

Adaptation and validation of the GHOST questionnaire in the Indonesian context: Assessing recipients' experiences of ghosting in digital communication

Adaptasi dan validasi kuesioner GHOST dalam konteks Indonesia: Pengukuran pengalaman penerima *ghosting* dalam komunikasi digital

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ABSTRACT

Digital communication helps transformed interpersonal relationships, yet has also increased the probability of ghosting, which refers to the termination of communication without any explanation and closure. This study aimed to adapt the GHOST Questionnaire to measure ghosting in the Indonesian context and to examine its content validity, construct validity, and internal consistency. A quantitative psychometric design was employed to analyze data from 254 young adults who had experienced ghosting in a romantic relationship conducted partly through digital media. Participants were recruited using convenience sampling. The adaptation followed the International Test Commission guidelines and included translation, synthesis, expert review, readability testing, form development, data collection, and psychometric testing. Content validity was examined using Aiken's V, and construct validity was tested through a one-factor confirmatory factor analysis (CFA) with a diagonally weighted least squares (DWLS) estimator in JASP 0.19.1.0. Aiken's V coefficient was 0.758, indicating moderate content validity. The one-factor model indicated good fit with CFI = 0.988; TLI = 0.983; RMSEA = 0.053; SRMR = 0.041 and all factor loadings were significant, with standardized loadings = 0.566–0.726. The average variance extracted 0.405, which was below the 0.50 criterion, indicating that convergent validity was not yet optimal, whereas Cronbach's α = 0.842 and McDonald's ω = 0.811 indicated adequate internal consistency. These findings provide only preliminary evidence among the psychometric properties tested, as equivalence with the original instrument was not assessed. The Bahasa Indonesia version may be used in nonclinical research investigating young adults' experiences of being ghosted in Indonesia.

ABSTRAK

Komunikasi digital telah membantu mengubah hubungan interpersonal, tetapi juga meningkatkan kemungkinan terjadinya ghosting, yaitu penghentian komunikasi tanpa penjelasan maupun penutupan hubungan yang jelas. Penelitian ini bertujuan untuk mengadaptasi Kuesioner GHOST guna mengukur pengalaman ghosting dalam konteks Indonesia serta menguji validitas isi, validitas konstruk, dan konsistensi internal instrumen tersebut. Penelitian ini menggunakan desain kuantitatif psikometrik dengan melibatkan 254 dewasa muda yang pernah mengalami ghosting dalam hubungan romantis yang berlangsung sebagian melalui media digital. Partisipan direkrut menggunakan teknik convenience sampling (sampling kemudahan). Proses adaptasi mengacu pada pedoman International Test Commission dan mencakup penerjemahan, sintesis hasil terjemahan, penelaahan oleh ahli, pengujian keterbacaan, penyusunan bentuk instrumen, pengumpulan data, serta pengujian psikometrik. Validitas isi diuji menggunakan koefisien Aiken's V, sedangkan validitas konstruk diuji melalui analisis faktor konfirmatori (CFA) satu faktor dengan estimator Diagonally Weighted Least Squares (DWLS) menggunakan JASP versi 0.19.1.0. Koefisien Aiken's V sebesar 0,758 menunjukkan validitas isi pada tingkat sedang. Model satu faktor menunjukkan kesesuaian yang baik, dengan nilai CFI = 0,988; TLI = 0,983; RMSEA = 0,053; dan SRMR = 0,041. Seluruh muatan faktor signifikan, dengan nilai muatan faktor terstandar berkisar antara 0,566–0,726. Nilai average variance extracted (AVE) sebesar 0,405 berada di bawah kriteria 0,50, yang menunjukkan bahwa validitas konvergen belum optimal. Sementara itu, nilai Cronbach's α = 0,842 dan McDonald's ω = 0,811 menunjukkan konsistensi internal yang memadai. Temuan ini hanya memberikan bukti awal mengenai karakteristik psikometrik yang diuji karena kesetaraan dengan instrumen asli belum dievaluasi. Versi Bahasa Indonesia dari Kuesioner GHOST dapat digunakan dalam penelitian nonklinis untuk mengkaji pengalaman dewasa muda yang mengalami ghosting di Indonesia.

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1. INTRODUCTION

The internet, instant-messaging applications, social media, and dating applications have transformed interpersonal relationships by enabling rapid, asynchronous interactions that are no longer constrained by geographic distance. Beyond its practical use as communication tools, digital technologies should also be understood as a social condition that shapes how individuals initiate, maintain, and terminate relationships (Thomas & Dubar, 2021; Timmermans et al., 2021). In Indonesia, the transformation has been further supported by increasing digital connectivity. The Indonesian Internet Service Providers Association (*Asosiasi Penyelenggara Jasa Internet Indonesia*: APJII) reported 221,563,479 internet users nationwide, with a penetration rate of 79.5 percent as of 2024 (APJII, 2024).

Digital connectivity has also changed how young Indonesians build romantic relationships. A 2024 Populix survey participated with 1,165 Indonesian revealed that 63 percent of participants used online dating applications; among these 732 users, 27 percent indicated that their primary purpose was seeking a romantic partner (Populix, 2024). These data demonstrate that forming romantic relationships through digital media has become an integral part of contemporary relationship practices, particularly among younger demographics. In addition, many relationships now begin, develop, and end largely through text-based interactions on instant-messaging applications, social media, and dating platforms (Thomas & Dubar, 2021). In such exchanges, a person can delay a reply, respond vaguely, or even stop responding altogether without facing the other person directly, consequently reducing face-to-face accountability when the interaction is ended.

Ghosting is a relationship dissolution strategy characterized by the avoidance of communication without an adequate explanation (Daraj et al., 2024; Kay & Courtice, 2022). It involves the sudden or gradual termination of, or reduction in, communication without explanation or closure after a relationship or correspondence has been established. It can occur in romantic relationships, friendships, family relationships, and professional settings. Ghosting differs from direct rejection because the decision to end contact is not communicated explicitly, leaving recipients to interpret the silence on their own (Daraj et al., 2024; Kay & Courtice, 2022).

For recipients, therefore, this ambiguity can serve as a psychological problem rather than a mere inconvenience. Particularly in romantic relationships, ghosting includes avoidance, delayed responses, ambiguous communication, or declining interest in meeting, and these experiences are often associated with confusion, feelings of rejection, distress, and decreased relational security (Pancani et al., 2021, 2022; Timmermans et al., 2021). Previous studies have examined recipients' and initiators' experiences, social norms, personality traits, the need for closure, psychological consequences, and ghosting in recruitment contexts (Forrai et al., 2023; Freedman et al., 2024; Jonason et al., 2021; Lyons et al., 2024; Pancani et al., 2021; Powell et al., 2022).

Within emerging research literature in ghosting, existing measurements differ in their conceptualization of the phenomenon, with variations in the constructs, relational roles, and outcomes they assess. One example, The RG-C Romantic Ghosting Scale includes victim roles, perpetrator roles, and emotional impact, thereby capturing ghosting as a multidimensional relational phenomenon among young adults in Colombia. However, its specificity decreased when the construct is strictly delimited to the frequency or intensity of receiving ghosting (Herrera-López et al., 2024). Similarly, applicant ghosting measures focus primarily on

candidate-organization dynamics and workplace behavior (Lyons et al., 2024). Meanwhile, general relationship dissolution inventories and studies examining ghosting, orbiting, and direct rejection help distinguish avoidance strategies, mediated communication, confrontation, and emotional outcomes.

Existing measures are generally not designed as concise scales for assessing recipients' experiences of being ghosted (Koessler et al., 2019; Pancani et al., 2022). These differences do not necessarily indicate that one instrument is inherently better or worse than another. Rather, they reflect differences in the constructs each instrument is designed to assess. The research gap, therefore, lies not primarily in the lack of studies on ghosting, but in the limited availability of a brief, unidimensional measure of recipients' experiences of ghosting in digitally mediated communication.

The GHOST Questionnaire, therefore, was selected because it was developed specifically to capture an individual's experience as a recipient of ghosting. Its final version contains eight items rated on a five-point Likert scale, developed through a literature review and a phenomenological approach and subsequently examined using exploratory and confirmatory factor analyses (Jahrami et al., 2023). This focus aligns with the present study's objective of measuring young adults' experiences of being ghosted without combining recipients' ("ghostee") experiences with initiators' ("ghoster") experiences or emotional consequences into a single score. GHOST has a parsimonious one-factor structure and a low response burden. Its limitations include the lack of assessment of the ghoster's experience, the absence of a clinical cutoff, and insufficient evidence of temporal stability. Accordingly, GHOST is positioned as an instrument rather than a diagnostic or clinical screening tool.

Cross-linguistic adaptations suggest that the GHOST Questionnaire can preserve its one-factor structure and adequate internal consistency across various linguistic and cultural contexts. An Urdu adaptation involving 540 participants supported a one-factor structure, $\alpha = 0.913$, $\omega = 0.915$, and test-retest reliability = 0.960 (Husain et al., 2024a). An Arabic adaptation involving 607 participants reported $\alpha = 0.87$, $\omega = 0.87$, ICC = 0.89, and factor loadings of 0.56–0.81 (Husain et al., 2024b). A Turkish adaptation among 200 adults also supported a one-factor structure, with CFI = 0.99, RMSEA = 0.03, item-total correlations of 0.417–0.710, and $\alpha = 0.86$ (Atalar et al., 2025). Overall, these findings provide preliminary empirical support for the cross-cultural psychometric applicability of the GHOST, as its eight items consistently converge into a single dimension with adequate to high internal consistency across settings. Even so, structural similarity and reliability do not inherently demonstrate full measurement equivalence, and successful linguistic adaptation does not automatically warrant cross-national score comparisons.

This study aims to adapt the GHOST Questionnaire for Indonesian context and evaluate its content validity, construct validity, and internal consistency. In digital communication, behaviors such as silence, delayed responses, claims of being busy, and reluctance to meet in person may carry different meanings depending on cultural norms and relationship expectations. In cultures that emphasize social harmony and avoiding embarrassment, these behaviors may be interpreted as indirect rejection or ambiguous avoidance (Gunkel et al., 2016). Therefore, cross-cultural adaptation requires more than literal translation. It must also ensure that the instrument retains its intended meaning and remains linguistically and culturally appropriate for the target population (Beaton et al., 2000; International Test Commission, 2017)

The research gap addressed by this study is the lack of psychometric evidence for a Bahasa Indonesia version of the GHOST Questionnaire that specifically measures recipients' experiences of being ghosted. This study also examines whether the questionnaire's original unidimensional structure is supported among young adult social media users in Indonesia.

2. METHODS

Research Design

This study employed a cross-sectional quantitative design with a psychometric approach. Data were collected once within a defined research period, without repeated measurements over time. The psychometric approach was used to evaluate the instrument's measurement properties through content validity assessment, construct validity testing using one-factor confirmatory factor analysis (CFA), and internal consistency analysis using Cronbach's α and McDonald's ω . The unit of analysis was each participant's responses to the eight items of the Bahasa Indonesia version of the GHOST Questionnaire.

Participants

The data included 254 complete responses collected through Google Forms using convenience sampling. The target population was Indonesian young adults who had experienced ghosting in a romantic relationship partly conducted through digital media. The survey link was distributed online between June and August 2026 through social media platforms, including WhatsApp, Instagram, and X, together with a short invitation that described the study and the eligibility criteria. Eligibility criteria were being a young adult, residing in Indonesia, having had a romantic relationship that was partly conducted through digital media, and having experienced ghosting within that relationship. These criteria were applied through four screening questions at the beginning of the form, covering age, current domicile, experience of a romantic relationship partly conducted through digital media, and experience of ghosting within that relationship.

Age and domicile were asked as "*Usia*" and "*Domisili Anda saat ini*". The relationship question read "*Apakah Anda pernah atau sedang menjalin hubungan romantis yang sebagian komunikasinya dilakukan melalui media digital*", followed by examples of digital media and applications (e.g., WhatsApp, Instagram, X, Tinder, and Bumble), with "*Ya*" (yes) and "*Tidak*" (no) as response options. The ghosting question read "*Apakah dalam hubungan tersebut Anda pernah mengalami penghentian komunikasi secara tiba-tiba tanpa penjelasan (ghosting)?*", with the same response options.

Respondents who did not meet any of the four eligibility criteria were unable to proceed to the questionnaire items, as the form was closed automatically. Therefore, all 254 respondents in the final dataset met all four criteria. Participants were aged 20–27 years ($M = 22.64$, $SD = 1.55$), comprising 118 men and 136 women. Demographic data included sex, age, and geographical residence, with residential locations grouped by island region for descriptive analysis.

The sex distribution was relatively balanced, with slightly more women than men. Participants ranged in age from 20 to 27 years, with the largest concentration in the 22–23 age group. Participants resided across 38 provinces, summarized by island region.

Table 1. Participant characteristics (N = 254)

Variables	Category	n	%
Sex	Men	118	46.5
	Women	136	53.5
	Total	254	100.0
Age	20–21 years old	67	26.4
	22–23 years old	109	42.9
	24–25 years old	69	27.2
	26–27 years old	9	3.5
	Total	254	100.0
Residence (by island)	Java	92	36.2
	Sumatra	58	22.8
	Kalimantan	30	11.8
	Bali and Nusa Tenggara	27	10.6
	Sulawesi	24	9.4
	Papua	15	5.9
	Maluku	8	3.1
	Total	254	100.0

Participation was voluntary. The first page of the online form explained the study's purpose, the voluntary nature of participation, and the confidentiality of responses. Respondents could proceed to the questionnaire items only after providing informed consent. All responses were treated as confidential and used solely for research purposes. Although informed consent was obtained from all respondents, formal ethical approval was not obtained because the researchers' institution does not require ethical review for online survey studies.

Instrument

The GHOST Questionnaire was developed by Jahrami et al. (2023) as a self-report scale measuring recipients' experiences of ghosting in technology-mediated communication. The original instrument contains eight items rated on a five-point Likert scale: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always. Higher scores indicate more frequent or stronger experiences of ghosting. The items cover delayed responses, ambiguous responses, reduced engagement, and reluctance to meet. The adapted items administered in this study are shown in Table 2; the instruction and response options are described after the table.

The instruction in Bahasa asked respondents to think of one person who had ghosted them and defined the pronoun "dia" (he/she/they), which is used in all items, as that person. The instruction reads:

"Bayangkan satu orang yang pernah menghilang atau memutus komunikasi dengan Anda secara tiba-tiba tanpa penjelasan yang memadai (ghosting), yaitu pasangan romantis yang berkomunikasi dengan Anda melalui pesan atau media sosial. Pada seluruh pernyataan berikut, kata 'dia' merujuk pada orang tersebut, yaitu orang yang melakukan ghosting terhadap Anda. Pilihlah jawaban yang paling menggambarkan seberapa sering hal tersebut terjadi dalam pengalaman Anda dengan orang tersebut. Tidak ada jawaban benar atau salah."

Table 2. Blueprint of the Bahasa Indonesia version of GHOST Questionnaire

Dimensions	Original item	Code	Adapted item (in Bahasa Indonesia)
Ghosting recipient	Did you get stood up or had your plans canceled by them without being told beforehand?	G1	<i>Dia pernah tidak datang menemui saya atau membatalkan rencana pertemuan tanpa memberi tahu sebelumnya.</i>
Ghosting recipient	Their reply/response messages are delayed.	G2	<i>Dia sering terlambat membalas pesan saya.</i>
Ghosting recipient	Their reply/response messages are confusing and vague.	G3	<i>Balasan pesan dari dia sering kali membingungkan dan tidak jelas.</i>
Ghosting recipient	Have you experienced trouble maintaining a conversation with them (e.g., they use one-word replies, confusing emojis, short responses)?	G4	<i>Saya mengalami kesulitan mempertahankan percakapan dengan dia karena respons yang diberikan cenderung singkat, seperti balasan satu kata, emoji yang membingungkan, atau jawaban yang pendek.</i>
Ghosting recipient	The phrase "I'm busy" is always used in their communications.	G5	<i>Dia sering mengatakan sedang sibuk saat berkomunikasi dengan saya.</i>
Ghosting recipient	Their interest in you is inconsistent - sometimes very engaged, sometimes completely uninterested.	G6	<i>Ketertarikan dia terhadap saya tidak menentu; terkadang tampak sangat tertarik, tetapi di lain waktu tampak tidak tertarik sama sekali.</i>
Ghosting recipient	They don't share personal information about themselves with you.	G7	<i>Dia tidak membagikan informasi pribadi tentang dirinya kepada saya.</i>
Ghosting recipient	They are not interested in meeting.	G8	<i>Dia tampak tidak tertarik untuk bertemu dengan saya.</i>

(Think of one person who once disappeared or suddenly cut off communication with you without any adequate explanation ('ghosting'), for instance, a romantic partner with whom you communicated via messages or social media. In all of the following statements, the word 'dia' (he/she/they) refers to the particular the individual(s) who ghosted you. Please select the answer that best describes how frequently this occurred during your experience with that person. There are no right or wrong answers.)

Respondents answered on a five-point frequency scale: 1 = *Tidak pernah* (never), 2 = *Jarang* (rarely), 3 = *Kadang-kadang* (sometimes), 4 = *Sering* (often), and 5 = *Selalu* (always).

Because frequency should be expressed only by the response options, the wording of the administered items was reviewed. The word "*pernah*" (ever) in G1 and the word "*sering*" (often) in G2, G3, and G5 overlap with the frequency anchors of the response scale. These administered versions were retained for all analyses because the data had been collected with them, and the overlap is acknowledged as a limitation. For future use, wordings in which frequency is conveyed only by the response scale are proposed while preserving the meaning of the original items: G1, "*Dia tidak datang menemui saya atau membatalkan rencana pertemuan tanpa memberi tahu sebelumnya*"; G2, "*Dia terlambat membalas pesan saya*"; G3, "*Balasan pesan dari dia membingungkan dan tidak jelas*"; and G5, "*Dia mengatakan sedang sibuk saat berkomunikasi dengan saya.*" The wording of item G4 is later discussed in the Synthesis section.

Procedure

The adaptation process followed a multistage protocol in accordance with the principles of the International Test Commission (2017) and the process described by Beaton et al. (2000) to preserve construct, meaning, linguistic, cultural, and administrative equivalence. The stages included preconditions, forward and back translation, synthesis, expert judgement, readability testing, item format development, data collection, and model testing.

Preconditions

The researchers obtained permission from the instrument developers to use and adapt the GHOST Questionnaire and specified the purpose, target population, and context of the Bahasa Indonesia version.

Forward and back translation

The original English items were translated into Bahasa Indonesia by one bilingual translator, who was a graduate in English literature and worked as an English instructor in Kampung Inggris. The Bahasa Indonesia draft was then back-translated into English by another independent translator, who was also a graduate in English literature and an English instructor in Kampung Inggris, had not seen the original English items, and had not taken part in the forward translation.

The back-translation was then compared with the original English items so that semantic equivalence could be verified. This process preserved the psychological meaning and the interpersonal communication context. At this stage, the third-person plural pronoun “they” in the original items was rendered as “mereka”. Ambiguous phrasing was flagged for discussion during the synthesis and expert judgement stages. The Bahasa Indonesia items in their final form, after the expert judgement and readability stages, are presented in Table 2.

Synthesis

The forward and backward translations were systematically compared in terms of conceptual equivalence, natural Bahasa Indonesia phrasing, and applicability to digital communication experiences. This comparison resulted in a consensus draft of the items, summarized in the adapted item column of Table 2. One rendering in this draft deviate from the original wording. In item G4, the parenthetical examples of the original item (one-word replies, confusing emojis, and short responses) were expressed as an explanatory clause introduced by “karena” (because). This turns the examples into a stated reason for the difficulty in maintaining a conversation and thus treated as a deviation from the original item. It is also acknowledged in the Recommendations section, with a closer rendering is recommended for future use: “*Saya mengalami kesulitan mempertahankan percakapan dengan dia (misalnya, balasan satu kata, emoji yang membingungkan, atau jawaban yang singkat).*”

Expert judgement

Four experts evaluated the relevance, linguistic clarity, and cultural appropriateness of each item. All four were psychology lecturers at Universitas Negeri Semarang (UNNES) with academic and research experience in psychological test development, qualifying them

to assess the items' relevance, clarity, and cultural appropriateness. Each expert rated every item on a 1–5 scale, giving one overall rating per item that integrated the three criteria on the basis of their own professional judgment, without a prescribed formula for combining the criteria. The draft evaluated by the experts still used the pronoun "*mereka*" for "they". Expert recommendations such as substituting "*konsisten*" (consistently) with "*tidak menentu*" (inconsistently/unpredictable), and adding the qualifier "*tampak*" (appears/seems) to item G8 were integrated into the trial version. The expert evaluations and resulting Aiken's V values are presented in Table 3.

Readability testing

The expert-reviewed draft was tested for readability with 70 respondents who met the screening criteria (age, domicile, a romantic relationship partly conducted through digital media, and ghosting within that relationship) and were separate from the final sample of 254 respondents. They were selected through convenience recruitment among social media users who passed the screening questions and completed the draft in Google Forms. They were asked to rate each item from 1 to 5 according to how well they understood its core meaning and to add comments. Based on their feedback, the following change was made: the third-person pronoun "they", which was still rendered as "*mereka*" in the expert-reviewed draft, was replaced with "*dia*" in all items because respondents found it more readable. No other changes to items or instructions were needed. The revised draft became the final version used for data collection.

Instrument formatting

The final version was compiled in Google Forms alongside informed consent, screening questions, demographic questions, the completion instruction, and the eight items formatted on a five-point Likert scale. The exact wording of the eight items used in the form is displayed in Table 2.

Data collection

The survey link was distributed online using convenience sampling. A total of 254 complete responses were recorded in the dataset, with no missing data across items G1–G8. Respondent characteristics are summarized in Table 1, and item completeness and response distributions are reported in Table 4.

Model testing

Data were analyzed in JASP 0.19.1.0 using Aiken's V based on the four experts' ratings, descriptive statistics, one-factor CFA with the DWLS estimator, factor loading estimation, and reliability assessment using Cronbach's α and McDonald's ω . The five-point Likert items were treated as ordinal categorical data rather than continuous data, and DWLS was selected because it is suited to ordinal indicators (Flora & Curran, 2004; Li, 2016). In JASP, all eight items were declared as ordinal variables, and the CFA was estimated using the DWLS estimator. Model fit results are presented in Table 5, factor loading estimates, standardized loadings, and R^2 in Table 6 and Figure 2, and AVE and reliability coefficients in Table 7.

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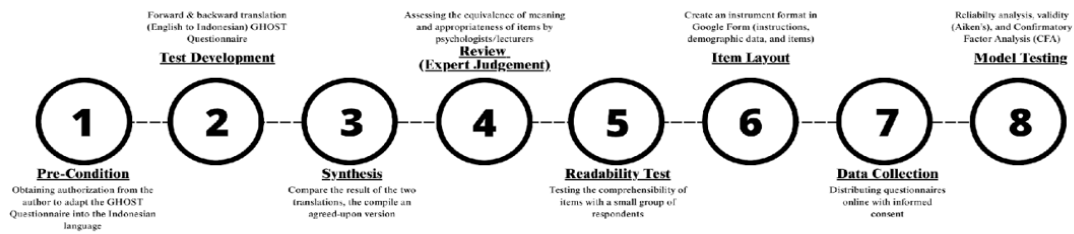


Figure 1. Adaptation procedure for the GHOST Questionnaire

Data Analysis

The analyses were conducted sequentially. Content validity was calculated using Aiken's V , $V = \sum s / [n(c - 1)]$, where s is the expert's rating minus the lowest possible rating (1), n is the number of experts (4), and c is the number of rating categories (5). The criteria were $V > 0.80$ = high; $0.40 < V \leq 0.80$ = moderate; and $V \leq 0.40$ = low. Respondent characteristics were summarized using frequencies and percentages, while items were summarized using response validity, missing data, means, standard deviations, minimums, maximums, skewness, and kurtosis. Construct validity was tested through one-factor CFA with DWLS. Model fit was evaluated using χ^2 , χ^2/df , CFI, TLI, RMSEA with a 90 percent confidence interval and p-close, SRMR, GFI, and MFI.

The following criteria were applied consistently in the Results and Discussion: CFI and TLI > 0.95 , RMSEA and SRMR < 0.08 , $\chi^2/df < 3.00$, RMSEA p-close > 0.05 , and GFI and MFI > 0.90 (Browne & Cudeck, 1993; Hu & Bentler, 1999). Standardized factor loadings were considered adequate when they were ≥ 0.40 and the loadings were significant. Convergent validity was evaluated with the average variance extracted (AVE), with AVE ≥ 0.50 considered adequate (Fornell & Larcker, 1981). Reliability was reported using Cronbach's α and McDonald's ω , with coefficients > 0.70 considered adequate.

Table 3. Content-validity results (Aiken's V) based on expert ratings

Items	V	Criterion	Interpretation
G1	0.813	$V > 0.80$	High
G2	0.813	$V > 0.80$	High
G3	0.688	$0.40 < V \leq 0.80$	Moderate
G4	0.813	$V > 0.80$	High
G5	0.688	$0.40 < V \leq 0.80$	Moderate
G6	0.750	$0.40 < V \leq 0.80$	Moderate
G7	0.813	$V > 0.80$	High
G8	0.688	$0.40 < V \leq 0.80$	Moderate
Total	0.758	$0.40 < V \leq 0.80$	Moderate

3. RESULTS AND DISCUSSION

Content Validity (Expert Judgement)

Table 3 shows that G1, G2, G4, and G7 obtained $V = 0.813$, classified as high, whereas G3, G5, G6, and G8 obtained $V = 0.688$ – 0.750 , classified as moderate. The overall $V = 0.758$ was classified as moderate, indicating adequate but not maximal expert agreement. Because

each expert gave one overall rating per item, V is reported per item and not separately for relevance, linguistic clarity, and cultural appropriateness. The content validity evidence supports construct representation while indicating that several item wordings require attention in future studies.

Descriptive Statistics

All items had 254 valid observations and no missing data (Table 4). Means ranged from 3.795 to 3.988, with the highest mean for G8 and the lowest for G7, indicating a high response tendency across indicators. Standard deviations ranged from 0.887 to 1.039, with the highest variability for G4 and the lowest for G1. All items used the full 1-5 score range. Negative skewness indicated concentration at high scores, whereas positive kurtosis indicated relatively peaked distributions, especially for G1.

Table 4. Descriptive statistics for GHOST Questionnaire items

Statistics	G1	G2	G3	G4	G5	G6	G7	G8
Valid	254	254	254	254	254	254	254	254
Missing	0	0	0	0	0	0	0	0
Mean	3.846	3.902	3.894	3.898	3.831	3.972	3.795	3.988
Std. Deviation	0.887	0.963	0.941	1.039	0.990	0.947	1.020	0.956
Minimum	1	1	1	1	1	1	1	1
Maximum	5	5	5	5	5	5	5	5
Skewness	-1.030	-0.846	-0.933	-0.794	-0.641	-0.846	-0.683	-0.908
Kurtosis	1.556	0.660	1.094	0.332	0.049	0.661	0.095	0.720

Construct Validity (CFA)

CFA tested whether the eight items could be explained by a single latent GHOST factor. The model yielded $\chi^2(20) = 33.98$, $p = 0.026$, and $\chi^2/df = 1.70$. Although the p value was significant, χ^2 is sensitive to sample size and to small discrepancies between empirical and model-implied covariances. The complementary indices met the criteria stated in the Data Analysis section (Table 5): CFI and TLI were above 0.95, and RMSEA and SRMR were below 0.08, indicating a good one-factor model fit.

Table 5. Confirmatory model fit indices

Fit indexes	Value	Criterion	Interpretation
Comparative Fit Index (CFI)	0.988	> 0.95	Meets criterion
Tucker-Lewis Index (TLI)	0.983	> 0.95	Meets criterion
RMSEA	0.053	< 0.08	Meets criterion
SRMR	0.041	< 0.08	Meets criterion
Goodness of Fit Index (GFI)	0.995	> 0.90	Meets criterion
χ^2 (df = 20)	33.98	—	—
χ^2/df	1.70	< 3.00	Meets criterion
RMSEA 90% CI	0.018–0.082	—	—
RMSEA p-close	0.410	> 0.05	Meets criterion
McDonald's Fit Index (MFI)	0.996	> 0.90	Meets criterion

Figure 2 shows Fc1 as the latent factor explaining indicators G1–G8. All items were designed to measure recipients' experiences of ghosting, with G1 serving as the marker variable and G2–G8 as estimated indicators. The curved arrows attached to the indicators represent error or item-specific variances. All items load on one factor, supporting a unidimensional structure.

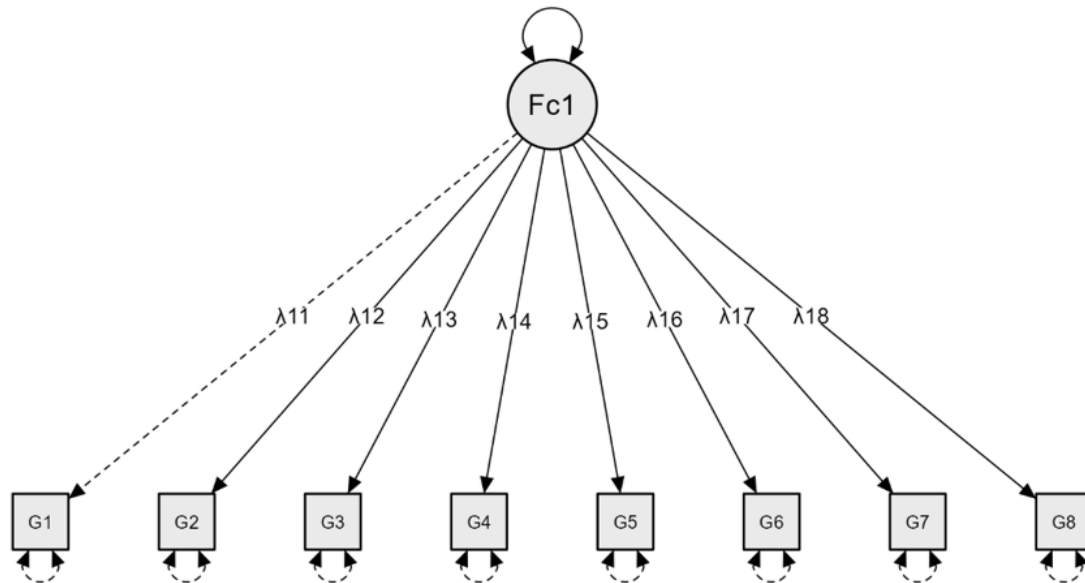


Figure 2. CFA path diagram of the Bahasa Indonesia version of GHOST Questionnaire

All indicators had positive factor loadings on the GHOST construct. G1 served as the marker variable with an unstandardized estimate of 1.000 and therefore had no standard error, z value, or p value. G2–G8 had z values of 11.44–15.65 with $p < 0.001$, so all loadings differed significantly from zero. Since the unstandardized estimates (0.809–1.038) depend on the scaling of the marker variable, item quality was evaluated with the standardized loadings shown in Table 6. Standardized loadings ranged from 0.566 (G3) to 0.726 (G6), and all exceeded the 0.40 criterion. In this one-factor model, each standardized loading equals the square root of the item's R^2 .

Table 6. Parameter estimates, standardized factor loadings, and coefficients of determination (R^2)

Factor	Indicators	Estimate	SE	z	p	Std. loading (λ)	R^2
GHOST	G1	1.000	—	—	—	0.700	0.490
	G2	1.024	0.079	13.02	< 0.001	0.717	0.514
	G3	0.809	0.070	11.56	< 0.001	0.566	0.320
	G4	0.865	0.073	11.93	< 0.001	0.605	0.367
	G5	0.860	0.066	12.96	< 0.001	0.601	0.362
	G6	1.038	0.066	15.65	< 0.001	0.726	0.527
	G7	0.821	0.072	11.44	< 0.001	0.574	0.330
	G8	0.819	0.071	11.49	< 0.001	0.573	0.329

An AVE of 0.405 indicates that the GHOST factor explained, on average, 40.5 percent of indicator variance, whereas the remaining 59.5 percent arose from specific variance or measurement error. Cronbach's $\alpha = 0.842$ and McDonald's $\omega = 0.811$ both exceeded the 0.70 criterion, indicating that the eight items were sufficiently consistent as indicators of one construct (Table 7).

The two coefficients differ by 0.031 because Cronbach's α is calculated from observed inter-item covariances and assumes that all items contribute equally to the construct (tau-equivalence). In contrast, McDonald's ω is derived from the factor loadings and residual variances estimated in the one-factor model, allowing items to contribute unequally to the construct. This makes ω a more suitable reliability estimate when items have unequal factor loadings (McNeish, 2018). The reliability results support the consistency of scores in the study sample but do not establish temporal stability, as test-retest reliability was not assessed.

Table 7. Average Variance Extracted (AVE) and reliability of the GHOST Questionnaire

Psychometric indicators	Value	Criterion	Interpretation
Average Variance Extracted (AVE)	0.405	≥ 0.50	Below criterion
McDonald's ω	0.811	> 0.70	Meets criterion
Cronbach's α	0.842	> 0.70	Meets criterion

Discussion

This study adapted the GHOST Questionnaire for the Indonesian context and examined its content validity, construct validity, and internal consistency to evaluate its suitability for measuring young adult social media users' experiences of being ghosted. The findings provide preliminary support for the Bahasa Indonesia version as an instrument, with interpretation bounded by the sample and by the validity facets that were evaluated. As the measurement invariance against the original or other language versions was not tested, the findings therefore concern the psychometric properties of the Bahasa Indonesia version in this sample and do not show that its scores are equivalent to those of the original instrument.

Experts showed high agreement on items describing concrete, observable behaviors, including unannounced cancellations (G1), delayed replies (G2), difficulty sustaining conversations (G4), and withholding personal information (G7). In contrast, agreement was moderate for items whose wording allowed alternative interpretations, including vague replies (G3), claims of being busy (G5), fluctuating interest (G6), and reluctance to meet in person (G8). This variation in expert agreement contributed to the moderate overall Aiken's V coefficient.

While these behaviors frequently characterize ghosting, they can also stem from genuine busyness, shifts in personal priorities, limited self-disclosure tendencies, or polite indirect rejection. Furthermore, a moderate V does not render an item invalid; rather, it indicates that item meaning is context dependent and warrants more precise semantic calibration, so that differences in scores reflect ghosting experiences rather than subjective interpretation (Aiken, 1985; Boateng et al., 2018).

Item means were high across the scale, which is expected because all participants had experienced ghosting. Reluctance to meet in person (G8) was the most strongly endorsed manifestation, and withholding personal information (G7) was the least. In contrast, the

inclusion criteria for the original GHOST validation study, which required participants to be adults, own a mobile phone, and agree to participate, did not require prior experience of being ghosted (Jahrami et al., 2023). The concentration of responses at high scores may therefore reflect sample selection, and it may have restricted variance, which can attenuate inter-item correlations, R^2 , and AVE. Mean levels should accordingly not be read as population frequencies of ghosting.

The one-factor model supported the unidimensional structure reported for the original GHOST Questionnaire (Jahrami et al., 2023) and its Urdu, Arabic, and Turkish versions (Atalar et al., 2025; Husain et al., 2024a; Husain et al., 2024b). This finding suggests that delayed communication, vague messages, strained conversations, claims of being busy, inconsistent interest, restricted self-disclosure, and reluctance to meet may represent interrelated manifestations of a single ghosting experience in this sample.

The model fit indices ($CFI = 0.988$, $RMSEA = 0.053$, $SRMR = 0.041$) indicated a good fit. The CFI was higher than the 0.92 reported in the original validation study, while the RMSEA was lower than the original value of 0.07. The SRMR was comparable to the original value of 0.04 (Jahrami et al., 2023). The CFI was also comparable to the values of 0.99 reported for the Urdu and Turkish versions. These differences may reflect variations in sample size (254 in the present study, compared with 411 in the original validation subsample, 540 in the Urdu study, 607 in the Arabic study, and 200 in the Turkish study), estimation methods, and sample composition. Therefore, fit indices obtained using different estimators should not be compared directly without considering these methodological differences.

Although the chi-square test was significant, indicating that exact fit was not achieved, this result should be interpreted in light of the test's sensitivity to sample size. The RMSEA p-close value of 0.410 and a chi-square-to-degrees-of-freedom ratio below 3.00 provide additional support for close model fit. Finally, the use of diagonally weighted least squares (DWLS) was appropriate for the ordinal Likert-scale responses (Flora & Curran, 2004; Li, 2016).

All standardized loadings were positive, significant, and above 0.40 (0.566-0.726). This range is comparable to the factor loadings of 0.56-0.81 reported for the Arabic version and to the item-total correlations of 0.417-0.710 reported for the Turkish version (Atalar et al., 2025; Husain et al., 2024b), although these are not identical statistics. Fluctuating interest (G6) had the highest R^2 (52.7 percent), followed by delayed replies (G2) and unannounced cancellations (G1), whereas vague replies (G3), disinterest in meeting (G8), and lack of personal sharing (G7) had the lowest R^2 (32.0-33.0 percent), meaning that a larger share of their variance was unique. For G3 and G8, this is in line with the moderate expert agreement found in the content validity analysis and suggests that responses to these items are more open to alternative interpretations. These items should not be eliminated prematurely, however, because they retained significant loadings and represent theoretically essential facets of the construct, in line with the joint evaluation of loading direction, magnitude, significance, and explained variance recommended in psychometric practice (Boateng et al., 2018).

The AVE of 0.405 fell below the conventional threshold of 0.50 (Fornell & Larcker, 1981), indicating limited convergent validity. On average, 59.5 percent of the variance in each item was attributable to unique variance or measurement error rather than the underlying construct. Therefore, it does not invalidate the one-factor structure, since fit indices and AVE address different questions. Fit indices assess whether inter-item covariance can be adequately modeled by one dimension, whereas AVE quantifies the proportion of item

variance attributable to that dimension (Boateng et al., 2018; Fornell & Larcker, 1981). The broad spectrum of ghosting behaviors covered by the items, from delayed text messaging to refusal to meet, supports content coverage but may attenuate shared variance, and the concentration of high scores may have contributed as well. The convergent validity of the Bahasa Indonesia version therefore remains preliminary and requires further evidence.

Internal consistency was satisfactory ($\alpha = 0.842$; $\omega = 0.811$). Both coefficients exceeded the 0.70 criterion and the values of 0.74 (α and ω) reported for the original GHOST (Jahrami et al., 2023). They were similar to those of the Arabic version ($\alpha = \omega = 0.87$) and the Turkish version ($\alpha = 0.86$) and lower than those of the Urdu version ($\alpha = 0.913$; $\omega = 0.915$).

Since all versions contain the same eight items, these differences are more plausibly related to sample characteristics, such as the heterogeneity of respondents and the restricted variance in a sample consisting only of people who had been ghosted, than to scale length. ω was slightly lower than α , which is unusual because ω is expected to be equal to or higher than α when loadings are unequal and the model fits. A plausible explanation is that α is computed from the observed inter-item covariances, including covariance that the one-factor model does not fully reproduce (as suggested by the significant χ^2), whereas ω is computed only from the loadings and residual variances of the fitted model. The difference is small (0.031), and both coefficients exceed 0.70, so conclusions about score reliability do not depend on the index chosen. Nevertheless, McDonald's ω is the more appropriate reliability index in this context because Cronbach's α assumes tau-equivalence, meaning that all items have equal factor loadings, whereas the standardized loadings in this study ranged from 0.566 to 0.726. Furthermore, the items were measured using an ordinal response scale (McNeish, 2018).

These findings support the Bahasa Indonesia version of GHOST questionnaire to be used as a brief research instrument in nonclinical studies of recipients' experiences of ghosting among young adults. The moderate content validity and suboptimal AVE suggest that future refinement should focus on the wording of items G3, G5, G6, and G8, as well as the frequency markers in items G1, G2, G3, and G5. Until further validity evidence is available, total scores should be interpreted with caution.

This study has several limitations. First, convenience sampling and the relatively narrow age range of 20-27 years may limit generalizability to other populations. Second, the cross-sectional design and absence of test-retest assessment mean that temporal stability could not be established. Third, the AVE of 0.405 indicates that convergent validity remains preliminary and should be examined further alongside related and distinct constructs. Lastly, measurement equivalences with the original and other language versions were not tested; therefore, direct cross-cultural score comparisons are not yet warranted. Future studies should use more diverse samples, longitudinal designs, and measurement invariance testing to strengthen the evidence for the Bahasa Indonesia version of GHOST Questionnaire.

4. CONCLUSION AND RECOMMENDATIONS

The Bahasa Indonesia version of the GHOST Questionnaire demonstrated preliminary evidence of content validity, with an Aiken's V coefficient of 0.758 indicating moderate overall content validity, as well as evidence of construct validity and internal consistency. A one-factor CFA showed good fit (CFI = 0.988; TLI = 0.983; RMSEA = 0.053; SRMR = 0.041), with all factor loadings significant and standardized loadings of 0.566-0.726. Reliability was adequate ($\alpha = 0.842$; $\omega = 0.811$). However, convergent validity was not yet optimal (AVE = 0.405), and

the findings should be interpreted cautiously for its convenience sampling, a narrow age range, the cross-sectional design, and the absence of test-retest evidence. The instrument can be used in nonclinical research on recipients' experiences of ghosting among young adult social media users, but not for diagnosis, clinical screening, or claims of temporal stability. Future research should examine convergent, discriminant, and criterion-related validity and test-retest reliability in larger and more diverse samples.

Future studies are encouraged to examine convergent and discriminant validity using related and distinct constructs, such as relational uncertainty, rejection distress, the need for closure, and relationship-dissolution strategies. This testing can determine whether GHOST scores correlate with theoretically related constructs while remaining distinguishable from other constructs. Such evidence would complement the AVE value below 0.50 (Boateng et al., 2018). In addition, the use of a longitudinal design to examine test-retest reliability and distinguish relatively stable ghosting experiences from experiences dependent on specific communication events are encouraged. More diverse samples and more targeted sampling strategies are also needed to reduce the concentration of responses at high scores. Variations may include age, relationship status, social media use intensity, platform type, region, and ghosting history.

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