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### The influence of self-regulation, self-esteem, and peer support on digital well-being among senior high school students

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| Article Info                                                                                                                 | Abstract                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| <b>Keywords:</b><br>Self regulation, self esteem, peer support, digital well being.                                          | This research endeavors to analyze the influence of self-regulation, self-esteem, and peer support on digital well-being, as well as its implications for guidance and counseling. Employing a correlational design, the study involved a sample of 290 students selected using cluster proportional stratified random sampling. Student data were gathered using a 29-item self-regulation scale (Bandura), a 35-item self-esteem scale (Coopersmith), a 31-item peer support scale (Cowie & Wallace), and an 11-item digital well-being scale (adapted from Arslankara). The findings indicate a positive and significant influence of self-regulation ( $p=0.000<0.05$ ), self-esteem ( $p=0.000<0.05$ ), and peer support ( $p=0.000<0.05$ ) on digital well-being. Furthermore, peer support was found to mediate the influence of self-regulation on digital well-being ( $Z=2.20>1.96$ ) and also to mediate the influence of self-esteem on digital well-being ( $Z=7.24>1.96$ ). It is recommended that school counselors utilize self-regulation, self-esteem, and peer support to enhance students' digital well-being through basic services in the personal-social domain. Future research is recommended to further investigate the influence of peer support on digital well-being in greater depth. |
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### Introduction

In recent years, the utilization of digital technology has grown exponentially worldwide. Specifically, the digital world has become a significant part of adolescents' daily lives (Ballarotto et al., 2018; Rakhmawati et al., 2021). Modern society has followed the explosive development of technology in recent decades, and access to information has increased due to the use of digital technology (Martins et al., 2020).

Excessive use of digital technology is characterized as abnormal behavior that disrupts a person's biological, mental, and physical functions, as well as daily activities, and leads to a loss of balance (Jorgenson et al., 2016; Islam et al., 2023). Several studies have found that many individuals spend a significant amount of time playing games, socializing, and browsing or downloading information on the Internet, making it difficult for them to disengage (Atroszko et al., 2018; Qi et al., 2024). This can lead to serious academic problems (e.g., poor academic performance (Chen & Tzengdan, 2010; Qi et al., 2024), academic procrastination (Aznar-Díaz et al., 2020; Qi et al., 2024)), and physical and mental health issues (e.g., sleep problems (P.M. Bhandari et al., 2017; Qi et al., 2024), eating disorders (Ç.B. Çelik et al., 2014; Qi et al., 2024), depression, anxiety, and even suicidal attempts (Y. Shen & F., 2020; Qi et al., 2024)).

The research by Wardani et al. (2023) states that the extensive use of digital media by Generation Z (ages 12-27 years) carries many risks, and it is explained that the concept of digital well-being is certainly essential for Gen Z, particularly senior high school students. Moreover, the research by McAlaney et al. (2020) describes digital well-being as a case study where behaviors and changes in shared media behavior are similar and where some behavior and performance towards behavioral goals and boundaries can be partially tracked and monitored, namely digital usage. Gui et al. (2017) define digital well-being as a set of skills needed to manage the side effects of excessive digital communication.

Furthermore, research by Zhang (2024) revealed that the main finding was students' recognition of the value and functionality of online courses was closely related to their level of self-regulation. Additionally, research by Ji (2024) indicated that deliberate self-regulation was negatively associated with students' tendency to use digital media. Self-regulation is an individual's ongoing effort and responsibility towards their learning (Zimmerman; Aheto et al., 2024). It is important for students to control their behavior, thoughts, and emotions in crisis situations they encounter, which is known as self-regulation (Utami & Aviani, 2021).

Tonder et al. (2023) states that risk factors for digital media use, especially social media and technology, include poor interpersonal communication competence and low self-esteem. In relation to this, excessive digital media use is significantly associated with low self-esteem (Býachnio et al., 2019; Lewrence, 2021). Self-esteem is objectively defined as self-awareness, self-evaluation, and also a determinant of behavior (Baron & Byrne, 2005; Rani & Sugiharto, 2022). Self-esteem can also be linked to almost all aspects of behavior and experience (Man et al., 2024; Garcia et al., 2019).

Research conducted by Wulandari & Huwae (2024) explains that the increase or decrease in digital media usage is influenced by the significant role of surrounding social support, one of which is peer support. The connection between specific manifestations of digital practices can lead to new friendships (Van Deursen & Helsper, 2015; Buchi, 2024) and reduce stress (Turel et al., 2018; Buchi, 2024), which is ultimately quite important as it has the potential to impact digital well-being. According to Santrock (in Oktariani et al., 2020), one of the roles of peers is to provide social support in the form of both verbal and non-verbal assistance.

School counselors have an important role because in the current digital era, character strengthening by school counselors is necessary (Oktaviani, 2023; Izi & Shobabiya, 2024). Guidance and counseling materials can be developed towards the life skills context needed in the digital era, such as the present time (Izi & Shobabiya, 2024). This is because fostering individuals with digital well-being requires cognitive changes in behavior towards action plans, ultimately leading to improved health and the ability to use digital media wisely, which can be achieved by providing interventions and counseling services (Hamu et al., 2020).

This research contains novelty that distinguishes it from previous studies. According to Lynch (2021), the research indicated that the relationship between digital well-being and self-regulation is negative or at least not supportive, likely because the measurement tools used did not empower digital media users to self-regulate. However, according to Setiawan (2024) the research explains that strong self-regulation can reduce an individual's tendency to engage in phubbing behavior. Self-regulation is an important ability for individuals to face challenges that arise in the digital age (such as phubbing) and has the potential to contribute to overall digital well-being by promoting healthier and more balanced technology use (Setiawan, 2024). Furthermore, according to Subiyakto (2024), the research showed that in the correlation test between demographic factors, social media addiction, and self-esteem, no significant relationship was found. Meanwhile, Sirajuddin (2023) explained in his study that there is a significant positive relationship between self-esteem and life satisfaction among Generation Z passive Instagram users.

This research offers a new perspective by examining the role of peer support as an intervening variable, seeking to uncover how peer support can strengthen individuals' ability to regulate their digital behavior and enhance self-esteem, which ultimately contributes to more positive digital well-being. Furthermore, this study aims to explore the contributions of self-regulation, self-esteem, and peer support to digital well-being among students. These findings are expected to serve as a reference for school counselors in how they attempt to improve students' digital well-being through personal-social guidance and counseling services.

## Method

In this research, a quantitative approach was employed as it aimed to examine the influence of self-regulation, self-esteem, and peer support on digital well-being. The population in this study consisted of 1830 high school students from State Senior High Schools in Grabag Subdistrict, Magelang Regency. From this total, research respondents were selected using a proportional stratified random sampling technique, which was carried out using the Isaac and Michael table. Consequently, the sample size in this study comprised 290 high school students from State Senior High Schools in Grabag Subdistrict, Magelang Regency.

Student self-regulation data were collected through a self-regulation scale developed based on Bandura's self-regulation theory, consisting of 29 statement items with response options ranging from strongly disagree (1) to strongly agree (5). Its validity ranged from 0.212 to 0.700, while its alpha reliability was 0.828. Student self-esteem data were collected through a self-esteem scale developed based on Coopersmith's self-esteem theory, consisting of 35 statement items with response options ranging from strongly disagree (1) to strongly agree (5). Its validity ranged from 0.221 to 0.544, while its alpha reliability was 0.752. Student peer support

data were collected through a peer support scale developed based on Cowie & Wallace's peer support theory, consisting of 31 statement items with response options ranging from strongly disagree (1) to strongly agree (5). Its validity ranged from 0.211 to 0.559, while its alpha reliability was 0.762. Student digital well-being data were collected through the digital well-being scale from Arslankara et al. (2022), consisting of 11 statement items with response options ranging from strongly disagree (1) to strongly agree (5). Its validity ranged from 0.277 to 0.629, while its alpha reliability was 0.693.

This research employed a correlational research design with multiple regression analysis techniques and mediation effect testing using path analysis with the Sobel test. Data collection through questionnaires was conducted via Google Forms.

## Result and Discussion

The results of the descriptive analysis using SPSS version 25 showed that the average self-regulation of students was in the moderate category ( $M=88.94$ ,  $SD=13.15$ ). The self-esteem category was in the moderate category ( $M=100.2$ ,  $SD=10.96$ ), peer support was in the moderate category ( $M=96.14$ ,  $SD=9.52$ ), and digital well-being was in the moderate category ( $M=33.22$ ,  $SD=94.98$ ). Table 1 below shows the category levels of all variables.

**Table 1.** Category levels

| Variables          | Mean  | SD    | Category |
|--------------------|-------|-------|----------|
| Self regulation    | 88,94 | 13,15 | Medium   |
| Self esteem        | 100,2 | 10,96 | Medium   |
| Peer support       | 96,14 | 9,52  | Medium   |
| Digital well-being | 33,22 | 49,98 | Medium   |

Next, to determine the influence between variables, multiple regression analysis was conducted, and the resulting data are presented in Table 2.

**Table 2.** Multiple regression coefficient test results

| Predictors      | $\beta$ | $t$   | $p$   |
|-----------------|---------|-------|-------|
| Self regulation | 0,415   | 6,79  | 0,000 |
| Self esteem     | 0,389   | 5,93  | 0,000 |
| Peer support    | 0,212   | 3,76  | 0,000 |
| R               |         | 0,276 |       |
| R <sup>2</sup>  |         | 0,268 |       |
| F               |         | 36,28 |       |
| P               |         | <.05  |       |

Based on the multiple regression results, it was found that self-regulation, self-esteem, and peer support have an influence on digital well-being ( $R = 0.276$ ;  $p < 0.05$ ). These three predictors explain 26.8% of the variance in digital well-being ( $R^2 = 0.268$ ). Specifically, self-regulation has an influence on digital well-being ( $p = 0.000$ ), self-esteem has an influence on digital well-being ( $p = 0.000$ ), and peer support has an influence on digital well-being ( $p = 0.000$ ).

**Table 3.** Mediation effect test results

| Predictors      | Std. Error | $\beta$ | Z    |
|-----------------|------------|---------|------|
| Self regulation | 0,047      | 0,105   | 2,20 |
| Self esteem     | 0,052      | 0,439   | 7,24 |
| Peer support    | 0,015      | 0,212   | -    |

Based on Table 3, the results show a positive and significant influence of self-regulation on digital well-being with peer support as an intervening variable ( $Z = 2.20 > 1.96$ ). Furthermore, there is a positive and significant influence of self-esteem on digital well-being with peer support as an intervening variable ( $Z = 7.24 > 1.96$ ). Meanwhile, based on the previous analysis results, the level of self-regulation among senior high school students is in the moderate category. The emotion regulation aspect shows the highest percentage, consistent with Bandura's theory (1991) which states that the ability to control emotions correlates with emotional expressions appropriate to the situation. Conversely, the self-monitoring aspect has the lowest percentage, even

though this ability is important for increasing self-awareness of actions (Bandura, 1991; Ormrod, 2012; Prasetyana & Mariyati, 2020). This finding indicates that students with a moderate level of self-regulation tend to shift focus while studying and neglect ethics.

The level of self-esteem among senior high school students is categorized as moderate. The "significant" aspect shows the highest percentage, consistent with Salsabilla & Maryatmi, (2023) view that individuals who feel care, affection, attention, and expressions of love from others tend to have a high sense of significance due to popularity and social acceptance. Conversely, the "virtue" aspect has the lowest percentage. Non-compliance with religious, moral, and ethical standards, leading to behaviors that should be avoided, correlates with a negative sense of virtue (Coopersmith, 1967; Salsabilla & Maryatmi, 2023). This finding indicates that senior high school students with a moderate level of self-esteem tend to be indifferent to religious, moral, and ethical standards, which has the potential to shape negative attitudes and poor self-evaluation.

Furthermore, the level of peer support among senior high school students is in the moderate category. The emotional support aspect shows the highest percentage, which, according to Cowie & Wallace (2000); Alaei & Hosseinneshad (2020), reflects the care and empathy that make individuals feel noticed and comfortable by the source of support. Conversely, the "Emphasize education and information-give" aspect has the lowest percentage. This support includes providing advice and information related to an individual's condition (Cowie & Wallace, 2000; Uke et al., 2017). This finding indicates that peer support among students with a moderate level tends to overlook the interest in helping, presenting, and teaching from their peers.

Additionally, the level of digital well-being among students is categorized as moderate. The aspect of safe and responsible behavior shows the highest percentage, which, according to Schuler (Arslankara et al., 2022), includes protecting one's own and others' rights, privacy, and fostering good relationships with the environment. Conversely, the digital wellness aspect has the lowest percentage. Well-being is defined as a state that makes individuals feel healthier and happier (Cambridge Dictionary, 2022; Arslankara et al., 2022). This finding indicates that students with a moderate level of digital well-being tend to neglect the expression of relaxation, happiness, and anger in the digital context.

The research demonstrates a positive and significant influence of both self-regulation and self-esteem on digital well-being among senior high school students. A high level of self-regulation correlates with better digital well-being, consistent with Zhang (2024) research emphasizing the importance of self-regulation in digital use. Self-regulation helps students manage themselves and their environment, improving psychological well-being, reducing the risk of addiction and aggression (Ji et al., 2024), and developing positive psychology (Me et al., 2023; Ji et al., 2024). Similarly, high self-esteem is also associated with better digital well-being. This is supported by Lawrance (2021) research, which found a link between digital access and self-esteem. Low self-esteem is associated with excessive digital use (Býachnio et al., 2019; Lewrence, 2021). Social interaction and extracurricular involvement contribute to higher self-esteem (Hampton et al., 2022), and self-esteem influences how students perceive themselves in the digital context (Tonder et al., 2023). Peer support also has a positive and significant influence on the digital well-being of senior high school students. A high level of peer support correlates with better digital well-being, consistent with Lawrance (2021) research stating that positive interactions and social support enhance well-being. Conversely, social difficulties can decrease it (Olalekan, 2016; Lewrence, 2021). Peer support also contributes positively to learning outcomes (Pan et al., 2024) and can reduce stress (Buchi, 2024), which is important for digital well-being.

Furthermore, peer support acts as a positive and significant intervening variable in the influence of self-regulation and self-esteem on digital well-being. Peer support mediates how high self-regulation can enhance digital well-being. This aligns with the research by Bahrodin (2024) which states that peer support is significantly positively correlated with self-regulation. This is reinforced by Buchi (2024) research, which indicates that digital practices that can lead to new friendships capable of reducing stress ultimately have the potential to improve digital well-being. Similarly, peer support also mediates the influence of self-esteem on digital well-being. According to Rifqoh et al. (2024), their research explains that peer support can enhance self-esteem. Peer support that includes comfort, care, appreciation, and assistance (Sestiani & Muhid, 2022; Rifqoh et al., 2024) contributes to the formation of self-esteem (Coopersmith, 1967) and ultimately improves digital well-being (Tonder et al., 2023).

Based on the findings of this research, it is hoped that school counselors can maintain and enhance students' digital well-being, particularly in the aspect of digital wellness, as this indicator was in the lowest category. In relation to this, school counselors can provide services in the personal-social domain. It is expected that through the provision of these services, students' digital well-being can be improved. Furthermore, this

research is expected to be beneficial as a consideration for future researchers to further investigate the influence of peer support on digital well-being.

## Conclusion

Referring to the research, it can be concluded that there is an influence between self-regulation, self-esteem, and peer support on digital well-being. Furthermore, peer support is able to mediate the influence of self-regulation on digital well-being, and peer support is also able to mediate the influence of self-esteem on digital well-being. It is recommended that school counselors provide basic services in the personal-social domain. It is hoped that through the provision of these services, students' digital well-being can be improved. Additionally, future research is suggested to further investigate the influence of peer support on digital well-being.

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