

Developing an Explanatory Model of Cyberostracism and Psychological Adjustment Among Adolescents

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ABSTRACT

Objective: This study aimed to develop and empirically test an explanatory model of cyberostracism and psychological adjustment among Malaysian adolescents, with emphasis on the effects of direct exclusion, indirect exclusion, and being ignored.

Methods and Materials: This quantitative cross-sectional correlational study was conducted among 486 adolescents aged 13–17 years who were recruited from public secondary schools in Kuala Lumpur, Selangor, Johor, and Penang, Malaysia, using multistage cluster sampling. Data were collected using a demographic information form, the Cyberostracism Scale, and the Brief Adjustment Scale–6. Cyberostracism was conceptualized as a higher-order construct comprising direct exclusion, indirect exclusion, and being ignored, whereas psychological adjustment was modeled as a latent outcome construct. Data were analyzed using IBM SPSS Statistics and AMOS. Confirmatory factor analysis was used to assess the measurement model, and structural equation modeling was employed to test the explanatory relationships. Model adequacy was evaluated using χ^2/df , CFI, TLI, RMSEA, and SRMR.

Findings: The measurement model demonstrated acceptable fit, $\chi^2(189) = 421.36$, $\chi^2/df = 2.23$, CFI = .953, TLI = .944, RMSEA = .050, and SRMR = .043. Cyberostracism significantly and negatively predicted psychological adjustment, $\beta = -.62$, $p < .001$. Among its dimensions, being ignored had the strongest unique negative effect on psychological adjustment, $\beta = -.35$, $p < .001$, followed by indirect exclusion, $\beta = -.23$, $p < .001$, and direct exclusion, $\beta = -.17$, $p = .003$. Age, $\beta = -.09$, $p = .020$, and daily Internet use, $\beta = -.12$, $p = .006$, were also significant negative predictors, whereas sex was not significant, $\beta = .04$, $p = .318$. The final structural model showed acceptable fit, $\chi^2(201) = 447.81$, $\chi^2/df = 2.23$, CFI = .948, TLI = .939, RMSEA = .050, and SRMR = .047, and explained 46% of the variance in psychological adjustment.

Conclusion: Cyberostracism represents a significant multidimensional digital interpersonal stressor associated with poorer psychological adjustment among Malaysian adolescents, with being ignored emerging as the most influential dimension; therefore, prevention and intervention efforts should address subtle as well as explicit forms of online exclusion.

Keywords: cyberostracism; psychological adjustment; adolescents; social exclusion; being ignored; structural equation modeling; Malaysia

1. Introduction

Adolescence is a developmental period characterized by substantial biological, cognitive, emotional, and social transitions, during which peer acceptance, social belonging, interpersonal recognition, and perceived inclusion become especially salient for psychological functioning. Although adolescents have always been vulnerable to interpersonal rejection and exclusion, contemporary social interaction increasingly occurs through digital environments, where social media platforms, instant messaging applications, gaming communities, online classrooms, and other networked spaces have become embedded in everyday communication. This digitalization of adolescent social life has created new forms of peer affiliation and social support, but it has also generated distinct forms of exclusion, relational aggression, cyberbullying, and technology-mediated rejection. Negative experiences on social media have been associated with poorer mental health and lower well-being among adolescents, indicating that online interpersonal experiences are not psychologically trivial extensions of offline communication but can have meaningful implications for emotional and social adjustment (Skogen et al., 2023). Research on cyberbullying similarly demonstrates that digitally mediated victimization can be associated with psychological distress and impaired mental health during adolescence (Urano et al., 2020). Broader scholarship on bullying, relational bullying, school violence, and cyberdeviance has also emphasized that peer aggression should increasingly be understood across interconnected offline and online contexts rather than as a phenomenon restricted to the physical school environment (Chen & Chan, 2024; Partino et al., 2023). Consequently, understanding less visible forms of online peer exclusion has become a particularly important issue in adolescent psychology.

One increasingly studied form of digitally mediated interpersonal exclusion is cyberostracism, which refers to the experience or perception of being ignored, excluded, rejected, or socially disregarded within online environments. Cyberostracism may occur through explicit acts such as removal from an online group, deliberate exclusion from a digital conversation, or refusal to include an individual in a shared online activity, but it may also take subtler forms such as unanswered messages, ignored posts, absent reactions, delayed responses, or being visibly overlooked while others receive acknowledgment. Research on online ostracism indicates that even apparently minor digital cues can activate

powerful perceptions of social rejection because individuals often interpret silence, nonresponse, or exclusion as evidence that their social presence is devalued. Experimental work comparing online ostracism and rejection has shown that being ignored in digital environments can threaten fundamental psychological needs and initiate coping responses even when no explicit negative feedback is given (Lutz & Schneider, 2020). Similarly, experiences such as being “left on read” on social networking applications may contribute to heightened social surveillance and poorer mental health among young individuals (Vanherle et al., 2023). Related digital practices such as ghosting and breadcrumbing also illustrate how ambiguous interpersonal disengagement can produce psychologically meaningful reactions when individuals receive insufficient relational feedback or uncertain social acknowledgment (Navarro et al., 2020). These patterns suggest that cyberostracism may function as a distinctive psychosocial stressor whose impact depends not only on overt rejection but also on the perceived absence of expected interpersonal responsiveness.

The psychological significance of cyberostracism is especially important during adolescence because belongingness and peer affiliation occupy a central position in developmental adaptation. Adolescents increasingly depend on peers for emotional validation, identity exploration, social status, and interpersonal feedback, and exclusion from valued peer networks can therefore challenge both social and psychological functioning. Evidence from school-based and experimental studies demonstrates that social ostracism can affect emotional experience, self-regulation, and behavioral responses among young people (Engelskirchen et al., 2025). Experimental work with middle school students has further shown that social exclusion and teammate selection can produce meaningful psychological effects even within short-term controlled interactions, highlighting the sensitivity of adolescents to signs that they are unwanted or devalued by peers (Munini et al., 2024). In the offline school context, the quality of school climate and interpersonal belonging has repeatedly been associated with adolescents’ emotional well-being (Bosacki et al., 2023). Social exclusion may also contribute to problematic behavioral outcomes, including antisocial tendencies among minors (Boykina, 2023), while exclusion experiences have been implicated in the association between personality characteristics and bullying involvement (Huang et al., 2023). These findings provide a developmental basis for expecting cyberostracism to exert substantial effects on adolescents, particularly because digital exclusion can be

recurrent, difficult to escape, publicly visible, and embedded in peer relationships that continue beyond the physical school setting.

The growing empirical literature indicates that cyberostracism is associated with a wide range of maladaptive psychological and behavioral outcomes. Among adolescents, cyberostracism has been linked to depression, experiential avoidance, and non-suicidal self-injury, suggesting that digitally mediated exclusion can contribute not only to transient negative affect but also to more serious forms of psychological vulnerability (Ding et al., 2022). Longitudinal evidence has further demonstrated that cyberostracism can predict depression and subsequent cyberbullying perpetration, supporting the possibility that exclusion may initiate cycles in which psychological distress is externalized through aggressive online behavior (Ding et al., 2024). Recent research has similarly shown that ostracism on social media may increase aggression toward others and the self by frustrating belongingness needs and increasing perceived burdensomeness (Tan et al., 2026). Among college-aged populations, cyberostracism has also been associated with aggressive behavior through mediated and moderated psychological mechanisms (Xing & Kuo, 2024). Although such findings come from different age groups, they collectively suggest that online exclusion should be viewed as a process capable of influencing affect, cognition, and behavior simultaneously rather than as a narrow interpersonal inconvenience.

Cyberostracism has also been associated with emotional and interpersonal difficulties that are directly relevant to psychological adjustment. Research among undergraduates has shown that cyberostracism may increase social anxiety through rejection sensitivity and rumination, indicating that exclusion can generate persistent cognitive and affective processing that extends beyond the original online event (Shi et al., 2025). Earlier studies likewise reported that cyberostracism can influence psychological well-being through maladaptive rumination, whereas mindfulness may operate as a potentially protective process (Li et al., 2022). The role of psychological resilience is also relevant, as evidence suggests that resilience may reduce the extent to which cyberostracism is associated with lower prosocial behavior (Shi et al., 2022). These findings are consistent with broader adolescent mental-health research indicating that adaptive psychological functioning depends partly on regulatory resources such as mindfulness, self-compassion, emotional regulation, and cognitive flexibility (Afrashteh & Hasani, 2022). From this perspective, the consequences of

cyberostracism may vary according to the adolescent's ability to interpret, regulate, and recover from perceived rejection, but persistent or repeated exclusion may nevertheless erode the psychological resources required for healthy adjustment.

Psychological adjustment is a broad construct encompassing the capacity to maintain emotional stability, positive self-regard, functional interpersonal relationships, and effective participation in developmentally important roles despite stressors and social demands. During adolescence, psychological adjustment involves not merely the absence of psychopathology but the capacity to regulate emotion, cope with interpersonal difficulties, sustain school and social functioning, and recover from stressful experiences. Exposure to cyberviolence and cyberbullying can disrupt these processes by producing fear, humiliation, anxiety, depressive symptoms, social withdrawal, and difficulties with emotion regulation. Clinical and developmental discussions of cyberviolence trauma emphasize that children and adolescents may experience persistent psychological consequences after repeated digital victimization (Bae, 2024). Neurobiological perspectives also indicate that cyberbullying victimization may affect emotional regulation processes, potentially increasing vulnerability to dysregulated affect and prolonged stress responses (Nesin et al., 2025). In addition, studies of high school adolescents have shown that cyberbullying and the quality of parental interactions can jointly influence psychological outcomes, demonstrating that online peer adversity operates within a wider interpersonal ecology (Alkatiri et al., 2024). Thus, psychological adjustment provides a particularly appropriate outcome for evaluating the broader developmental implications of cyberostracism.

The online environment may intensify the psychological consequences of ostracism because digital interactions possess distinctive characteristics that differ from face-to-face communication. Online communication often provides limited contextual information, making it difficult to determine whether a delayed response, missing reaction, or social exclusion was deliberate. This ambiguity may encourage adolescents to ruminate about the intentions of others and may increase rejection sensitivity, especially among those who closely monitor social media interactions. At the same time, digital platforms make peer activity continuously visible; an adolescent may observe others interacting while simultaneously recognizing that his or her own message, invitation, or presence has been ignored. Such visibility may make exclusion particularly salient because

the adolescent is not merely deprived of interaction but may also witness evidence of others' inclusion. Studies examining Instagram-based cyberostracism demonstrate that online exclusion can alter users' mental states and emotional experiences (Yusainy et al., 2023). Likewise, being removed from a WhatsApp group has been associated with adolescents' psychosocial well-being and school achievement, illustrating how specific forms of online rejection can extend into broader domains of adjustment (Lin et al., 2024). Cyberostracism therefore appears to combine the fundamental threat of interpersonal exclusion with the persistent accessibility, visibility, and ambiguity of contemporary digital communication.

Another important consideration is the relationship between cyberostracism and problematic technology use. Adolescents who experience exclusion may respond by withdrawing from particular platforms, intensifying their online engagement, monitoring others more frequently, or shifting to other digital activities in an attempt to restore social connection. Evidence suggests that cyberostracism can increase discontinuous usage intentions toward social networking sites, with emotional and cognitive processes shaping whether individuals disengage from platforms after experiencing exclusion (Sarfraz et al., 2023). In contrast, other research indicates that ostracism may contribute to digital addiction, suggesting that some individuals respond to exclusion by increasing rather than reducing their engagement with digital environments (Sambath et al., 2026). Recent evidence also shows that cyberostracism may interact with perceived parental phubbing in predicting problematic smartphone use, indicating that digital exclusion may become especially consequential when adolescents or young people simultaneously perceive insufficient attention within close family relationships (Mohammadi & Ghanbari, 2026). These findings support the idea that cyberostracism can influence adjustment through multiple pathways, including emotional distress, compensatory digital engagement, social withdrawal, and attempts to restore threatened belongingness.

The relationship between cyberostracism and psychological adjustment may also be understood in the broader context of peer aggression, social learning, and cyberdeviance. Adolescents exposed to harmful online content and aggressive peer norms may be more likely to normalize bullying or participate in hostile digital behavior (Cui, 2024). Research on Korean adolescents has identified multiple individual and contextual factors associated with cyberbullying, reinforcing the view that online aggression

emerges from interacting psychological and social conditions rather than a single cause (Jun, 2020). Similarly, cyberbullying victimization and perpetration have been linked to cyberostracism and youth anxiety, suggesting reciprocal or overlapping processes among exclusion, victimization, aggression, and internalizing symptoms (Wang et al., 2024). Experiences of school bullying may also produce different developmental outcomes depending on the presence of social support, with supportive contexts potentially fostering more prosocial adaptation after adversity (Lin, 2022). These findings imply that cyberostracism should not be examined in isolation from the wider peer ecology in which adolescents negotiate acceptance, conflict, aggression, and support.

From an educational perspective, cyberostracism may also affect adolescents' willingness to participate, communicate, and share information in digitally mediated learning environments. Research in e-learning contexts has shown that cyberostracism can reduce knowledge-sharing behaviors, with social anxiety functioning as an important mediating mechanism (Akçay & Kayış, 2023). This is particularly relevant in contemporary education, where digital communication platforms are increasingly used for collaborative learning, classroom interaction, peer support, and school-related social coordination. An adolescent who feels ignored or excluded online may therefore experience consequences not only for emotional well-being but also for participation in academic and social activities. Policy-oriented work on bullying prevention similarly emphasizes the need for integrated responses involving schools, families, health professionals, and institutional systems rather than limiting prevention efforts to individual students (Wuryaningsih et al., 2022). Such an ecological perspective is especially important because the boundaries between school-based peer relationships and online communication are increasingly porous, meaning that exclusion initiated in one context can easily continue in another.

Despite growing attention to cyberostracism, several limitations remain in the existing literature. First, many studies have focused on single outcomes such as depression, anxiety, aggression, self-injury, social anxiety, or problematic digital use rather than examining psychological adjustment as a broader multidimensional outcome. Second, much of the available evidence has been generated among university students or adults, despite the heightened developmental importance of peer belonging during adolescence. Studies of self-esteem among medical students, for example, demonstrate that cyberostracism can affect self-

evaluative processes (Oktar et al., 2021), but findings from young adults cannot simply be generalized to adolescents whose emotional regulation capacities, identity development, and peer dependencies differ substantially. Third, research increasingly suggests that the consequences of ostracism are shaped by social media and gaming environments, loneliness, internalizing symptoms, and externalizing tendencies (Bruneel et al., 2025), yet relatively few studies have developed parsimonious explanatory models capable of estimating the overall contribution of cyberostracism to psychological adjustment while simultaneously examining its constituent forms.

A further gap concerns the differentiation of specific cyberostracism experiences. Direct exclusion, indirect exclusion, and being ignored may share a common underlying structure, but they are not necessarily psychologically equivalent. Explicit removal or exclusion may provide a clear explanation for rejection, whereas being ignored may be more ambiguous and therefore more likely to trigger rumination, uncertainty, and repeated monitoring of online interactions. Indirect exclusion may similarly create a sense that one is socially peripheral without offering an explicit interpersonal explanation. Theoretical and empirical work on online rejection therefore suggests that ambiguous nonresponse can sometimes be as threatening as, or even more psychologically demanding than, overt rejection because the excluded person must infer the meaning of the interaction (Lutz & Schneider, 2020). Recent studies using online ostracism paradigms with young people further support the need to examine affective and regulatory responses to different forms of exclusion rather than treating ostracism as a uniform experience (Engelskirchen et al., 2025). Accordingly, an explanatory model that distinguishes multiple dimensions of cyberostracism may provide greater conceptual and practical value than models based solely on a global cyberostracism score.

The Malaysian adolescent context is particularly relevant for such investigation because adolescents increasingly engage in intensive digital communication while simultaneously navigating family, school, and peer expectations. Although international research has established important associations between online exclusion and adverse psychological outcomes, the strength and configuration of these relationships may differ across social and cultural settings. Peer connectedness, family involvement, norms surrounding group belonging, patterns of social-media use, and school climate may all influence how cyberostracism is experienced and interpreted.

Moreover, the consequences of exclusion may extend beyond emotional distress to school engagement, social functioning, online behavior, and broader developmental adjustment. Developing and testing an explanatory model in a Malaysian adolescent sample can therefore contribute to the international literature while also providing contextually relevant evidence for school counselors, psychologists, educators, parents, and prevention programs concerned with digital peer relations.

The present study addresses these limitations by conceptualizing cyberostracism as a higher-order multidimensional construct represented by direct exclusion, indirect exclusion, and being ignored and by examining psychological adjustment as a broad outcome reflecting adolescents' emotional and functional adaptation. This approach is consistent with recent scholarship showing that cyberostracism can operate through multiple cognitive, emotional, and behavioral mechanisms, including rejection sensitivity, rumination, depression, experiential avoidance, social anxiety, aggression, and compensatory digital use (Ding et al., 2024; Shi et al., 2025; Tan et al., 2026). It is also aligned with emerging evidence that adaptive resources such as resilience, mindfulness, self-compassion, and emotional competence can shape responses to online adversity (Afrashteh & Hasani, 2022; Shi et al., 2022; Urano et al., 2020). By using structural equation modeling, the study can simultaneously evaluate the measurement structure of cyberostracism, estimate the direct contribution of the overarching construct to psychological adjustment, compare the relative effects of its constituent dimensions, and determine the proportion of variance in adjustment explained by online exclusion experiences.

Accordingly, the aim of this study was to develop and empirically test an explanatory model of cyberostracism and psychological adjustment among Malaysian adolescents, with particular emphasis on the contributions of direct exclusion, indirect exclusion, and being ignored to adolescents' psychological adjustment.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a quantitative, cross-sectional, correlational design with a structural equation modeling approach to develop and test an explanatory model of the relationship between cyberostracism and psychological adjustment among adolescents in Malaysia. The target population consisted of adolescents enrolled in public

secondary schools during the 2026 academic year. A total of 486 adolescents participated in the study. Participants were between 13 and 17 years of age and were recruited from secondary schools located in Kuala Lumpur, Selangor, Johor, and Penang in order to provide representation from different urban and semi-urban educational settings. A multistage cluster sampling procedure was employed. In the first stage, the participating states and federal territory were selected to ensure geographical and socioeconomic diversity; in the second stage, secondary schools were selected from the participating areas; and in the final stage, classes were randomly selected within each school, with eligible students in the selected classes invited to participate. The sample size was considered adequate for structural equation modeling because it exceeded commonly recommended minimum requirements for confirmatory factor analysis and latent-variable path modeling and provided a sufficiently large participant-to-parameter ratio for estimating the proposed model. Eligibility criteria included being between 13 and 17 years of age, current enrollment in a Malaysian secondary school, regular access to the Internet or social networking platforms during the preceding six months, sufficient proficiency in either Malay or English to understand the questionnaires, provision of informed assent, and receipt of parental or guardian consent. Students with conditions that substantially prevented independent understanding or completion of the questionnaires were excluded. Before data collection, permission was obtained from the relevant educational authorities and participating schools, and the study procedures were reviewed in accordance with institutional ethical requirements for research involving minors. Parents or legal guardians received information explaining the purpose and procedures of the research and provided written informed consent, while adolescents provided informed assent before participation. Participation was entirely voluntary, respondents were informed that they could discontinue participation at any stage without penalty, and no personally identifying information was recorded in the research dataset. Questionnaires were administered in designated classroom sessions under the supervision of trained research assistants. Participants were instructed to answer independently on the basis of their actual experiences rather than perceived socially desirable responses. Completion of the questionnaire battery required approximately 20–25 minutes. All completed questionnaires were reviewed for response completeness before data entry, and cases with substantial missing data or evident patterned

responding were excluded before the final analytical dataset was established.

2.2. Measures

Data were collected using a demographic information form, the Cyberostracism Scale, and the Brief Adjustment Scale–6. The demographic information form was developed for the present study to obtain background characteristics relevant to the description of the sample and interpretation of the explanatory model. Information collected included age, sex, school grade, place of residence, approximate daily Internet use, frequency of social networking use, and the principal social media or online communication platforms used by the adolescent. Questions concerning Internet and social media use were included because exposure to digitally mediated interpersonal interactions constitutes an important contextual condition for experiencing cyberostracism. These demographic variables were used principally to characterize the sample and, where necessary, to examine whether meaningful differences existed across participant groups before estimation of the primary structural model.

Cyberostracism was assessed using the Cyberostracism Scale developed by Hatun and Demirci. The instrument was designed to assess individuals' perceptions of being ignored, excluded, or disregarded within online and social-media interactions and conceptualizes cyberostracism as a multidimensional construct consisting of three related dimensions: direct exclusion, indirect exclusion, and being ignored. Direct exclusion reflects explicit experiences in which an individual perceives that others deliberately exclude or reject him or her in an online environment. Indirect exclusion represents more subtle experiences of being left outside online interactions, conversations, activities, or social exchanges without an explicit statement of rejection. The ignored dimension concerns experiences in which messages, comments, online presence, or attempts to initiate interaction are disregarded or receive no expected interpersonal response. The original psychometric investigation of the instrument supported this three-factor structure through exploratory and confirmatory factor analyses and also demonstrated satisfactory reliability and construct validity. For the present study, participants were instructed to respond by considering their interactions through social networking applications, messaging services, online groups, and other forms of digital interpersonal communication during recent months. Higher scores indicated greater perceived cyberostracism. Because the

present research involved Malaysian secondary-school adolescents rather than the population in which the original instrument was developed, linguistic and cultural appropriateness was evaluated before the main administration. The English version was reviewed by experts in educational psychology, adolescent psychology, and psychometrics, and a Malay-language version was prepared through translation and back-translation procedures by bilingual specialists. Minor wording modifications were permitted only when necessary to ensure that items were comprehensible to adolescents without altering the conceptual meaning of the original statements. A preliminary administration with adolescents who were not included in the main sample was conducted to assess clarity, reading difficulty, and completion time. In the main analysis, the factorial structure of the instrument was re-examined using confirmatory factor analysis, and the internal consistency of the total construct and its dimensions was evaluated using Cronbach's alpha and composite reliability coefficients.

Psychological adjustment was measured using the Brief Adjustment Scale-6 (BASE-6), developed as a concise measure of general psychological adjustment and psychological distress. The BASE-6 consists of six self-report items that assess emotional distress and the degree to which such distress interferes with important areas of personal and social functioning. The items address experiences such as irritability or anger, anxiety or fear, unhappiness or depressive feelings, interference of emotional distress with positive feelings about oneself, interference with interpersonal relationships, and interference with functioning in major life roles such as school activities. Each item is rated on a seven-point response continuum ranging from minimal or absent difficulty to extremely high difficulty. The instrument was originally developed as a unidimensional measure, and psychometric studies have demonstrated satisfactory internal consistency, temporal reliability, and construct validity. More recent validation research has also supported the usefulness of the BASE-6 for assessing psychological adjustment among adolescent populations. Because the original scoring direction represents psychological adjustment problems, higher raw scores indicate greater emotional or functional difficulty. For consistency with the conceptual orientation of the present study, item scores were reverse-coded before construction of the psychological adjustment latent variable so that higher modeled scores represented more favorable psychological adjustment,

whereas lower scores represented greater psychological maladjustment. This transformation did not alter the relative distribution or psychometric relationships among the items but facilitated substantive interpretation of the structural coefficients. As with the Cyberostracism Scale, the Malay-language form was prepared through forward translation, expert review, and independent back-translation, followed by a pilot assessment of linguistic clarity. Confirmatory factor analysis was subsequently conducted to examine whether the expected unidimensional measurement structure was supported in the Malaysian adolescent sample. Internal consistency was evaluated using Cronbach's alpha and composite reliability, while convergent validity was assessed using standardized factor loadings and average variance extracted.

2.3. Data Analysis

Data analysis was conducted using IBM SPSS Statistics and AMOS. Before testing the explanatory model, the dataset was screened for accuracy, missing values, univariate and multivariate outliers, and violations of relevant statistical assumptions. Frequency distributions, means, standard deviations, skewness, and kurtosis were examined for the study variables and their constituent items. Cases containing substantial missing information were removed, whereas isolated missing responses were handled using an appropriate model-based estimation procedure when the proportion of missingness was acceptably small. Univariate outliers were evaluated using standardized scores, and multivariate outliers were examined using Mahalanobis distance. The assumption of approximate normality was evaluated through skewness and kurtosis statistics as well as inspection of score distributions. Multicollinearity among the dimensions of the predictor construct was assessed using intercorrelations, tolerance values, and variance inflation factors. Descriptive statistics were used to summarize participant characteristics and levels of cyberostracism and psychological adjustment. Pearson correlation coefficients were initially calculated to determine the magnitude and direction of bivariate relationships between cyberostracism dimensions and psychological adjustment. Statistical significance was evaluated at an alpha level of .05, with exact probability values reported whenever appropriate.

The proposed explanatory model was evaluated in two sequential stages consisting of assessment of the measurement model and assessment of the structural model.

Confirmatory factor analysis was first performed to determine whether the observed indicators adequately represented the latent constructs specified in the theoretical framework. Cyberostracism was modeled as a multidimensional construct represented by direct exclusion, indirect exclusion, and being ignored, whereas psychological adjustment was modeled as a latent construct represented by the BASE-6 indicators. Standardized factor loadings of .50 or greater were considered desirable, although loadings of .40 or above were retained when theoretically justified and when overall construct reliability remained adequate. Internal consistency was considered acceptable when Cronbach's alpha and composite reliability coefficients were at least .70. Convergent validity was evaluated using average variance extracted, with values of .50 or above regarded as satisfactory, while discriminant validity among the dimensions of cyberostracism was examined by comparing interconstruct relationships and the shared variance between constructs. Overall model fit was evaluated using multiple complementary indices rather than relying exclusively on the chi-square statistic. The ratio of chi-square to degrees of freedom, the Comparative Fit Index, Tucker-Lewis Index, Root Mean Square Error of Approximation, and Standardized Root Mean Square Residual were examined. Values of χ^2/df below 3.00, CFI and TLI values of approximately .90 or higher, and RMSEA and SRMR values below .08 were interpreted as evidence of an acceptable fit, with more stringent values interpreted as indicating good model fit.

After establishing an acceptable measurement model, structural equation modeling was used to test the explanatory relationship between cyberostracism and psychological adjustment. The principal structural path represented the hypothesized effect of perceived cyberostracism on adolescents' psychological adjustment, with higher levels of online exclusion expected to correspond to poorer psychological adjustment. Because cyberostracism incorporates qualitatively distinguishable forms of online exclusion, the relative contribution of its direct exclusion, indirect exclusion, and ignored dimensions was also examined within the model to determine whether specific forms of cyberostracism exhibited stronger associations with psychological adjustment. Standardized path coefficients, standard errors, critical ratios, and probability values were used to evaluate the statistical significance and direction of the structural relationships. The proportion of variance in psychological adjustment explained by cyberostracism was evaluated using the squared multiple correlation coefficient

(R^2). Where theoretically appropriate, age, sex, and daily Internet-use duration were entered as control variables to determine whether the principal association remained stable after accounting for basic demographic and digital-use characteristics. Modification indices were inspected only after evaluation of the theoretically specified model, and covariance parameters were added solely when they were conceptually defensible rather than for the purpose of improving statistical fit alone. The final explanatory model was selected on the basis of theoretical interpretability, adequacy of measurement properties, statistical significance of structural paths, explained variance, and overall goodness-of-fit indices. This analytical strategy made it possible to evaluate both the psychometric adequacy of the constructs among Malaysian adolescents and the extent to which experiences of cyberostracism provided a statistically meaningful explanation of individual differences in psychological adjustment.

3. Findings and Results

A total of 486 Malaysian adolescents were included in the final statistical analysis after data screening and examination of questionnaire completeness. Participants ranged in age from 13 to 17 years, with a mean age of 15.18 years ($SD = 1.39$). Of the total sample, 251 participants (51.65%) were female and 235 (48.35%) were male. With respect to age distribution, 84 adolescents (17.28%) were 13 years old, 93 (19.14%) were 14 years old, 101 (20.78%) were 15 years old, 110 (22.63%) were 16 years old, and 98 (20.16%) were 17 years old. Regarding geographical distribution, 132 participants (27.16%) were recruited from Selangor, 124 (25.51%) from Kuala Lumpur, 119 (24.49%) from Johor, and 111 (22.84%) from Penang. Most participants reported regular daily engagement with social networking and digital communication platforms. Specifically, 112 adolescents (23.05%) reported using the Internet for fewer than three hours per day, 185 (38.07%) reported three to five hours of daily use, 123 (25.31%) reported between five and seven hours, and 66 (13.58%) reported more than seven hours per day. WhatsApp, TikTok, Instagram, Telegram, and online gaming communication environments were among the most frequently reported digital platforms. Preliminary screening indicated that missing data were minimal and did not exceed 1.4% for any individual study variable. Examination of standardized scores and Mahalanobis distance identified no cases requiring exclusion because of severe multivariate outlying patterns. Skewness values for the observed

variables ranged from -0.61 to 0.74 , and kurtosis values ranged from -0.58 to 0.81 , indicating acceptable approximation to normality for maximum-likelihood estimation. Variance inflation factor values ranged from

1.38 to 2.27 , while tolerance coefficients ranged from $.44$ to $.72$, providing no indication of problematic multicollinearity among the predictor variables.

Table 1

Descriptive Statistics, Internal Consistency, and Correlations Among the Study Variables

Variable	M	SD	Cronbach's α	1	2	3	4
1. Direct exclusion	2.84	0.81	.86	—			
2. Indirect exclusion	2.97	0.77	.84	.58***	—		
3. Being ignored	3.11	0.85	.88	.61***	.64***	—	
4. Psychological adjustment	4.36	1.02	.89	-.47***	-.52***	-.58***	—

As shown in Table 1, the three dimensions of cyberostracism demonstrated moderate mean scores, with being ignored showing the highest average level ($M = 3.11$, $SD = 0.85$), followed by indirect exclusion ($M = 2.97$, $SD = 0.77$) and direct exclusion ($M = 2.84$, $SD = 0.81$). The mean score for psychological adjustment was 4.36 ($SD = 1.02$), indicating that, on average, participants reported a moderate-to-favorable level of psychological adjustment, although meaningful interindividual variation was evident. Internal consistency coefficients were satisfactory for all measures, with Cronbach's alpha values ranging from $.84$ to $.89$, exceeding the conventional criterion of $.70$ and supporting the reliability of the study instruments within the Malaysian adolescent sample. The three cyberostracism dimensions were positively and significantly correlated with one another. Direct exclusion was correlated with indirect exclusion at $r = .58$, $p < .001$, and with being ignored at $r = .61$, $p < .001$, while indirect exclusion demonstrated a correlation of $r = .64$, $p < .001$, with being ignored. These

coefficients indicated substantial conceptual overlap among the dimensions while remaining below levels that would suggest redundancy or severe multicollinearity. More importantly, all dimensions of cyberostracism showed statistically significant negative relationships with psychological adjustment. Direct exclusion was negatively associated with psychological adjustment, $r = -.47$, $p < .001$, while indirect exclusion demonstrated a somewhat stronger negative association, $r = -.52$, $p < .001$. The strongest bivariate relationship was observed between being ignored and psychological adjustment, $r = -.58$, $p < .001$. These findings indicate that adolescents reporting more frequent experiences of exclusion, neglect, or disregard in online environments also tended to report poorer emotional and functional adjustment. The pattern of correlations therefore provided initial empirical support for the proposed explanatory model and justified subsequent confirmatory factor analysis and structural equation modeling.

Table 2

Confirmatory Factor Analysis and Measurement Model Results

Construct/Dimension	Standardized Loading Range	CR	AVE	Cronbach's α
Direct exclusion	.68–.84	.87	.57	.86
Indirect exclusion	.65–.82	.85	.54	.84
Being ignored	.71–.88	.89	.61	.88
Psychological adjustment	.69–.86	.90	.60	.89
Cyberostracism second-order construct	.76–.89	.91	.63	.90
Model Fit Index	Obtained Value	Recommended Criterion		
χ^2	421.36	—		
df	189	—		
χ^2/df	2.23	< 3.00		
CFI	.953	$\geq .90$		
TLI	.944	$\geq .90$		
RMSEA	.050	< .08		
90% CI for RMSEA	.044–.056	—		
SRMR	.043	< .08		

Table 2 presents the results of the confirmatory factor analysis conducted to evaluate the adequacy of the measurement model before testing the structural relationships. All observed indicators loaded significantly on their corresponding latent constructs at $p < .001$. Standardized factor loadings ranged from .68 to .84 for direct exclusion, from .65 to .82 for indirect exclusion, from .71 to .88 for being ignored, and from .69 to .86 for psychological adjustment. These values exceeded the minimum acceptable level and indicated that the observed items were sufficiently representative of their intended latent dimensions. At the second-order level, direct exclusion, indirect exclusion, and being ignored loaded strongly on the overarching cyberostracism construct, with standardized coefficients ranging from .76 to .89, supporting the conceptualization of cyberostracism as a higher-order multidimensional phenomenon. Composite reliability coefficients ranged between .85 and .91, and Cronbach's alpha coefficients ranged from .84 to .90, demonstrating satisfactory internal consistency and construct reliability.

Average variance extracted values ranged from .54 to .63 and were therefore above the recommended threshold of .50, providing evidence of adequate convergent validity. The measurement model also demonstrated acceptable overall fit to the observed data. The chi-square statistic was significant, $\chi^2(189) = 421.36$, $p < .001$, as commonly occurs with moderately large samples; however, the normed chi-square value was 2.23 and remained below the recommended threshold of 3.00. The Comparative Fit Index was .953 and the Tucker–Lewis Index was .944, both indicating good incremental fit. The RMSEA value was .050, with a 90% confidence interval extending from .044 to .056, while the SRMR was .043. Collectively, these indices showed that the hypothesized measurement structure reproduced the observed covariance matrix satisfactorily. The combination of acceptable factor loadings, composite reliability, average variance extracted, and global goodness-of-fit indices therefore supported retention of the measurement model and permitted evaluation of the structural paths proposed in the explanatory model.

Table 3

Structural Equation Model Predicting Psychological Adjustment

Structural Path	B	SE	β	Critical Ratio	p
Cyberostracism → Psychological adjustment	−0.69	0.07	−.62	−9.86	< .001
Direct exclusion → Psychological adjustment	−0.18	0.06	−.17	−3.00	.003
Indirect exclusion → Psychological adjustment	−0.24	0.06	−.23	−4.00	< .001
Being ignored → Psychological adjustment	−0.34	0.06	−.35	−5.67	< .001
Age → Psychological adjustment	−0.07	0.03	−.09	−2.33	.020
Sex → Psychological adjustment	0.05	0.05	.04	1.00	.318
Daily Internet use → Psychological adjustment	−0.11	0.04	−.12	−2.75	.006
Structural Model Indicator	Value				
χ^2	447.81				
df	201				
χ^2/df	2.23				
CFI	.948				
TLI	.939				
RMSEA	.050				
SRMR	.047				
R ² for Psychological Adjustment	.46				

The structural equation modeling results presented in Table 3 demonstrated that cyberostracism was a statistically significant negative predictor of psychological adjustment among Malaysian adolescents. The overall standardized structural coefficient from cyberostracism to psychological adjustment was $\beta = -.62$, $B = -0.69$, $SE = 0.07$, critical ratio = -9.86 , $p < .001$, indicating that higher levels of cyberostracism were strongly associated with poorer

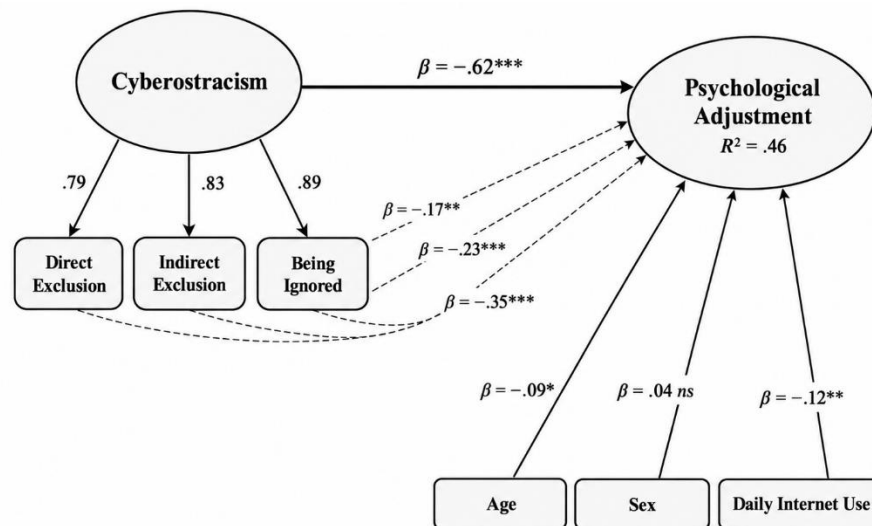
psychological adjustment. The magnitude of the standardized coefficient suggests that cyberostracism represented a substantial explanatory factor rather than a weak contextual correlate. When the three constituent dimensions were examined simultaneously, all remained significant negative predictors of psychological adjustment. Being ignored demonstrated the strongest unique relationship with adjustment, $\beta = -.35$, $B = -0.34$, $SE = 0.06$,

$p < .001$, followed by indirect exclusion, $\beta = -.23$, $B = -0.24$, $SE = 0.06$, $p < .001$, and direct exclusion, $\beta = -.17$, $B = -0.18$, $SE = 0.06$, $p = .003$. This pattern indicates that subtle or ambiguous online social exclusion, particularly the experience of receiving no interpersonal response or recognition, may be especially detrimental to adolescents' psychological functioning. Among the control variables, age had a small but statistically significant negative association with psychological adjustment, $\beta = -.09$, $p = .020$, suggesting slightly poorer adjustment among older adolescents within the sampled age range. Daily Internet use was also negatively related to psychological adjustment, $\beta =$

$-.12$, $p = .006$, whereas sex did not contribute significantly to the prediction of adjustment, $\beta = .04$, $p = .318$. Importantly, the inclusion of these demographic and digital-use covariates did not meaningfully reduce the magnitude or significance of the principal cyberostracism effect. The model accounted for 46% of the variance in psychological adjustment, $R^2 = .46$, indicating substantial explanatory power. Overall model fit was acceptable to good, $\chi^2(201) = 447.81$, $\chi^2/df = 2.23$, $CFI = .948$, $TLI = .939$, $RMSEA = .050$, and $SRMR = .047$. Thus, both the magnitude of the structural coefficients and the global fit indices supported the adequacy of the proposed explanatory model.

Figure 1

Final Explanatory Model of Cyberostracism and Psychological Adjustment Among Malaysian Adolescents



The final model indicated that cyberostracism functioned as a higher-order latent construct composed of direct exclusion, indirect exclusion, and being ignored, with all three dimensions contributing significantly to the overall construct. The standardized second-order loadings were .79 for direct exclusion, .83 for indirect exclusion, and .89 for being ignored, indicating that being ignored represented the strongest manifestation of cyberostracism in the present sample. The principal structural pathway from cyberostracism to psychological adjustment was negative and statistically significant, $\beta = -.62$, $p < .001$, demonstrating that greater perceived exclusion in digital interactions was associated with lower levels of positive psychological adjustment. The model explained 46% of the variance in psychological adjustment, suggesting that cyberostracism accounted for a considerable proportion of adolescents' variation in emotional and functional adaptation. The dimension-specific paths further clarified

this relationship by showing that being ignored exerted the largest unique negative contribution, followed by indirect exclusion and direct exclusion. This pattern suggests that online experiences characterized by ambiguity, silence, lack of response, and absence of interpersonal acknowledgement may have particularly strong psychological implications during adolescence, a developmental period in which social belonging and peer recognition are highly salient. The persistence of the central cyberostracism effect after controlling for age, sex, and daily Internet-use duration further indicated that the relationship could not be explained merely by demographic characteristics or the amount of time adolescents spent online. Taken together, the final model provided empirical support for the proposed explanatory framework and demonstrated that cyberostracism represents a multidimensional digital interpersonal stressor with a substantial negative association with psychological adjustment among Malaysian adolescents.

4. Discussion

The present study developed and tested an explanatory model of cyberostracism and psychological adjustment among Malaysian adolescents, with cyberostracism conceptualized as a higher-order construct comprising direct exclusion, indirect exclusion, and being ignored. The findings provided strong empirical support for the proposed model. Cyberostracism had a substantial negative association with psychological adjustment, with the overall standardized path coefficient indicating that adolescents who reported greater experiences of exclusion in digital environments tended to demonstrate poorer emotional and functional adjustment. The structural model explained 46% of the variance in psychological adjustment, suggesting that cyberostracism is not merely a peripheral correlate of adolescent well-being but an important psychosocial factor associated with meaningful differences in adjustment. The measurement model also confirmed that the three dimensions of cyberostracism were distinguishable yet strongly related manifestations of a common underlying construct. Among these dimensions, being ignored emerged as the strongest indicator of cyberostracism and also the strongest unique predictor of poorer psychological adjustment, followed by indirect exclusion and direct exclusion. These findings are consistent with a growing body of evidence showing that digitally mediated exclusion can undermine adolescents' psychological well-being, intensify emotional distress, and contribute to maladaptive behavioral outcomes (Ding et al., 2022; Li et al., 2022; Skogen et al., 2023).

The strong negative relationship between cyberostracism and psychological adjustment can be interpreted in light of the central developmental importance of belongingness and peer validation during adolescence. Adolescents increasingly organize their social identity, self-evaluation, and emotional security around peer relationships, and exclusion from valued social networks can therefore threaten multiple aspects of psychological functioning. Previous research has demonstrated that ostracism can evoke affective distress, threaten basic psychological needs, and disrupt emotional regulation among young people (Engelskirchen et al., 2025). Experimental findings with middle school students have similarly shown that social exclusion and teammate selection can have immediate psychological consequences, even when the exclusion takes place in relatively brief and controlled interactional settings (Munini et al., 2024). The present findings extend these patterns into

everyday digital environments and suggest that cyberostracism may operate as a persistent form of relational stress. The negative association observed in the current study also aligns with evidence that social media ostracism can increase aggression toward both others and the self through thwarted belongingness and perceived burdensomeness (Tan et al., 2026). This convergence indicates that the psychological costs of exclusion may arise from the same basic interpersonal mechanisms across both offline and online contexts, although digital environments may magnify those effects through repetition, visibility, and constant accessibility.

The finding that being ignored was the strongest unique predictor of lower psychological adjustment is particularly noteworthy. Although direct exclusion provides a relatively clear social signal, being ignored is often ambiguous, leaving the adolescent uncertain about whether the lack of response is intentional, accidental, temporary, or socially meaningful. Such ambiguity may promote rumination, rejection sensitivity, repeated checking behavior, and heightened social monitoring. This interpretation is supported by earlier work showing that online ostracism and rejection threaten psychological needs even when no direct verbal rejection occurs (Lutz & Schneider, 2020). Similarly, being "left on read" has been associated with poorer mental health among young people, suggesting that visible nonresponse can carry substantial interpersonal meaning in social-media communication (Vanherle et al., 2023). Research on ghosting and breadcrumbing also indicates that ambiguous relational withdrawal can generate distress because individuals are left without sufficient explanatory closure (Navarro et al., 2020). The present findings therefore support the view that online silence can function as a powerful form of social communication. For adolescents, who may be highly attentive to peer responsiveness, the absence of expected acknowledgment may be interpreted as evidence of low relational value, social rejection, or deliberate exclusion.

Indirect exclusion also showed a stronger association with psychological adjustment than direct exclusion. This pattern suggests that subtle forms of exclusion may be especially disruptive because they are difficult to interpret and may remain cognitively unresolved. Indirect exclusion may involve being omitted from online conversations, overlooked in peer exchanges, or excluded from group activities without explicit rejection. These experiences may lead adolescents to question their social standing and to engage in repeated mental review of interactions. Research has shown that cyberostracism can influence social anxiety

through rejection sensitivity and rumination, illustrating how ambiguous exclusion may become internalized through maladaptive cognitive processing (Shi et al., 2025). Likewise, cyberostracized adolescents may experience lower psychological well-being through rumination, whereas mindfulness appears to reduce some of these negative effects (Li et al., 2022). The relatively strong contribution of indirect exclusion in the present study is therefore consistent with the proposition that uncertainty and repetitive cognitive processing may intensify the impact of online exclusion. This also helps explain why the consequences of cyberostracism can extend beyond immediate distress into more persistent patterns of maladjustment.

Direct exclusion, although the weakest of the three dimensions, remained a statistically significant predictor of poorer psychological adjustment. Explicit removal from groups, direct rejection, or obvious exclusion from online interactions may produce strong emotional reactions, but such experiences at least provide a clear social signal. The adolescent knows that exclusion has occurred, which may allow more direct coping, reinterpretation, or disengagement. Nevertheless, the negative association remained substantial and supports findings that online exclusion can contribute to emotional and behavioral problems. Cyberostracism has been linked to depression and non-suicidal self-injury among adolescents, with experiential avoidance serving as an important explanatory mechanism (Ding et al., 2022). Longitudinal evidence further indicates that cyberostracism may contribute to depression and later cyberbullying perpetration (Ding et al., 2024). Other studies have shown that cyberostracism can increase aggressive behavior among young people and university populations, particularly under conditions involving psychological vulnerability or reduced self-control (Xing & Kuo, 2024). These studies support the current finding that direct exclusion is detrimental, even if its unique contribution is somewhat smaller than that of more ambiguous forms of online ostracism.

The significant negative association between cyberostracism and adjustment also corresponds with broader evidence on cyberbullying and cyberviolence. Adolescents exposed to harmful online interactions often report anxiety, depressive symptoms, social withdrawal, and difficulties with emotional regulation. Cyberbullying victimization has been associated with poorer adolescent mental health, although individual differences in emotional competence may modify the strength of these effects (Urano

et al., 2020). Clinical literature on cyberviolence similarly highlights the possibility of persistent psychological trauma, emotional dysregulation, and functional impairment among children and adolescents exposed to online aggression (Bae, 2024). Neurobiological perspectives further suggest that repeated cybervictimization may influence emotional regulation systems and stress-response processes (Nesin et al., 2025). Although cyberostracism differs from overt cyberbullying, both involve interpersonal harm enacted through digital channels, and both may undermine adolescents' sense of safety, social belonging, and emotional stability. The present findings therefore reinforce the importance of conceptualizing online exclusion as part of the broader spectrum of digital interpersonal adversity.

The model also indicated that the three dimensions of cyberostracism were strongly interrelated, while remaining psychometrically distinct. This multidimensional structure is important because it demonstrates that cyberostracism is not a single undifferentiated experience. Adolescents may be explicitly excluded, subtly left out, or simply ignored, and each pattern may carry different psychological meanings. Prior research in educational and digital contexts supports the relevance of these distinctions. Cyberostracism has been associated with reduced knowledge sharing and increased social anxiety in e-learning environments, demonstrating that exclusion can affect both emotional and behavioral engagement (Akçay & Kayış, 2023). Similarly, being removed from a WhatsApp group has been associated with poorer psychosocial well-being and school achievement, illustrating that specific online exclusion events can affect functioning across domains (Lin et al., 2024). The current findings add to this literature by showing that different forms of exclusion can be integrated within a single explanatory model while still retaining unique predictive value.

Another important finding was that age showed a small negative association with psychological adjustment, whereas sex did not significantly predict the outcome. The age effect may reflect increasing developmental sensitivity to peer status and social comparison during later adolescence. Older adolescents may use social networking platforms more intensively or may attach greater psychological importance to peer recognition and online belonging, making exclusion more salient. Although the magnitude of this effect was relatively small, it suggests that developmental stage may shape how digital exclusion is experienced. In contrast, the absence of a significant sex effect indicates that cyberostracism may be psychologically relevant across male and female adolescents rather than

being concentrated within one sex. This finding is compatible with broader evidence that cyberbullying and online relational harm affect diverse adolescent groups and are shaped more by contextual, interpersonal, and psychological mechanisms than by sex alone (Jun, 2020; Wang et al., 2024). It also supports the use of broadly inclusive prevention strategies rather than interventions targeted exclusively by sex.

Daily Internet use also demonstrated a small but significant negative association with psychological adjustment. This finding should not be interpreted as evidence that Internet use itself is inherently harmful; rather, greater time online may increase adolescents' exposure to peer interactions, social comparison, cyberbullying, or exclusion experiences. Adolescents who spend more time online may also have more opportunities to monitor others' social activity and to detect signs of being ignored or excluded. Previous research has shown that negative social-media experiences are associated with poorer mental health and well-being among adolescents (Skogen et al., 2023). Cyberostracism may also contribute to problematic patterns of digital engagement. A recent systematic review and meta-analysis found an association between ostracism and digital addiction, suggesting that exclusion may promote compensatory or excessive technology use in some individuals (Sambath et al., 2026). Similarly, cyberostracism and perceived parental phubbing have been shown to jointly predict problematic smartphone use, indicating that exclusion across peer and family contexts may increase reliance on digital devices (Mohammadi & Ghanbari, 2026). These findings support the interpretation that greater Internet use may function both as a contextual exposure factor and as a behavioral response to social exclusion.

The explanatory power of the model may also be understood through the role of psychological resources. Adolescents differ in their capacity to tolerate rejection, regulate emotional responses, cognitively reinterpret social events, and recover after exclusion. Previous research has identified psychological resilience as a protective factor that may reduce the negative behavioral consequences of cyberostracism (Shi et al., 2022). Mindfulness, self-compassion, emotional regulation, and cognitive flexibility have also been associated with better psychological well-being among adolescents (Afrashteh & Hasani, 2022). These findings suggest that the strong relationship observed in the present model may partly reflect variation in adolescents' coping resources, even though these mechanisms were not directly included in the structural model. Future extensions

may therefore benefit from incorporating resilience, mindfulness, emotion regulation, self-compassion, and rejection sensitivity as potential mediators or moderators.

The present findings also have implications for the wider ecology of adolescent development. Cyberostracism does not occur independently from school climate, peer culture, family relationships, or broader social norms. School climate has been linked to adolescents' emotional well-being, suggesting that supportive educational environments may reduce the psychological impact of peer exclusion (Bosacki et al., 2023). Social support may also transform the consequences of bullying experiences and encourage more prosocial forms of adaptation (Lin, 2022). In addition, parental interactions can influence the psychological consequences of cyberbullying among adolescents (Alkatiri et al., 2024). Policy-oriented research likewise emphasizes that prevention of adolescent bullying requires coordinated responses involving families, schools, health professionals, and legal or institutional systems (Wuryaningsih et al., 2022). These studies reinforce the interpretation that cyberostracism should be addressed as an ecological problem rather than solely as an individual vulnerability.

The association between cyberostracism and psychological maladjustment may also contribute to cycles of online aggression and social withdrawal. Research has shown that social exclusion is related to antisocial behavior among minors (Boykina, 2023), while exclusion may also interact with personality characteristics in predicting bullying behavior (Huang et al., 2023). Exposure to violent content has likewise been associated with bullying tendencies among adolescents (Cui, 2024). The present results, considered alongside these studies, suggest that cyberostracism may function as both an outcome and a precursor within broader cycles of online relational dysfunction. An adolescent who is excluded may withdraw, retaliate, become more aggressive, or seek validation through maladaptive digital behavior. Cyberostracism has also been associated with discontinuous social-media use, indicating that some individuals respond by disengaging from platforms rather than increasing their use (Sarfraz et al., 2023). These divergent responses underscore the complexity of coping with online exclusion and suggest that similar experiences may produce different behavioral trajectories depending on psychological and contextual factors.

5. Conclusion

Overall, the findings of this study support the conceptualization of cyberostracism as a multidimensional digital interpersonal stressor with substantial implications for adolescent psychological adjustment. The strength of the overall path, the high explained variance, and the distinct contributions of direct exclusion, indirect exclusion, and being ignored all indicate that online exclusion deserves greater attention in adolescent mental-health research. The results are consistent with prior work linking cyberostracism to depression, self-injury, aggression, social anxiety, problematic digital use, and diminished well-being (Ding et al., 2024; Ding et al., 2022; Shi et al., 2025; Tan et al., 2026). They also reinforce evidence that the consequences of online exclusion are shaped by broader emotional, cognitive, and social processes, including rumination, rejection sensitivity, resilience, mindfulness, and interpersonal support (Afrashteh & Hasani, 2022; Li et al., 2022; Shi et al., 2022). Taken together, the present model provides a coherent framework for understanding how different forms of cyberostracism are associated with psychological adjustment among Malaysian adolescents.

6. Limitations & Suggestions

Several limitations should be considered when interpreting the findings. First, the cross-sectional design does not permit firm causal conclusions regarding the direction of association between cyberostracism and psychological adjustment. Although the proposed structural model was theoretically grounded, poorer adjustment may also increase sensitivity to perceived exclusion or alter patterns of digital interaction. Second, all study variables were measured through self-report, which may have introduced common-method variance, recall bias, or socially desirable responding. Third, the sample was drawn from selected Malaysian regions and public secondary schools, which may limit generalizability to adolescents from rural settings, private schools, different cultural groups, or other national contexts. Fourth, the study focused on direct exclusion, indirect exclusion, and being ignored but did not include potentially relevant mechanisms such as rejection sensitivity, rumination, loneliness, emotion regulation, resilience, or family support. Finally, the model explained a substantial but incomplete proportion of variance in psychological adjustment, indicating that other personal, relational, and environmental factors also contribute to adolescent adaptation.

Future research should employ longitudinal, cross-lagged, and experimental designs to clarify the temporal and potentially reciprocal relationships between cyberostracism and psychological adjustment. Studies could follow adolescents across several developmental stages to determine whether the effects of online exclusion become stronger or weaker with age and whether repeated experiences accumulate over time. Future models should incorporate mediating and moderating variables such as rejection sensitivity, rumination, loneliness, self-esteem, mindfulness, resilience, emotion regulation, parental support, peer support, and school climate. Multi-informant approaches involving adolescents, parents, teachers, and school counselors would also reduce reliance on self-report. Researchers should further examine whether the effects of cyberostracism differ across specific platforms, forms of digital communication, cultural contexts, or patterns of Internet use. Qualitative studies may also help clarify how adolescents interpret being ignored, excluded, or removed from online groups and how these experiences influence their coping strategies and social identity.

In practice, schools, families, and mental-health professionals should treat cyberostracism as a meaningful form of peer adversity rather than a minor or inconsequential feature of digital communication. School-based programs should address subtle forms of online exclusion in addition to overt cyberbullying and should teach adolescents how to recognize, report, and respond to exclusionary digital behaviors. Counselors and psychologists should assess experiences of being ignored, excluded from online groups, or deliberately left out when evaluating adolescents with emotional or adjustment difficulties. Prevention programs should strengthen emotion regulation, coping, communication, empathy, and digital citizenship skills while also encouraging supportive peer norms. Parents should be informed that excessive monitoring alone is insufficient and that open communication about online relationships may help adolescents discuss exclusion before it develops into more serious distress. Schools should also establish clear reporting procedures and coordinated responses involving teachers, counselors, families, and students so that cyberostracism can be addressed early and its effects on psychological adjustment can be minimized.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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