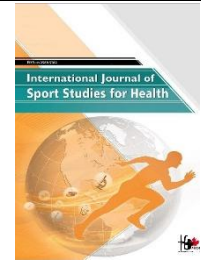








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Digital Gaming Behavior Among University Students: Interactions of Attitudes, Motivation, and Addiction Awareness Across Demographic Factors



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ABSTRACT

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Objective: The present study aims to investigate digital gaming behavior among university students by examining the interactions between digital game playing attitudes, gaming motivation, and digital game addiction awareness. Specifically, the study seeks to determine how these psychological dimensions vary across key demographic factors, including gender, faculty type, and grade level. In addition, the study aims to analyze the relationships among attitudes, motivation, and awareness to provide a comprehensive understanding of the underlying mechanisms shaping digital gaming behavior in this population.

Methods and Materials: A quantitative cross-sectional survey design was employed. The sample consisted of 337 university students (aged 17–32) selected through convenience sampling. Data were collected via validated scales measuring digital game addiction awareness, game playing motivation, and attitudes toward digital games. Statistical analyses were conducted using SPSS, including independent samples t-tests, one-way ANOVA, and Pearson correlation analysis, with significance set at $p < 0.05$.

Results: Female students demonstrated significantly higher levels of digital game addiction awareness ($M = 46.32$) compared to males ($M = 41.66$, $p < .001$), whereas male students showed higher motivation ($M = 65.64$ vs. 57.25 , $p < .001$) and more positive attitudes ($M = 57.22$ vs. 49.92 , $p < .001$). Students from the Faculty of Sports Sciences had lower awareness levels than students from other faculties ($p < .001$), while no significant differences were observed in motivation or attitudes. Grade level did not significantly affect awareness or motivation; however, differences were found in attitudes ($p < .05$). Correlation analysis revealed a weak negative relationship between awareness and motivation ($r = -0.141$, $p < .01$) and attitudes ($r = -0.136$, $p < .05$), and a very strong positive relationship between motivation and attitudes ($r = 0.924$, $p < .001$).

Conclusion: Digital gaming behavior among university students is influenced by an interaction of awareness, motivation, and attitudes. Interventions should adopt an integrated approach focusing on increasing awareness and regulating motivation to promote balanced gaming behaviors.

Keywords: Digital game addiction, awareness, motivation, attitude, and university students

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1. Introduction

Digital gaming has become a pervasive form of leisure, particularly among young people, and its intensive use can substantially influence everyday functioning. Excessive engagement in digital games has been associated with disruptions in sleep patterns, academic responsibilities, and social relationships (1). This widespread prevalence raises important questions about the factors that motivate individuals to engage so intensively in gaming. Digital games offer a structured, controllable, and reward-based environment that reinforces feelings of achievement, competition, and progression, thereby enhancing user engagement (2, 3). Moreover, the alternative reality created by digital games enables individuals to experience a sense of power, competence, and accomplishment that may be less accessible in real life. Elements such as uncertainty, curiosity, and structured progression further contribute to sustaining players' interest and continued involvement (4). Excessive digital gaming has also been linked to a range of emotional and behavioral consequences, as well as changes in daily habits and routines (5-7). As a result, researchers have increasingly focused on the underlying mechanisms that drive gaming behavior. The literature suggests that digital gaming is closely tied to motivational processes that satisfy individuals' needs for enjoyment, achievement, and social interaction (8). In this regard, the reward systems, opportunities for progression, and interactive features embedded in games are central factors that intensify engagement. Furthermore, digital game playing motivation is regarded as a multidimensional construct that significantly shapes individuals' propensity to participate in gaming activities (4). Beyond motivation, attitudes toward digital games also represent a critical dimension in understanding gaming behavior. Through devices such as computers, tablets, and smartphones, digital gaming has become an integral part of daily life across a broad age spectrum, from childhood through adulthood. Recent studies on esports participants further underscore the growing significance of gaming behaviors and their related physical and psychosocial outcomes (9, 10). The cognitive, affective, and behavioral dimensions of attitudes may play a decisive role in shaping individuals' engagement with digital games (11, 12). Accordingly, a comprehensive understanding of gaming behavior requires an integrated consideration of attitudes, motivation, and awareness rather than an exclusive focus on frequency or duration of use. The development, sources, behavioral consequences, and temporal evolution of

attitudes have long attracted scholarly attention (13). Attitude is widely understood as a multidimensional construct formed through the interaction of cognitive, affective, and behavioral components. When individuals' knowledge of a subject leads to favorable evaluations, these evaluations are reflected in the affective domain and become evident through their statements and behaviors (14). In this sense, attitudes play a crucial role in guiding engagement with digital games. Despite the expanding literature on digital gaming, most existing studies have concentrated primarily on usage patterns, addiction, and behavioral consequences, whereas research simultaneously examining attitudes, motivation, and awareness remains limited. In particular, the interplay among these constructs and their combined contribution to digital gaming behavior has not yet been sufficiently clarified. This gap points to the need for a more comprehensive perspective that addresses multiple psychological dimensions concurrently. Therefore, the present study aims to examine digital game addiction awareness, digital game playing motivation, and digital game playing attitudes among university students, and to investigate the relationships among these variables across different demographic characteristics.

2. Methods and Materials

2.1 Research Design

This study employed a quantitative research approach to examine university students' attitudes toward digital game playing, their motivation for digital gaming, and their awareness of digital game addiction across selected demographic variables. A cross-sectional survey design was adopted to identify group differences and to explore the relationships among the study variables.

2.2 Participants

The study sample consisted of 337 university students enrolled at Ondokuz Mayıs University, including students from the Yaşar Doğu Faculty of Sports Sciences, the Faculty of Education, and the Faculty of Science. Participants ranged in age from 17 to 32 years and were recruited on a voluntary basis using a convenience sampling method. Data were collected in 2025 through an online survey. The inclusion criteria were as follows: being actively enrolled in one of the relevant faculties, being between 17 and 32 years of age, and providing voluntary consent to participate in the study. Exclusion criteria included incomplete or incorrectly

completed survey forms, failure to provide informed consent, and responses identified as statistical outliers during the data screening process.

2.3 Data Collection Instruments

Digital Game Addiction Awareness Scale. Participants' awareness of digital game addiction was assessed using the *Digital Game Addiction Awareness Scale* developed by (15). The scale comprises 12 items and includes two subdimensions: internal awareness and external awareness. Responses are recorded on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate greater awareness of digital game addiction. In the present study, the scale demonstrated good internal consistency, with a Cronbach's alpha coefficient of 0.87.

Digital Game Playing Motivation Scale. Digital game playing motivation was measured using the *Digital Game Playing Motivation Scale* developed by (4). This instrument consists of three subdimensions: achievement and revitalization, curiosity and social acceptance, and uncertainty in gaming desire. All items are rated on a 5-point Likert scale, with higher scores reflecting greater motivation to engage in digital gaming. In the current study, the Cronbach's alpha coefficient for the scale was 0.87, indicating satisfactory reliability.

Digital Game Playing Attitude Scale. Attitudes toward digital game playing were assessed using the *Digital Game Playing Attitude Scale* developed by (4). The scale contains 18 items and has a three-factor structure comprising cognitive (Items 1–5), affective (Items 6–10), and behavioral (Items 11–18) dimensions. Total scores are used to determine the overall level of digital game playing attitude and are interpreted as follows: 1–18 very low, 19–37 low, 38–54 moderate, 55–72 high, and 73–90 very high.

2.4 Data Collection Procedure

Data were collected in 2025 through an online survey form. Students from different faculties at Ondokuz Mayıs University were invited to participate voluntarily. Before completing the survey, all participants were informed about the purpose of the study and provided informed consent. The questionnaire was administered anonymously, and participants were informed that they could withdraw from the study at any stage without penalty.

2.5 Data Analysis

All statistical analyses were performed using the SPSS software package. Descriptive statistics, including means and standard deviations, were first calculated. The normality of the data distribution was then assessed, and the results indicated that the assumptions for parametric testing were met. Independent samples *t*-tests were used to compare two groups, whereas one-way analysis of variance (ANOVA) was employed for comparisons involving three or more groups. Pearson correlation analysis was conducted to examine the relationships among the variables. Statistical significance was set at $p < 0.05$ for all analyses.

3. Results

Table 1 presents the comparison of digital game addiction awareness, digital game playing motivation, and digital game playing attitudes by gender. Female students reported significantly higher scores than male students in internal awareness, external awareness, and total digital game addiction awareness. The difference in total awareness was statistically significant, with females scoring higher ($M = 46.32$, $SD = 8.28$) than males ($M = 41.66$, $SD = 10.04$; $t = 4.66$, $p < .001$, $d = 0.51$). These findings indicate that female students demonstrated greater awareness of the risks associated with digital game addiction. In contrast, male students showed significantly higher levels of digital game playing motivation across all subdimensions, including achievement and revitalization, curiosity and social acceptance, and uncertainty in gaming desire (Table 1). The largest gender-based difference was found in total motivation, where male students obtained a mean score of 65.64 ($SD = 11.66$), compared with 57.25 ($SD = 10.95$) among female students ($t = -5.99$, $p < .001$, $d = -0.74$). Likewise, male students scored significantly higher on digital game playing attitudes, including the cognitive, affective, and behavioral subdimensions, as well as on the total attitude score ($M = 57.22$, $SD = 11.82$ vs. $M = 49.92$, $SD = 10.95$; $t = -5.87$, $p < .001$, $d = -0.64$). As illustrated in Figure 1, female students were characterized by higher awareness, whereas male students displayed stronger gaming motivation and more favorable attitudes toward digital games.

Table 1. Comparison of Digital Game Addiction Awareness, Game Playing Motivation, and Attitudes by Gender

Variables	Gender	N	Mean	SD	t	p	d
Internal awareness	Female	187	19.05	4.00	4.48	.001**	0.49
	Male	150	16.76	5.39			
External awareness	Female	187	27.26	4.86	4.12	.001**	0.45
	Male	150	24.90	5.67			
Digital game addiction awareness (total)	Female	187	46.32	8.28	4.66	.001**	0.51
	Male	150	41.66	10.04			
Achievement and revitalization	Female	187	14.75	3.96	-5.07	.001**	-0.56
	Male	150	16.96	4.00			
Curiosity and social acceptance	Female	187	28.68	8.43	-4.20	.001**	-0.46
	Male	150	32.49	8.07			
Uncertainty in gaming desire	Female	187	13.81	4.70	-2.67	.008*	-0.29
	Male	150	15.20	4.79			
Total game-playing motivation	Female	187	57.25	10.95	-5.99	.001**	-0.74
	Male	150	65.64	11.66			
Cognitive	Female	187	14.46	3.86	-6.32	<.001**	-0.70
	Male	150	17.11	3.76			
Affective	Female	187	12.96	4.61	-2.09	.037*	-0.23
	Male	150	14.01	4.53			
Behavioral	Female	187	22.50	7.93	-4.12	<.001**	-0.45
	Male	150	26.11	8.01			
Total digital game playing attitude	Female	187	49.92	10.95	-5.87	<.001**	-0.64
	Male	150	57.22	11.82			

* $p < 0.05$ ** $p < 0.001$

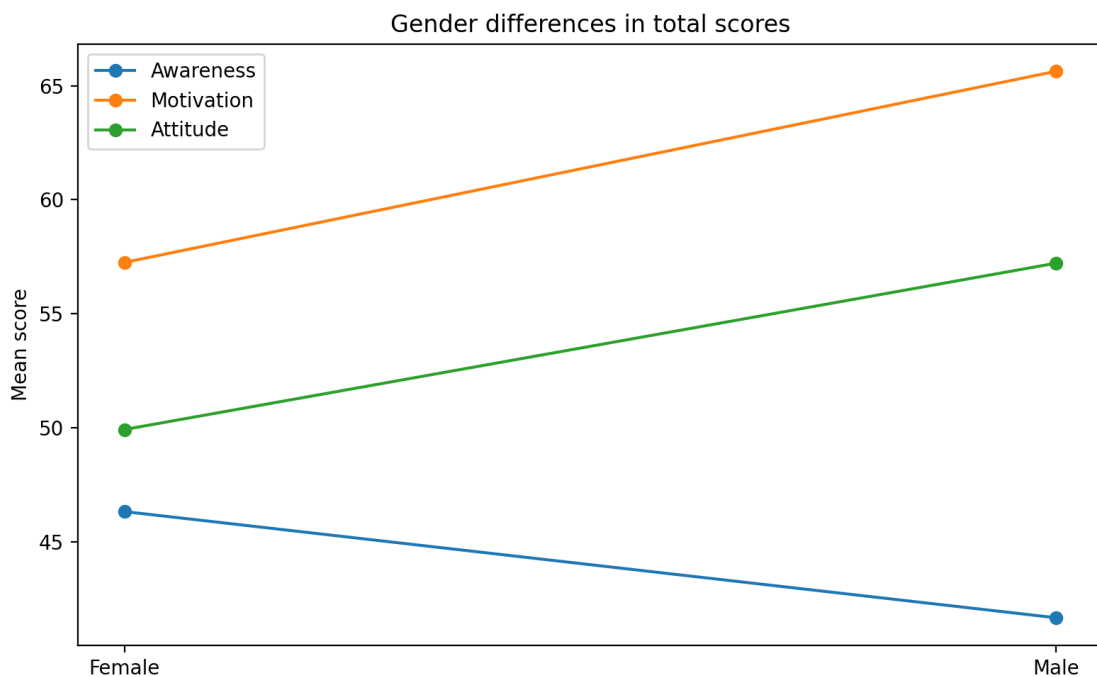


Figure 1. Gender differences in total digital game addiction awareness, game playing motivation, and digital game playing attitude.

Table 2 summarizes the comparison by faculty type. Students enrolled in the Faculty of Sports Sciences had significantly lower scores in internal awareness, external awareness, and total digital game addiction awareness than

students from other faculties. In particular, the total awareness score was lower among students in the Faculty of Sports Sciences ($M = 42.37$, $SD = 10.19$) than among those in other faculties ($M = 46.32$, $SD = 7.92$; $t = -3.95$, $p < .001$,

d = 0.43). However, no statistically significant differences were observed between faculty groups in the subdimensions of motivation or in total game playing motivation (all $p > .05$). Similarly, digital game playing attitudes did not differ

meaningfully by faculty type. Figure 2 visually reinforces this pattern, showing that faculty-related differences were evident primarily in awareness rather than in motivation.

Table 2. Comparison of Digital Game Addiction Awareness, Game Playing Motivation, and Attitudes by Faculty Type

Variables	Faculty	N	Mean	SD	t	p	d
Internal awareness	Faculty of Sports Sciences	177	17.37	5.30	-2.68	.008*	0.29
	Other faculties	160	18.76	4.08			
External awareness	Faculty of Sports Sciences	177	24.99	5.75	-4.50	.001**	0.50
	Other faculties	160	27.56	4.54			
Digital game addiction awareness (total)	Faculty of Sports Sciences	177	42.37	10.19	-3.95	.001**	0.43
	Other faculties	160	46.32	7.92			
Achievement and revitalization	Faculty of Sports Sciences	177	15.55	4.17	0.85	.394	
	Other faculties	160	15.94	4.08			
Curiosity and social acceptance	Faculty of Sports Sciences	177	29.77	8.40	-1.39	.164	
	Other faculties	160	31.06	8.54			
Uncertainty in gaming desire	Faculty of Sports Sciences	177	14.16	4.46	-1.07	.283	
	Other faculties	160	14.73	5.12			
Total game playing motivation	Faculty of Sports Sciences	177	59.49	10.43	-1.73	.084	
	Other faculties	160	61.72	13.			

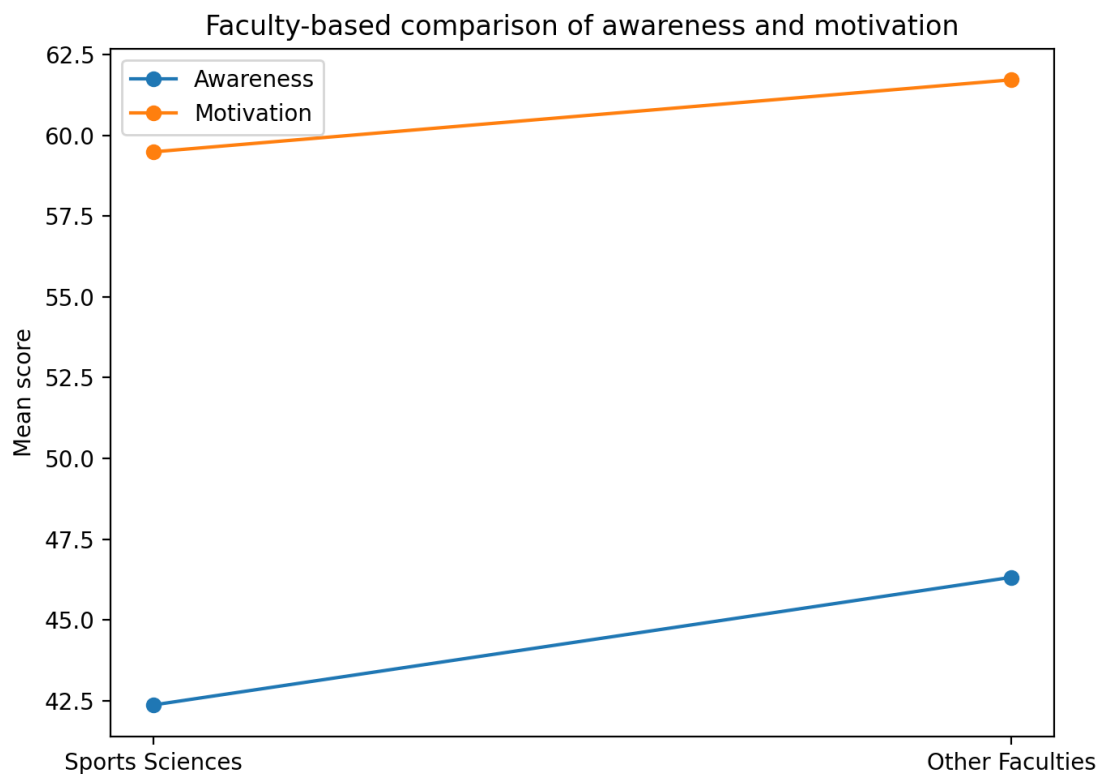


Figure 2. Comparison of awareness and motivation scores by faculty type.

The comparison across grade levels is reported in Table 3. No significant differences were identified in internal awareness, external awareness, or total awareness scores according to grade level (all $p > .05$). Similarly, total digital game playing motivation did not vary significantly across grades ($F = 1.97, p = .118$). Nevertheless, significant grade-

level differences emerged in some motivation subdimensions. Achievement and revitalization differed significantly ($F = 4.84, p = .003$), with first- and second-year students scoring higher than third-year students, and second-year students also exceeding fourth-year students. Curiosity and social acceptance also varied significantly ($F = 2.79, p =$

.041), with first- and second-year students showing higher scores than third- and fourth-year students. Significant grade-level differences were also found in digital game playing attitudes (Table 3). Cognitive attitude ($F = 5.22, p = .002$), affective attitude ($F = 3.00, p = .030$), behavioral attitude ($F = 5.98, p < .001$), and total digital game playing attitude ($F = 4.43, p = .005$) all differed significantly across grade levels. Post-hoc comparisons indicated that first- and

second-year students generally reported higher cognitive, behavioral, and total attitude scores than students in later academic years. By contrast, first-year students had significantly lower affective attitude scores than students in the remaining grade levels. As shown in Figure 3, awareness remained relatively stable across grades, whereas attitude scores tended to decline modestly in upper grades.

Table 3. Comparison of Digital Game Addiction Awareness, Game Playing Motivation, and Attitudes by Grade Level

Variables	Grade	N	Mean	SD	F	p	Post-hoc
Internal awareness	1	73	18.49	4.37	1.96	.119	–
	2	68	17.81	4.55			
	3	92	18.75	3.62			
	4	104	17.22	5.96			
External awareness	1	73	26.05	5.76	0.17	.914	–
	2	68	26.46	5.11			
	3	92	26.41	4.09			
	4	104	25.98	6.21			
Total awareness	1	73	44.55	9.68	0.75	.525	–
	2	68	44.26	9.10			
	3	92	45.16	6.71			
	4	104	43.20	11.22			
Achievement and revitalization	1	73	16.44	3.12	4.84	.003*	1 > 3; 2 > 3, 4
	2	68	16.90	3.99			
	3	92	14.70	4.77			
	4	104	15.40	3.98			
Curiosity and social acceptance	1	73	32.58	5.68	2.79	.041*	1, 2 > 3, 4
	2	68	30.81	9.91			
	3	92	29.91	9.30			
	4	104	28.97	8.11			
Uncertainty in gaming desire	1	73	13.12	3.85	2.39	.069	–
	2	68	14.91	5.07			
	3	92	14.85	5.01			
	4	104	14.66	4.88			
Total game playing motivation	1	73	62.14	6.48	1.97	.118	–
	2	68	62.62	13.80			
	3	92	59.46	14.93			
	4	104	59.04	9.97			
Cognitive	1	73	15.89	3.30	5.22	.002*	1 > 3; 2 > 3, 4
	2	68	16.99	3.82			
	3	92	14.51	4.65			
	4	104	15.58	3.81			
Affective	1	73	12.10	3.83	3.00	.030*	1 < 2, 3, 4
	2	68	14.21	4.70			
	3	92	13.85	5.01			
	4	104	13.47	4.49			
Behavioral	1	73	26.16	5.73	5.98	<.001**	1, 2 > 4
	2	68	25.93	8.25			
	3	92	23.85	9.23			
	4	104	21.70	7.95			
Total digital game playing attitude	1	73	54.15	7.13	4.43	.005*	2 > 3, 4
	2	68	57.12	12.31			
	3	92	52.21	14.88			
	4	104	50.75	10.69			

* $p < 0.05$

Table 4 presents the correlations among digital game addiction awareness, digital game playing motivation, and digital game playing attitudes. Digital game addiction awareness was weakly but significantly negatively correlated with digital game playing motivation ($r = -0.141$, $p < .01$) and digital game playing attitude ($r = -0.136$, $p < .05$), indicating that higher awareness was associated with slightly lower motivation and less favorable attitudes toward

digital gaming. By contrast, a very strong positive correlation was found between game-playing motivation and digital game-playing attitude ($r = 0.924$, $p < .001$). Taken together, these findings suggest that awareness, motivation, and attitudes represent closely related but distinct dimensions of digital gaming behavior among university students.

Table 4. Correlations Between Students’ Digital Game Addiction Awareness, Game Playing Motivation, and Attitudes

Variables	1	2	3
1. Digital Game Addiction Awareness	1	-.141**	-.136*
2. Game Playing Motivation		1	.924**
3. Digital Game Playing Attitude			1

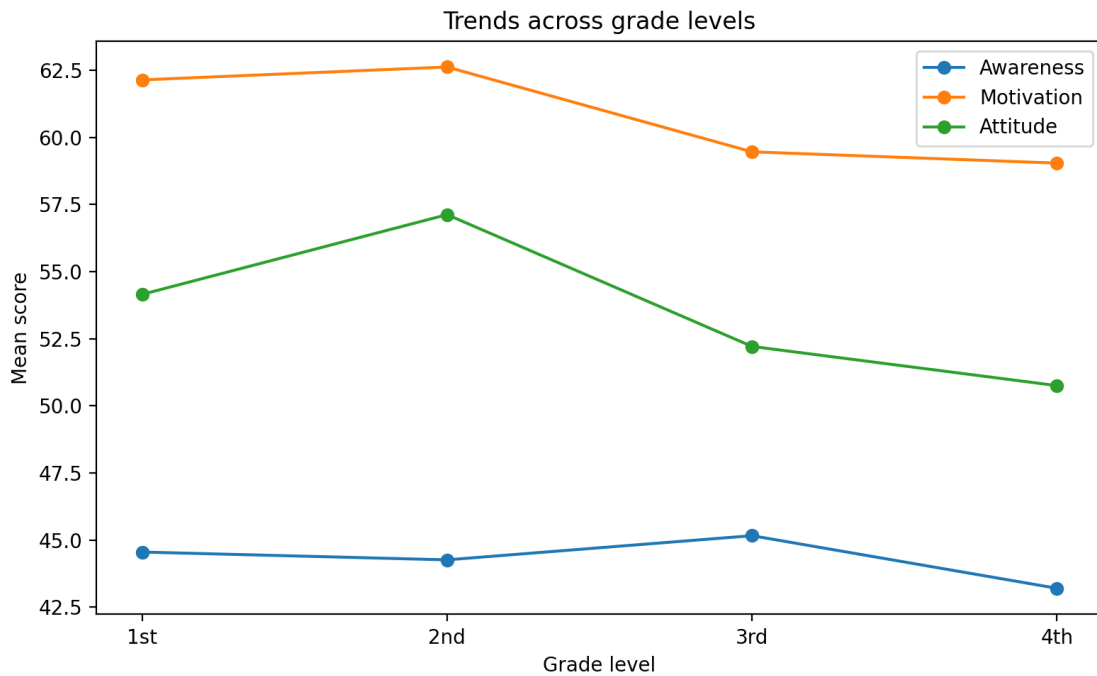


Figure 3. Trends in awareness, motivation, and attitude scores across grade levels.

Significant differences were found in curiosity and social acceptance, uncertainty in gaming desire, total game playing motivation, total digital game playing attitude, and the cognitive, affective, and behavioral subdimensions ($p < .05$ and $p < .001$). In all these variables, male participants demonstrated higher mean scores compared to female participants.

Significant differences were found in the internal, external, and total scores of digital game addiction awareness according to faculty type ($p < .05$; $p < .001$). However, no significant differences were observed in digital game playing motivation or digital game playing attitudes (p

$> .05$). When mean scores were examined, students from the Faculty of Sports Sciences demonstrated lower levels of digital game addiction awareness compared to students from other faculties. The effect sizes for these differences ranged from small to moderate ($d = 0.29-0.50$), indicating that while the differences are statistically significant, their practical magnitude is limited. No significant differences were found in digital game addiction awareness or total game playing motivation scores according to grade level ($p > .05$). However, significant differences were observed in the total digital game playing attitude score as well as in its cognitive, affective, and behavioral subdimensions ($p < .05$; $p < .001$).

According to the post-hoc analysis, first- and second-year students had significantly higher scores in achievement and revitalization, as well as curiosity and social acceptance, compared to third- and fourth-year students. In addition, first-year students demonstrated significantly lower affective scores compared to students in other grade levels. Furthermore, significant differences were also identified in cognitive, behavioral, and total attitude scores across grade levels.

Significant negative correlations were found between digital game addiction awareness scores and both digital game playing motivation ($r = -0.141, p < .01$) and digital game playing attitude ($r = -0.136, p < .05$), indicating low-level inverse relationships. In contrast, a very strong positive correlation was observed between digital game playing motivation and digital game playing attitude ($r = 0.924, p < .001$).

4. Discussion and Conclusion

The present study provides a multidimensional perspective on digital gaming behavior among university students by examining addiction awareness, gaming motivation, and gaming attitudes simultaneously. The findings indicate that these dimensions differ meaningfully across demographic groups and are also closely interrelated. In particular, gender emerged as a prominent factor in shaping students' awareness, motivation, and attitudes toward digital gaming. Female students reported higher levels of digital game addiction awareness than male students, a result that is consistent with previous studies showing greater awareness among females (16-18). One possible explanation is that male students tend to engage more frequently in digital gaming, which may normalize gaming behavior and reduce the perception of potential risk (19). By contrast, female students' relatively more limited engagement with digital games may contribute to a more critical or cautious perspective, thereby increasing their awareness of problematic gaming patterns. In this respect, the present findings are also in line with studies reporting a negative association between awareness and digital game addiction (20). The results further showed that male students had higher levels of digital game playing motivation than female students. This finding supports earlier research indicating that gaming motivation differs by gender (21, 22). Motivation appears to be a central mechanism underlying sustained engagement in digital gaming, as it is closely linked to the rewarding nature of games and the fulfillment

of needs related to achievement, competition, and enjoyment (23). The higher motivation observed among male students may therefore reflect stronger interest in the structural and psychological rewards embedded in digital games. This interpretation is also consistent with previous evidence suggesting that increased gaming motivation strengthens gaming behavior and encourages more intensive engagement (24). At the same time, the literature is not entirely consistent, as some studies have found no significant gender differences in digital game playing motivation (25). Such discrepancies may be attributable to differences in sample composition, sociocultural context, or individual gaming habits. A similar pattern was observed for digital game playing attitudes. Male students demonstrated more positive attitudes toward digital gaming than female students, with their scores falling within the high range, whereas female students remained within the moderate range. This finding is consistent with previous studies showing that attitudes toward digital gaming vary by gender (26, 27). Since attitude reflects cognitive, affective, and behavioral orientation toward gaming, more favorable attitudes among male students may indicate stronger personal identification with gaming and greater acceptance of gaming-related behaviors (12). However, the literature also suggests that such attitudes may vary depending on contextual and personal factors and may not always differ significantly by gender (28). Accordingly, the present results should be interpreted within the characteristics of the current sample rather than as universally fixed patterns. Another important finding concerns faculty-based differences. Students from the Faculty of Sports Sciences demonstrated lower levels of digital game addiction awareness than students from other faculties, whereas no significant differences were found in motivation or attitudes. This suggests that awareness may be more sensitive to academic or social environment than the other two constructs. Although the present study does not directly explain why sports sciences students reported lower awareness, the finding implies that belonging to a particular academic context may shape students' perceptions of gaming-related risks without necessarily influencing their underlying motivation or general attitudes toward gaming. This result reinforces the importance of examining awareness as a distinct dimension rather than assuming that it develops in parallel with motivation or attitude. With regard to grade level, awareness and overall motivation did not differ significantly, whereas significant differences were observed in gaming attitudes and in some motivational

subdimensions. First- and second-year students generally showed stronger scores in achievement and revitalization, curiosity and social acceptance, and several attitude-related dimensions than students in higher grades. This pattern may indicate that earlier university years are associated with stronger engagement with gaming-related rewards, interests, and behavioral tendencies. Although the cross-sectional design does not allow developmental conclusions, the findings suggest that attitudes toward gaming may be more dynamic across the university years than awareness or total motivation. In practical terms, this means that educational interventions may benefit from being sensitive not only to gender differences but also to students' academic stage. The correlational findings add further depth to the interpretation of the results. Digital game addiction awareness was negatively associated with both gaming motivation and gaming attitudes, although these relationships were weak. This suggests that as students become more aware of digital game addiction, they may be slightly less inclined to hold highly favorable attitudes toward gaming or to report strong motivation to play. In contrast, the relationship between gaming motivation and gaming attitude was very strong and positive, indicating that these two constructs are closely intertwined. Students who are more motivated to play digital games also tend to evaluate gaming more positively. This finding highlights the importance of addressing motivation and attitude together in any attempt to understand or regulate gaming behavior. Viewing gaming behavior only in terms of frequency or time spent may therefore provide an incomplete picture, whereas considering awareness, motivation, and attitudes simultaneously offers a more comprehensive explanatory framework. Taken together, the findings suggest that balanced digital game use among university students may depend not only on reducing problematic behavior but also on strengthening awareness and addressing the motivational and attitudinal factors that sustain gaming engagement. In particular, the lower awareness and higher motivation observed among male students may indicate a group-specific vulnerability that deserves attention. Similarly, the differences observed by faculty and grade level imply that preventive and educational strategies should be adapted to the social and developmental context of student groups. Programs designed to enhance awareness of problematic gaming may be especially valuable when they are integrated with efforts to better understand why students play and how they cognitively and emotionally relate to gaming.

At the same time, the findings should be interpreted with appropriate caution. Because the study was conducted with students from a single university and used convenience sampling, the generalizability of the results is limited. In addition, the use of self-report instruments may have introduced response bias, including social desirability and recall effects. The cross-sectional design also prevents causal interpretation of the observed relationships. Finally, several variables that may influence gaming behavior, such as daily gaming duration, game genre, and broader psychosocial factors, were not included in the analysis. Future studies that incorporate these variables and adopt longitudinal designs may help clarify the developmental and causal pathways linking awareness, motivation, and attitudes in digital gaming behavior. Nonetheless, the present study contributes to the literature by demonstrating that digital gaming among university students is best understood as a multidimensional phenomenon shaped by the interaction of awareness, motivation, and attitude rather than by usage patterns alone.

Authors' Contributions

Conceptualization: Engin Meydan, Nur Elvan Koç Doğan, and Osman İmamoğlu; methodology: Engin Meydan, Serhat Polat, and Mahmut Ulukan; formal analysis: Engin Meydan and Serhat Polat; investigation: Engin Meydan, Nur Elvan Koç Doğan, and Mahmut Ulukan; data curation: Engin Meydan and Serhat Polat; writing—original draft preparation: Engin Meydan and Nur Elvan Koç Doğan; writing—review and editing: Mahmut Ulukan and Osman İmamoğlu; supervision: Osman İmamoğlu. All authors have read and approved the final version of the manuscript.

Declaration

The authors used artificial intelligence–assisted tools only for language editing and improvement of academic expression. All conceptual development, data collection, statistical analysis, interpretation of findings, and final approval of the manuscript were carried out by the authors. The authors take full responsibility for the content of the article.

Transparency Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

Ethical approval for the study was obtained from the Ethics Committee of Istanbul Gelişim University (Meeting No. 2025-19, Decision No. 2025-19-12, dated 24 October 2025). The study was reviewed and approved in accordance with established ethical principles for human research. All procedures were carried out in line with the Declaration of Helsinki. Participants were informed of the study objectives prior to participation, and informed consent was obtained from all respondents. Participation was entirely voluntary, and anonymity was fully maintained.

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