Uludağ Üniversitesi Eğitim Fakültesi Dergisi / Journal of Uludag University Faculty of Education
e-ISSN: 2667-6788 https://dergipark.org.tr/tr/pub/uefad
Yıl **2025,** Cilt **38**, Sayı **2**, **331-348** | DOI: https://doi.org/10.19171/uefad.1566148 **Araştırma Makalesi | Research Article**

Promoting E-motional Skills in Cyberspace: The Relationship between Cyber-Emotional Skills and Digital Literacy[1]

Siber Dünyada E-duygusal Becerilerin Teşvik Edilmesi: Siber-Duygusal Beceriler ve Dijital Okuryazarlık İlişkisi

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Abstract

In today's interconnected digital landscape, navigating emotional content in virtual environments has become as critical as mastering technical skills. The convergence of emotional and digital literacy plays a pivotal role in shaping individual achievement and broader societal outcomes. This study explores how cyber-emotional skills, defined as the ability to manage emotions in digital contexts, contribute to digital literacy. A total of 283 university students from three Turkish institutions, selected through simple random sampling, participated in the study. Structural equation modeling (SEM) analysis revealed that cyber-emotional skills exert a significant influence on digital literacy, providing new insights into the interplay between emotional competence and digital literacy. These findings suggest that individuals with stronger cyber-emotional skills are better equipped to succeed in digital environments. A comprehensive understanding of how effectively individuals can manage emotions and emotion-related information in a digital environment substantially enhances their awareness of the digital dynamics and their competence in performing digital tasks. This reconceptualizes what it means to be successful in the online world and emphasizes the importance of emotional skills in shaping effective digital education strategies.

Keywords: Cyber-Emotional Skills, Digital Literacy, E-Motions, Higher Education, Structural Equation Modelling

Özet

Günümüzün dijital dünyasında, sanal ortamlardaki duygusal içeriği doğru yönetebilme, teknik beceriler kadar önemli hale gelmiştir. Duygusal ve dijital okuryazarlıkların birleşimi hem bireysel başarıyı hem de toplumsal dinamikleri şekillendirmede kritik bir rol oynamaktadır. Bu çalışma, dijital çağda giderek önem kazanan siber duygusal becerilerin (e-motions) dijital okuryazarlık üzerindeki etkisini incelemeyi amaçlamaktadır. Araştırmaya Türkiye'deki üç farklı üniversiteden basit rastgele örnekleme yöntemiyle seçilen toplam 283 öğrenci katılmıştır. Veri analizi için yapısal eşitlik modellemesi (YEM) kullanılmıştır. YEM analizi sonuçları, siber duygusal becerilerin, dijital okuryazarlık üzerinde anlamlı bir etkiye sahip olduğunu ortaya koymuştur. Bu bulgular, daha güçlü siber-duygusal becerilere sahip olanların dijital okuryazarlıkta başarılı olmak için daha donanımlı olduğunu göstermektedir. Ayrıca görülmektedir ki, bireylerin dijital bir ortamda duyguları ve duygularla ilgili bilgileri ne kadar etkili bir şekilde ele alabildiğine dair kapsamlı bir kavrayış, dijital

[1] This study is presented as an oral presentation at International Education Congress 2024.

Kabul Tarihi / Received: 13.10.2024 | Onay Tarihi / Accepted: 18.03.2025

dünyaya ilişkin farkındalıklarını ve dijital görevleri yerine getirmedeki yetkinliklerini büyük ölçüde şekillendirmektedir. Bu durum, çevrim içi dünyada başarılı olmanın anlamını yeniden tanımlamakta ve dijital eğitim stratejilerinin geliştirilmesinde duygusal becerilerin önemini vurgulamaktadır.

Anahtar Kelimeler: Siber Duygusal Beceriler, Dijital Okuryazarlık, E-Motions, Yükseköğretim, Yapısal Eşitlik Modellemesi

1. Introduction

Digital literacy has become the new lingua franca in the rapidly evolving digital age. Modern educational approaches are recognizing the need to integrate digital skills into educational frameworks (Gutiérrez-Ángel et al., 2022), as seen in the Turkish Ministry of Education's recent curriculum initiative, the Türkiye Century Education Model (MoNE, 2024). This framework provides a comprehensive approach to digital literacy, progressing from basic awareness to practical application. It covers crucial aspects such as information access, communication, content creation, legal and ethical considerations, security, and critical thinking in digital contexts. However, the digital world is as much about the heart as the hardware. Recent research has highlighted that understanding and applying the emotional cues prevalent in online interactions is crucial for effective communication in digital spaces (Silber-Varod et al., 2019). Digital literacy is more than just the ability to use a keyboard. Still, it is a complex set of skills that includes social and emotional skills necessary for effective participation in the digital world (Choi & Kim, 2004).

Despite the widespread belief that younger generations, often referred to as 'digital natives', innately possess these skills, empirical evidence suggests a significant gap between perceived and actual competencies, particularly in online emotional domains (Porat et al., 2018). On the eve of an educational reform, we need to further the discussion by emphasizing the need to focus on the emotional side of online interactions, so as not to forget about the human element. Cyber-emotional skills encompass the capacity to interpret subtle cues in text-based communication, such as discerning underlying sentiments in messages or accurately interpreting the intended mood conveyed by emojis. This study aims to investigate how these emotional interpretation skills in digital contexts interact with and relate to broader digital literacy competencies. By exploring this connection, the research intends to provide insights into the interplay between emotional intelligence in online spaces and technical proficiency in digital environments in the context of university students.

1.1. Cyber-Emotional Skills

From early childhood, individuals learn to navigate society by observing and interacting with others, acquiring cultural knowledge and social skills. This socialization process teaches people how to behave in different contexts and shapes their everyday interactions. Emotions are central in this dynamic; social relationships influence and help define them (Halberstadt et al., 2001). Emotional competence, which has been extensively studied in face-to-face interactions, is essential for effective interpersonal engagement (Reich, 2017). Mayer and Salovey (1990) describe emotional intelligence as "the ability to monitor one's own and others' emotions, to discriminate between different emotions, and to use this information to guide one's thinking and actions" (p. 189). Emotional literacy encompasses the ability to identify and manage one's emotions, empathize with others, and cope with emotional challenges - skills essential for social integration (Steiner, 1979). Traditionally, these skills are developed through personal and social practices (Weare, 2004), but the rise of digital communication has changed the way people engage emotionally with each other. Even when people

are physically together, much of their interaction occurs via online platforms, resulting in a growing importance of emotional expression in virtual spaces.

Today, technology and the internet profoundly impact human behavior, including emotional responses (Valkenburg et al., 2017). In this digital landscape, emotional engagement is no longer confined to traditional social settings; it now permeates online interactions and influences areas of life once thought purely functional and unemotional. Social media, in particular, encourage users to express their emotions publicly and frequently, reshaping how emotions are experienced and shared in modern society (Derks et al., 2008). It is now essential to be able to interpret emotional cues when interacting online, show empathy, collaborate in virtual communities, build positive relationships, resolve disputes, and behave ethically in cyberspace (Cebollero-Salinas et al., 2022). Despite the different terms used to describe these competencies - such as e-emotions, cyber-emotions, social and emotional online skills, and social and emotional e-skills (Cebollero-Salinas et al., 2022; Kappas, 2016; Zych et al., 2017)- there is a consensus that emotional skills in cyberspace play a central role in driving change. These skills encompass the abilities and competencies needed to effectively navigate and thrive in the digital world, particularly in terms of communication, relationships, and emotional well-being.

1.2. Digital Literacy

When Alexander Graham Bell introduced the first telephone in 1876 and Tim Berners-Lee conceptualized the idea of a 'web of information' in 1989, it's highly unlikely they could have predicted the diverse and advanced forms of communication that their inventions would evolve into today. Since then, there has been much discussion about the rapidly evolving nature of our world and the influence that technological progress has on our lives. Online platforms are now integral for everyday tasks like shopping, job applications, doctor appointments, and interpersonal communication. Even the students in this era are called “digital natives” because they live digitally immersed lives and learn differently from previous generations (Bennett et al., 2008). For various global (e.g., coronavirus outbreak) or local (e.g., 2023 Türkiye-Syria earthquake) reasons, students at all levels of education are expected to use digital tools and navigate online information for learning to address complex global/local challenges. Here, the question comes: “How can we fully embrace the benefits of the digital world while effectively avoiding its so-called (Caplan, 2003) drawbacks?” Indeed, digital literacy seems to be of significant relevance and importance in addressing this issue, as it involves the ability to use technology competently, to interpret digital content, to assess its credibility, and to create, research, and communicate using appropriate tools (Common Sense Media, 2009).

Gilster used the first definition of the term (1997, p. 1) as the ability to understand and make effective use of information in a variety of formats and from a variety of sources, especially when it is presented through computers. This definition emphasizes that digital literacy includes a profound cognitive ability to comprehend and understand digital technologies (Secker, 2017). These technologies, encompassing both hardware and software, are utilized by individuals for educational, social, or recreational purposes in both school and home settings, comprising devices like computers, mobile gadgets, interactive whiteboards, data logging equipment, web 2.0 technologies, digital recording devices, and commercial or free accessible software packages for learning (Ng, 2012a). In our research, we approach digital literacy as the set of skills and competencies necessary for individuals to effectively navigate, adapt and flourish in a digital society, including three intersecting dimensions that are proposed by Ng (2012b, p. 38) (i) technical (ii) cognitive and (iii) social-emotional dimensions of digital literacy. The technical dimension includes technical and operational skills such as the ability

to connect and use input/peripheral devices such as a mouse and printer, as well as adequately handle file structures, download/install applications, embed links, etc. Cognitive dimension includes critical and evaluative skills such as: being able to distinguish between the different search engines and using the more 'suitable' search engine for a particular purpose, and being able to critique the content of webpages in terms of accuracy, currency, reliability, and the level of difficulty. The social and emotional dimension includes social and cybersecurity skills such as: using the Internet responsibly for communicating, socializing, using "netiquette", balancing the time spent on social networks, keeping personal information private, etc.

As mentioned earlier, recent research has illuminated various opportunities and risks associated with digital media communication (Chen & Fan, 2024; Rega et al., 2023). However, there has been notably less emphasis on exploring cyber-emotional skills, specifically how adolescents can utilize them to enhance their ability to navigate and understand the digital landscape effectively.

1.3. Relationship between Cyber-Emotional Skills and Digital Literacy

The intersection of cyber-emotional skills and digital literacy is a nascent area of inquiry with significant implications for how individuals navigate the digital landscape. While emotions are recognized as influencing cognition and behavior, shaping how people react to their surroundings and process information (Fredrickson, 2001; Pekrun, 2006; Bower, 1981), the specific role of cyber-emotional skills in the development and application of digital literacy remains largely unexplored. Cyber-emotional skills, broadly defined, encompass the ability to recognize, understand, and manage emotions experienced in online interactions (Alemdar & Yiğiter, 2025). These skills are hypothesized to influence how individuals respond to emotional stimuli encountered digitally, potentially impacting their ability to evaluate information critically, engage in online discourse, and ultimately, shape their digital literacy. For instance, adverse emotional reactions to online content might prompt a more cautious and critical approach to information evaluation, potentially fostering stronger digital literacy skills. While direct research on this relationship is scarce, emerging studies suggest a correlation between emotional intelligence and digital literacy. Putra et al. (2023) and Alpian et al. (2023) report positive correlations, albeit of varying strengths, between these constructs, with Ibrahim et al.'s (2024) study further suggesting that emotional intelligence predicts digital literacy within a model that also incorporates self-regulation and academic stress. These preliminary findings support the proposition that cyber-emotional skills play a role in shaping digital literacy. However, further investigation is needed to elucidate the specific mechanisms and causal pathways involved.

2. Method

2.1. Research Design and Sampling

This study examines the theoretical model formed as the cyber-emotional skills of university students affect their digital literacy. It was designed in a causal model to analyze the direction of the causal relationship between the variables (Bryman, 2016). The study participants were 283 students from different universities (Boğaziçi University, Necmettin Erbakan University and Muş Alparslan University) in Türkiye in 2023-2024, selected using simple random sampling. The sample served as a representative group for the validation and reliability analyses of the E-motions Questionnaire and the SEM analysis (see Table 1). Approval was obtained from the Necmettin Erbakan University Social Sciences and Humanities Research Ethics Committee on 09/06/2023 (2023/271) to ensure that ethical guidelines were followed.

Table 1. *Participants' Demographic Information*

Variables		*N*	*%*
Gender	Man	210	74,2
	Woman	68	24,0
	Not Declared	5	1,8
Age	15-20 years	82	29,0
	21-29 years	169	59,7
	30+ years	32	11,3
Time spent on social media	Less than 1 hour	25	8,5
	1-2 hour/s	112	39,9
	3+ hours	146	51,6
Number of social media accounts	1	10	3,5
	2	49	17,3
	3	97	34,3
	4	68	24,0
	5	59	20,8

2.2. Measurement Tools

2.2.1. E-motions Questionnaire

The E-motions Questionnaire, formulated by Zych et al. (2017), is an important tool for assessing the emotional content of online spaces and exploring the expression, perception, use, and regulation of emotions online. The scale consists of 21 items divided into four subscales: e-motional expression, e-motional perception, facilitating the use of E-motions, and understanding and managing E-motions. The scale items, which are presented in a 5-point Likert format, are answered from '1 - Strongly Disagree' to '5 - Strongly Agree'. The validity of the E-motions Questionnaire was reinforced by a Confirmatory Factor Analysis (CFA) conducted by the authors, which showed that the goodness of fit indicators of the scale were within acceptable parameters ($\chi2=316.23$, $df=183$, $p<0.05$; $\chi2/df=1.728$; CFI=0.98, NFI=0.95, NNFI=0.98, RMSEA=0.07). In the original version of the measurement tool, the Cronbach's alpha reliability coefficient was calculated as 0.84 for the E-motional expression dimension (4 items, e.g. "I express my emotions through social media platforms such as Facebook or Instagram"); 0.75 for the E-motional perception dimension (3 items, e.g, "People tell me whether they are happy or sad through Facebook or Instagram"); 0.91 for facilitating the use of E-motions (6 items, $\alpha= 0.91$; e.g., "I express my emotions through Facebook or Instagram to overcome challenges"); and 0.87 for the understanding and management of E-motions dimension (8 items, $\alpha= 0.87$; e.g., "I understand what kind of emotions people feel when I look at their profiles"). It has proven to be a valuable tool for both researchers and practitioners, providing a deeper insight into the complex dynamics of emotions in virtual environments. The scale was adapted into Turkish by Alemdar & Yiğiter (2025). The CFA findings of the adaptation study of the E-emotions questionnaire show that the goodness-of-fit indicators of the scale are within acceptable parameters ($\chi2=498.09$, $df=185$, $p<0.05$; $\chi2/df=2.692$; CFI=0.99, NFI=0.97, RMSEA=0.06, SRMR=0.06). In the adaptation version of the measurement tool, the Cronbach's alpha reliability coefficient was calculated as 0.74 for the emotional expression dimension, 0.66 for the emotional perception dimension, 0.85 for the emotional facilitation dimension, and 0.90 for the emotional understanding and management dimension.

2.2.2. Digital Literacy Scale

The Digital Literacy Scale, originally developed by Ng (2012a), adapted to Turkish by Üstündağ et al. (2012), is used to assess the digital literacy level of university students. The scale consists of ten items with a single factor, which accounts for 40 per cent of the variation in the digital literacy skills of the participants. The items are structured as a five-point Likert scale. There are no reverse-scored questions. Respondents could choose from 'strongly disagree' (1), 'disagree' (2), 'neutral' (3), 'agree' (4), and 'strongly agree' (5). The results of our CFA analysis showed the following goodness of fit indices: $\chi 2/df = 3.67$, RMSEA = 0.06, CFI = 0.96, IFI = 0.96 and GFI = 0.94. These values indicate a near perfect fit for CFI, IFI and GFI, while X2/sd <5 and RMSEA indicate an acceptable level of fit. Additionally, the study's reliability coefficient was assessed and found to be 0.84, indicating adequate reliability. Therefore, the data collected in this study can be considered both valid and reliable.

2.2.3. Data Analysis

Rigorous data preparation and hypothesis testing preceded confirmatory factor analysis (CFA) and structural equation modelling (SEM). An extensive preliminary analysis revealed that there was no missing data in the responses of the students. Outlier detection was performed by calculating total and standardised z-scores, with potential outliers defined as observations outside the [-3, +3] range. Notably, no data exclusions were required as all observations fell within the acceptable range. Normality assessment included examination of skewness and kurtosis coefficients, which were found to be within the recommended range [-1.5, +1.5] (Tabachnick & Fidell, 2013), indicating an approximately normal data distribution. Multicollinearity was assessed using the values of the variance inflation factor (VIF), with no concerns of multicollinearity identified, as all of the VIF values were below the critical threshold of 5 (Kline, 2011). Given the categorical and ordinal variable structure of the study, the robust weighted least squares (WLSMV) estimation method was chosen, which is particularly appropriate when multivariate normality assumptions may be violated (Brown, 2006; Koğar & Yılmaz Koğar, 2015; Forero et al., 2009).

Data analysis was performed with the use of the R programming language, with the use of specialised packages for comprehensive statistical processing: 'dplyr' for data organisation, 'PerformanceAnalytics' for distribution assessment, 'car' for multicollinearity testing, 'psych' for reliability coefficient calculations, 'lavaan' for CFA and SEM analyses, and 'semPlot' for structural model visualisation.

2.3. Ethics of Research

Throughout the research process, the participants were informed that their participation in the study was voluntary. The direct names of the participants were not used to report the research data. Ethical permission to conduct this research was granted by the Research Ethics Committee of Necmettin Erbakan University of Social Sciences and Humanities on 09/06/2023 with the number 2023/271.

3. Findings

This section of the study presents findings related to the e-Motions Questionnaire and its impact on digital literacy. Firstly, the reliability, normality, and correlation analysis findings obtained from the scales are presented. Then, the CFA and SEM analysis findings are presented respectively.

3.1. Reliability, Normality and Correlation Analysis

A structural equation model (SEM) has been constructed to examine the impact of E-motions on digital literacy. The reliability, skewness, and kurtosis values of the variables and the pairwise correlations between variables (Byrne, 2011) have been calculated and are presented in Table 2.

Table 2. *Correlations, Skewness, Kurtosis, and Reliability Coefficients*

	E-motions	*Digital Literacy*
E-motions	1	0.385*
Digital Literacy	0.385*	1
Mean	57.84	34.32
SD	16.67	8.06
Skewness	0.380	-0.022
Kurtosis	0.286	-0.338
Cronbach Alpha	0.931	0.908
Mc Donald ω	0.947	0.911

*p<.01

The reliability of both the E-motions and digital literacy variables, as indicated by both Cronbach's Alpha and McDonald's ω coefficients, is very high (reliability > 0.90). A moderate positive correlation (r = 0.38; p <0.01) exists between E-motions and digital literacy. The fact that this correlation value is less than 0.85 indicates no issue with multicollinearity (Kline, 2015). Skewness and kurtosis values fall within the range of-1.5 to +1.5, and the data appears to follow a normal distribution (Tabachnick & Fidell, 2013).

3.2. Confirmatory Factor Analysis and Structural Equation Modeling Findings

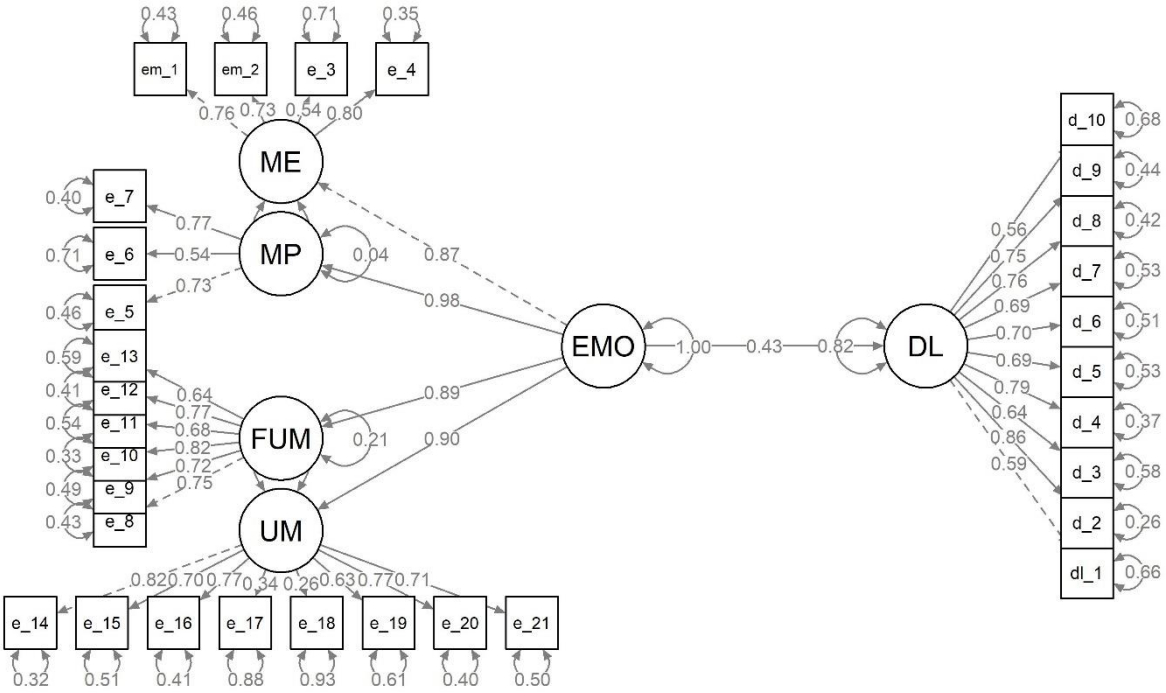
This section presents the findings of the confirmatory factor analysis (CFA) and structural equation model (SEM) analyses. The fit indices obtained from the models are presented in Table 3.

Table 3. *CFA and SEM Model Fit Indices*

Fit Indıces	*Reference value*	*Digital Literacy CFA Model*	*E-motions CFA Model*	*Structural Equation Model*
χ2		86.655	261.281	617.005
p value		0.000	0.000	0.000
df		35	185	429
χ2/df	< 5	2.476	1.412	1.438
RMSEA	< 0.08	0.072	0.038	0.039
SRMR	< 0.08	0.082	0.072	0.073
GFI	> 0.90	0.982	0.980	0.969
AGFI	> 0.90	0.971	0.975	0.965
NFI	> 0.90	0.969	0.970	0.954
CFI	> 0.92	0.972	0.975	0.985
TLI	> 0.90	0.964	0.972	0.984

Looking at the Table 3, it is evident that the fit indices for the scales' Confirmatory Factor Analyses (CFAs) and the Structural Equation Model (SEM) meet the expected criteria [χ^2/df = 1.4; RMSEA = 0.03; SRMR = 0.07; CFI = 0.98; TLI = 0.98] (Kline, 2015). The results are presented at Table 4, and the model diagram is provided in Figure 1.

Figure 1. *The Structural Model*



Not. ME: E-motional expression, MP: E-motional perception, FUM: Facilitating use of E-motions, UM: understanding and managing E-motions, EMO: E-Motions, DL: Digital Literacy

Table 4. *Standardized Effects*

	β	*SE**	*LCL***	*UCL****	*p*
E-motions -> Digital Literacy	0.427	0.052	0.324	0.532	0.000

Not. *Standard error, **Lower confidence limit, ***Upper confidence limit

Table 4 indicates that E-motions is a positive predictor of digital literacy (β = .43, p<.000, %95 CI [.32; .53], SE = 0.052). Specifically, the standardized regression coefficient (β = 0.43) implies that when there is a one unit increase in the E-motions variable, a 0.43 unit increase in the digital literacy variable can be expected. Therefore, this finding suggests that E-motions play an important role in increasing individuals' digital literacy levels.

4. Discussion and Conclusion

Traditional research on adolescent emotional competencies remains grounded in offline paradigms, but the digital revolution, driven by the unprecedented proliferation of social media, has radically changed the way young people form social connections and engage in supportive interactions (Armstrong-Carter & Telzer, 2021). Digital platforms have become the primary ecosystem through which today's digital natives navigate, express themselves, and socialise. Increasing reliance on digital

connectivity triggers profound inquiries into online emotional competencies, which are increasingly important for cultivating meaningful relationships, facilitating collaborative interactions, and fostering holistic personal development in virtual environments (von Scheve & Salmela, 2014; Benksi & Fisher, 2013). We propose the concept of 'cyber-emotional skills', which delves into the complex realm of virtual emotional landscapes and reveals how individuals dynamically express, perceive, use and regulate emotions in digital communication. Furthermore, we argue that the convergence of cyber-emotional and digital skills has emerged as a key determinant of personal, professional and social trajectories in our increasingly digital age. Based on those, this study seeks to identify the causal structural relationships between cyber-emotional skills and digital literacies among university students.

Our research results are consistent with the previous research results on the E-motions Questionnaire validity and reliability (Cebollero-Salinas et al., 2022; Zych et al., 2017). CFA results indicate that this scale meets criteria and is of good quality ($\chi2$= 501.0, df = 152, $\chi2$/df = 3.2; CFI= 0.98, NLI= 0.98, RMSEA= 0.06). This study notes that the Cronbach's alpha reliability coefficient of the scale is 0.94, while it is reported to be 0.92 in the original form (Zych et al., 2017) and 0.88 in the study by Cebollero-Salinas et al. (2022). These consistent and high reliability coefficients across multiple studies suggest a robust internal consistency of the measurement instrument. Notably, the current study demonstrates the highest reliability coefficient. These indicate that the scale effectively captures the intended construct with a high degree of precision and reliability.

Our study also presents an empirical test of the connection between cyber-emotional skills (E-motions) and digital literacy (β= .41, p = .000, $\chi2$/df = 1.9, RMSEA = 0.06, SRMR = 0.07) via SEM. The main findings of the study reveal a noteworthy relationship between these two concepts, indicating that E-motions is a positive predictor of digital literacy (Schumacker & Lomax, 2004). A thorough grasp of how effectively an individual can sensibly handle emotions and emotion-related information in a digital environment greatly shapes their awareness of the digital world and their competence in executing digital tasks. This result aligns with earlier research finding regarding the impact of emotional competence on digital competence (Erdat et al., 2023; Audrin & Audrin, 2023). This represents a novel variation of the rich-get-richer hypothesis (Kraut et al., 2002): Those who possess greater emotional competences tend to excel in digital skills as well.

Digital platforms have transformed creative expression from solitary to dynamic and interactive. These technologies offer new ways for individuals to explore and construct their identities through social interaction by enabling sharing and communication. Integrating digital technologies requires not only technical skills but also emotional awareness to navigate these spaces constructively. Digital literacy is therefore crucial - it's about equipping students with the cognitive tools and ethical frameworks to use digital platforms for meaningful self-expression and to ensure that online interactions make a positive contribution to personal growth and self-understanding (Lincenberg, 2021). Taken together, robust digital skills and emotional competencies are foundational to developing key skills including digital literacy, online collaboration, communication and computational thinking. This is important as advocating for digital access and skills alone is not enough to ensure inclusion and fair outcomes (Burns & Gottschalk, 2019). Theoretically, our study advances the conceptualisation of digital literacy by integrating emotional dimensions into existing frameworks. We propose the novel concept of 'cyber-emotional literacy' as a sophisticated lens through which to understand digital interaction, digital literacy, and emotional competence during those interactions. This approach challenges traditional, technologically deterministic views of digital literacy and instead emphasises the human-centred, emotionally nuanced nature of digital communication.

5. Limitations and Future Directions

This study contributes valuable empirical evidence regarding the influence of cyber-emotional skills on digital literacy; however, several limitations must be acknowledged. First, the reliance on self-report measures introduces potential subjectivity and response bias, potentially affecting the accuracy of reported experiences and emotions. Second, the cross-sectional design precludes definitive causal inferences. Future research employing experimental or longitudinal designs is essential to explore causal relationships more rigorously, examining how these constructs co-develop and interact across different developmental stages. Third, the sample's geographical and cultural limitations restrict the generalizability of findings. Future studies should prioritize larger, more diverse samples, including representation from marginalized and disadvantaged communities who may encounter unique challenges in digital participation. Cross-cultural comparisons can provide valuable insights into the cultural variability of cyber-emotional skills and their impact on digital literacy. Fourth, while the E-motions Questionnaire demonstrated strong psychometric properties within the study's young adult sample, caution is warranted when generalizing these findings to other populations. Finally, incorporating qualitative methods in future research would enrich the understanding of participants' social and emotional competencies within specific online contexts.

Future research should adopt a multi-method approach, integrating qualitative explorations of lived digital experiences with experimental and longitudinal studies to investigate causal relationships and developmental trajectories. Cross-cultural and demographic comparisons can further illuminate the influence of social and cultural contexts. Specific research directions include: (1) examining online communication patterns and social media engagement; (2) comparing emotional competencies in digital versus face-to-face settings; (3) evaluating training programs aimed at enhancing cyber-emotional skills and digital literacy; (4) exploring the role of cyber-emotional skills in professional digital contexts; and (5) investigating their potential to bridge the digital divide for disadvantaged groups.

The study's implications underscore the need for comprehensive digital literacy interventions that integrate emotional intelligence and self-awareness alongside technical skills, equipping individuals to navigate the complexities of the digital age effectively and responsibly. This holistic approach has important implications for educational institutions and policymakers in developing effective strategies to promote digital literacy.

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Geniş Özet

1. Giriş

Duygular, insan yaşamının temel bir parçası ve iyi bir yaşam sürmenin arkasındaki itici güçlerdir (Mayer & Salovey, 1990). Yüz yüze etkileşimlerde kapsamlı bir şekilde incelenmiş olan duygusal beceriler, etkili kişiler arası iletişimin anahtarıdır (Reich, 2017). Duygusal yetkinlik, kişinin kendi duygularını tanımlama, başkalarıyla empati kurma, duyguları yönetme, duygusal zorluklarla başa çıkma ve bu aşamaların bütünleştirme yeteneğini içermektedir (Steiner, 1979). Siber duygusal beceriler veya çevrim içi duygusal beceriler ise, iletişim, ilişkiler ve duygusal iyi oluş açısından dijital dünyada etkili bir şekilde gezinmek ve gelişmek için gereken yetenek ve yetkinlikleri içerir (Alemdar & Yiğiter, 2025). Çevrim içi etkileşimlerde duygusal ipuçlarını yorumlamak, çevrim içi ortamda empati göstermek, sanal bir toplulukta iş birliği yapmak, olumlu çevrim içi ilişkiler kurmak, çevrim içi anlaşmazlıkları çözmek ve çevrim içi ortamda etik davranmak gibi beceriler, siber duygusal becerilerin temel bileşenleridir (Cebollero-Salinas vd., 2022).

Dijital okuryazarlık becerisi, teknolojiyi yetkin bir şekilde kullanma, dijital içeriği yorumlama, güvenilirliğini değerlendirme ve uygun araçları kullanarak araştırma, oluşturma ve iletişim kurma yeteneği olarak tanımlanır (Common Sense Media, 2009). Terimin ilk tanımı, Gilster (1997) tarafından, çeşitli formatlarda ve kaynaklardan (özellikle bilgisayarlardan) gelen bilgileri anlama ve etkili bir şekilde kullanma yeteneği olarak kullanılmıştır. Bu tanım, dijital okuryazarlığın dijital teknolojileri kavrama ve anlama konusunda derin bir bilişsel yetenek içerdiğini vurgular (Secker, 2017).

Hızla gelişen dijital çağda, dijital okuryazarlık yeni bir ortak dil haline gelmiştir. Modern eğitim yaklaşımları, dijital becerilerin eğitim çerçevelerine entegre edilmesi gerektiğini giderek daha fazla kabul etmektedir (Gutiérrez-Ángel vd., 2022). Bu durum, Türkiye Cumhuriyeti Millî Eğitim Bakanlığı'nın (MEB, 2024) yakın zamanda başlattığı Türkiye Yüzyılı Eğitim Modeli'nde de görülmektedir. Yeni eğitim programları çerçevesinde dijital okuryazarlık, temel farkındalıktan pratik uygulamaya kadar uzanan kapsamlı bir yaklaşımla ele alınmıştır. Bilgiye erişim, iletişim, içerik oluşturma, yasal ve etik konular, güvenlik ve dijital bağlamlarda eleştirel düşünme gibi önemli unsurları kapsar. Ancak dijital dünya, yalnızca donanıma dair bilgiyi değil, aynı zamanda duygusal faktörleri de içermektedir. Güncel araştırmalar, çevrim içi etkileşimlerde yaygın olan duygusal mesajları anlamanın ve uygulamanın, dijital alanlarda etkili iletişim için kritik öneme sahip olduğunu vurgulamaktadır (Silber-Varod vd., 2019). Dijital okuryazarlık, sadece bir klavye kullanabilme becerisi değil, aynı zamanda dijital dünyada etkili bir katılım için gerekli olan sosyal ve duygusal becerileri de içeren karmaşık bir yetkinlikler bütünüdür (Choi & Kim, 2004).

'Dijital yerliler' olarak da adlandırılan genç kuşağın, bu becerilere doğuştan sahip olduğuna dair yaygın bir inanç olmasına rağmen, ampirik kanıtlar, özellikle çevrim içi duygusal alanlarda algılanan ve gerçek yetkinlikler arasında önemli bir fark olduğunu göstermektedir (Porat vd., 2018). Siber-duygusal beceriler, online ortam yazışmalarındaki ipuçlarını yorumlama yeteneğini, mesajlardaki temel duyguları ayırt etme veya emojilerle ifade edilen ruh halini doğru bir şekilde anlama gibi becerileri vurgulamaktadır (Alemdar & Yiğiter, 2025). Bu çalışma, bu bağlamda, üniversite öğrencilerinin siber duygusal becerilerinin dijital okuryazarlık yetkinliklerini nasıl etkilediğini araştırmayı amaçlamaktadır.

2. Yöntem

2.1. Araştırma Deseni ve Örneklem

Bu çalışma, üniversite öğrencilerinin siber duygusal becerilerinin dijital okuryazarlıklarını etkilediği yönünde hipotezlendirilen teorik modeli incelemektedir. Değişkenler arasındaki nedensel ilişkinin yönünü analiz etmek için nedensel modelden yararlanılmıştır (Bryman, 2012). Araştırmanın örneklemi, Türkiye'deki çeşitli üniversitelerden (Boğaziçi Üniversitesi, Necmettin Erbakan Üniversitesi ve Muş Alparslan Üniversitesi) basit rastgele örnekleme yöntemiyle seçilen 283 üniversite öğrencisinden oluşmaktadır.

2.2. Ölçme Araçları

2.2.1. E-motions (E-duygular) Ölçeği

Zych ve arkadaşları (2017) tarafından geliştirilen E-motions ölçeği, çevrim içi ortamlarda duygusal becerileri değerlendirmek için kullanılmaktadır. Ölçek, dört alt boyutta 21 maddeden oluşmaktadır: e-duygusal ifade, e-duygusal algı, e-duyguların kullanımını kolaylaştırma ve e-duyguları anlama ve yönetme. Ölçekteki maddeler, 5'li Likert formatında sunulmuş olup, '1 - Kesinlikle Katılmıyorum' ile '5 - Kesinlikle Katılıyorum' arasında derecelendirilmektedir. E-motions ölçeğinin geçerliliği, Doğrulayıcı Faktör Analizi (DFA) ile güçlendirilmiş ve ölçeğin uyum iyiliği göstergelerinin kabul edilebilir parametreler içinde olduğunu göstermiştir ($\chi2=316.23$, sd=183, $p<0.05$; $\chi2/sd=1.728$; CFI=0.98, NFI=0.95, NNFI=0.98, RMSEA=0.07). Ölçme aracının orijinal versiyonunda, Cronbach alfa güvenilirlik katsayısı e-duygusal ifade boyutu için 0.84 olarak hesaplanmıştır (4 madde, ör. "Facebook, Twitter veya Instagram gibi sosyal medya platformlarında duygularımı ifade ederim"); e-duygusal algı boyutu için 0.75 (3 madde, ör. " Bağlantılarım, mutlu ya da üzgün olduklarını, bana Facebook, Twitter veya Instagram aracılığıyla iletirler"); e-duyguların kullanımını kolaylaştırma boyutu için 0.91 (6 madde, $\alpha = 0.91$; ör. " Zorlandığım durumların üstesinden gelmek için duygularımı Facebook, Twitter veya Instagram'da ifade ederim"); ve e-duyguları anlama ve yönetme boyutu için 0.87 (8 madde, $\alpha = 0.87$; ör. " Bağlantılarımın sayfasına baktığımda, ne tür duygular hissettiklerini anlarım"). E-motions ölçeği, Alemdar ve Yiğiter (2025) tarafından Türkçeye uyarlanmıştır. E-motions ölçeğinin uyarlama çalışmasının DFA bulguları, ölçeğin uyum iyiliği göstergelerinin kabul edilebilir parametreler içinde olduğunu göstermiştir ($\chi2=498.09$, sd=185, $p<0.05$; $\chi2/sd=2.692$; CFI=0.99, NFI=0.97, RMSEA=0.06, SRMR=0.06). Ölçme aracının uyarlama versiyonunda, Cronbach alfa güvenilirlik katsayısı e-duygusal ifade boyutu için 0.74; e-duygusal algı boyutu için 0.66; e-duyguların kullanımını kolaylaştırma boyutu için 0.85; ve e-duyguları anlama ve yönetme boyutu için 0.90 olarak hesaplanmıştır.

2.2.2. Dijital Okuryazarlık Ölçeği

Ng (2012a) tarafından geliştirilen ve Üstündağ ve arkadaşları (2012) tarafından Türkçeye uyarlanan Dijital Okuryazarlık Ölçeği, üniversite öğrencilerinin dijital okuryazarlık düzeylerini değerlendirmek için kullanılmaktadır. Ölçek, katılımcıların dijital okuryazarlık becerilerindeki varyasyonun yüzde 40'ını açıklayan tek faktörden oluşan on maddeden oluşmaktadır. Maddeler, beşli Likert (1-Katılmıyorum ve 5-Kesinlikle katılıyorum aralığında) ölçeği formatında yapılandırılmıştır. DFA analizi sonuçlarına göre uyum iyiliği indeksleri şu şekildedir: $\chi2/sd= 3.67$, RMSEA = 0.06, CFI = 0.96, IFI = 0.96 ve GFI = 0.94. Bu değerler, CFI, IFI ve GFI için mükemmele yakın bir uyum gösterirken, $\chi2/sd < 5$ ve RMSEA kabul edilebilir düzeyde uyum sağlamaktadır. Ayrıca, çalışmanın güvenilirlik katsayısı 0.84

olarak değerlendirilmiş ve yeterli güvenilirlik sağlamıştır. Bu nedenle, bu çalışmada toplanan veriler hem geçerli hem de güvenilir olarak kabul edilebilir.

2.2.3. Veri Analizi

Analiz öncesinde, çok değişkenli istatistiksel tekniklerin varsayımları kapsamlı bir şekilde test edilmiştir. Kayıp veri bulunmadığı ve tüm z puanlarının [-3,+3] aralığında olduğu tespit edilmiştir. Verilerin normalliği, çarpıklık ve basıklık katsayılarının [-1.5,+1.5] aralığında olması ile doğrulanmıştır (Tabachnick & Fidell, 2013). Çoklu bağlantı analizi, VIF (variance inflation factor) değerlerinin 5'in altında kalmasıyla çoklu bağlantı sorunu olmadığı bulgulanmıştır (Kline, 2011). Kategorik ve sıralı değişkenler nedeniyle, çok değişkenli normallik ihlallerinde önerilen WLSMV kestirim yöntemi tercih edilmiştir (Brown, 2006; Forero vd., 2009). Bu araştırmada tüm veriler R programlama dili ile analiz edilmiştir. Verilerin düzenlenmesinde "dplyr", çarpıklık-basıklık değerlerinin incelenmesinde "PerformanceAnalytics", çoklu bağlantının incelenmesinde "car", güvenirlik katsayılarının hesaplanmasında "psych", doğrulayıcı faktör analizi ve yapısal eşitlik modeli analizleri için "lavaan", yapısal model diyagramı için "semPlot" paketleri kullanılmıştır.

3. Bulgular

Bu çalışma, Yapısal Eşitlik Modeli aracılığıyla siber duygusal beceriler (E-motions) ve dijital okuryazarlık arasındaki bağlantının ampirik bir testini sunmaktadır (β= .41, p = .000, $\chi 2/df$ = 1.9, RMSEA = 0.06, SRMR = 0.07). Hem E-motions hem de dijital okuryazarlık değişkenlerinin güvenilirliği, Cronbach's Alpha ve McDonald's ω katsayılarına göre oldukça yüksektir (güvenilirlik > 0.90). E-motions ve dijital okuryazarlık arasında orta düzeyde pozitif bir korelasyon (r = 0.38; p < 0.01) bulunmaktadır. Bu korelasyon değerinin 0.85'ten küçük olması, çoklu doğrusallık sorunu olmadığını göstermektedir (Kline, 2015). Çarpıklık ve basıklık değerleri -1.5 ile +1.5 arasında değişmekte ve veriler normal dağılıma uymaktadır (Tabachnick & Fidell, 2013).

4. Sonuç, Tartışma ve Öneriler

Çalışmanın bulguları, siber duygusal beceriler ile dijital okuryazarlık arasında dikkate değer bir ilişki olduğunu ortaya koymakta ve siber duygusal becerilerin dijital okuryazarlığın pozitif bir yordayıcısı olduğunu göstermektedir. Bu sonuç, sosyal ve duygusal becerilerin dijital okuryazarlık üzerindeki etkisine ilişkin daha önceki araştırma bulgularıyla uyumludur (Audrin & Audrin, 2023). Bir bireyin dijital bir ortamda duyguları ve duygu ile ilgili bilgileri ne kadar etkili bir şekilde yönetebileceğinin kapsamlı bir şekilde anlaşılması, dijital dünya hakkındaki farkındalığını ve dijital görevleri yerine getirme yetkinliğini büyük ölçüde şekillendirmektedir. Bu bulgu, dijital okuryazarlık eğitimlerinde stratejilerin geliştirilmesinde duygusal becerilerin önemini vurgulamakta ve çevrim içi dünyada başarılı olmak için yeni bir ön koşul sunmaktadır. Dijital okuryazarlık aracılığıyla dijital çağda başarılı olmanın sadece teknik becerilere değil, aynı zamanda duygusal zekaya da bağlı olduğunu ortaya koyulmuştur. Aynı zamanda dijital becerilerin duygusal becerilerle de ilişkili olduğu gerçeği, eğitim program ve politikalarının geliştirilmesinde dikkate alınması gereken önemli bir faktördür.

Nedensel ilişkileri daha derinlemesine araştırmak için gelecekteki araştırmalar deneysel veya boylamsal tasarımlar kullanabilir. Farklı yaş gruplarında siber-duygusal beceriler üzerine yapılacak boylamsal araştırmalar, bu becerilerin nasıl geliştiği, değiştiği ve dijital okuryazarlıkla nasıl etkileşime girdiğine dair içgörü sağlayacaktır. Ayrıca, bu çalışmanın örneklemi Türkiye'deki üç şehirdeki öğrencilerden seçilmiştir, bu da bulguların genellenebilirliğini sınırlayabilir. Daha büyük ve daha çeşitli

bir örneklem, sonuçların sağlamlığını artıracaktır. Gelecekte yapılacak çalışmalar, özellikle anlamlı dijital katılımın önünde ek engellerle karşılaşabilecek marjinalleştirilmiş ve dezavantajlı gençlere odaklanabilir. Ayrıca, kültürler arası çalışmalar, siber-duygusal becerileri ve dijital okuryazarlığı farklı kültürler arasında karşılaştırarak mevcut araştırma çerçevesini genişletebilir. Nitel araştırma desenine dayalı verilerin dahil edilmesi, katılımcıların sosyal ve duygusal yeterliliklerinin yanı sıra belirli ortamların veya bağlamların sonuçları nasıl etkileyebileceğine dair daha derin içgörüler sağlayabilir. Son olarak, E-duygular ölçeğinin geçerliliği ve güvenilirliği genç yetişkin örnekleminde (üniversite öğrencileri) yüksek bulunmuş olsa da, bu bulguları daha geniş popülasyonlara uygularken dikkatli olunması gerekmektedir. Bu sınırlamalara rağmen, bu çalışma siber-duygusal becerilerin farklı bağlamlarda dijital okuryazarlığı önemli ölçüde etkileyebileceğine dair değerli ampirik kanıtlar sunmaktadır.

Declaration of Publication Ethics

This research has been granted ethical approval by the Ethics Committee of Necmettin Erbakan University with the decision number 2023/271 dated 09/06/2023. Throughout the entire process of this research, from planning to implementation, data collection to data analysis, all rules specified within the scope of the "Higher Education Institutions Scientific Research and Publication Ethics Directive" have been strictly adhered to. None of the actions listed under the "Actions Contrary to Scientific Research and Publication Ethics" section in the second part of the directive have been committed. In the writing process of this research, scientific, ethical, and citation rules have been followed; no manipulation has been made on the collected data. This study has not been submitted for evaluation to any other academic publication venue. We hereby declare that our study does not include sensitive information, vulnerable groups, or risk of disclosure.

Declaration of Contribution of Researchers

First Author, 50%: study conception, literature review, data acquisition, and manuscript writing. Second Author, 30%: data analysis and manuscript writing. Third Author, %20%: data acquisition, manuscript writing, reference citation control. All authors contributed to the article and approved the submitted version.

Data Availability

Datasets generated and/or analyzed during this study are available from the corresponding author upon request.

Funding

The authors did not receive support from any organization for the submitted work.

Conflict Statement

The authors report there are no competing interests to declare.