relationship between digital social engagement, loneliness, and political polarization of Generation Z students from the city of Multan. The research revealed that online engagement has become a vital element of young people's lives—but that lots of connectivity does not always equal emotional connectivity.

Results indicated that there were significant relationships between all three mentioned variables in the study. A net increase in loneliness was linked to digital social engagement, indicating that there might be occasions where online connection leads to feelings of loneliness when people are constantly connected. Moreover, psychological and digital factors are both linked to political polarization, which shows that political attitudes among Generation Z are not only affected by psychological but also by digital factors.

The paper also ends with a discussion on an emerging complex social context within which people are at times highly connected but also feel isolated. Web-based space impacts not just how folks communicate, but additionally, how they decide who they are and how engaged they're politically. This relationship provides important context for enhancing health in the digital realm and enabling people to connect meaningfully and maintain healthy co-politics.

Recommendations

Based on the results of this study, some recommendations are given. To implement education on healthy digital use and suggest students create a balance between online or offline social interactions through awareness programs in universities/educational institutions. In seeking to alleviate digitally connected youth's experience of loneliness, more opportunities for face-to-face communication, student activities, and community engagement may be helpful.

Pupils should be supported to engage in digital platforms in terms of not simply passive 'consumption' but meaningful dialogue, learning, and constructive dialogue. One way of fostering polarization cues is to help youth become aware of 'echo chambers' and 'selective exposure.'

Social media platforms need to foster a “balanced” exposure to content and foster “respectful” communication among people who have different perspectives. Developing online interactions that will foster understanding, instead of conflict, could be possible if the quality of these online interactions can be improved.

Further studies with larger samples and in different geographical locations may increase generalizability regarding the topic. Longitudinal studies could provide more information on the impact of digital engagement over time on loneliness and political attitudes.

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