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From Clicks to Compassion: The Role of Digital Empathy in Young Adults' Online Prosocial Behavior and Emotional Intelligence

Research Project

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Declaration

The work presented in this research project has been conducted by me under the guidance of Ms. S. Gurav, Faculty, Sunandan Divatia School of Science, NMIMS (Mumbai Campus). The observations, analysis, and interpretations made in the study, as well as the conclusions arrived at and included in the research project, are entirely my own.

The work reported in this is original and, to the best of my knowledge, has not been submitted in part/full for any other diploma or degree at any other University or Institute.

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Abstract

This study examined digital empathy, online prosocial behavior (OPB), and emotional intelligence (EI) among Indian college students who reported higher levels of internet use. It was expected that students who are better at understanding emotions in online interactions would also be more likely to engage in helpful behaviour online and show higher emotional intelligence. A quantitative, cross-sectional design was used with a sample of 417 students aged 18–25 who met the criteria for above-average internet use based on the PRIUSS scale. Information was gathered using three standard questionnaires: DCES (Digital Communication Empathy Scale), OPBS (Online Prosocial Behavior Scale), and TEIQue-SF (Emotional Intelligence Questionnaire-Short Form). Correlation analysis (Pearson's and Spearman's) was used to study the relationships.

The results show high positive relationships between digital empathy and online prosocial behavior, and also between digital empathy and emotional intelligence. This means that students who are better at understanding others' emotions in an online setting are more likely to be helpful to others online and also have higher emotional intelligence. Digital empathy was linked to both giving and receiving help online. It was also found that females scored higher in digital empathy and prosocial behavior, while emotional intelligence did not differ by gender. Higher daily internet use was linked to lower levels of all three variables. Overall, the study shows that digital empathy plays an important role in positive and emotionally aware behavior in online spaces.

Keywords: Digital empathy, online prosocial behavior, emotional intelligence, Indian college students, digital communication, empathy, prosocial behavior.

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Introduction

In recent years, digital technology has changed the way people communicate, interact, and maintain relationships. Currently, various types of social networks, like Instagram, WhatsApp, and X (formerly Twitter) contribute significantly to human everyday activities especially among youth. Concerning university students, the usage of such applications extends beyond mere exchange of information as they use these social platforms to express themselves, to create interpersonal links and to build their personality. Hence, it seems important to discuss the processes in relation to which the phenomena of emotion and social behavior work in the digital space.

For example, one such phenomenon may be that of empathy which is a crucial aspect in terms of development of human relations. Empathy is usually considered to imply perceiving and recognizing another person's emotions and reaction to them. It combines both cognitive and emotional components linked with the comprehension of human beings and their feelings (Mayer & Salovey, 1997). Communication face-to-face includes lots of non-verbal cues of empathy such as facial expressions, voice modulations, gestures and body language. However, modern technologies have significantly transformed communications and relationships of people in the last decades. Currently, there are many different kinds of social networks such as Instagram, WhatsApp, and X (formerly known as Twitter), which play a great role in people's everyday life, particularly for young generation members. In regard to college students, apart from the process of exchanging information, they also utilize these social networks to reveal themselves, establish relationships with other people, and develop their personalities. Therefore, it becomes necessary to consider certain processes within which emotion and social behavior become interrelated in the virtual world.

For instance, one such process can be empathy that is essential in terms of building human relations. Generally, empathy is understood as the ability to understand and react to the emotions of another individual. This process involves not only cognitive but also emotional aspects related to humans' comprehension (Mayer & Salovey, 1997). When interacting face-to-face, communication is rich in various non-verbal signs that include facial expressions, voice modulation, gestures, and posture. Nevertheless, modern technologies have drastically changed human relations during the last few decades. In recent years, the use of technology has brought new ways of communication and relationship maintenance. Social networking platforms and messengers, including Instagram, WhatsApp, and X (formerly known as Twitter), have found their way into people's daily routines, becoming a necessity for young adults. College students tend to use them for communication, self-expression, and identity formation. The rise in digital interactions means that many emotional and social experiences that traditionally occur in person are now transferred to the online environment. Therefore, studying psychological processes in the virtual world becomes crucial.

One construct that has always been important in relation to social and interpersonal processes is empathy. Traditionally defined as the capacity to perceive, understand, and respond to the emotions of another person. It includes both cognitive components, such as perspective-taking, and affective components, such as emotional sharing (Mayer & Salovey, 1997). In traditional face-to-face communication, empathy is supported by a wide range of non-verbal cues, including facial expressions, tone of voice, gestures, and body language. The connection between empathy and prosocial behavior has been widely researched in the field of psychology. The empathy-altruism hypothesis suggests that people feeling empathic towards someone tend to act more altruistically by trying to diminish other people's pain (Batson, 1991). Nevertheless, such studies mostly refer to offline interpersonal relations. Taking into account the

differences between the two types of communication, it is reasonable to explore how the same pattern might operate within the digital environment.

It is also necessary to mention another significant concept for the research, that is, emotional intelligence. It can be described as people's ability to comprehend emotions of themselves and others, as well as regulate and use these emotions effectively (Petrides, 2009). Emotions of individuals play an important role in their actions and affect how people react to certain circumstances, which explains the importance of emotional intelligence for interpersonal interactions. Generally, people possessing high levels of emotional intelligence are usually capable of building strong relationships and acting adaptively in a social context. As it was mentioned above, digital empathy is based on understanding other people's emotions and acting accordingly, thus, the connection between these two concepts seems to be very strong. Moreover, increased utilization of digital platforms has raised some concerns regarding their effects on emotional and social functioning.

Although digital platforms afford opportunities to connect and communicate with other people, the excessive use of them might result in a lack of emotional sensibility, misunderstanding of social cues, or detachment from meaningful communication (Kuss & Griffiths, 2017). On the other hand, online social interaction is also a means to communicate and assist one another by demonstrating prosocial behavior. It becomes evident that online communication entails both negative and positive aspects, therefore, it is important to identify the factors that promote prosocial behavior. One of them is digital empathy since it facilitates appropriate and empathic responses in the process of online socialization.

The current research centers on college students living in India since they represent an essential demographic for this study. India is considered a collectivist country where

interpersonal connections, social cohesion, and emotional closeness matter greatly. People who come from collectivist cultures tend to display empathy, cooperative behavior, and care for others. At the same time, rapid growth of the number of users of the Internet and social media websites in India is noted. College-going people use the Internet extensively, and they engage in social activities as well as academic assignments using digital media. Since they are highly active online as well as valuing social ties, they serve an excellent sample population for the analysis of the dynamics of empathy and helping behavior within the digital environment.

It is true that today's communication takes place predominantly through the digital media; however, studies on the role and nature of digital empathy have concentrated primarily on Western samples. Little research has explored digital empathy within an Indian context where there might be certain differences due to different cultural values and habits of communication. For instance, it can be hypothesized that people from collective cultures will tend to show preference for maintaining harmony within the group and helping known people rather than unknown ones. It is necessary to explore the influence of culture on digital empathy in detail since there are numerous cultural differences that can affect it. In addition, further research is needed to clarify the connection between digital empathy and emotional intelligence.

While emotional intelligence refers to self-awareness, emotional regulation, and social skills, digital empathy has been conceptualized as a context-dependent aspect that involves emotional understanding in the digital domain. Exploring the association between these concepts can provide information about whether digital empathy is just an extension of overall emotional intelligence or rather an independent skill developed through online interactions. With all that in mind, the present research attempts to understand the relationships among digital empathy, online prosocial behavior, and emotional intelligence in Indian college students. Specifically, the

research explores whether individuals with better online emotional understanding exhibit online prosociality and higher levels of emotional intelligence. The analysis of the associations among the selected variables will enable gaining more insight into the functioning of emotional processes in online spaces.

To sum up, the goal of this research is to explore areas of knowledge that are still underexplored in existing literature. The author seeks to examine empathy as an aspect of digital communication and its relation to prosocial behavior and emotional intelligence. With the growing importance of digital communication, such analysis appears to be particularly relevant.

Review of Literature

Origins of Prosocial Behaviour

Krebs (2015) took on an evolutionary model in order to find out the origins and how prosocial behaviour came to as early humans developed. This evolutionary approach gathers that prosocial behaviour arose as a byproduct of early humans trying to acclimatise to their immediate surroundings and considerate behaviour helped each other adapt to it, solve problems, and propagate their genes.

This highlighted the role of psychological and biological processes in altruistic and prosocial behaviour. psychological processes could be defined by goals and intentions while biological processes could be defined by behavioural decisions. In an evolutionary perspective however, biological processes will always precede psychological behaviour as psychologically prosocial behaviour are biologically egocentric (Krebs, 2015).

The biological-evolutionary lens on prosocial behaviour suggests it has 4 origins – the first being that prosocial behaviour stems from a misfiring of evolved mechanisms. It suggests that altruism is inherited as a process of an evolved mechanism to help adapt but it also has a tendency to be maladaptive in the sense where it conforms without critical reasoning; the second claims that altruism evolved for favourable sexual selection as it signals that the mate is ready to make sacrifices for the partner and their offspring; the third places importance propagation of genes in offsprings and how prosocial behaviour acts as a predictor of propagation. The fourth brings up the importance of group selection in which the inabilities of an individual can be covered by another and as such demands an equivalent prosocial behaviour from every group member.

It must be understood however that this perspective merely suggests the origin of prosocial behaviour and doesn't isolate these reasons in the contemporary world where empathy and altruism are much more observable in humans (Batson, 2011).

Understanding Prosocial Behaviour

Prosocial behaviour, whether in real time or on social media, forms the backbone of this study yet it also acts as an umbrella for many other concepts to exist under it. With this vastness imposed upon it, many definitions of positive social behaviour can exist simultaneously. Departing focus from a definite set of words to explain it, questioning the workings of the concept itself would produce a strong foundation.

Krebs (2015) suggests that prosocial behaviour is a product of social learning wherein children exposed to selfless acts are bound to repeat it. He cited a study by Liebert and Sprafkin which saw that children who were exposed to prosocial behaviour on television displayed the same during playtime. Another cited study by Rushton which studied children observing models that display selfish or generous behaviour were more likely to repeat it 2 months down the line compared to children who weren't subjected to it. This emphasises on how observable prosocial behaviour can be grounds for social learning and chaining more instances of the same down the line.

A study by Penner et al. (2005) explored Prosocial Behaviour in 3 levels of distinct depths – meso, micro, and macro levels. The meso level questions the concept of prosocial behaviour by taking people as the medium of interrogation. The micro level concerns itself with the origin of prosocial behaviour. The Macro level examines prosocial behaviour in larger contexts.

The meso level had two basic questions: (1) *When do people help?* Which is answered by the cost-reward analysis of helping. Being a transactional perspective, it describes humans to act from a place of self-interest, before acting on a particular situation of urgency for another person, one will assess the cost efficiency, alternate courses of actions, ratio of cost to reward, and calculate the amount of personal gain/loss after the summation of these analyses. The other question it asks is (2) *Why people help.* According to Penner et al., the answer for this question works on 3 mechanisms – *learning*, as in the acquisition of skills and formation of beliefs centred around selflessness and its benefits; *personal standards*, as in how a sense of social responsibility instils positive self-image; *arousal and affect*, as in the role of aroused emotions as a facilitator of empathy and understanding, which then acts as an additional form of arousal.

Empathy and Prosocial Behaviour

Empathy, which can be defined as a state of heightened affect caused from the assumption of another's emotional state or condition (Eisenberg, 1987), acts as a motivator for prosocial behaviour (Batson, 2017). Batson then identifies empathetic concern to be the directive force, that an other-oriented emotional response drives individuals to help the other in order to help alleviate the number of troubles they might be facing. While even this hypothesis can be contested with egoism and self-interest, it is the understanding shared between people that guides behaviour to be altruistic and prosocial.

A different perspective stated that empathetic emotions are unpleasant and that motivated behaviour sought to remove these feelings of distress and sorrow as they do not emanate from the self but rather the other. Stocks et al. calls this hypothesis aversive-arousal reduction hypothesis (AARH). By establishing that AARH and the act of carrying out prosocial behaviour

to help another in need of it is grounds for physical and psychological escape, two assumptions were made on this hypothesis – first, that empathy is unpleasant and the act of prosocial behaviour directed at resolving this unpleasantness works on the motive of egoistic arousal reduction; and second, that empathy induces a feeling of concern based on psychologically escaping another's suffering.

Role of Emotional Intelligence in Prosocial Behaviour

Emotional Intelligence can be defined as "the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth" (Mayer and Salovey, 1997, p.5). Emotional expressiveness, and sensitivity and recognition of the crisis of others is important in stimulating empathetic responses and individuals who show high signs of sensitivity are more likely to show pro social behaviour (Malayeri and Sheikholeslami, 2019).

Amani (2022) argues that prosocial behaviour is a product of the different personality traits that people possess, and emotional intelligence acts as a mediator between the two. The study considers the big five personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism) and concludes with neuroticism being associated with low levels of pro social behaviour due to fear and eventual withdrawal from social relationships, which again ties to the importance of high emotional intelligence and stability linked with prosocial behaviour. The study couldn't find a link between agreeableness, and openness with prosocial behaviour. The study omitted extraversion and conscientiousness. It Reinstates how people with high emotional intelligence can understand others' negative emotions and are more motivated

and confident to act on it. This sense of confidence and competence can also be attributed to the skills that people with high emotional intelligence develop for themselves and impart on others.

Effect of Social Media on Prosocial Behaviour

In the study by Erreygers et al. (2018), online prosocial behavior (OPB) is defined as voluntary and intentional acts engaged across digital environments to help, encourage, or support others. These acts consist of sharing information, providing emotional support, and participating in social causes, etc. In Indian culture and environment, digital empathy has turned out to be a powerful indicator for such behaviors. According to Kumar and Rathi, students who have high compassion and empathetic awareness are more likely to participate actively in supportive online interactions. They are also quite sensitive to other's needs and emotional cues. Commenting actively, teamwork, encouraging peers and similar online interactions that are meaningful can promote empathetic processing. These can further lead to performing selfless digital deeds. (Saxena & Saxena, 2025). Alternatively, it was found that development of empathy and moral reflection is negatively correlated with consuming content passively like excessive scrolling on social media. Additionally, Aman and Soudi (2023) argued that empathy and psychological strengths, including optimism, resilience, hope, contribute to high levels of online altruism. It's worth noting that internal emotional resources do promote empathetic digital behaviors and thoughts or feelings that cause more such behaviors. Likewise, Rajagopal (2024) demonstrated that participating in empathy and emotional awareness centered digital literacy programs can enable students to engage ethically and critically evaluate online content, thereby contributing to a more collaborative and socially aware digital culture.

Potential risks are related to excessive digital exposure despite the noticeable positive correlations. One such study conducted among Indian undergraduates found that those who spend too much time on social media often suffer from empathy fatigue which is a gradual decline of emotional responsiveness. This is caused by overstimulation and constant emotional engagement (Masih, 2025). Existing literature confirms this finding, elucidating that continuous interaction can make people more insensitive to other's emotions, resulting in digital burnout and lowered capacity to engage in authentic prosocial behavior (Konrath et al., 2011; Kuss & Griffiths, 2021). Additionally, using social media excessively can cause rash exchanges, inferiority anxiety and fake emotional expression, reducing true empathy and altruistic intent. (Sunil & Chukkali, 2023). These outcomes reveal a dichotomy in digital culture wherein digital spaces can cause empathy and interaction, but if someone becomes too involved or extravagant, it can diminish emotional sensitivity. Thus, it's crucial for Indian adolescents to develop balanced digital habits, and acquire empathy focused digital education so as to promote online prosocial behavior and psychological well-being.

Emotional Intelligence and Digital Empathy

Petrides (2009) defined emotional intelligence as the ability to recognise, perceive, and regulate one's own emotions and of others, in order to guide adaptive behavior and decision making. Emotional intelligence plays an important role in interpreting why and how to maintain positive digital communication in online spaces where the tone, facial expressions, and non-verbal cues seem to be absent. Those who have higher emotional intelligence tend to reflect enhanced self-regulation, responsible social media use, and increased interpersonal sensitivity in these spaces where they spend their time in (Dubey, 2024). Teens and college students who have strong emotional intelligence are more likely to exhibit netiquette, supportive communication

with peers, and collaborative problem solving. The outcomes reveal that emotional intelligence acts as a psychological buffer or a protective factor that helps support them in coping with stress, uncertainties, ambiguity, emotional overload that they frequently encounter in those digital platforms. Emotionally intelligent persons are adept at understanding intricate online emotions and turn them into prosocial acts and enhance digital empathy (Sunil & Chukkali, 2023).

The more time we spend in the digital world, the less able we are to show emotions in a healthy way. Research by Masih in 2025 found that Indian students who used social media a lot had lower self-awareness and emotional intelligence, which can lead to emotional desensitization. This is not just a problem in India, as people all over the world who constantly consume content that is meant to stimulate emotions can become irritable, compare themselves to others, and lose the ability to reflect on themselves. When we interact on social media, it can feel like we're performing, and we focus more on how we appear to others than on having real emotional connections. This highlights the importance of emotional intelligence in the digital age, as it can protect us from the negative effects of too much screen time and help us interact with others in a kind and empathetic way. By teaching emotional intelligence and responsible digital habits in higher education, we can help young people in India develop the emotional resilience and empathy they need to navigate social media in a healthy way. This is crucial, as it will enable them to build strong relationships, make good decisions, and take care of their mental health in a world where technology is increasingly present.

The development of digital empathy helped better understand interactions taking place in a virtual space. It is characterized by the ability to recognize, interpret, and react to emotions of others through digital means, including emoticons, tone of language, and timing of response (Mehta & Sharma, 2022). Digital empathy depends on symbolic and frequently ambiguous cues

that require more emotional awareness and contextual understanding than traditional empathy, which focuses on body language and facial expressions (Rajagopal, 2024).Digital platforms play an extended role in identity development and expression of emotions of college students in India, who form one of the most technically advanced segments of the population globally (Tadpatrikar, 2024). High digital empathy levels correspond with prosocial digital actions, healthy peer relations, and resilience against aggression and cyberbullying (Mehta & Sharma, 2022; Sunil & Chukkali, 2023). In contrast, low digital empathy levels correlate with impulsive or tactless digital communications, including troll behavior and cyberbullying (Aman & Soudi, 2023).

Empathy in the digital world is closely linked to being emotionally smart and doing good things online. A study in India found that people who are good at understanding and managing their emotions can also be empathetic online. But how Indians show empathy online is shaped by their unique culture. In India, people are taught to think about the group, not just themselves. However, the internet is all about expressing yourself and promoting your own brand. This mix of cultural values creates a complex emotional environment. Young adults in India have to balance helping others online with promoting themselves. They might do things like volunteer digitally, but also spend time creating a personal brand online. This balance is interesting to explore, especially in a country like India where community is so important.

Therefore, digital empathy in India is both an interpersonal skill and a culturally specific digital ability determined by social norms, technology use, and value systems. Promoting digital empathy in students can thus improve emotional well-being, responsible communication, and ethical digital citizenship (Bhuvaneswari & Vijayakumar, 2023).

Methodology

Hypothesis

In this paper, the focus is on two proposed relationships drawn from the relevant literature related to digital empathy, online prosocial behavior, and emotional intelligence among Indian college students.

Hypothesis 1 (H1): Digital Empathy and Online Prosocial Behavior

There will be a positive significant relation between digital empathy and online prosocial behavior (OPB). Being India a collectivistic society in which social belongingness and social affiliation are strongly emphasized, those individuals who possess the skill to feel others' emotions and exhibit behaviors as accordingly when communicating online will similarly be online prosocial. In fact, much literature supports this proposition as empathy, whether in person or in the digital space, is a strong predictor of prosocial behavior (Collins et al., 2024; Pang et al., 2022). Due to the growing precedence of online communication over face-to-face communication among the young Indians, ability to respond to others' emotion in a digital domain would also result in OPB.

Hypothesis 2 (H2): Digital Empathy and Emotional Intelligence

There will be a significant positive relationship between digital empathy and emotional intelligence (EI). Those individuals that are found to have a high level of ability to perceive and regulate their emotions when operating in digital environments will have a similar capacity to do so outside digital environments based on the similarities between these two environments. The socially challenging nature of Indian colleges requires that people utilize their digital and

conventional empathic abilities. As such, digital empathy is expected to relate highly to the four components of trait EI, namely self-awareness, emotion regulation, and social awareness, as defined by Petrides (2009). In this study, trait EI has been measured using the Trait Emotional Intelligence Questionnaire Short Form (TEIQue-SF) with four higher-order traits – wellbeing, self-control, emotionality, and sociability. These constructs are expected to align closely with those captured by the Digital Communication Empathy Scale (DCES; Collins et al., 2024).

Operational definition of the variables

For the concept to be clearer and studies to be replicable, each variable has been operationally defined prior to this investigation.

The first independent variable (IV) in the current study is digital empathy, defined as a person's ability to identify, understand, and appropriately respond to another person's feelings within digital interactions (Collins et al., 2024, pp. 1-2). The operational definition of IV was based on the total score of the 36-item DCES composite: high on the DCES implies high digital empathy and vice versa.

The first dependent variable (DV1) is online prosocial behavior (OPB) which involves helping- and support-oriented actions of an individual towards another person in digital interactions that are voluntary and intentional (Erreygers et al., 2018, pp. 2-4). DV1 was assessed with the OPBS, a two-factor, ten-item questionnaire that assesses the frequency of helping and supporting behaviors performed online and received online from other people in the month prior to participation.

DV2 (the second dependent variable) is EI and defined as the capacity to reason about emotions and use emotions in the service of thinking and acting (Petrides, 2009, pp. 1-2). All

parts of this study were performed strictly in accordance with the ethical principles set by the American Psychological Association (APA, 2017) and the Declaration of Helsinki (World Medical Association, 2013) which served as guidelines for the participants' rights and well-being and for equal opportunity for inclusion.

Informed consent was required from all participants prior to commencement. Prior to this study, all participants were provided with an information letter which contained the study's goals and procedures as well as information on the voluntary nature of participation, the fact that it is not mandatory to participate in the study, the ability to terminate participation at any point without penalty and without having to give any reason, the privacy of the participant's data, and the researcher's contact information. Participants provided their consent by ticking the box.

All participants participated entirely on a voluntary basis and no remuneration was promised or given; indeed, participants were repeatedly told that non-participation or mid-study withdrawal would entail no penalties whatsoever. It was possible to leave the survey at any point. Data was kept strictly confidential, with access limited to research team members only. The database holding all data files is password protected. All analyses will report findings at group level, with no individual data being published or presented. Anonymity and privacy were protected; no personal information beyond first initials for the demographics page was recorded.

Debriefing was presented at the end of the survey, detailing the nature of the constructs, their theoretical relevance, and the proposed uses of the results. No deception was implemented in the present study; not revealing the hypotheses was a measure implemented in order to control for potential demand characteristics, rather than to delude participants. The data were handled throughout the different stages of collection, analysis, and reporting, with no artificial data

generated or collected, nor any data selectively or artlessly excluded based on specific criteria. Since none of the questionnaires used (DCES, OPBS, TEIQue-SF and PRIUSS) tapped into any distressing or otherwise sensitive themes, there was no psychological risk to participants expected. The study was a student project conducted as a dissertation. The work was supervised by the participant's tutor at the university they were connected with.

Materials

When selecting among various instruments to measure the study variables (digital empathy, online prosociality and emotional intelligence), the following criteria were considered: (a) that each instrument should be psychometrically well-established in terms of reliability and validity; (b) that the items would conceptually correspond to the constructs being measured, (c) that the scale would be appropriate for the sample intended (Indian young people aged between 18 and 25) and (d) that it would conform to current scientific practice (i.e. Relatively recent or updated instruments were preferred over older ones). Four instruments were thus used; one screening questionnaire (PRIUSS) and three main scales (DCES, OPBS, TEIQue-SF). All the instruments were compiled into a single online questionnaire made through Tally Forms.

Demographic Questionnaire

At this point, the screening stage has been completed and the participant has finished a brief demographic questionnaire which has been included to yield basic descriptive data. In the questionnaire utilized by the researcher in this experiment, information was collected about the participant's name, age (in years), sex, and the number of hours they spend on the internet daily outside of school work. The last variable has been broken into four different categories; less than 2 hours; 2-4 hours; 4-6 hours; and more than 6 hours.

Screening Instrument: Problematic and Risky Internet Use Screening Scale (PRIUSS)

PRIUSS is a Screening Measure for Problematic Internet Use In an effort to include only subjects who use the internet at a rate higher than the norm, the experimenter had all participants complete the PRIUSS, which is described below: The Problematic and Risky Internet Use Screening Scale (PRIUSS) is an 18-item scale that attempts to measure "the extent to which individuals manifest problems and risks associated with their internet use," among 18-25-year-old adolescent and young adult males. PRIUSS was developed from a combination of concept mapping, clinical input and item development/refinement among a sample of 714 individuals from a university population, with a later confirmation of the factor analytic model from a second, cross-validating sample of 214 people.

The PRIUSS is made up of three theoretically separate factors of PIU. Social Impairment (Questions 1-6) examines the inability to engage in social interactions with people in person, withdrawal from real-life connections, and excessive dependence on virtual connections with others. Emotional Impairment (Questions 7-11) measures the emotional reaction to being without the internet and involves emotions such as anxiety, irritability, and anger. Risky/Impulsive Internet Use (Questions 12-18) reflects problems controlling the use of the internet and putting internet use before other obligations, such as studying or sleeping.

According to the scoring criteria, a score of 25-26 or higher indicates a high risk of PIU, while a score of 15 or higher suggests an intermediate risk status, which is considered a critical predictor of the subsequent occurrence of PIU (Jelenchick et al., 2015). In this study, participants whose scores met or exceeded the criteria for intermediate-risk status were selected since the criteria effectively identify people with excessive internet use. The PRIUSS exhibits remarkable

psychometric features; Cronbach's alpha value for the whole scale varies between 0.89 and 0.92, while alphas for the three subscales are 0.89 (social impairment), 0.90 (emotional impairment), and 0.88 (risky/impulsive internet use). The PRIUSS three-factor model was successfully verified using CFA, which showed appropriate fit indices (GFI = 0.92, RMSEA = 0.06). It was shown that the scores on the scale correlated positively with the average time spent on internet surfing, PIU severity, and depressive and anxious symptoms (Lakkunarajah et al., 2022). The completion of the scale online takes less than 10 minutes.

Independent Variable Instrument: Digital Communication Empathy Scale (DCES)

DCES (Collins et al., 2024) is a self-report tool consisting of 36 items explicitly formulated to gauge empathy as practiced in the context of digital communications. The rationale behind its creation lies in the noted deficiency in the current literature on empathy, where the majority of measures are created for use in interpersonal situations and neglect the lack of nonverbal signals characteristic of digital communications. This tool was tested in two independent studies, with one including the EFA of 72 items conducted on 600 participants.

The last scale measures six theoretically similar but distinct aspects of digital empathy, each consisting of six items. The first aspect of digital empathy is known as digital emotion matching and it involves the extent to which one’s emotional condition is in line with that of someone else he or she comes into contact with through the digital medium. Digital perceived empathic accuracy refers to people’s perceptions about their abilities to understand accurately how other people feel using digital cues such as emojis, typing speed, and reaction time. Digital perspective taking denotes thinking about things as seen from another person’s perspective in the online setting. Digital sympathy is defined as the feeling of care or sadness in response to the

other person's plight in the digital world. Finally, digital empathic anger refers to anger toward others when another person is experiencing maltreatment in digital spaces. Items are on a 5-point Likert scale (1= Strongly Disagree, 5=Strongly Agree) and generate 6 sub-scores, and one total score, such that high scores represent high digital empathic competence. The completion time for the DCES is estimated at 10-12 minutes. Cronbach's Alpha coefficients of internal consistency range between 0.80 and 0.90 for subscales, while for the entire scale, it is above 0.90. The test-retest reliability coefficient over a period of two months is moderately acceptable (Collins et al., 2025). The six-factor model structure has been verified by both exploratory and confirmatory factor analysis methods with good fit indices. Regarding construct validity, the scores of the DCES show positive correlations with other measures of empathy, namely the Empathy Quotient and Interpersonal Reactivity Index scales and online prosocial actions, but there is no connection with conscientiousness. Another consistent pattern has been identified, wherein males have scored lower than females on all but one subscale, as well as overall (Collins et al., 2024). Considering the culturally relevant and neutral language of the DCES, alongside the stability of the scale across English-speaking nations like Australia and America, its suitability for implementation among Indian students can be expected.

Dependent Variable 1 Instrument: Online Prosocial Behavior Scale (OPBS)

The OPBS scale (Vandoninck et al., c. 2013) is a ten-item self-administered questionnaire aimed at measuring how frequently and diversely people participate in prosocial behaviors in virtual settings or receive these behaviors from others. It uses a two-dimensional framework to differentiate between the two aspects of prosocial behavior. The first dimension – Performing Online Prosocial Behaviors, includes five items measuring behaviors initiated by participants to be helpful or comforting to other people on the Internet, such as sending a friend a message to

cheer them up or encouraging someone by posting their status online. The second dimension – Receiving Online Prosocial Behaviors, also comprises five items representing behaviors performed by others to help participants.

Participants respond on a five-point frequency scale reflecting their behavior during the past month. Performing Subscale scores, Receiving Subscale scores and an OPBS Total Score are computed; higher scores reflect more frequent prosocial behaviors. This questionnaire is completed online in about 2-3 minutes.

OPBS has been found to have excellent psychometric characteristics among adolescents and young adults. Results from CFA and EFA reveal that OPBS has a two-factor structure. Both subscales display good model fit and convergent validity. Alpha values are at least 0.80 per subscale and are often greater than 0.85 for the full scale (Martinez-Gregorio et al., 2023). OPBS results are significantly correlated with offline prosocial behavior, empathy, emotional intelligence, social competence, agreeableness, and life satisfaction, but negatively related to cyberbullying and trolling behaviors.In this regard, consistent differences have been observed, whereby women score higher on supportiveness and men score higher on information/activism. Originally developed in a Western sample population consisting of subjects from Belgium and the Netherlands, OPBS has been used around the world. In India, it has been demonstrated that OPBS is appropriate for use.

Dependent Variable 2 Instrument: Trait Emotional Intelligence Questionnaire Short Form (TEIQue-SF)

TEIQue-SF (Petrides, 2009) is a 30-question test that measures trait emotional intelligence at the global level. The test was developed from the long version of TEIQue, which

consisted of 153 questions, by choosing two questions for each of the 15 factors making up the construct of trait EI. The 15 components have been organized into four second-level dimensions. Well-being can be defined as respect for self, happiness, and positive expectations. Self-control means control of emotions, lack of impulsivity, stress management. Emotionality entails understanding and expression of one's emotion and empathy towards others' feelings. Finally, sociability covers three variables: assertiveness, social skills, and the ability to control others' emotions.

The responses to all questions are evaluated on a seven-point Likert scale. Fifteen items have been negatively keyed. The summation of all items produces the overall global trait EI score. Trait EI scores for the four higher-order factors can also be obtained. High scores denote a high level of trait EI. Administration takes about 5-10 minutes in both paper and online versions.

TEIQue-SF is considered one of the most popular trait EI assessments due to its strong psychometric properties across various samples. The Cronbach's alpha coefficient of the global trait EI score varies from 0.83 to 0.90, while test-retest reliability remains stable across different time periods (r = 0.80-0.89; Petrides, 2009). This conclusion was corroborated through meta-analytical reliability generalization studies (Orhan, 2024). Cross-validation analyses conducted in various cultures have demonstrated the presence of four dimensions with satisfactory reliability coefficients in Brazil (Zuanazzi et al., 2022), Lithuania (Gkintoni et al., 2026), Vietnam (Nguyen et al., 2025), and many other nations. Most importantly for the current investigation, cross-verification among Indian college students resulted in the Cronbach's alpha coefficient of 0.82.

In addition, the TEIQue-SF possesses discriminant validity, evidenced by its low correlation with tests of cognitive ability, thereby separating trait EI from cognitive ability.

Sample

Target Population

This is because the target population for the current research consists of undergraduate and graduate students who are enrolled in higher educational institutions located within India with the condition that they be between the ages of 18 and 25 in order to maintain developmental equivalence with the emerging adulthood period of life. It is important to note that this target population comprises a significant number of individuals who use technology for purposes of maintaining their social connections and emotions via mediums like Instagram, WhatsApp, X/Twitter, and YouTube.

Sampling Technique

A sampling strategy of purposive non-probability sampling was used for the selection of participants. Participants were sourced using WhatsApp and Telegram groups in colleges and universities and through other social media networks. The purposive sampling method was used since the study needed participants that would meet one criterion, which is being frequent internet users. It could not have been done using a probability sampling approach, hence, the necessity of administering the PRIUSS to all potential participants before recruiting them.

Sample Size and Outcomes

Based on power analysis for medium effects sizes (Cohen, 1992), a minimum sample size of about 400 responses was deemed sufficient for conducting the planned correlation analysis. To

allow for some attrition due to the screening procedures, incomplete or low-quality data, an additional number of participants needed to participate. The goal was to achieve a sample size of 460 responses which is about 15% above the analytic minimum. 465 participants completed the survey. After applying the cut-off value of PRIUSS and using the exclusion criteria stated below, 417 participants were left for further analysis. Participants were removed from the sample if they failed to reach the intermediate-risk cut-off value of PRIUSS, had more than 5% of missing data, showed signs of not putting any effort in answering the questionnaire (e.g., extremely low completing time, straightlining, etc.), or submitted a duplicate entry from one IP address/device.

Inclusion Criteria

The eligibility criteria for selecting participants were that they should be currently enrolled undergraduate or postgraduate students from any institute of higher learning in India, between the ages of 18 and 25, gave active informed consent before starting the questionnaire, and had a score equal to or above the PRIUSS intermediate risk cut-off, suggesting high levels of internet use.

Exclusion criteria

If the participant's data was found to not match the PRIUSS screening criteria; exhibited characteristics of carelessness such as straight lining or abnormally fast completion; had less than 95% questionnaire completion rate; or the IP address/device had been used earlier in the study, their responses were removed from the data analysis stage.

Research Design

This study used a quantitative, cross-sectional, and correlational research design to examine the relationships between beliefs and behaviors related to digital empathy, as well as emotional intelligence in Indian college students. A quantitative research design was necessary since it would help conduct a statistical analysis of the association between the constructs of interest. In addition, as the study used standardized and validated psychometric measures such as the DCES, OPBS, and TEIQue-SF, it allowed obtaining reliable data suitable for correlation testing in relation to H1 and H2. The choice of the cross-sectional design ensured obtaining all needed information from each study participant at a certain moment in time, which made it a relatively easy and efficient method of obtaining the data on the correlations between the constructs considered in other correlational studies of the same or related topics (Collins et al., 2024; Jelenchick et al., 2015; Zuanazzi et al., 2022). However, it should be stated that correlation does not imply causation.Data were collected via the Tally Forms online survey instrument, an online survey program that collects data anonymously and automatically; this method was found to be time and cost-effective in collecting data from a wide range of students, who are scattered across the geographic breadth of India.

Procedure

The online survey took an estimated 15-20 minutes to complete and was presented in 5 sequential steps:

Step 1: When participants first accessed the survey by clicking the link they were given the Participant Information and Consent Form. On this form the purpose of the research was detailed, as were the issues of voluntary participation and the ability to withdraw at any time without penalty, participant confidentiality of all data provided, and contact details of the

researchers. It was only upon actively clicking the consent tick box that participants were allowed to proceed.

Step 2: Participants were asked to complete the 18-item PRIUSS. All responses were simultaneously screened in real time by means of the built-in conditional logic feature of Tally Forms. The respondents who succeeded in reaching the cut-off on the PRIUSS test were directed to the bulk of the survey questions, while those who failed to pass the cut-off point were thanked briefly and asked to go to the end of the survey form.

Step 3: The participants who succeeded in passing the cut-off on the PRIUSS took the questionnaire assessing the respondents' demographic information (initials, age, sex, and number of daily internet hours).

Step 4: Participants then completed the three core measures: the DCES, OPBS (Performing and Receiving subscales), and TEIQue-SF. These three scales were presented to participants in a randomized order to avoid systematic order effects by using the question randomization feature within Tally Forms. Specific instructions pertaining to the scales were presented prior to completion.

Step 5: Once the sections had been finished the participants were shown the debriefing page where they were thanked for their contribution to the study, their full understanding of the aim of the study and possible implications of the findings was developed and assurance of the anonymity of their answers and details of contact for researchers were reiterated.

Ethical Considerations

All aspects of the present study were conducted in strict adherence to the American Psychological Association's (APA, 2017) ethical principles and the Declaration of Helsinki (World Medical Association, 2013), informing the researchers' attention to participant rights and well-being, as well as to fairness of inclusion.

Prior to participation all participants were required to give their informed consent. Before proceeding to the study, all participants were presented with an information letter outlining the aims and methods of the study, and stressing the entirely voluntary nature of their participation, their right to withdraw at any point without repercussions and without obligation to explain, the protection of their data, and the researchers' contact information. They must give their consent by checking the corresponding checkbox.

All participants participated entirely on a voluntary basis and no remuneration was promised or given; indeed, participants were repeatedly told that non-participation or mid-study withdrawal would entail no penalties whatsoever. It was possible to leave the survey at any point.

Data was kept strictly confidential, with access limited to research team members only. The database holding all data files is password protected. All analyses will report findings at group level, with no individual data being published or presented. Anonymity and privacy were protected; no personal information beyond first initials for the demographics page was recorded.

Debriefing was presented at the end of the survey, detailing the nature of the constructs, their theoretical relevance, and the proposed uses of the results. No deception was implemented in the present study; not revealing the hypotheses was a measure implemented in order to control for potential demand characteristics, rather than to delude participants. The data were handled

throughout the different stages of collection, analysis, and reporting, with no artificial data generated or collected, nor any data selectively or artlessly excluded based on specific criteria.

Given that none of the scales used, namely DCES, OPBS, TEIQue-SF and PRIUSS, deal with topics of a distressing or otherwise sensitive nature, psychological risks to participants are considered to be minimal. The study was undertaken as a student dissertation under the supervision of a faculty tutor at the affiliated university.

Results

Preliminary Analysis

Jamovi version 2.6 was used to conduct all the statistical analyses (The jamovi project, 2024). 465 responses were collected in total through the online survey on Tally forms. After data screening, 48 participants were excluded from the final analytic sample as 40 did not meet the PRIUSS screening cut-off for above average online engagement, 5 of them submitted incomplete responses, and 3 of them fell outside the predefined age range of 18 to 25 years old. No duplicate entries or speedy responses were found. The final analytic sample consisted of N = 417 participants (M~age~ = 21.3, SD = 2.13), out of which 211 were identified as female (50.6%), 18.3% as male (43.9%), 12 as non-binary (3.1%), and 10 fell into preferred not to say group (2.4%). The participants reported an average of 2.79 hours (SD = 0.93) of regular non-academic internet usage, with the majority falling in the range of 2-4 and 4-6 hours.

Shapiro-Wilk test along with skewness and kurtosis indices was used to evaluate the normality of all continuous variables. The Shapiro-Wilk test revealed significant results for all variables with $p < .001$, which was expected given the large sample size, and the test became highly sensitive to minor deviations from normality. Skewness values ranged from -.423 to -.257 whereas kurtosis values ranged from -.545 to +.756, all within the acceptable thresholds of ±1 and ±2. Histograms were plotted (see Figures 2.1 to 2.5 in the Appendix) to confirm the approximate normal distributions across all measures.

Pearson's correlation coefficient was used as the primary statistical test with Spearman's rho in parallel as a robustness check. Descriptive statistics for all the variables are presented in Table 1.

Main results

Table 1

Descriptive Statistics for Study Variables

	Age	Internet_Hours	DCES_Total	OPBS_Total	OPBS_Performing	OPBS_Receiving	TEIQueSF_Total
N	417	417	417	417	417	417	417
Missing	0	0	0	0	0	0	0
Mean	21.3	2.79	138	79.4	27.1	25.3	134
Standard deviation	2.13	0.931	35.1	32.8	11.4	10.5	34.4
Minimum	18	1	39	3	1	1	30
Maximum	25	4	208	149	50	50	210
Skewness	0.200	-0.334	-0.423	-0.410	-0.376	-0.257	-0.413

Std. error skewness	0.120	0.120	0.120	0.120	0.120	0.120	0.120
Kurtosis	-0.991	-0.754	0.228	-0.504	-0.545	-0.456	0.756
Std. error kurtosis	0.238	0.238	0.238	0.238	0.238	0.238	0.238
Shapiro-Wilk W	0.938	0.868	0.979	0.973	0.974	0.984	0.965
Shapiro-Wilk p	<.001	<.001	<.001	<.001	<.001	<.001	<.001

Note. DCES = Digital Communication Empathy Scale; OPBS = Online Prosocial Behaviour Scale; TEIQue-SF = Trait Emotional Intelligence Questionnaire–Short Form. Daily Internet Hours coded as 1 = <2 hours, 2 = 2–4 hours, 3 = 4–6 hours, 4 = >6 hours.

Hypothesis 1: Digital Empathy and Online Prosocial Behavior

Hypothesis 1 proposed a significant positive correlation between digital empathy and online prosocial behavior. Pearson Correlation was conducted to measure this relationship. Results indicate a strong, positive correlation between digital empathy (DCES Total) and online

prosocial behavior (OPBS Total), $r = .760$, $p < .001$, 95% Confidence Interval [.716,.798]. This correlation was statistically significant at .001 alpha value. Spearman's rho confirmed this finding, $\rho = .702$, $p<.001$, stating that the result was robust to deviations from normality. Thus, Hypothesis 1 is validated.

The relationship was also consistent across both the components of online prosocial behavior i.e., OPBS Performing, $r = .752$, $p<.001$, 95% Confidence Interval [.707, .791] and OPBS Receiving, $r = .736$, $p<.001$, 95% Confidence Interval [.689, .777]. This concludes that digital empathy was associated with both giving and receiving supportive online behavior.

Hypothesis 2: Digital Empathy and Trait Emotional Intelligence

Hypothesis 2 proposed a significant positive correlation between digital empathy and trait emotional intelligence. Pearson Correlation revealed a strong positive association between DCES Total and TEIQue-SF Total, $r = .754$, $p < .001$, 95% Confidence Interval [.710, .793]. Spearman's rho confirmed this finding, $\rho = .626$, $p < .001$. Thus, Hypothesis 2 is validated.

Additional correlation among study variables

In addition to the two hypothesized relationships, a strong positive correlation was also found between online prosocial behavior and trait emotional intelligence, $r = .694$, $p < .001$, 95% Confidence Interval [.641, .741], $\rho = .552$, $p < .001$. The full correlation matrix has been presented in Table 2 along with scatterplots illustrating each pairwise relationship in Figure 3 in the Appendix.

Table 2

Pearson Correlation Matrix for Study Variables

		DCES_Total	OPBS_Total	TEIQueSF_Total
DCES_Total	**Pearson's r**	—		
	df	—		
	p-value	—		
	95% CI Upper	—		
	95% CI Lower	—		
	Spearman's rho	—		
	df	—		
	p-value	—		
	N	—		
OPBS_Total	**Pearson's r**	0.760***	—	

	df	415	—	
	p-value	<.001	—	
	95% CI Upper	0.798	—	
	95% CI Lower	0.716	—	
	Spearman's rho	0.702***	—	
	df	415	—	
	p-value	<.001	—	
	N	417	—	
TEIQueSF_Total	**Pearson's r**	0.754***	0.694***	—
	df	415	415	—
	p-value	<.001	<.001	—
	95% CI Upper	0.793	0.741	—

95% CI Lower	0.710	0.641	—
Spearman's rho	0.626***	0.552***	—
df	415	415	—
p-value	<.001	<.001	—
N	417	417	—

Supplementary observations

Gender Differences

Supplementary analysis measured whether the variables differed by gender. Group means and standard deviations across all four gender groups are presented in Table 3. One-way Welch's ANOVAs with Games-Howell post-hoc tests were chosen for the study due to the inequalities in group sizes (females, males, non-binary and prefer not to say groups), along with Levene's test to confirm homogeneity of variances across all five variables (separating OPBS into OPBS Performing and OPBS Receiving) (all ps > .45). Levene's test further supports the reliability of the results.

Welch's ANOVA results showed significant gender differences in digital empathy, $F(3,26.3) = 7.80$, $p < .001$; online prosocial behavior $F(3,26.6) = 6.22$, $p = .002$; OPBS Performing, $F(3,26.7) = 6.79$, $p = .002$; and OPBS Receiving, $F(3, 26.5) = 4.66$, $p = .010$.

However, trait emotional intelligence did not differ significantly across gender groups, F(3,26.2) = 1.58, p = .218.

Games-Howell post-hoc comparisons confirmed that females scored significantly higher than males on digital empathy (M~diff~ = 16.20, p < .001), overall online prosocial behaviour (M~diff~ = 13.20, p < .001), OPBS Performing (M~diff~ = 4.76, p < .001), and OPBS Receiving (M~diff~ = 3.69, p = .003). No other group comparisons reached statistical significance, mainly due to limited statistical power associated with small non-binary and prefer not to say groups. Trait emotional intelligence did not differ significantly across gender groups, F (3, 26.2) = 1.58, p = .218. Post-hoc comparisons for DCES Total, OPBS Total, Levene's homogeneity test tables have been attached in the Appendix.

Table 3

Group Means and Standard Deviations by Gender

	Gender	N	Mean	SD	SE
DCES_Total	**Female**	211	145.7	33.5	2.305
	Male	183	129.5	34.2	2.526
	Non-binary	13	153.3	40.5	11.232
	Prefer not to say	10	129.6	41.3	13.046

OPBS_Total	**Female**	211	85.9	32.0	2.205
	Male	183	72.7	31.9	2.359
	Non-binary	13	82.2	34.5	9.557
	Prefer not to say	10	61.3	34.6	10.940
OPBS_Performing	**Female**	211	29.5	11.2	0.769
	Male	183	24.7	11.1	0.821
	Non-binary	13	27.4	11.6	3.212
	Prefer not to say	10	20.4	11.5	3.631
OPBS_Receiving	**Female**	211	27.0	10.3	0.712
	Male	183	23.3	10.3	0.761
	Non-binary	13	27.5	11.3	3.135
	Prefer not to say	10	20.5	11.6	3.680

TEIQueSF_Total	**Female**	211	134.5	33.6	2.314
	Male	183	131.3	33.8	2.500
	Non-binary	13	156.2	43.0	11.937
	Prefer not to say	10	124.5	43.2	13.663

Table 4

One-Way ANOVA (Welch's) Results for Gender Differences

	F	**df1**	**df2**	**p**
DCES_Total	7.80	3	26.3	<.001
OPBS_Total	6.22	3	26.6	0.002
OPBS_Performing	6.79	3	26.7	0.002
OPBS_Receiving	4.66	3	26.5	0.010

TEIQueSF_Total	1.58	3	26.2	0.218

Internet Hours and Study Variables

Pearson correlations were computed between self-reported internet hours and the study variables to measure the role of daily non-academic internet usage. All five correlations were significant and negatively correlated. Internet hours were inversely correlated with digital empathy , $r(415) = -.545$, $p < .001$, 95% CI [−.609, −.473]; online prosocial behaviour, $r(415) = -.368$, $p < .001$, 95% CI [−.448, −.282]; OPBS Performing, $r(415) = -.343$, $p < .001$, 95% CI [−.425, −.255]; OPBS Receiving, $r(415) = -.404$, $p < .001$, 95% CI [−.481, −.320]; and trait emotional intelligence, $r(415) = -.702$, $p < .001$, 95% CI [−.747, −.649]. Spearman's rho values also confirmed the same pattern (ρ ranging from −.290 to −.641, all $p < .001$). Table 4 presents the correlation matrix.

Table 5

Pearson and Spearman Correlations of Internet Hours with study variables

	DCES_Total	OPBS_Total	OPBS_Performing	OPBS_Receiving	TEIQueSF_Total	Internet_Hours

DCES_Total	**Pearson's r**	—	
	df	—	
	p-value	—	
	95% CI Upper	—	
	95% CI Lower	—	
	Spearman's rho	—	
	df	—	
	p-value	—	
OPBS_Total	**Pearson's r**	0.760 ***	—

	df	415	—	
	p-value	<.001	—	
	95% CI Upper	0.798	—	
	95% CI Lower	0.716	—	
	Spearman's rho	0.702***	—	
	df	415	—	
	p-value	<.001	—	
OPBS_Performing	**Pearson's r**	0.752***	0.992***	—
	df	415	415	—
	p-value	<.001	<.001	—

	95% CI Upper	0.791	0.993	—	
	95% CI Lower	0.707	0.990	—	
	Spearman's rho	0.699***	0.990***	—	
	df	415	415	—	
	p-value	<.001	<.001	—	
OPBS_Receiving	**Pearson's r**	0.736***	0.962***	0.920***	—
	df	415	415	415	—
	p-value	<.001	<.001	<.001	—
	95% CI Upper	0.777	0.969	0.933	—

	95% CI Lower	0.689	0.954	0.904	—	
	Spearman's rho	0.683***	0.954***	0.907***	—	
	df	415	415	415	—	
	p-value	<.001	<.001	<.001	—	
TEIQueSF_Total	**Pearson's r**	0.754***	0.694***	0.664***	0.721***	—
	df	415	415	415	415	—
	p-value	<.001	<.001	<.001	<.001	—
	95% CI Upper	0.793	0.741	0.714	0.764	—
	95% CI Lower	0.710	0.641	0.606	0.671	—

	Spearman's rho	0.626***	0.552***	0.516***	0.608***	—	
	df	415	415	415	415	—	
	p-value	<.001	<.001	<.001	<.001	—	
Internet_Hours	**Pearson's r**	-0.545***	-0.368***	-0.343***	-0.404***	-0.702***	—
	df	415	415	415	415	415	—
	p-value	<.001	<.001	<.001	<.001	<.001	—
	95% CI Upper	-0.473	-0.282	-0.255	-0.320	-0.649	—
	95% CI Lower	-0.609	-0.448	-0.425	-0.481	-0.747	—
	Spearman's rho	-0.511***	-0.312***	-0.290***	-0.361***	-0.641***	—

df	415	415	415	415	415	—
p-value	<.001	<.001	<.001	<.001	<.001	—

Note. * p < .05, ** p < .01, *** p < .001

Both hypotheses were validated and strongly supported. Supplementary analyses also identified significant differences across gender groups and non-academic internet hours categories.

Discussion

Digital Empathy and Online Prosocial Behavior (H1)

A strong positive correlation between digital empathy and online prosocial behavior ($r = .760$, $p < .001$, 95% Confidence Interval [.716, .798] validates Hypothesis 1 thereby adding to the growing literature that connects empathetic capacity with helping behaviors in digital spaces and contexts. A similar large study was conducted among young adults and it also found a similarly strong positive correlation between empathy and prosocial behavior ($r = .847$, $p < .001$). The study concluded that empathy is important to drive altruistic actions, thoughts and behaviors (Ishtiyaq et al., 2024). Research with adolescents has revealed significant positive correlations between empathy and prosocial behavior across different age groups as well (Fu et al., 2022), indicating that the relationships observed in our Indian sample is part of a broader pattern, not simply characteristic of a culture. The Empathy-Altruism Hypothesis (Batson, 1991) states that individuals often start caring about another individual's well-being if they are able to understand how they are feeling. This fuels motivation to reduce the other individual's distress leading to prosocial behaviors, either in online or offline contexts.

The correlation was found to be consistent across both subdimensions of the OPBS scale i.e., performing ($r = .752$) and receiving supportive acts ($r = .736$), suggesting that those high in digital empathy are more likely to offer help and be involved in supportive networks from where they can receive help in case of any distressing situations or conflicts, so the help flows in both directions. These two sub-scale correlations are nearly identical, showing that digital empathy is both a predictor of giving and evidence of participation in compassionate online interactions and networks where such behaviors can be expressed. The findings also add depth and proof from the Indian population as the relationships were previously studied mostly in Western or East Asian

groups. Alloway and colleagues noticed that digital empathy could also be implied and positively related to empathy in real life, however they pointed out that people tend to be less empathetic online comparatively. Online spaces have limited emotional cues so it gets difficult for people to respond empathetically (Carrier et al., 2015). Since our correlation is at the higher end of the range (around .76), it could be because of the specific population that was chosen i.e., those who are chronically online and use digital platforms frequently to connect with other people. For them the abilities required to read and respond to emotional cues online are practised well-enough.

From theory's perspective, the strength of this correlation also shows how closely digital empathy and online prosocial behavior is aligned conceptually. The items of the scale record acts like offering emotional support, comforting and helping peers online, etc. which are exactly the behavioral outcomes that a high scoring DCES scale respondent would fulfill. Thus, the correlation is psychologically valuable, meaningful and hypothetically anticipated.

Digital Empathy and Emotional Intelligence (H2)

A strong positive correlation was also found between digital empathy and trait emotional intelligence ($r = .754$, $p < 0.001$, 95% Confidence Interval [.710, .793]), validating Hypothesis 2, Spearman's rho also confirmed the correlation at $\rho = .626$. According to Mayer and Salovey's 1997 ability model of emotional intelligence, being able to perceive other people's emotions is a key emotional intelligence skill. Digital empathy, at its core, involves the ability to perceive emotions in online settings where people rely on certain aspects like emojis, writing tone, time taken to respond, punctuation, thereby implying that it would be strongly linked to trait emotional intelligence. Previous researches have found similarly that social media usage and online chatting are related to empathy to some extent, supporting the view that empathetic skills

can be transferred to digital spaces and contexts as well, rather than being confined to offline (Collins, n.d.)

The scale covers 4 broad dimensions i.e., well-being, self-control, emotionality, and sociability and it can be noted that the emotionality and sociability aspects contribute significantly in this correlation. Individuals who are adept at managing their own emotions, sensing the emotional atmosphere, and perceiving other's emotions in face to face interactions seem to carry those same skills in digital spaces as well, where the risks of misinterpreting are arguably even higher due to absence of non-verbal scaffolding. One thing to consider is that digital empathy and trait emotional intelligence are not identical constructs so the correlation is not only strong but also meaningfully below unity. This means that even though emotionally intelligent students have a higher score in digital empathy functioning, digital empathy can be taught and trained, and employing interventions that target it can help develop it in those students whose baseline trait EI is low.

Not directly relevant to the study but digital empathy and emotional intelligence together showed a significant positive correlation with online prosocial behavior (r between EI and OPBS = .694, $p < .001$). This aligns with existing literature that talks about the interdependency between emotional competencies and prosocial behaviors i.e., higher levels of empathy leads to greater engagement in prosocial behaviors that help others (Ishtiyaq et al., 2024). In our sample, these three constructs collectively form a group of emotionally driven digital skills.

Supplementary Findings (Gender differences and Internet hours)

Gender differences

These gender differences hold true to established evidence in both traditional and digital empathy research (Erreygers et al., 2018; Sunil & Chukkali, 2023). A recent study by Scientific Reports revealed that women are more likely to show empathy and compassion and engage in more prosocial actions in cooperative allocation or voluntary assistance compared to men (McDonald & Kanske, 2023). Simultaneously, a more nuanced reading of this literature stated that the gender gap may partially be driven by measurement and socialisation rather than innate talent. One interesting point to note is that large gender differences that favor women occurred when empathy was measured through self-assessment but much smaller or non-existent distinctions were found when objective methods were used, as per the Eisenberg and Lennon's meta-analysis. This could mean that females have a tendency to report stronger empathetic responses instead of their true empathetic capacities (Löffler & Greitemeyer, 2021). Another economics study suggested that gender differences in prosocial behaviors across dictator, public goods, and trust games resulted in no significant differences once empathy was statistically controlled, implying that the most empathetic men act as prosocially as women (Kamas & Preston, 2020).

One of the most interesting features of our gender analysis results was that there were no significant differences between male and female groups on the TEIQue-SF. Underlying emotional capacities for both the gender groups are roughly equivalent but the substantial differences noted on DCES and OPBS could be because social-role expectations and gendered norms around emotional expression shape how those capacities are directed towards visible online helping. In Indian culture, females are naturally caregivers and often go through emotional labour, as they are encouraged to provide emotional support openly whereas men are discouraged to do the same. This is also consistent with Eagly's (2009) social role theory that

talks about interventions targeting male students being less about building emotional capacity and more about normalising that capacity in peer support contexts.

The other groups i.e., non-binary (n=13) and prefer not to say (n=10) groups values were also measured. Even though the non-binary participants descriptively recorded highest group means on digital empathy (M = 153.3) and emotional intelligence (M = 156.2), the post-hoc comparisons involving these groups reached no significance. This implies the insufficient statistical power of the groups rather than a true absence of difference. Even sizable mean differences are not able to clear significance thresholds due to such small cell sizes. Therefore such descriptive observations need to be interpreted with caution and marked as a direction for future research to have a balanced recruitment across gender-diverse populations.

Internet hours

The results suggest that students who spent the most time online on non-academic activities reported lowest levels of empathy, prosocial behavior and emotional intelligence and this relationship was markedly evident for emotional intelligence.

A cross-sectional study was conducted on nursing students and their results also found a significant moderate negative correlation between internet addiction and emotional intelligence ($r = -.53$, $p < .001$) with all four EI dimensions i.e., perception of emotion, managing own emotions, managing other's emotions and expression of emotions, thereby showing the same pattern (El-Gazar et al., 2024). Another study including 1448 Chinese college students similarly demonstrated that emotional intelligence was negatively correlated with problematic social media use (Guan et al., 2025), and its follow-up elaborated that higher emotional intelligence causes individuals to handle emotion related problems more rationally, regulate emotions better

and prevent internet overuse (Chen et al., 2025). Therefore, our finding is consistent with the existing literature and the absolute value of our internet hours to EI correlation is significantly larger than most published estimates, possibly because our sample was pre-selected for high engagement through the PRIUSS scale, revealing the observable negative gradient even within an already digitally immersed group.

There are two mechanisms that help us explain why high internet use may weaken these skills or capabilities. Firstly, the displacement theory states that time spent online replaces the face to face interaction where most of the empathetic skill building takes place (Carrier et al., 2015). This means students who spend around six or more hours per day online have fewer opportunities to practise observing and perceiving facial expressions, tone of voice, and body language as it happens plus the emotional skills that depend on those cues may shrink. Secondly, certain types of heavy media consumption like violent video gaming, produce cognitive desensitisation, cognitive overload and poor empathetic concern that further leads to reduced prosocial behavior towards strangers (Fraser et al., n.d.). That same point can apply to chronic exposure to the emotionally overstimulating social media feeds where users may gradually become less responsive to other's distresses as a self-protective adaptation of their own emotions.

When this pattern is read alongside H1 and H2 results, it shows that digital empathy is a crucial strong trait for online prosocial behavior and emotional intelligence, however the same environment in which it is expressed seems to atrophy these skills down. This does not imply that students should quit digital spaces, but the frequency with which they do matters i.e, the quality and intention with which they engage online may be more important than the volume and

excessive consumption could degenerate their skills that make empathetic online behavior possible in the first place.

Limitations and Future Considerations

The study provides meaningful and valuable insights into the relationships between digital empathy, online prosocial behavior, and emotional intelligence among Indian college students. However, many methodological limitations and circumstantial factors must be noted that affected the study to some extent and directly inform future research of the study.

Self-report bias and Common method variance

One of the limitations of the study is its heavy reliance on self-report psychometric scales. All three variables i.e., digital empathy in DCES, online prosocial behavior in OPBS, and trait emotional intelligence in TEIQue-SF were measured through self-assessments that were administered by the participant at the same time. This would introduce two related concerns. First, social desirability bias may lead to exaggerated or over-the-top responses because participants are likely to present themselves as more empathetic and engaged prosocially than their actual behavior in reality. This can be seen more prominently in constructs with clear normative valence e.g. helping others online (Podsakoff et al., 2003). Second, when all variables are measured using self-report assessments at once, it can create common method variance. This contributes to artificially exaggerated correlation coefficients, thereby making the associations between these variables appear stronger than they really are (Harman, 1976).

Future research could address this by combining self-report scales data with semi-structured interviews conducted with a small purposive sub-sample of participants. They would be asked to describe any recent experience of them helping someone online, adding qualitative depth that our study fails to capture. It would also allow the researchers to

cross-check whether those who score high on the DCES and OPBS scales describe empathetic behavior or respond in socially desirable ways in their interview.

Cross-Sectional Design and Causal Interference

The study uses a quantitative, cross-sectional survey design to test the statistical relationships between the variables. This means that all data from each participant was collected at a single point in time. Hence, it's excellent for identifying relationships and making predictions but it cannot fundamentally establish causality. The significant correlation found between digital empathy and online prosocial behavior ($r = 0.760$, $p < 0.01$) confirms that these two constructs collocate strongly but it fails to clarify whether higher digital empathy causes more online prosocial behavior, or whether engaging in more online prosocial behavior leads to higher digital empathy over time, or whether another variable such as agreeableness or collectivist values guides both of them. This limitation becomes especially relevant because the theoretical frameworks cited in the above literature review states that digital empathy and emotional intelligence also bidirectionally influences each other but a simple snapshot of the values of these constructs cannot tell us which causes and affects which (Mayer & Salovey, 1997).

Therefore, future researchers could conduct a longitudinal design that tracks the same participants at the beginning of the term and the end of the term at roughly 8 to 10 weeks apart. It is much more realistic and manageable to understand whether changes in digital empathy scores correspond with changes in online prosocial behavior or emotional intelligence over time.

Purposive Sampling and Generalisability

For this study, participants were recruited using purposive sampling, using a PRIUSS screening cut-off such that only chronically online and high to moderate frequency internet users were included in the final sample. While this approach targeting such participants sounds methodologically right given that the study only focuses on those who spend a significant amount of their time online. The findings of the study cannot be generalised to those who use the internet moderately or infrequently as it only describes the associations within this high-engagement subgroup. Furthermore, they were recruited mostly through WhatsApp, Discord, Reddit, and university premises, leading to selection bias.

So, future research could benefit more by using random or stratified sampling across different internet use levels and also across multiple institutions, and other regions of India, so as to produce findings that have broader representational validity.

Culture Applicability of Western-Developed Scales

Another limitation of the study is the cultural origin of the scales that were used to measure the variables. The DCES (Collins et al., 2023) was developed and validated for English speaking western populations like USA, Australia, UK, etc. whereas the OPBS (Erreygers et al., 2018) was originally developed and validated for Belgian and Dutch populations. The scales were initially selected for the study due to their psychometric strength and language neutral word framing, however we cannot assume that the items would translate smoothly into the socio-cultural context of our target population. They are unique in their collectivist values, family centeredness, communication styles, and rapidly changing platform usage and cultures. For example, some items in the scales portray helping strangers or speaking up for others assertively online, that may feel less relevant to Indian students who are more likely to extend their help towards people they already know like friends, classmates, family members, partners

rather than an unknown user they barely know on the internet. The items in the scale may carry different meanings for every person within the Indian collectivist framework. The TEIQue-SF has demonstrated good reliability in Indian college samples ($\alpha = 0.82$) (Petrides, 2009) providing a comparatively stronger cross-cultural grounding.

Full cross-cultural validation is very difficult to achieve for student researchers, a practical step could be to include two to three open ended follow up questions after DCES and OPBS asking them whether any items felt unclear, irrelevant or culturally unfamiliar. Though it's not directly important for the study, such qualitative feedback, even from a small subset of participants, can suggest concrete evidence for scale adaptation and making the items more culturally fit.

Applications and Significance of the Present Study

This research allows one to learn about behavior and emotional interaction in digital spaces. With the rapid growth of online communication, especially among college students, it is imperative not only to focus on technological tools used by modern youth but also to pay attention to their emotional interaction. The analysis shows that there is some connection between digital empathy, prosocial behavior, and emotional behavior, and all three aspects impact positively on online interaction.

The area in which findings may be implemented is education. It means that colleges and universities could use knowledge obtained from the research in developing programs for student psychological and social skills development. Traditionally, programs for development of emotional intelligence focus on face-to-face interaction. However, nowadays, college students spend much time in online environments. Hence, the skill to perceive the mood and tone in online conversations and react to it is extremely helpful in maintaining good relationships. There is an evident connection between prosocial behavior and empathy, according to Batson (1991).. According to research findings, empathy has been identified as a key factor influencing prosocial behaviors since people with higher levels of empathy are usually more inclined towards offering support and help (Batson, 1991). In such a case, nurturing digital empathy can lead to creation of more positive digital environments where the individuals interact in a respectful manner.

In addition, the study can be applied in the area of counseling and mental health issues. It has become common for various emotional experiences, conflicts, and misunderstanding to happen in the digital environment and this might lead to increased emotions since the communication is done through messages that can be misinterpreted at times. The idea of digital empathy can be used by mental health practitioners to guide individuals on how to interpret their

emotions and engage positively with other individuals. As suggested by Petrides (2009), emotional intelligence is associated with better emotional regulation and therefore promoting emotional intelligence could be beneficial in alleviating stress, reducing conflict, and creating healthy interactions.

Social media platforms can also be developed based on the ideas suggested here. This is because digital environments are not passive but have the ability to influence the behaviors of people interacting there. On the other hand, platforms can also be designed to facilitate constructive interaction. Meaningful engagement, avoiding impulses when commenting on content, and offering constructive responses are examples of such practices that can make the experience on such platforms better and more enjoyable. It has been proven that the structural design of digital platforms influences users' actions and well-being (Kuss & Griffiths, 2017). Thus, the introduction of the notion of digital empathy into platform design can contribute to the social sphere even further.

This study can be helpful in planning educational campaigns to increase awareness about digital issues and educate people about online behavior. As it is currently practiced, most educational initiatives emphasize potential harms related to the use of the Internet from the dangers of addiction to problems related to cyberbullying. However, little consideration is given to the development of constructive behaviors online. The current results show that the development of skills in terms of empathic communication and the overall improvement of emotional intelligence can positively influence interaction on such platforms.

These results may have practical implications in various areas. For instance, college students may learn more about how they interact online and improve their skills of effective communication. Educational institutions may use the obtained results to develop their curriculum

further to promote students' personal development. Psychologists and counselors may find the discussed findings relevant while counseling college-age people and helping them cope with psychological problems, especially in relation to online interactions. Finally, policymakers may also use the results of the present study while making rules and regulations related to digital interaction.

As for future research, there are several of them worth considering. The study demonstrates that studying the relevance of applied psychology in digital contexts is gaining more importance. First of all, future studies should consider changes that occur in digital empathy over time, or conduct research based on experimental designs to understand causal relationships. Another option is to conduct findings among other age groups or in the context of a particular culture to observe possible differences in such relationships. Also, it can significantly contribute to the development of interventions in clinical settings through integration of future research..

This research helps contribute to our understanding of the functioning of emotional and social abilities in the digital space. As communication through digital platforms gains importance in our lives, it is very important to know how to interpret and respond to other people’s emotions in an online setting. The relationship between digital empathy and prosocial conduct, as well as emotional intelligence, makes it clear why digital empathy is of significance for online communication that is healthy and emotionally intelligent in nature.

Conclusion

In this research, an attempt was made to examine the correlation between digital empathy, prosocial behavior on the Internet, and emotional intelligence among Indian college students with high Internet usage. The results of this research show that there is a strong and positive correlation between digital empathy and prosocial behavior on the Internet and between digital empathy and emotional intelligence. In other words, people who are able to recognize and react to emotions of other people in a digital world will be more inclined to perform prosocial activities online and have higher levels of emotional intelligence.

These outcomes can be supported by existing theoretical approaches in psychology, for instance, empathy-altruism hypothesis according to which empathy is important in explaining altruistic behavior of people (Batson, 1991). The findings confirm that the hypothesis works in a digital environment, despite the lack of non-verbal communication. The strong link between digital empathy and emotional intelligence also supports existing theories that stress how important it is to understand and manage emotions in social situations (Mayer & Salovey, 1997; Petrides, 2009). From the results obtained, it can be stated that emotional competencies are not only necessary for face-to-face interaction but are also essential in the digital world; however, they may need more consideration since they may be harder to recognize there. In addition to that, it gives an understanding of the behavior of Indians college students who are quite involved in digital interaction, being a part of the culture which has collectivism values. Thus, digital empathy could be helpful for the purpose of retaining social connectedness and ensuring positive relations in the virtual environment. Nevertheless, the significant negative correlation between excessive internet usage and research variables emphasize the necessity for individuals to

interact with others mindfully and in a balanced way as uncontrolled usage of social networks could decrease one's emotional abilities (Kuss & Griffiths, 2017).

On the other hand, there are several limitations associated with this study. Firstly, since the research used cross-sectional design, no conclusions concerning causation were obtained. In addition to that, the use of self-reports was also a source of bias in the analysis. Secondly, due to the use of purposive sampling, the findings might not apply to all groups of people. These limitations imply that further studies on the topic should be designed using longitudinal, more varied samples, and mixed approaches.

Thus, in conclusion, it can be said that digital empathy is getting more important as a necessary part of current social interaction. With continued development of digital communication spaces, understanding emotional state through digital interaction gains more and more relevance. The findings suggest that developing digital empathy is important, as it contributes to emotional intelligence and prosocial behaviour in today's digital spaces.

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Appendix

Figure 1.1 - Gender Distribution of the Sample

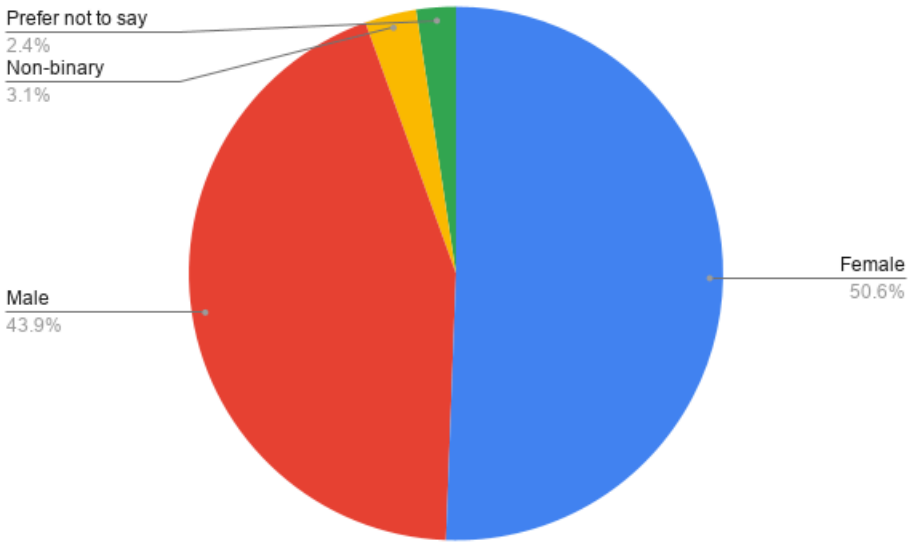


Figure 1.2 - Age Distribution of the Sample

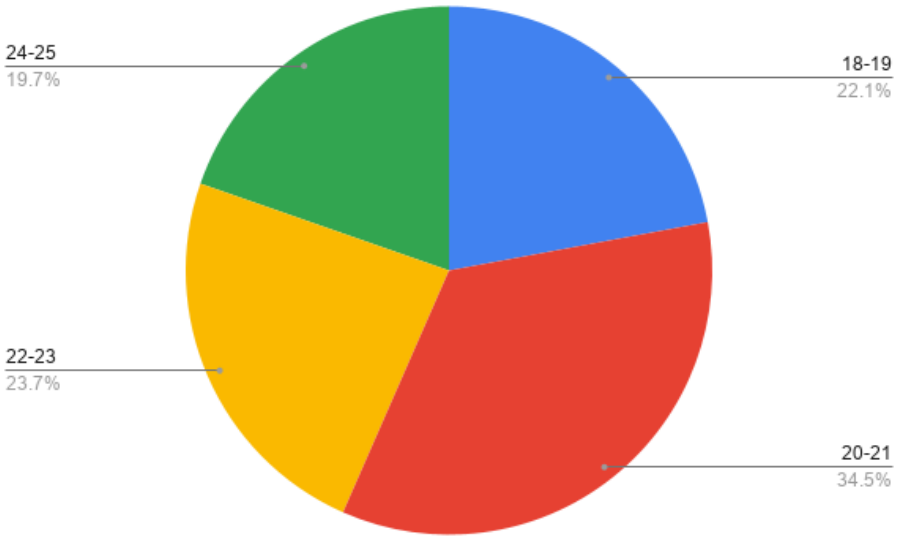


Figure 1.3 - Daily Non-Academic Internet Hours of the Sample

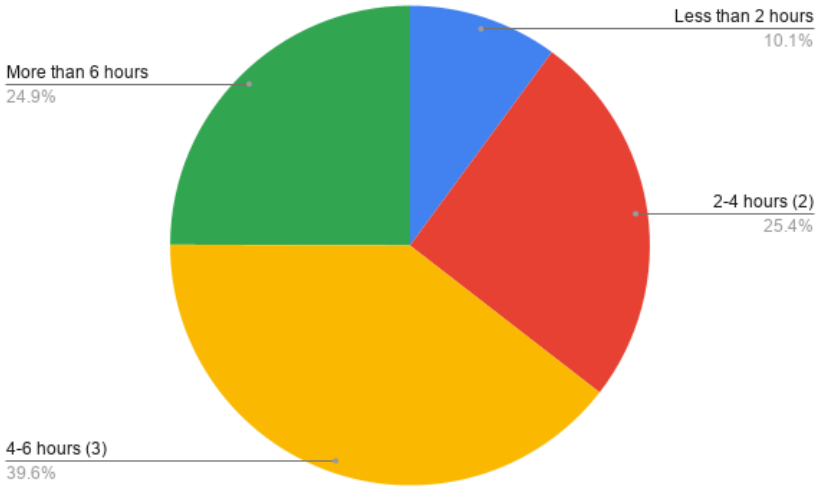


Figure 2.1 - Histogram of Digital Empathy (DCES Total) Scores

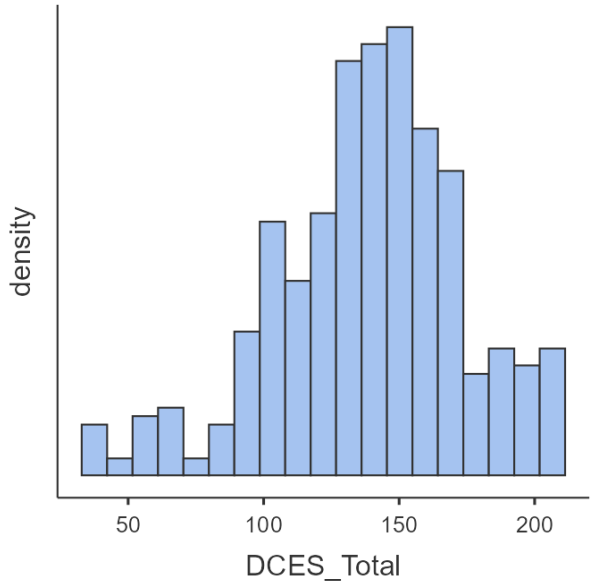


Figure 2.2 - Histogram of Online Prosocial Behavior (OPBS Total) Scores

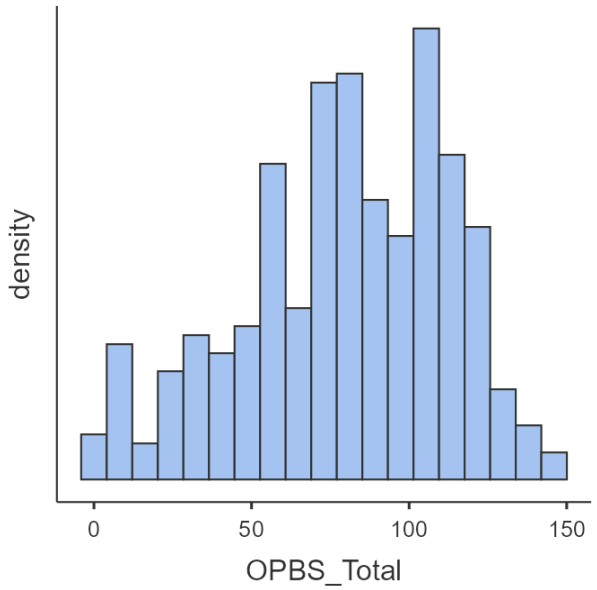


Figure 2.3 - Histogram of OPBS Performing Subscale Scores

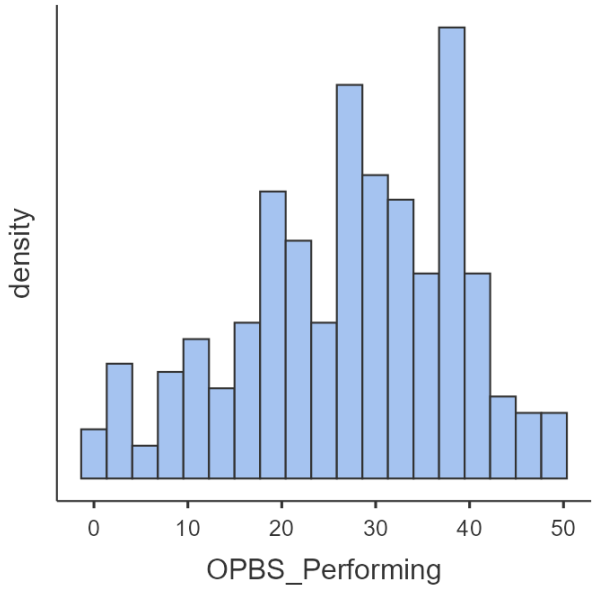


Figure 2.4 - Histogram of OPBS Receiving Subscale Scores

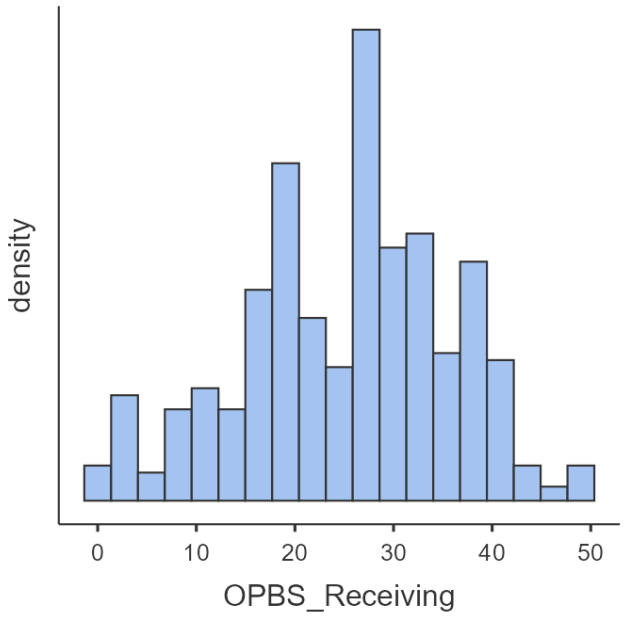


Figure 2.5 - Histogram of Trait Emotional Intelligence (TEIQue-SF Total) Scores

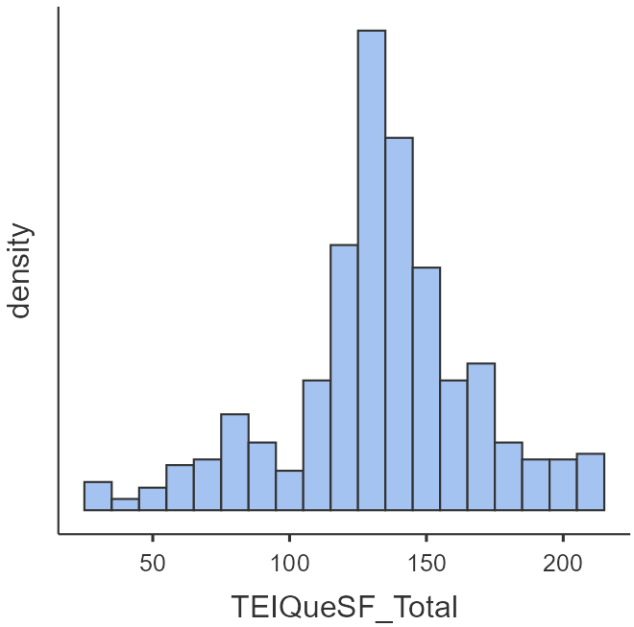


Figure 3 - Scatterplots of Pairwise Relationships Between DCES, OPBS, and TEIQue-SF

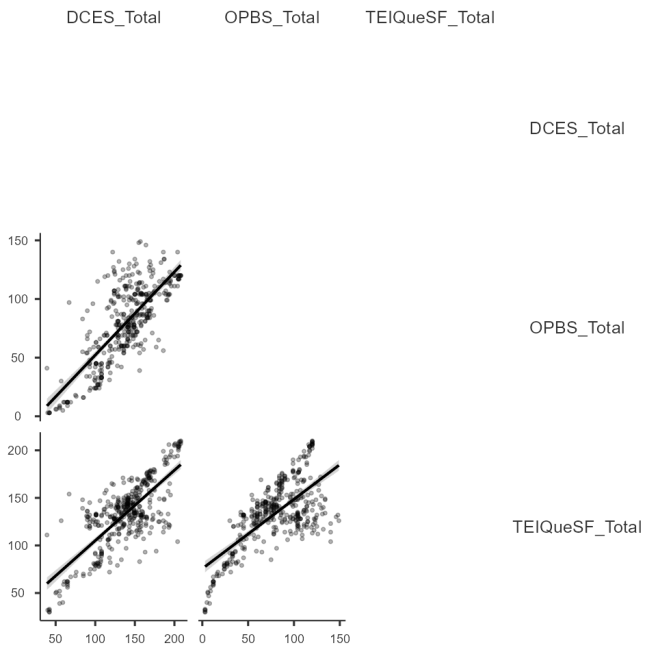


Figure 4.1 - Assumption Checks for Normality

Homogeneity of Variances Test (Levene's)

	F	df1	df2	p
DCES_Total	0.6890	3	413	0.559
OPBS_Total	0.0543	3	413	0.983
OPBS_Performing	0.1271	3	413	0.944
OPBS_Receiving	0.1457	3	413	0.932
TEIQueSF_Total	0.8753	3	413	0.454

Figure 4.2 - Games-Howell Post-Hoc Test (DCES Total)

Games-Howell Post-Hoc Test – DCES_Total

		Female	Male	Non-binary	Prefer not to say
Female	**Mean difference**	—	16.2***	-7.62	16.0872
	t-value	—	4.73	-0.665	1.21428
	df	—	382	13.0	9.57
	p-value	—	<.001	0.908	0.633
Male	**Mean difference**		—	-23.80	-0.0918
	t-value		—	-2.067	-0.00691
	df		—	13.2	9.69
	p-value		—	0.214	1.000
Non-binary	**Mean difference**			—	23.7077
	t-value			—	1.37714
	df			—	19.32
	p-value			—	0.528

Prefer not to say	**Mean difference**	—
	t-value	—
	df	—
	p-value	—

Note. * p < .05, ** p < .01, *** p < .001

Figure 4.3 - Games-Howell Post-Hoc Test (OPBS Total)

Games-Howell Post-Hoc Test – OPBS_Total

		Female	Male	Non-binary	Prefer not to say
Female	**Mean difference**	—	13.2***	3.71	24.6
	t-value	—	4.09	0.378	2.21
	df	—	385	13.3	9.75
	p-value	—	<.001	0.981	0.188
Male	**Mean difference**		—	-9.50	11.4
	t-value		—	-0.965	1.02

	df	—	13.5	9.86
	p-value	—	0.771	0.741
Non-binary	**Mean difference**		—	20.9
	t-value		—	1.44
	df		—	19.47
	p-value		—	0.490
Prefer not to say	**Mean difference**			—
	t-value			—
	df			—
	p-value			—

Note. * p < .05, ** p < .01, *** p < .001

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