



## A Multidimensional Predictive Model of Loneliness in Indonesian Generation Z

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### Abstract

Loneliness among Generation Z has become a pressing public health issue, reflecting the paradox of increasing isolation despite high digital connectivity. This study aimed to test a multidimensional model integrating psychological, social, and spiritual factors to explain loneliness, with social support examined as a key mediating mechanism. Employing a quantitative cross-sectional design, data were collected from 527 Indonesian Generation Z participants using validated instruments, and analyzed through GSCA-SEM and path analysis with JASP. The findings revealed that self-compassion ( $\beta = -0.005, p = 0.015$ ) and self-acceptance ( $\beta = -0.006, p = 0.007$ ) directly reduced loneliness, while gratitude unexpectedly exhibited a positive association ( $\beta = 0.015, p = 0.005$ ). Social support significantly mediated the influence of both social interaction ( $\beta = -0.037, p < 0.001$ ) and self-compassion ( $\beta = -0.040, p < 0.001$ ), explaining 54.7% of the variance (GFI = 0.947). These results challenge conventional theories, demonstrating that gratitude may operate differently in digital-native contexts and highlighting the central role of social support in translating interaction and psychological resources into reduced loneliness. The study offers theoretical innovation by proposing an integrated framework of loneliness and provides practical implications for developing culturally sensitive interventions for Generation Z in the digital era.

**Keywords:** Loneliness; Social support; Self-acceptance; Self-compassion; Generation Z.

## A. Introduction

Loneliness has evolved from a transient personal feeling into a widespread epidemic, with Generation Z at the epicenter. This demographic, the first true cohort of digital natives, is experiencing heightened isolation despite living in world of unprecedented technological connectivity (Marthoenis et al., 2022). Global surveys reveal the severity of this issue, with one in four young people worldwide reporting feelings of 'quite' to 'very lonely,' particularly among those aged 15 to 29. In Indonesia, the phenomenon is similarly alarming, with significant numbers of adolescents, particularly girls, struggling with persistent loneliness. This presents a starking paradox: a generation equipped with limitless communication tools is simultaneously experiencing a profound lack of meaningful connection.

Research on loneliness has typically been fragmented, resulting in a limited understanding of its complex causes (Spitzer & Segel-karpas, 2019). Many studies have focused on external social factors, such as the frequency of social interactions or perceived social support from friends and family. Meanwhile, other literature has emphasized internal psychological traits, like self-compassion, self-acceptance, and gratitude. While these insights are valuable, their isolated focus has contributed to contradictions and incomplete explanations, failing to account for the dynamic interplay between an individual's internal world and their external social environment (Jeon et al., 2023).

This fragmented approach has yielded inconsistent findings, highlighting a significant knowledge gap. For instance, the relationship between the psychological resource of self-compassion and loneliness demonstrates puzzling variability across studies: it shows a significant negative correlation within university student samples but appears insignificant among younger adolescent cohorts (Rokach & Patel, 2024). Such discrepancies strongly suggest that the influence of key psychological variables is not direct but likely mediated or enhanced by other factors. This underscores the critical need for research that moves beyond examining variables in isolation and develops integrated models that account for these complex interactions (Marthoenis et al., 2022).

The theoretical foundations of this study are deliberately chosen to address this gap. The research is grounded in self-compassion theory, which explains how a kind, mindful, and connected self-attitude can buffer against adverse psychological outcomes (Marthoenis et al., 2022). Additionally, the study draws from social provision theory,

which defines the specific functions of relationships that fulfill an individual's fundamental social needs. The novel proposition of this study is that these two theoretical frameworks are intrinsically linked. It posits that internal resources like self-compassion and gratitude can enhance an individual's ability to seek out, perceive, and utilize available social support, which is the more direct mechanism for reducing feelings of loneliness (Zimet et al., 1988; Ismail et al., 2024; Masyhuri et al., 2025).

Central to this study's conceptual innovation is the theorized role of social support. Rather than treating it as an independent external variable, this study reconceptualizes it as a pivotal mediating variable (Kong et al., 2021; Mahmud et al., 2024). This means that social support is hypothesized to be the active pathway through which psychological strengths influence loneliness. An individual with higher self-compassion, for example, may be less affected by social anxiety and more resilient in the face of rejection, thereby engaging in more effective social behaviors that lead to stronger, more supportive relationships. This enhanced social support, in turn, directly mitigates the subjective feeling of loneliness (Afdal & Rizki, 2021; Zimet et al., 1988).

This investigation is further distinguished by its deliberate focus on the unique cultural context of Indonesia. Most loneliness literature emanates from Western, individualistic societies, where the onus of connection may fall more heavily on the individual (Borawski & Nowak, 2022; Ismail et al., 2024). In contrast, Indonesia's collectivist culture, characterized by strong familial bonds, community interdependence, and values such as *gotong royong* (mutual assistance), presents a distinct social landscape. The experience of loneliness and the very function of social support are likely shaped by these cultural norms, suggesting that findings from Western studies cannot be directly extrapolated and that local socio-cultural values must be integral to any effective model (Lodder et al., 2022; Afifi et al., 2025).

The technological dimension adds another layer of complexity to this inquiry. For Generation Z, social interaction is increasingly mediated through digital platforms, which can simultaneously offer the illusion of connection while exacerbating feelings of isolation through negative social comparison and perceived exclusion (Neff, 2003b). The Indonesian context, with its rapidly growing digital penetration and unique social media landscape, provides a critical setting to explore the dynamics of online interaction (Hurmat et al., 2024). This study seeks to understand how digital communication

interfaces with traditional cultural values of connection to either ameliorate or accelerate the experience of loneliness among young people.

The implications of failing to address this issue are severe. Loneliness is not a benign condition; it is a significant risk factor for a cascade of detrimental health outcomes. Research has consistently linked it to severe mental health challenges, including heightened anxiety, depression, and suicidal ideation. Beyond psychology, it also correlates with physical health deterioration, including sleep disorders, increased substance use, and poorer cardiovascular outcomes (van Winkel et al., 2017). For Generation Z, whose formative years are shaped by this experience, understanding and mitigating loneliness is not merely an academic exercise but a pressing public health priority (Tran et al., 2024).

By proposing a holistic model that integrates psychological traits, social mechanisms, and cultural context, this study aims to provide a more nuanced and comprehensive understanding of loneliness. It seeks to clarify the contradictory results found in previous literature by introducing a key mediating variable and situating the analysis within an understudied cultural setting (Zhaoyang et al., 2022; Ibrahim et al., 2025). The study is designed to uncover the precise pathways through which internal strengths translate into tangible social benefits, and how these processes are uniquely manifested within Indonesian society.

Ultimately, this study argues that loneliness in the digital age is a multifaceted phenomenon that demands an equally multifaceted explanation. It contends that the paradox of connectivity and isolation can only be unraveled by examining the interplay between the mind and the social world. The findings of this study are expected to significantly contribute to the global literature on loneliness while also providing evidence-based insights for developing targeted, culturally attuned interventions to foster genuine connection and improve mental health outcomes for Generation Z in Indonesia.

However, despite the growing body of research on loneliness, existing studies remain fragmented and often focus on either psychological resources or social mechanisms in isolation, leading to inconsistent and inconclusive findings. Few attempts have been made to build an integrated model that simultaneously incorporates psychological, social, and spiritual dimensions, while also situating the analysis within a collectivist cultural context. This study is therefore novel in two important ways. First, it advances

the literature by developing a multidimensional model that examines the direct and indirect effects of self-compassion, self-acceptance, gratitude, and social interaction. It also conceptualizes social support as a central mediating pathway. Second, it positions the analysis within the Indonesian cultural setting, where values such as *gotong royong* and community interdependence shape the meaning and function of social support. By combining these elements, this study contributes theoretically to cross-cultural psychology and practically to the design of culturally sensitive interventions to reduce loneliness among Generation Z in the digital era.

## **B. Method**

This study employed a quantitative cross-sectional design to develop and test a multidimensional model of loneliness among Indonesian Generation Z, examining psychological (self-compassion, self-acceptance), social (social support, social interaction), and spiritual (gratitude) factors through a mediation framework. A total of 527 participants (age  $M=20.78$ ,  $SD=1.149$ ; 73% female) were recruited through online convenience sampling from East Java, representing diverse ethnic backgrounds (21 groups) and educational backgrounds (*Madrrasah Aliyah*: 28%; Islamic boarding schools: 22.39%; public high schools: 36.24%).

Six validated instruments demonstrated excellent reliability: UCLA Loneliness Scale (20 items,  $\omega = 0.917$ ), MSPSS (12 items,  $\omega = 0.917$ ), Self-Compassion Scale (26 items,  $\omega = 0.831$ ), GQ-6 (6 items,  $\omega = 0.917$ ), Unconditional Self-Acceptance Questionnaire (16 items,  $\omega = 0.776$ ), and Social Interaction Questionnaire (21 items,  $\omega = 0.873$ ). The online administration via Google Forms proved particularly suitable for this digital-native generation, though potential self-selection bias was acknowledged.

Confirmatory Factor Analysis established strong construct validity for all measures ( $GFI > 0.90$ ,  $SRMR < 0.08$ ). GSCA SEM with GSCA Pro and path analysis with JASP were selected for their ability to handle complex mediation models with multiple latent variables without distributional assumptions. The study followed a two-stage approach: first, evaluating the measurement model's reliability and validity, then testing the structural relationships, including direct effects, mediation pathways through social support, and model fit indices.

The combination of psychometrically robust instruments, appropriate analytical techniques, and consideration of methodological limitations provides confidence in the

validity of the findings, particularly the counterintuitive results regarding gratitude and the crucial mediating role of social support.

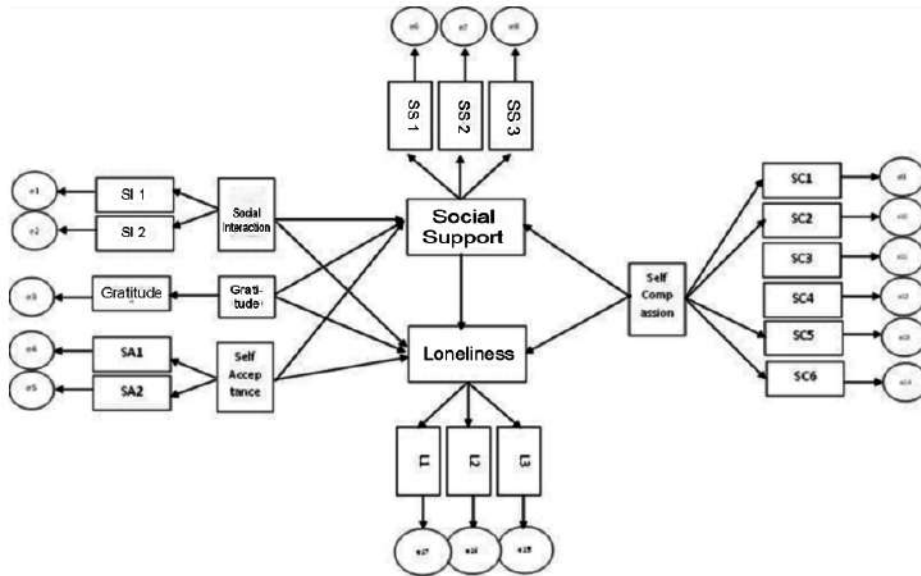


Figure 1. Structural model predicting loneliness

### C. Results and Discussion

Following a comprehensive data analysis process, the findings of this study reveal the complex dynamics between psychological, social, and spiritual factors in predicting loneliness. The results of structural model testing demonstrate significant relationship patterns, with social support serving as a key mechanism mediating the influence of various variables on loneliness. These findings confirm some of the proposed hypotheses and provide unexpected insights, particularly regarding the role of gratitude, which will be discussed in depth in relation to existing literature.

#### 1. Results

The analysis began with an examination of the descriptive characteristics of the respondents to provide an overview of the sample profile. This step was essential to contextualize the subsequent structural model testing. The results include demographic variables such as age, gender, ethnicity, religion, and educational background. Table 1 presents the descriptive statistics of the study participants, highlighting the diversity of the sample and ensuring that the findings are grounded in a representative depiction of Indonesian Generation Z.

Table 1. Descriptive statistics

Variable	Mean	Std. Error of Mean	Std. Deviation	Variance
Age	20.787	0.050	1.149	1.320
Religion	1.004	0.003	0.062	0.004
Ethnicity	11.509	0.120	2.751	7.570
Gender	1.734	0.019	0.442	0.195
Educational Background	2.778	0.063	1.438	2.067
Major	27.268	0.392	9.006	81.101

The respondents had an average age of 20.79 years (SD = 1.15), with a relatively balanced gender distribution (M = 1.73; SD = 0.44). Religion showed little variation (M = 1.00; SD = 0.06), while ethnicity (M = 11.51; SD = 2.75), educational background (M = 2.78; SD = 1.44), and major (M = 27.27; SD = 9.01) indicated greater diversity among participants.

*a. Fitting the Model to Each Construct*

Model analysis on each construct was carried out separately before combining them in the SEM model. This approach ensures that each measurement instrument fits the data, meaning the latent variable accurately represents its indicator. As shown in Table 2, the gratitude variable demonstrated the best model fit (FIT = 0.622; GFI = 0.988; SRMR = 0.055), indicating that this construct was measured excellently and the model successfully captured the essence of gratitude within this research context. Conversely, the self-compassion variable showed the weakest fit (GFI = 0.829; SRMR = 0.136), suggesting that the measurement scale for this construct may be less optimal within the Indonesian cultural context or that other factors influencing self-compassion were not captured in the model.

Table 2. Fit of the model on each of the research variables

Parameter	Loneliness	Social Support	Social interaction	Self-Acceptance	Self-Compassion	Gratitude
FIT	0.485	0.528	0.362	0.386	0.496	0.622
AFIT	0.482	0.525	0.359	0.384	0.493	0.619
GFI	0.965	0.969	0.956	0.97	0.829	0.988
SRMR	0.077	0.078	0.072	0.06	0.136	0.055

Table 2 presents the social support and loneliness variables, which showed a good fit (GFI > 0.96; SRMR < 0.08), confirming that the model successfully explained the relationship between these two constructs. Meanwhile, the social

interaction and self-acceptance variables showed relatively lower FIT values (0.362 and 0.386, respectively), yet still within an acceptable range, indicating that other elements of these constructs might not be fully represented in the measurements.

These findings carry important implications: although the overall model is viable, results for the self-compassion variable must be interpreted cautiously. Refinements in instrumentation or the inclusion of additional variables in future research are needed to better understand the mechanism of self-compassion within the Indonesian cultural context.

**b. Hypothesis Analysis**

Goodness-of-fit analysis revealed that the research model reasonably explained the relationships between variables, although the fit quality varied across constructs. GSCA SEM was used to test the proposed prediction model.

*Table 3. Fit of the loneliness prediction model*

<b>FIT</b>	<b>AFIT</b>	<b>FITs</b>	<b>FITm</b>	<b>GFI</b>	<b>SRMR</b>	<b>OPE</b>	<b>OPEs</b>	<b>OPEm</b>
0.547	0.545	0.233	0.637	0.947	0.099	0.455	0.771	0.365

The prediction results show acceptable model fit (GFI=0.947, SMSR=0.099, FIT=0.547). The model can explain approximately 54,7% of the total variance of all indicators and components. AFIT also shows model consistency. In addition, the model has FITm = 0.233 and FITs = 0.637, indicating that the measurement model explains 15.5% of the indicator variance, while structurally explaining 63.7% of the component variance. The model also shows OPEs = 0.771 and OPEm = 0.365, indicating that the measurement and structural models produce lower average prediction errors than the null model. These OPEs and OPEm can be used to compare different sub-model specifications in predictions. Overall, the data show that the model is suitable, the relationship between constructs is quite strong in explaining variance, and the model has good predictive power, especially at the structural level. This indicates that the model is statistically robust and has good explanatory power. In addition, the difference between what is predicted in the model and the existing data is also minimal, suggesting that the model is very accurate in its predictions. However, the quality of the measurement model indicators still needs to be improved.

Path analysis and mediation analysis models were used to test the following hypotheses related to the model proposed in this study.

Table 4. Direct influence

Path		95% Confidence Interval					
		Estimate	Std. Error	z value	p-value	Lower	Upper
Social interaction	→ Loneliness	-0.002	0.002	-1.409	0,159	-0.005	8.891×10 <sup>4</sup>
Self-Acceptance	→ Loneliness	-0.006	0.002	-2.715	0.007	-0.011	-0.002
Self-Compassion	→ Loneliness	-0.005	0.002	-2.423	0.015	-0.008	-8.706×10 <sup>4</sup>
Gratitude	→ Loneliness	0.015	0.005	2.831	0.005	0.005	0.025

Note: Delta method standard errors, normal theory confidence intervals, ML estimator.

Table 4 presents the results of direct pathways, which reveal distinct patterns in how each variable influences loneliness. Social interaction demonstrates a negligible and statistically nonsignificant direct effect on loneliness ( $\beta = -0.002$ ,  $p = 0.159$ ). This indicates that the mere frequency or quantity of social contact is insufficient to directly alleviate feelings of isolation, underscoring the critical distinction between social connection and meaningful emotional engagement.

In contrast, self-acceptance ( $\beta = -0.006$ ,  $p = 0.007$ ) and self-compassion ( $\beta = -0.005$ ,  $p = 0.015$ ) exhibit significant negative direct effects on loneliness. These results strongly suggest that internal psychological resources—such as embracing one’s imperfections and treating oneself with kindness during difficult times—serve as powerful protective factors, directly reducing feelings of social and emotional isolation.

A counterintuitive and significant finding emerged regarding gratitude, demonstrating a positive direct effect on loneliness ( $\beta = 0.015$ ,  $p = 0.005$ ). This implies that, contrary to common belief, higher levels of gratitude were associated with increased feelings of loneliness. This surprising result may be explained by the nature of gratitude in this cohort; it might reflect a form of comparative or obligatory gratitude (“I should be grateful for what I have”), which could paradoxically heighten awareness of social or emotional shortcomings through upward social comparison, rather than fostering genuine contentment.

Table 5. Indirect influence

Path		95% Confidence Interval					
		Estimate	Std. Error	z value	p-value	Lower	Upper

		95% Confidence Interval								
Path			Estimate	Std. Error	z value	p-value	Lower	Upper		
Social interaction	→	Social Support	→	Loneliness	-0.037	0.005	-8.006	< .001	-0.047	0.028
Self-Acceptance	→	Social Support	→	Loneliness	-0.014	0.007	-1.952	0.051	-0.028	5.662 × 10 <sup>-5</sup>
Self-Compassion	→	Social Support	→	Loneliness	-0.040	0.006	-7.179	< .001	-0.050	0.029
Gratitude	→	Social Support	→	Loneliness	0.010	0.016	0.639	0.639	-0.021	0.041

*Note:* Delta method standard errors, normal theory confidence intervals, ML estimator.

The indirect effects analysis reveals social support as a powerful mechanism through which several psychological factors alleviate loneliness, though its mediating role varies significantly across predictors.

The most robust finding emerges for social interaction and self-compassion, which exert strong, statistically significant indirect effects on loneliness through social support ( $\beta = -0.037, p < .001$  and  $\beta = -0.040, p < .001$ , respectively). This indicates that their ability to reduce loneliness is predominantly channelled through enhancing social support. For social interaction, this underscores a crucial nuance. While mere contact is insufficient (as shown by its non-significant direct effect), its true value lies in its capacity to generate tangible emotional and instrumental support, which directly counteracts feelings of isolation. Similarly, self-compassionate individuals appear to attract, seek out, or perceive stronger social networks, which act as the primary vehicle for reducing their loneliness.

In contrast, the mediating effect for self-acceptance was marginally significant ( $\beta = -0.014, p = 0.051$ ), suggesting a weaker and less reliable pathway. This implies that while self-acceptance might contribute to better social connections, its influence on loneliness is more direct (as previously shown) and less dependent on the mediation of social support. It may foster internal resilience that protects against loneliness independently.

Most notably, gratitude showed no significant indirect effect through social support ( $\beta = 0.010, p = 0.639$ ). This critical finding helps interpret the earlier surprising

result of its positive direct effect on loneliness. It suggests that the type of gratitude measured in this study does not translate into behaviors or perceptions that strengthen social support. In fact, social support does not appear to be the mechanism through which gratitude operates or fails to relate to loneliness. This reinforces the hypothesis that this form of gratitude might be introspective or comparative, potentially isolating the individual rather than connecting them to others.

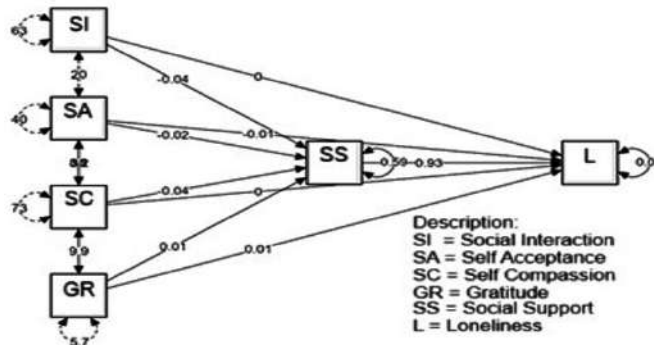


Figure 2. Results of Preliminary Model Test

The comprehensive path analysis reveals a nuanced pattern of relationships between psychological variables and loneliness, with social support as a critical mediating mechanism. While social interaction shows no significant direct effect on loneliness ( $\beta = -0.002$ ,  $p = 0.159$ ), it demonstrates a strong indirect effect through social support ( $\beta = -0.037$ ,  $p < 0.001$ ), indicating that social interaction reduces loneliness specifically when it generates meaningful social connections. Both self-acceptance ( $\beta = -0.006$ ,  $p = 0.007$ ) and self-compassion ( $\beta = -0.005$ ,  $p = 0.015$ ) show significant direct effects, confirming their role as internal resources that directly protect against loneliness.

However, their indirect effects through social support differ substantially: self-compassion shows the most substantial indirect effect ( $\beta = -0.040$ ,  $p < 0.001$ ), suggesting it operates through both internal regulation and enhanced social connectivity, while self-acceptance demonstrates only a marginally significant indirect effect ( $\beta = -0.014$ ,  $p = 0.051$ ). Most notably, gratitude exhibits a counterintuitive positive direct effect ( $\beta = 0.015$ ,  $p = 0.005$ ) with an indirect non-significant impact through social support ( $\beta = 0.010$ ,  $p = 0.639$ ). These findings indicate that social support functions as a full mediator for social interaction, a complementary mediator for self-compassion, and a non-significant mediator for self-acceptance and gratitude, providing crucial insights for developing targeted psychological interventions.

## 2. Discussion

The findings of this study provide a complex and multidimensional understanding of loneliness in Generation Z, challenging simplified assumptions that mere social interaction is sufficient to mitigate feelings of isolation. The evidence that social interaction exerts no significant direct effect on loneliness becomes a pivotal departure point for rethinking established conceptual frameworks (Veronika & Afdal, 2021). For a generation immersed in perpetual digital connectivity, the sheer quantity of interactions, particularly those mediated online, appears insufficient to predict emotional well-being. This reinforces the need to redefine “social interaction,” shifting the emphasis from frequency to quality, depth, and authenticity—dimensions often absent from the curated and performative nature of digital exchanges (Basir et al., 2025; Lodder et al., 2022).

This outcome challenges foundational theories such as Weiss’s social needs theory, which asserts that interaction satisfies the innate human need for belonging (Fourqoniah et al., 2025; Weiss, 1973). Instead, the study reveals that for Generation Z, many digital encounters may simulate connection without substantively addressing deeper emotional needs (Wang & Lou, 2022; Lubis & Nashrillah, 2024). These interactions often remain transactional—likes, comments, and shares—rather than transformational, lacking the empathetic resonance and shared vulnerability required for genuine bonding. This paradox illuminates a troubling phenomenon: individuals may appear hyper-connected, yet remain profoundly lonely, as their connections remain wide but shallow, offering little emotional sustenance (Kassim & Ahmad Badayai, 2023; Silva et al., 2023).

The structural features of online communication further explain this insufficiency. Platforms tend to incentivize performative engagement, where individuals present idealized versions of themselves (Kumar, 2023). For Generation Z, this ecosystem fosters constant social comparison, creating pressure to maintain a personal brand rather than cultivate authentic relationships (Jeon et al., 2023; Masyhuri et al., 2025). Consequently, social media often transforms from a tool for connection into a source of anxiety and perceived inadequacy, undermining its potential as a remedy for loneliness (Silva et al., 2023; Tran et al., 2024). This dynamic aligns with previous cross-cultural research emphasizing how digital environments can exacerbate isolation even in collectivist societies (Marthoenis et al., 2022; Ismail et al., 2024).

In contrast, the robust adverse effect of self-acceptance on loneliness underscores the essential role of internal psychological resources. Self-acceptance

emerges as a stabilizing factor, enabling individuals to navigate their social worlds with security rather than dependence on external validation (Chen & Yang, 2022; Arezi, 2025). This dynamic resonates with prior findings that self-acceptance enhances resilience, reduces social anxiety, and fosters authentic engagement (Adriansyah et al., 2023). By lowering defensiveness and fear of rejection, self-acceptance facilitates openness to meaningful interactions, which mitigates loneliness (Neff, 2003). Theoretically, this positions self-acceptance as an intrapersonal strength and an enabling condition for healthy interpersonal engagement (Kong et al., 2021; Maulida & Abdurrahman, 2024).

The mechanism is particularly significant: self-acceptance disrupts the negative cycle of anxiety and isolation by reducing fear of negative evaluation and reinterpreting ambiguous cues more positively (Shafiq et al., 2024; Khotimah et al., 2025). This strengthens the likelihood of initiating and maintaining relationships, a finding supported by studies highlighting the protective effects of unconditional self-acceptance in adolescence and early adulthood (Bernard, 2013; Kassim & Ahmad Badayai, 2023). Within the Indonesian context, this resonates with the cultural values of *gotong royong* and communal resilience, suggesting that psychological resources serve individual well-being while aligning with collective orientations (Afdal & Rizki, 2021).

Similarly, the significant adverse effect of self-compassion on loneliness provides an alternative but complementary pathway. While self-acceptance reflects an unconditional acknowledgment of the self, self-compassion entails an active and kind response to suffering or perceived inadequacies (Halston et al., 2019). In an era where Gen Z is constantly exposed to curated highlights of peers' lives, experiences of failure can amplify feelings of isolation. By affirming imperfection as a shared human condition, self-compassion directly counters such isolating tendencies (Borawski & Nowak, 2022). It operates as an internal buffer against the corrosive effects of comparison and shame, strengthening resilience and capacity for authentic connection (Zimet et al., 1988).

This capacity to reframe personal shortcomings as universal experiences prevents individuals from internalizing isolation and fosters a willingness to reach out for connection (Trott et al., 2023). Empirically, this is reflected in the mediation findings, where self-compassion's effects on loneliness are strongly channeled through social support. This confirms that compassion-oriented individuals regulate their emotions and cultivate stronger social networks, transforming intrapersonal resources into relational assets (Tran et al., 2024). This dual pathway highlights the versatility of self-compassion in both psychological regulation and social integration.

One of the most striking results is the counterintuitive finding that gratitude significantly affects loneliness. This contradicts the assumption that gratitude universally promotes well-being (Soekanto, 2010; McCullough et al., 2002). The study's results suggest that for Gen Z, gratitude may not operate as an inherently adaptive construct; instead, its effects are contingent upon authenticity, motivation, and social context (Russell, 1996). In performative environments like social media, gratitude can devolve into social comparison or obligatory positivity, creating a dissonance between external expression and internal emotional state. Expressing gratitude as a performance may, paradoxically, exacerbate loneliness by masking genuine feelings and reinforcing inauthenticity (Neff, 2003). This aligns with recent evidence that gratitude can produce guilt or shame rather than comfort when externally pressured, thereby intensifying isolation (Jeon et al., 2023).

The mediation analyses provide deeper insight into these mechanisms. The significant role of social support as a mediator between self-acceptance and loneliness illustrates the bridge between internal dispositions and external relational outcomes (Bernard, 2013; Wang & Lou, 2022). Individuals who accept themselves are more likely to perceive support as genuine and to engage openly in reciprocal relationships, fostering robust support networks that alleviate loneliness (Trott et al., 2023). The mediation is even more pronounced for self-compassion, where reduced shame and heightened emotional regulation foster proactive help-seeking, converting internal kindness into external support (Tran et al., 2024). By contrast, the absence of mediation for gratitude underscores its problematic role in this cohort: gratitude does not translate into support-seeking behaviors and may instead serve as a solitary practice, reinforcing detachment (Silva et al., 2023).

These findings suggest that addressing loneliness in Generation Z requires a dual-front strategy. Strengthening internal resources such as self-acceptance and self-compassion is indispensable for cultivating resilience and authentic relational engagement, while interventions that focus solely on increasing social interactions are insufficient unless paired with these psychological foundations (Zhaoyang et al., 2022; Badcock et al., 2023). This integrated model advances the literature by moving beyond the social deficit framework and reframing loneliness as the product of interaction between one's internal environment and external social context. For a generation navigating shallow digital connections and relentless social comparison, bolstering internal stability becomes essential for transforming connection into genuine belonging.

Theoretically, this study broadens the discourse by illustrating how digital environments can alter the functionality of psychological constructs, turning adaptive traits like gratitude into maladaptive processes. This raises urgent questions for positive psychology, demanding context-sensitive models that account for the pressures of digital culture (Hurmat et al., 2024). Practically, the results advocate for differentiated interventions: for individuals with limited networks, enhancing opportunities for authentic engagement remains crucial, whereas for those with existing networks but fragile internal resources, interventions focusing on self-compassion and self-acceptance training may be more effective. Moreover, culturally adapted programs integrating collectivist values such as *gotong royong* are necessary to maximize intervention efficacy in Indonesia and comparable contexts (Marthoenis et al., 2022; Afdal & Rizki, 2021).

Finally, these findings hold broader global relevance. The counterintuitive role of gratitude illustrates the importance of examining constructs through cross-cultural and generational lenses rather than assuming universality. Therefore, future studies should adopt longitudinal and mixed-methods approaches to establish causality, while incorporating cross-country comparisons to disentangle cultural effects from generational ones (Rokach & Patel, 2024; Zhaoyang et al., 2022). Such approaches would validate the present model across contexts and deepen theoretical understanding of how digital technologies interact with cultural and psychological factors in shaping mental health outcomes worldwide.

These contributions must nevertheless be interpreted with caution due to several limitations. The cross-sectional design used in this study does not allow for firm causal conclusions, thus the relationships identified should be understood as associative rather than definitive. In addition, the reliance on self-report instruments introduces the possibility of response biases, as participants may have overestimated or underestimated their experiences of loneliness, self-acceptance, or gratitude. The cultural context of the sample, which focused on Indonesian Generation Z youth, also limits the extent to which the findings can be generalized to other societies with different social and cultural orientations. Finally, although this study examined digital-age dynamics, the measurements of social interaction and gratitude may not fully capture the qualitative complexities of online engagement, particularly aspects such as performativity and social comparison that shape the lived experience of this generation.



## D. Conclusion

This study highlights that loneliness in Generation Z cannot be adequately explained by the quantity of social interactions alone but is best understood through the interplay of psychological, social, and spiritual factors. The findings affirm that self-compassion and self-acceptance function as powerful internal resources that directly reduce loneliness. At the same time, social support operates as a critical mediator that transforms social interaction into a meaningful emotional connection. Moreover, the counterintuitive role of gratitude reveals its cultural and contextual specificity, underscoring that constructs often considered universally adaptive may yield unexpected outcomes in digital-age societies.

The contribution of this study is twofold. Theoretically, it advances the discourse by developing an integrated multidimensional model of loneliness that moves beyond deficit-based explanations, situating loneliness as the result of dynamic interactions between internal psychological resources and external social contexts. This framework challenges conventional assumptions in positive psychology and enriches cross-cultural mental health research by introducing culturally sensitive interpretations of gratitude and relational processes. Practically, the study provides a foundation for designing interventions tailored to digital-native generations, emphasizing the cultivation of self-acceptance and self-compassion as prerequisites for authentic connection, while simultaneously promoting social environments that foster genuine support and reduce the performativity of online interaction. These insights establish the novelty of this work and its academic position relative to previous studies that tended to isolate variables without capturing their synergistic effects.

In light of its limitations, future research should extend this model across broader contexts, employing longitudinal and mixed-method designs to strengthen causal interpretations and deepen qualitative understanding of digital interaction. Comparative studies across cultural and generational groups are especially needed to test whether the paradoxical role of gratitude and the dual pathways of self-acceptance and self-compassion hold in different sociocultural settings. Exploring additional variables like digital literacy, identity expression, or algorithmic influence would further refine the model and expand its global relevance.

Ultimately, the central message of this study is clear: reducing loneliness in Generation Z requires more than creating opportunities for connection – it requires

strengthening the psychological infrastructure that allows individuals to engage authentically and meaningfully with others. By foregrounding self-acceptance and self-compassion as essential foundations for genuine social bonds, this study offers a fresh theoretical perspective and practical strategies for addressing one of the most pressing psychosocial challenges of the digital age.

### Declaration of Competing Interest

The authors declare that they have no known competing financial or non-financial interests that could have appeared to influence the work reported in this paper.

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