

Decline in Character of Generation-Z: The Mediation Effect of Smartphone Use, Parental Attention, and Peer Environment

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Abstract

The development of digital technology has changed the social interaction patterns of Generation Z adolescents, especially due to the intensive use of smartphones, which has resulted in concerns of character degradation. This study aims to analyze the mediating role of smartphone use in the relationship between parental attention and peer environment towards character degradation of adolescents aged 14-19 years in Surakarta. The approach used in this study is a quantitative approach with explanatory design through Structural Equation Modeling (SEM) and a bias-corrected (BCa)-based bootstrap mediation test to identify direct and indirect influences between constructions. The results of the analysis showed that parental attention had a significant negative effect on character degradation ($\beta = -0.321$, $p < 0.001$) and smartphone use ($\beta = -0.412$, $p < 0.001$), which indicates the protective role of the family. In contrast, peer environment had significant positive effects on smartphone use ($\beta = 0.486$, $p < 0.001$) and character degradation ($\beta = 0.571$, $p < 0.001$). The indirect effect of parental attention to character degradation through smartphone use was also significant ($\beta = -0.159$, $p = 0.032$; 95% BCa CI [-0.720, -0.010]), suggesting partial mediation, whereas smartphone use fully mediated the relationship between peer environment and character degradation ($\beta = 0.278$, $p = 0.041$). These findings confirm that smartphone use serves as a central mechanism that connects family and social contexts with adolescent character degradation, so these findings can enrich the study of digital behavior, especially in understanding the dynamics of Generation Z character formation.

Keywords: character degradation; generation z; parental attention; peer environment; smartphone use

1. Introduction

The character of adolescents is the main foundation in the formation of a nation's generation (Afriana et al., 2024). Alimron defines character as a fundamental trait inherent in an individual, which forms an identity and becomes a distinctive marker of his personality (Alimron et al., 2023). In the adolescent phase, the individual undergoes not only biological development, but

also social and psychological transformations that determine the direction of his or her life (Slavich et al., 2023). Good character will encourage the birth of a generation that is disciplined, has integrity, and has high social concern (Mashoedi et al., 2025). Thus, the quality of the character of the younger generation can be seen as the face of a country, because the sustainability of development, social stability, and the reputation of the nation are highly determined by the quality of the character of the generation (Szymkowiak et al., 2021).

In the period 2025-2026, the adolescent population is dominated by individuals born from the early 2000s to the mid-2012s, who are categorically included as generation Z (Oktafianto & Sholahuddin, 2026). This generation grew up in an environment characterized by the massive penetration of digital technology, the availability of technological devices, and relatively unlimited access to information. This condition ideally encourages generation Z to develop abilities, both in cognitive skills, critical attitudes, or character formation (Jamaluddin et al., 2024). However, the phenomenon that occurred in Indonesia shows the opposite. There is a phenomenon of a massive decline in character quality among adolescents, especially in the Surakarta area (Onoshakpokaiye et al., 2023). Surakarta Police data in August 2025 shows that there were security activities for 65 teenagers who were members of the "*budal ngetan*" Whatsapp group who were the perpetrators of riot demonstrations in the city of Surakarta. In addition, according to a study conducted by Prabowo & Santoso (2024), it revealed that the majority of illegal racing behavior in Surakarta City is teenagers. This fact shows that the degradation of adolescent character is not just an individual phenomenon, but a social problem that can have an impact on the stability of society in the future.

Character damage in adolescents is caused by many factors, including according to Social Learning Theory, individual moral behavior is developed through the process of observation, imitation and reinforcement of the social environment, such as the environment of teman sabaya and family (Bandura, 1977). In line with this theory, Ecological Systems Theory emphasizes that the development of adolescent character is influenced by the pattern of interaction that takes place in the nearest system, either the micro system or the mesos system which is sweet and contextual (Bronfenbrenner, 1979). Thus, parental protection and peer environment are viewed as two main factors that influence and shape the direction of adolescent character development.

In the era of digital technology development, the use of smartphones has emerged as a new environmental factor that is intense and even inherent in the daily lives of adolescents (Dewantara & Wahyuni, 2023). A number of studies show that there is a phenomenon of excessive and uncontrolled smartphone use,

which ultimately affects adolescent character in a negative direction, such as low discipline, gratitude, decreased enthusiasm for learning, and addictive behavior tendencies (Girela-Serrano et al., 2024). Other empirical evidence shows that at least adolescents today spend more than eight hours per day using smartphones, which certainly has the potential to shift the value process and regulation of adolescent behavior by 19% (Walters, 2021).

However, excessive and maladaptive smartphone use does not appear spontaneously or without cause (Shuai et al., 2021). Recent research results state that low parental supervision and attention contribute significantly to increased screen time and smartphone abuse in adolescents (X. Zhang et al., 2024). Weak supervision and low communication between parents and children make them seek refuge in the digital world, which ultimately leads to a deterioration of the character and values that parents have built (Huang et al., 2021). In addition, the influence of friends' environment is also an important factor that encourages excessive smartphone use through conformity mechanisms and behavioral imitation (Haddow et al., 2021).

Empirical findings regarding the direct influence of parental attention and peer environment on adolescent character directly still show inconsistent results. A number of studies such as Rohmalimna et al. (2024) explain that there is a significant influence of parents on the formation of adolescent character, especially in preventing character degradation. However, other findings suggest that this influence tends to be weakened or reduced as the child enters the adolescent phase (Zawadzka et al., 2022). Likewise, empirical evidence on the influence of peers on character formation shows inconsistent results. On the one hand, the peer environment has a significant impact as a constructive and prosocial social character builder (C. Kong & Yasmin, 2021). But on the other hand, it has the potential to reinforce deviant behavior through peer transmission mechanisms (Mitsuhashi et al., 2025).

Inconsistencies in the findings suggest that the relationship between peer environment and parental attention in shaping adolescent character does not necessarily work through direct channels. In the theory of Ecological Systems, it is explained that character development in adolescents is influenced by interaction patterns in their nearby systems (microsystems and mesosystems) that are dynamic and contextual, one of which is interaction with digital space (Navarro & Tudge, 2023). This is supported by research showing that smartphone use significantly reshapes the way adolescents interact with their social environment (Girela-Serrano et al., 2024). However, most studies still place the variable of smartphone use as an independent factor, rather than as a mediating mechanism that traps the influence of parental attention and peer environment in shaping adolescent character (A. Zhang et al., 2022). Therefore, this study aims to develop a comprehensive model of character decline among

Generation Z adolescents by placing smartphone use as a mediation mechanism between parental attention, peer environment, and character degradation. In contrast to previous studies that mostly examined these variables separately, this study integrated family and peer factors into a single structural model to explain how the social environment influences adolescents' character through smartphone use patterns. Furthermore, this research contributes to expanding previous research by treating smartphone use not only as a behavioral outcome, but as a psychosocial pathway that influences character development. Thus, this study examines the direct and indirect influence of parental attention and peer environment on character degradation through smartphone use among Generation Z adolescents.

2. Method

2.1 Research Design

The approach used in this study is an explanatory quantitative approach using the Structural Equation Modeling (SEM) analysis method. SEM is a multivariate analysis technique designed to examine the relationship between variables, either directly (exogenous to endogenous variables) or indirectly (exogenous to endogenous through mediator pathways) (Febriandika et al., 2023). SEM analysis was selected based on several methodological considerations: First, SEM is able to analyze more complex relationships, including examining the role of mediation variables. Second, SEM allows simultaneous testing of measurement and structural models, resulting in a more comprehensive validation of the developed theoretical model (Afthanorhan et al., 2020).

2.2 Population and Sample

The population in this study is adolescents in the city of Surakarta. Sampling uses the Purposive sampling technique, which is a technique in which researchers deliberately select subjects or informants based on certain criteria (Nuraini & Budiandru, 2023). The criteria for respondents in this study include: 1) Aged 14-19 years. 2) Possess and maintain personal smartphone use for at least the last 3 months. 3) Be in a stable social system (Live with family and be active in a friendly environment). These things aim to obtain data that is most in line with his research (Hermawan, 2022).

The sample size used in this study was 250 students for the main test and 50 respondents for the instrument test (validity and reliability). All respondents approved and agreed to participate in this study. This provision refers to the guideline that the minimum number of samples required for Structural Equation Modeling (SEM) analysis is in the range of 150 to 200 respondents (Dahlan et al.,

2024). So that the number of samples in this study based on this theory is declared eligible.

2.3 Data Collection Instruments

The research procedure begins with a review of relevant theories followed by the development of a measurement instrument based on previously validated studies. A pilot study involving 50 respondents outside the main sample was conducted to evaluate the instrument's validity and reliability before the final questionnaire was distributed online via Google Forms for one month. The questionnaire measured four constructs: parental attention, peer environment, smartphone use, and character degradation. All items were adapted from validated studies and scored using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Detailed indicators and measurement sources are presented in Table 1.

Table 1. Research Instrument

Variable	Indicator	Reference
Parental Attention	Parental attention, emotional support, and supervision/monitoring	(Hartoyo & Indriyani, 2024; Nudin, 2020; Wahyuni et al., 2022).
Peer Environment	Distorted peer influence, digital peer pressure, and academic impairment.	(L. Chen, 2023; S. C. Kong & Wang, 2021).
Use of Smartphone	Maladaptive smartphone engagement, inappropriate digital behavior, and academic impairment associated with weak parental supervision	(Visvizi et al., 2023; Wang et al., 2021).
Character Degradation	Academic cheating, disrespectful behavior, and disciplinary infractions	(Iqbal & Zahoor, 2024; Kosola et al., 2024; Miles et al., 2022).

2.4 Instrument Validity and Reliability Test

To ensure the quality of the research instrument, researchers conducted validity and reliability tests to ensure that each statement item truly represented the construct being measured and consistently reflected the underlying dimensions. The instrument pilot test involved 50 respondents outside the main research sample. Validity was tested using corrected item-total correlations, with results showing that the majority of items exceeded the minimum threshold of 0.30 (Melkamu et al., 2022). Furthermore, instrument reliability was evaluated using Cronbach's Alpha coefficient, with a minimum value of 0.5 (Prasetyaningrum et al., 2022).

2.4.1 Parental Attention

The results of the corrected item-total correlation test on the Parental Attention variable showed values of 0.390 for POT1, 0.492 for POT2, 0.013 for

POT3, 0.379 for POT4, 0.336 for POT5, and 0.328 for POT6. Based on the validity criteria, the majority of the Parental Attention items (POT1, POT2, POT4, POT5, and POT6) were declared valid, while one item (POT3) fell below the recommended minimum limit. However, considering the theoretical relevance and contribution of the item to the construct being measured, POT3 was retained in further analysis. Meanwhile, the reliability test using Cronbach's Alpha produced a coefficient of 0.547, which exceeds the minimum standard of 0.50. This finding indicates that the instrument used has sufficient internal consistency to be applied in the main study.

Table 2. Results of the Validity and Reliability Test of Parental Attention

Variables	Corrected Item-Total Correlations	Cronbach's Alpha
POT1	0.390	0.547
POT2	0.492	
POT3	0.013	
POT4	0.379	
POT5	0.336	
POT6	0.328	

2.4.2 Peer Environment

The corrected item-total correlation analysis for the Peer Environment variable yielded coefficients of 0.502 for T1, 0.525 for T2, 0.394 for T3, 0.493 for T4, 0.554 for T5, and 0.295 for T6. Based on the validity criteria, the majority of the items (T1, T2, T4, T5, and T6) satisfied the recommended standards, while one item (T3) was slightly below the acceptable threshold. However, due to its theoretical significance and contribution to the overall construct, T6 was retained for further examination. In addition, the reliability test using Cronbach's Alpha produced a coefficient of 0.726, which exceeds the minimum threshold of 0.50 for exploratory research. These findings confirm that the instrument demonstrates sufficient internal consistency to be employed in the main study.

Table 3. Results of the Validity and Reliability Test of Peer Environment

Variables	Corrected Item-Total Correlations	Cronbach's Alpha
T1	0.502	0.726
T2	0.525	
T3	0.394	
T4	0.493	
T5	0.554	
T6	0.295	

2.4.3 Use of SmartPhone

The corrected item-total correlation analysis for the Smartphone Usage variable yielded coefficients of 0.444 for PH1, 0.325 for PH2, 0.409 for PH3, 0.135 for PH4, 0.423 for PH5, 0.307 to PH6, and 0.470 to PH7. Based on the validity criteria, the majority of items (PH1, PH2, PH3, PH5, PH6, PH7) met the recommended standards, while one item (PH4) fell slightly below the acceptable

threshold. However, due to its theoretical significance and contribution to the overall construct, T6 was retained for further examination. Furthermore, the reliability test using Cronbach's Alpha yielded a coefficient of 0.576, which exceeds the minimum threshold of 0.50, indicating that the item is still acceptable. These findings confirm that the instrument demonstrates sufficient internal consistency for use in the main study.

Table 4. Results of the Validity and Reliability Test of Use of SmartPhone

Variables	Corrected Item-Total Correlations	Cronbach's Alpha
PH1	0.444	0.576
PH2	0.325	
PH3	0.409	
PH4	0.135	
PH5	0.423	
PH6	0.307	
PH7	0.470	

2.4.4 Character Degradation

The corrected item-total correlation analysis for the Character Degradation variable produced coefficients of 0.491 for KPA1, 0.349 for KPA2, 0.359 for KPA3, 0.469 for KPA4, 0.349 for KPA5, 0.119 for KPA6, and 0.332 for KPA7. According to the validity criteria, the majority of items (KPA1, KPA2, KPA3, KPA4, KPA5, and KPA7) met the recommended standards, whereas one item (KPA6) was slightly below the acceptable threshold. Nevertheless, considering its theoretical relevance and contribution to the construct, KPA4 was retained for subsequent analysis. Furthermore, the reliability test using Cronbach's Alpha resulted in a coefficient of 0.549, which exceeds the minimum requirement of 0.50 for exploratory studies, indicating an adequate level of reliability. These results demonstrate that the instrument possesses sufficient internal consistency to be employed in the main study.

Table 5. Results of the Validity and Reliability Test of Character Degradation

Variables	Corrected Item-Total Correlations	Cronbach's Alpha
KPA1	0.491	0.549
KPA2	0.349	
KPA3	0.359	
KPA4	0.469	
KPA5	0.349	
KPA6	0.119	

2.5 Data Analysis

Data analysis in this study was carried out using SPSS version 22 and AMOS version 22 through a structured sequence of statistical procedures. Before the main survey, a pilot study involving 50 respondents was conducted to evaluate the psychometric quality of the instruments. Validity was assessed using the Item-Total Correlation Correction method, with a minimum criterion of

0.30 (Melkamu et al., 2022). In addition, the reliability test is tested through Cronbach's Alpha value, where a coefficient above 0.50 is considered acceptable for explanatory research (Prasetyaningrum et al., 2022). The results of this preliminary analysis confirm that the instrument is reliable enough to be applied in the main data collection.

The main analysis was conducted on 250 respondents. The validity of the instrument construct was first tested using the Exploratory Factor Analysis (EFA) technique to identify the latent structure and ensure the conformity of the item to the measured construct. Items with a standardized factor loading value of ≥ 0.50 were maintained in the measurement model, while items that did not meet the criteria were declared unfeasible and will be eliminated (Sürücü et al., 2022). Next, the internal consistency reliability test is evaluated using Cronbach's Alpha coefficient. Cronbach's Alpha value is declared reliable if it is above ≥ 0.50 (Prasetyaningrum et al., 2022).

Furthermore, items that have passed the validity and reliability test in the SPSS software will be tested using the Confirmatory Factor Analysis (CFA) technique. The goal is to evaluate the adequacy of the measurement model. The fit model was examined through several goodness-of-fit indices recommended by Hair et al. (2019), the acceptable thresholds were: $\chi^2/df < 3.00$, GFI > 0.80 , CFI > 0.90 , TLI > 0.90 , and RMSEA < 0.06 (Goretzko et al., 2024; Waston et al., 2023; Xiao et al., 2023).

The last analysis is a test of the research hypothesis, either directly or indirectly. The path coefficient was evaluated, with a p -value of 0.05 indicating statistical significance (Dash & Paul, 2021). While for the mediator test, the effect of mediation was further examined using a bootstrapping approach with 5,000 resamples. A 95% corrected and accelerated confidence interval of bias (BCa) is estimated, and mediation is considered significant when the interval does not include zero (Preacher & Hayes, 2008).

3. Findings

This study involved 250 adolescent respondents born between 2007 and 2012 in the city of Surakarta, Central Java. The demographic characteristics of the respondents showed that the respondent sample consisted of 89 males (34%) and 161 females (66%). In terms of age distribution, 49 respondents (18.8%) were 14 years old, 59 respondents (23.6%) were 15-16 years old, 62 respondents (24.1%) were 17-18 years old, and 83 respondents (33.5%) were 19 years old. Regarding work background, 31 respondents (11%) were workers, 129 respondents (57.1%) were students in higher education, and 80 participants (31.9%) were registered as school siwa.

The next analysis is the Validity and Reliability of the Measurement Model. In this analysis, the researcher used the Exploratory Factor Analysis (EFA) Technique for the validity test and the Reliability Test using Cronbach's Alpha Value. Table 6 shows the results of the validity and reliability analysis on verifiable parental attention, peer environment, use of smartphone, and character degradation using items that have passed the pilot test in the previous analysis.

Table 6. Measurement model Exploratory Factor Analysis and Relianility Test

Variables	Component				Cronbach's Alpha	Variance Extracted Explained	KMO
	1	2	3	4			
PH1	.748	-.320	.111	.118	.623	61.400	.662
PH3	.804	-.030	.017	.067			
PH7	.672	.017	.171	.230			
POT1	-.149	.552	-.282	.145	.678	100.000	.653
POT2	-.145	.777	.005	-.211			
POT4	.025	.672	.178	-.340			
POT6	-.019	.725	.089	.003	.683	61.104	.618
T2	.101	.004	.795	.185			
T4	.243	-.036	.767	.114			
T6	-.045	.072	.699	-.077	.688	61.924	.653
KPA1	.441	.028	-.035	.747			
KPA5	.291	-.190	.157	.599			
KPA7	-.026	-.115	.085	.815			
Total						60.691	.720

Table 6 presents the results of the Exploratory Factor Analysis (EFA) analysis conducted to test the latent structure of the four research variables. The total Kaiser Mayer Olkin (KMO) value is 0.720, which shows that the sample adequacy level is adequate for factor extraction, and indicates that the matrix meets the criteria for further analysis (Güvendir & Özkan, 2022). The Extracted Explained Variance in this study showed a result of 60.619% which met the minimum limit of 50% as recommended by Hair et al. (2019). The results were obtained from the iterative refinement process, where as many as thirteen items from the constructs of parental attention (POT), peer (T), smartphone use (PH), and character degradation (KPA) were eliminated because they had a low loading factor below the minimum limit of 0.50. However, the proportion of items eliminated remained below the acceptable limit, which was 50% of the total initial indicators, so that conceptual integration was still maintained (Hatz et al., 2017).

In addition to the construct validity test through EFA, table 5 also presents the results of the reliability analysis using Cronbach's Alpha value. As a result, all constructs showed results that either POT, PH, T, or KPA showed sufficient values (0.623-0.688) so that they met the requirements of a construct to be declared reliable (Considine et al., 2005; Prasetyaningrum et al., 2022).

Instruments that have passed the validity and reliability test are then subjected to a Confirmatory Factor Analysis (CFA) test using the help of the AMOS application version 22. The CFA test is carried out to determine the convergent and discriminant validity shown through values that meet the goodness of fit (GOF) standard. The following are the results of the CFA analysis shown in table 7.

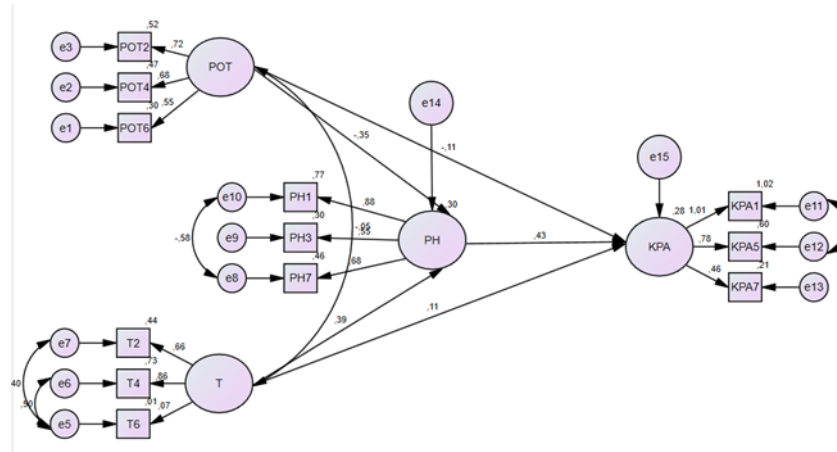


Figure 2. SEM Model

Table 7. Confirmatory Factor Analysis (Goodness of Fit)

GOF Index	Acceptable Value	CFA Model	Result
χ^2 (Chi-square)		79.087	Good Fit
Df (degree of freedom)		34	
χ^2/df	< 3	1.79	Good Fit
p-value	> 0.000	0.001	Good Fit
GFI	≥ 0.8	0.942	Good Fit
CFI	≥ 0.9	0.932	Good Fit
TLI	≥ 0.8	0.898	Marginal fit
RMSEA	< 0.08	0.065	Good Fit

The results of the Confirmatory factor analysis (CFA) in this study showed quite adequate results. The Chi-Square value of 79.087 with a degree of freedom of 34 resulted in an χ^2/df ratio of 1.79, which was below the recommended limit (< 3). In addition, other goodness of fit indices also showed consistent results, including a GFI value of 0.942, and a CFI of 0.932, both of which were above the minimum amount (≥ 0.9). Furthermore, the RMSEA value in this study also met the standard, with a value of 0.065, which was below the minimum limit (< 0.008) (Dash & Paul, 2021). However, in this study, the TLI value was slightly below the recommended limit (≥ 0.9) with a value of 0.898. Although this value is below the recommended limit, according to Kline (2023), the value is still categorized as marginal fit and can still be accepted in the study, provided it is supported by other indices. Therefore, although the TLI value is in the marginal

fit category, overall these findings support the adequacy of the measurement model as a basis for structural relationship testing in this study.

Furthermore, Structural Equation Modeling (SEM) analysis combined with Bootstrapping analysis aims to evaluate the relationship between exogenous and endogenous variables, including mediation variables. The results of the estimated path coefficients are displayed in Table 8.

Table 8. Hypothesis test results using SEM and Bootstrapping analysis

Hypothesis	Path	B	CR	P-Value	Result
H1	T → PH	0.404	0.444	0.001	Supported
H2	T → KPA	0.084	0.428	0.453	No Supported
H3	PH → KPA	0.571	3.481	****	Supported
H4	POT → PH	-0.217	-3.517	0.050	Supported
H5	POT → KPA	-0.255	-1.273	0.016	Supported

Note: *p<0.05, **p<0.01, ***p<0.001

Table 9. Hypothesis Test Results for Indirect

Hypothesis	Path	Indirect Effect	P-value	Lower Bound BC (95%)	Upper Bound BC (95%)	Result
H3a	T → PH → KPA	0.204	0.019	0.021	0.556	Mediated
H4a	POT → PH → KPA	-0.159	0.032	-0.720	-0.010	Mediated

The results of the hypothesis analysis show that most of the hypotheses are accepted. First, the findings revealed that peer influence (T) had a positive and significant impact on mobile phone use (PH) with a standard coefficient ($\beta = 0.404$, S.E. = 0.136, $p = 0.001$), but not significant on adolescent character degradation (KPA) ($\beta = 0.084$, S.E. = 0.099, $p = 0.453$), so that hypothesis 1 was declared accepted and hypothesis 2 was declared rejected. Furthermore, the use of mobile phones (PH) showed a strong and significant positive effect on adolescent character degradation (KPA) ($\beta = 0.571$, S.E. = 0.138, $p < 0.001$), thus confirming that Hypothesis3 (H3) was accepted. The results of the fourth hypothesis show that parental attention (POT) has a significant negative effect on bad character (KPA) ($\beta = -0.255$, S.E. = 0.136, $p = 0.016$) and has a significant negative effect on excessive smartphone use. So hypotheses 4 and 5 are accepted.

Although there was a rejected hypothesis, the bootstrapping test with 5,000 resamples showed that the indirect effect of peer influence (T) on bad character (KPA) through mobile phone use (PH) was significant ($\beta = 0.204$, $p = 0.019$; 95% BCa CI [0.021, 0.556]), so Hypothesis 1a (H1a) was accepted. In addition, the indirect effect of parental attention (POT) on bad character (KPA) through mobile phone use (PH) showed significant results ($\beta = -0.159$, $p = 0.032$; 95% BCa CI [-0.720, -0.010]), which indicates that Hypothesis 2a (H2a) is

accepted. These results imply that the use of smartphones is successful as a mediator for both the relationship between the environment of friends and character degradation, and the relationship between parental concerns and character degradation.

4. Discussion

The results of the first analysis showed that the peer environment had a significant influence on maladaptive smartphone use in adolescents ($\beta = 0.404$; $p = 0.001$). This indicates that the higher a person's interaction with his or her friends, the higher a person's use of the phone. The results of the latest study confirm that the intensity of interaction with peers can drive an increase in excessive smartphone use (Wang et al., 2021). In the perspective of Social Learning Theory (Bandura, 1977), individual behavior tends to be formed through the process of observation and imitation of dominant behavior in the social environment. Given that adolescence is a phase with a high intensity of peer interaction, the use of smartphones in the scope of meetings, such as playing games together, playing social media, and others is behaviors that are easily normalized in this group (Liao et al., 2024).

Interestingly, the results of the second analysis showed that the peer environment did not have a significant direct influence on adolescents' bad character ($\beta = 0.084$; $p = 0.453$). Insignificant does not mean that it has no effect at all, but the influence that exists tends to be small. These findings can be interpreted that a person who has a high intensity with his friend's environment, will not necessarily produce a negative character. The results of this study are certainly different from previous studies that stated that the peer environment has a significant impact on adolescent character (Zhou et al., 2024). However, these findings suggest that peer influence on character is not always dominant. In social control theory, it is explained that peer influence is one of the secondary factors or reinforcing situational behavior whose influence can be suppressed by the role of the family and the educational environment (Diana et al., 2024). So, these influences will be neutralized if the parents' environment can have a greater influence. This view is strengthened by the findings of Tu et al. (2025) who stated that the influence of peers on adolescent character is relatively weak compared to the influence of other factors, such as family environment and the role of education.

The results of the analysis further showed that the use of maladaptive smartphones had a significant positive effect on adolescents' bad character ($\beta = 0.571$; $p < 0.001$). Statistically, the findings indicate that a high level of unhealthy smartphone use patterns will be directly proportional to an increase in negative character tendencies in adolescents. These findings are reinforced by the results of a study in China showing that excessive smartphone use has a significant

impact on the formation of bad characters in adolescents (Świątek et al., 2023). In addition, these findings also corroborate the theory of Behavioral Addiction which explains that loss of control and excessive use of smartphones can have a negative impact on self-regulation and character formation (Andreassen et al., 2013). Smartphones that initially functioned as a medium of communication and entertainment turned into a means of escape from stress and problems, thus weakening adolescents' motivation and responsibility (Allaby & Shannon, 2020). The results of this study are also in line with Zhang's (2022), which shows that excessive smartphone use has a bad impact on adolescent character.

Meanwhile, the results of the fourth analysis showed that parental attention had a significant negative effect on maladaptive smartphone use ($\beta = -0.217$; $p = 0.050$). This indicates that the higher the parental attention and involvement, the lower the tendency of adolescents to overuse smartphones. These findings support the Parent Monitoring Theory which asserts that parental supervision, open communication, and compassion act as a protective mechanism against adolescent deviant behavior, including smartphone abuse (Alim & Haryanto, 2025; H. Chen et al., 2025). These findings are also in line with the research of Ko & Park, (2023) which explains that parents who have a high sense of care and concern for their children tend to pay attention to their activities, including smartphone use.

In addition, parental attention was also shown to have a significant negative effect on adolescents' bad character ($\beta = -0.255$; $p = 0.016$). These findings show that the more intensely people pay attention to their children, the lower the tendency to act or behave negatively. According to Merdovic et al., (Merdovic et al., 2024), parental attention in the form of supervision, emotional attachment, and effective communication can suppress the appearance of negative characters in adolescents. These findings are consistent with Bronfenbrenner's (1979) ecological theory and Social Control Theory (Zaman & Sunarti, 2024), which places the family as the main agent in shaping and controlling children's behavior. However, parental attention needs to be given in a balanced manner (Weinstein et al., 2023). Excessive attention will turn into overprotectiveness, which is not good for children's growth and development (Wordu, 2025). According to Li et al., (2025) parenting that is too authoritarian has the potential to hinder adolescent character development, and also makes children feel constrained and find it difficult to explore.

In indirect relationships, the association of peer environment with adolescent character degradation through excessive smartphone use showed significant results ($\beta = -0.159$, $p = 0.032$; 95% BCa CI [-0.720, -0.010]). This suggests that the peer environment can only damage an individual's character by increasing excessive smartphone use. According to the Theory of Use and Satisfaction, individuals actively use technology to meet specific psychological

and social needs, including affiliation, social acceptance, and self-identity (Katz et al., 1974). In the context of adolescents, smartphone use is not solely driven by functional needs, but rather by the urge to gain social recognition and validation by peers. Adolescents tend to use smartphones with the aim of conforming to group norms, following patterns of interaction that are considered prevalent in their circle of friends, and maintaining membership status in certain social groups. This conformity-based usage pattern opens up space for the internalization of negative behaviors, values, and habits that develop in the peer environment, thereby indirectly contributing to the formation of negative characters in adolescents (Kim, 2018).

In addition, the smartphone use variable also acts as a mediator in the relationship between parental attention to adolescent character ($\beta = -0.159$; $p = 0.032$; 95% BCa CI $[-0.720, -0.010]$). These findings suggest that parental attention not only influences formation directly, but also works through adolescent dependency mechanisms in smartphone use. According to social control theory, parents are positioned as the main factor that has a strategic role in shaping and regulating adolescents' interaction with digital technology (Hirschi, 2002). High parental attention allows the formation of regulations, restrictions and instilling the meaning of smartphone use, thus preventing adaptive use that ends up damaging character (Pagán, 2025). Adolescents who are in the middle of a phase of discovering their identity tend to be vulnerable to being influenced by people or their environment (Pérez-Torres, 2024). Thus, parental attention is a key factor in suppressing adolescents' tendency to have bad character, either directly or indirectly through reducing excessive smartphone use.

5. Conclusion

This study shows that the character degradation experienced by Generation Z is not solely influenced by one factor, which results from the interaction between the social environment (the environment of friends and parents) and the pattern of use of digital technology, especially smartphones. The results of the Structural model in this study show that the influence of peers on character development is fully mediated by the intensity of smartphone use. These findings suggest that Gen Z's friendship relationship dynamics acquire destructive forces in character when digital practices in adolescents begin to spiral out of control, such as negative content consumption, toxic interaction patterns, and the normalization of deviant behaviors in the digital space. Thus, the main problem regarding character degradation does not lie in the social relationships themselves, but in the way these relationships are built and strengthened by the digital ecosystem.

On the other hand, parental attention shows a more complex pattern. The results of the structural model in this study show that parental attention shows a partial influence mechanism, meaning that the role of parents in the formation of the character of Generation Z is not reduced by digital technology factors, but operates through the double finger. On the one hand, parental attention affects character through the management of smartphone use, on the other hand, this influence continues to work continuously through the process of internalizing values, moral examples, providing affection and other qualities of the relationship between parent and child.

Thus, Generation Z character degradation is understood as a phenomenon formed through complex interactions between social influences and digital contexts. The use of smartphones has been shown to play an important role in bridging the influence of the social environment on the characters, but the role is not uniform. While peer influence on character is entirely dependent on the mediation of digital technology, parental attention maintains a direct influence that is not entirely diminished with smartphone use. These findings confirm that digital technology reshapes, but does not replace, the basic mechanisms of character formation. Therefore, strengthening the character of the younger generation demands a comprehensive approach, which focuses not only on regulating digital behavior, but also on strengthening the role of the family and the quality of social relationships in the face of the increasingly digital reality of life.

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