

## ORIGINAL ARTICLE

# Validation of the German version of the 25-item hikikomori questionnaire 25

André Hajek<sup>1</sup>  | Alan R. Teo<sup>2,3</sup> | Larissa Zwar<sup>1</sup> | Hans-Helmut König<sup>1</sup>

<sup>1</sup>Department of Health Economics and Health Services Research, University Medical Center Hamburg-Eppendorf, Hamburg Center for Health Economics, Hamburg, Germany

<sup>2</sup>Health Services Research and Development Center to Improve Veteran Involvement in Care, VA Portland Health Care System, Portland, Oregon, USA

<sup>3</sup>Department of Psychiatry, Oregon Health and Science University, Portland, Oregon, USA

## Correspondence

André Hajek, Department of Health Economics and Health Services Research, Hamburg Center for Health Economics, University Medical Center Hamburg-Eppendorf, Martinistraße 52, Hamburg 20246, Germany.  
Email: [a.hajek@uke.de](mailto:a.hajek@uke.de)

## Funding information

UKE - Universitätsklinikum Hamburg-Eppendorf

## Abstract

**Objectives:** The 25-item Hikikomori Questionnaire (HQ-25) is an instrument developed to measure a condition characterized by extreme social withdrawal that was first described in Japan. This study aimed to translate the HQ-25 into German and validate the German version (HQ-25-G).

**Methods:** Translation was conducted according to established guidelines. Validation was based on data from a quota sample of individuals living in Germany, ranging from 18 to 74 years old (representing the distribution of age, sex and federal state,  $n = 5000$ ). Data collection occurred during August and September 2023. We tested reliability, construct validity and concurrent validity. Moreover, HQ-25 scores for key sociodemographic group were reported.

**Results:** Internal reliability for the HQ-25-G was excellent (Cronbach's alpha = 0.93). We confirmed the original three-factor model. Moreover, higher hikikomori levels were significantly associated with more depressive symptoms ( $r = 0.50$ ), more anxiety symptoms ( $r = 0.45$ ), higher loneliness levels ( $r = 0.56$ ), higher levels of objective social isolation ( $r = -0.47$ ), higher levels of perceived social isolation ( $r = 0.59$ ) and a higher preference for solitude ( $r = 0.45$ ).

**Conclusions:** In a large population-based sample (including younger adults, middle-aged adults and older adults), the HQ-25-G version proves to be a psychometrically robust instrument, which is useful for further exploring the phenomenon of hikikomori within the German-speaking population.

## KEYWORDS

anxiety, depression, hikikomori, HQ-25-G, HQ-25, loneliness, preference for solitude, social isolation, social withdrawal

## 1 | INTRODUCTION

Hikikomori is a condition characterized by extreme social withdrawal, which has raised significant concerns, especially in highly urbanized and technologically advanced societies during the past

decades (Cai et al., 2023; Watts, 2002). The term “hikikomori” gained prominence after Japanese psychiatrist Tamaki Saito's work was published in 1998 (Tamaki & Angles, 2013). The term “hikikomori” originates from Japanese words meaning “to retract” (hiku) and “to withdraw” (komoru), stressing the core element of this phenomenon:

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial](https://creativecommons.org/licenses/by-nc/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2024 The Author(s). International Journal of Methods in Psychiatric Research published by John Wiley & Sons Ltd.

the voluntary and prolonged isolation of individuals within their homes, away from social interactions. This term can encompass both the individual who experiences social withdrawal and the condition itself, which entails a deliberate and extended disengagement from the physical and social aspects of human life.

To identify hikikomori, specific criteria must be met, including significant social isolation at home or continuous social withdrawal for at least 6 months (Kato et al., 2019, 2020). Initially viewed as a phenomenon primarily linked to Japanese culture, researchers (Teo & Gaw, 2010) have called for further exploration into whether hikikomori might represent a psychological disorder in a broader sense. Indeed, the phenomenon of hikikomori has been observed globally (Al-Sibani et al., 2023; Fino et al., 2023; Je et al., 2022; Kaya et al., 2023; Lyakina et al., 2023; Yinan et al., 2023). A very recent bibliometric analysis also stressed the marked rise in research output regarding the topic of hikikomori (Wan Hussain, 2023).

Previous studies identified a prevalence of hikikomori of about 1%–2% in Asian countries, with men at higher risk (based on other tools (Koyama et al., 2010; Wong et al., 2015)). Nevertheless, prior research demonstrated an increase in hikikomori in Japan in the 2010s (Cabinet Office of the Government of Japan, 2010; Cabinet Office of the Government of Japan, 2019). Additionally, more recent studies, for example, conducted during the pandemic, found higher prevalence rates (e.g., 9.1% for hikikomori among young adults in Hong Kong) (Fong & Yip, 2023). Based on the Arabic version of the Hikikomori Questionnaire (HQ-25), another recent study reported a quite high prevalence rate of 44% in Oman during the pandemic (Al-Sibani et al., 2023), stressing the pressing issue of hikikomori and the need for future research in this area.

Prior research has suggested a bio-psycho-socio-cultural model to comprehend hikikomori as a response to stress and psychological distress, potentially distinct from clear psychiatric diagnoses. Personality and psychiatric disorders, such as avoidant, paranoid, and obsessive-compulsive personality disorders, as well as depressive, social anxiety, and posttraumatic stress disorders, can co-occur with hikikomori (e.g., Koyama et al., 2010; Teo et al., 2020). Furthermore, challenges within families and social connections (e.g., bullying, refusal or lack of care) have been identified as correlates of hikikomori (Malagón-Amor et al., 2020; Yong & Nomura, 2019). It should also be stressed that hikikomori has detrimental effects on society, individual mental well-being, and the economy (Kato et al., 2019).

Considering the increasing concerns surrounding hikikomori, there is a pressing need for a screening tool to evaluate hikikomori symptoms for clinical and research purposes. This tool would also serve the crucial role of disseminating accurate information to the public, particularly friends and relatives of individuals at risk of experiencing hikikomori.

Initially, Teo et al. (2018) developed the HQ-25 (Japanese language). They also provided an English version of the HQ-25 in this study (Teo et al., 2018). However, this tool has so far only been validated in a few languages, which limits the potential reach of this instrument. On a global level, a significant proportion of people with social withdrawal may therefore be excluded (which could limit cross-

cultural comparisons). Moreover, previous studies are often restricted to small and convenience samples. More precisely, Al-Sibani et al. translated the English version into Arabic—and confirmed the factorial validity (three factor model) of the HQ-25 (Al-Sibani et al., 2023). Another study translated the HQ-25 into Italian (HQ-25-I) and showed that this is a reliable tool (Fino et al., 2023) (see also: Amendola et al., 2022). Other published studies translated the HQ-25 into Korean (Je et al., 2022), Russian language (Lyakina et al., 2023), Turkish (Gundogmus et al., 2021) and Chinese (Yinan et al., 2023). Due to the lack of a German version, our objectives of this study encompass: (1) the translation, adaptation, and validation of the HQ-25 questionnaire for clinical and research application in German-speaking populations—based on a large sample of the general adult population aged 18–74 years. To this end, we tested reliability (Cronbach's alpha; McDonald's omega), construct validity through a confirmatory factor analysis and concurrent validity through identifying certain correlations (please see the methods section for further details). It is worth emphasizing that a German version is clearly needed. For example, a former study (Hajek & König, 2022) based on the general adult German population showed very high prevalence rates for loneliness and perceived as well as objective social isolation (e.g., prevalence of objective social isolation was 28.9% in August/September 2021). The prevalence rate differed between age groups (e.g., for objective social isolation: 18.0% among individuals aged 18–29 years; 36.0% among individuals aged 60 years and older), but was alarming in all groups. This is worth noting since loneliness and isolation are at least associated with hikikomori. High prevalence rates for major depressive disorder (20.0%) and generalized anxiety disorder (13.4%) were also observed in Germany during the pandemic (Hajek & König, 2021). Thus, mental health experts in Germany are intensively discussing mental health issues (Riedel-Heller & Richter, 2020).

## 2 | METHODS

### 2.1 | Translation process

The translation process adhered closely to established guidelines (Beaton et al., 2000). More precisely, our procedure was as follows: A renowned professional institute (tolingo; <https://www.tolingo.com/>) did the translations. Toling is one of the largest translation agencies in Germany (with about 50 employees in Hamburg, together with around 6000 native speakers). It is one of the few translation service providers to be ISO-certified four times: for translation expertise (translation services and machine translation), quality management and information security.

Two German native speakers working as translators for Japanese (one with prior knowledge in this research area, one “naive”, i.e., without prior knowledge in this area) independently translated the Japanese version into German. We (AH, HHK) then unified the versions. In this process, we were also supported by a psychologist (LZ) and a Japanese native speaker (MH; who has been living in Germany for many years). The back-translators (two Japanese native speakers;

one with prior knowledge in this research area, one “naive”) then translated the unified version independently into Japanese. Discrepancies between the versions were first resolved by discussions (AH, HHK, LZ, and MH) and subsequently we contacted Professor Teo (who developed the original HQ-25) to resolve remaining issues. In Appendix 1, the German version of the HQ-25 can be found. The total score of the HQ-25-G ranges from 0 to 100, with higher values reflecting more severe social withdrawal. In accordance with the recommendation given by Teo et al. (2018), a cut-off score of 42 (i.e.,  $\geq 42$ : presence of hikikomori;  $< 42$ : absence of hikikomori) was used in this present study. Teo et al. (2018) found a sensitivity of 94% and a specificity of 61%.

## 2.2 | Sample

The HQ-25-G together with other measures described below was used in a quota-based sample of individuals living in Germany, ranging from 18 to 74 years old ( $n = 5000$ ). Participants were chosen from an online sample based on quotas to ensure a representation of age, sex, and location that aligns with the broader adult population in Germany. Data collection occurred during August and September 2023. In relation to the process of recruiting participants: The recruitment of participants was carried out by the renowned market research firm Bilendi (ISO certified, 26362). Founded in 1999, the Bilendi Group is nowadays a leading provider of online market research services in Europe. The Bilendi team consists of about 420 employees in 15 offices in several different countries (e.g., France, Spain, Italy, Sweden, Denmark or Germany).

Each participant provided their informed consent before participating. Additionally, the study received approval from the Local Psychological Ethics Committee at the University Medical Center Hamburg-Eppendorf (LPEK-0629).

## 2.3 | Other measures

Similar to prior validation studies (e.g., Gundogmus et al., 2021; Je et al., 2022), pairwise correlations of the HQ-25-G with the following measures were computed: depressive symptoms, anxiety symptoms, loneliness, objective social isolation, perceived social isolation, and the preference for solitude.

Depressive symptoms were measured utilizing the established Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al., 2001), comprising nine items. A cumulative score (ranging from 0 to 27) was computed, with higher values indicating a greater presence of depressive symptoms. Cronbach's alpha was 0.90 in our study. Anxiety symptoms were quantified using the widely recognized Generalized Anxiety Disorder-7 (GAD-7) (Spitzer et al., 2006), consisting of seven items. The total score, derived from summarizing these items, ranged from 0 to 21, with higher values signifying more anxiety symptoms. In this study, Cronbach's alpha equaled 0.92.

The six-item version of the De Jong Gierveld tool was used to quantify loneliness (Gierveld & Tilburg, 2006). The final score ranges from 0 to 6, whereby higher values reflect higher loneliness levels. In our study, Cronbach's alpha was 0.81. To quantify objective social isolation, the Lubben Social Network Scale (6-item version: LSNS-6) was employed (Lubben et al., 2006). The sum score ranges from 0 to 30, whereby higher values reflect lower levels of social isolation. In this current study, Cronbach's alpha was 0.87. Perceived social isolation was assessed using the Bude and Lantermann tool (Bude & Lantermann, 2006) which consists of four items. The final score ranges from 1 to 4, with higher values reflecting higher levels of perceived social isolation. Cronbach's alpha was 0.91 in our study. To quantify the preference for solitude, we used the Preference for Solitude Scale (Burger, 1995) consisting of 12 items. The resulting score varies from 0 to 12, with higher values indicating a stronger preference for solitude. In this study, Cronbach's alpha was 0.78.

## 2.4 | Statistics

To test the three-factor structure of the tool, a confirmatory factor analysis (CFA; maximum likelihood) was performed. For model fit, we used these fit indices: Chi<sup>2</sup> statistic, Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), the normed fit index, the Relative Fit Index (RNI), and the Comparative Fit Index (CFI). We adhere to established recommendations regarding the criteria for favorable measurement properties (Prinsen et al., 2018).

Concurrent validity was assessed by means of Pearson correlation coefficients between the HQ-25-G and aforementioned constructs (depressive symptoms, anxiety symptoms, loneliness, objective social isolation, perceived social isolation, and the preference for solitude). The categorization of concurrent validity was as follows: very high when the correlation was 0.9 or greater, high between 0.7 and 0.9, moderate between 0.5 and 0.7, low between 0.3 and 0.5, and negligible when less than 0.3 (Hinkle et al., 2003). Moreover, we compared it particularly with the values of the original Japanese validation study (Teo et al., 2018)—and with the other recent validation studies.

Cronbach's alpha and McDonald's omega were computed to evaluate reliability. An excellent internal consistency (for both, Cronbach's alpha and McDonald's omega (Schweizer, 2011)) was characterized by values of 0.9 or higher, while a good and acceptable internal consistency was indicated by values of 0.8 or higher and 0.7 or higher, respectively (George, 2011). Missing values were not present. Thus, there was no need to use techniques such as multiple imputation.

Stata 18.0 (Stata Corp.) was used in this study. We used the Stata tools “validscale” (Perrot et al., 2018) (which performs the required statistical analyses to validate the HQ-25-G) and “omegacoeff” (for calculating McDonald's omega) (Shaw, 2021).

### 3 | RESULTS

#### 3.1 | Sample characteristics

Sample characteristics (also stratified by the presence of hikikomori) are shown in Table 1. In sum, the average age was 46.9 (SD: 15.3, ranging from 18 to 74 years). Moreover, 50.8% were female. Stratified by the hikikomori status, it may be worth noting that hikikomori were, among other things, frequently single (36.6% vs. 19.2%), often individuals with a migration background (14.0% vs. 8.8%) and were younger (average: 44.2 vs. 48.9 years) compared to non-hikikomori. Significant differences were identified between the two groups (i.e., absence of hikikomori vs. presence of hikikomori) for all socio-demographic factors. For instance, 36.6% of the hikikomori were singles, whereas 19.2% of the non-hikikomori were singles. Moreover, 65.2% of the non-hikikomori lived together (married/partnership), whereas 48.1% of the hikikomori lived together (married/partnership).

The mean score of the HQ-25-G equaled 37.5 (SD: 18.1), ranging from 0 to 100. The mean score was 41.5 (SD: 16.3) among individuals 18–29 years, 38.8 (SD: 17.9) among individuals aged 30–39 years, 37.5 (SD: 19.0) among individuals aged 40–49 years, 36.7 (SD: 18.5) among individuals aged 50–59 years and 34.4 (SD: 17.7) among individuals aged 60–74 years. Moreover, the mean score of the HQ-25-G was 38.0 (SD: 18.1) among men, whereas it was 36.9 (SD: 18.0) among women (diverse: 47.9, SD: 18.6).

#### 3.2 | Reliability

Cronbach's alpha for the HQ-25-G equaled 0.93. Likewise, McDonald's omega was 0.93. For the socialization subscale, Cronbach's alpha was 0.89 (McDonald's omega was 0.89). For the isolation subscale, it was 0.83 (McDonald's omega was 0.84) and for the emotional support subscale it was 0.78 (McDonald's omega was 0.79). The internal consistencies are also shown in Table 2.

TABLE 1 Sample characteristics (total sample and stratified by the presence of hikikomori).

	Absence of hikikomori (HQ-25-G < 42) N = 2860	Presence of hikikomori N = 2140 (HQ-25-G ≥ 42)	p-value	Total N = 5000
Sex			<0.001	
Men	1344 (47.0%)	1107 (51.7%)		2451 (49.0%)
Women	1514 (52.9%)	1026 (47.9%)		2540 (50.8%)
Diverse	2 (0.1%)	7 (0.3%)		9 (0.2%)
Age	48.9 (15.1)	44.2 (15.1)	<0.001	46.9 (15.3)
Marital status				
Single	549 (19.2%)	784 (36.6%)		1333 (26.7%)
Divorced	214 (7.5%)	189 (8.8%)		403 (8.1%)
Widowed	93 (3.3%)	67 (3.1%)		160 (3.2%)
Living together: Married/Partnership	1864 (65.2%)	1029 (48.1%)		2893 (57.9%)
Living separated: Married/Partnership	140 (4.9%)	71 (3.3%)		211 (4.2%)
Education			<0.001	
Low	257 (9.0%)	276 (12.9%)		533 (10.7%)
Medium	1685 (58.9%)	1302 (60.8%)		2987 (59.7%)
High	918 (32.1%)	562 (26.3%)		1480 (29.6%)
Employment status			<0.01	
Full-time employed	1419 (49.6%)	999 (46.7%)		2418 (48.4%)
Retired	596 (20.8%)	404 (18.9%)		1000 (20.0%)
Others	845 (29.5%)	737 (34.4%)		1582 (31.6%)
Migration background			<0.001	
No	2609 (91.2%)	1840 (86.0%)		4449 (89.0%)
Yes	251 (8.8%)	300 (14.0%)		551 (11.0%)

Note: A migration background was considered if the individual or at least one parent did not hold German citizenship at birth.

### 3.3 | Validity

#### 3.3.1 | Construct validity of the HQ-25-G

The HQ-25's suggested three-factor model underwent confirmatory factor analysis showing that the data aligned with the model proposed by Teo (Teo et al., 2018) (a description of the items is shown in Appendix 2). A satisfactory model fit of the model to the data was identified in this sample (e.g.,  $\text{Chi}^2(261) = 6125.21$ ,  $p < 0.001$ ; RMSEA = 0.067, SRMR = 0.053, CFI = 0.902) (Table 3). The standardized factor loadings (three-factor model) are shown in Table 4. Most of the standardized factor loadings ranged between 0.4 and 0.8 reflecting a robust association between the observed variable and the latent constructs. Two of the standardized factor loadings were 0.8 or higher (item 8 and item 24). In contrast, as for the isolation subscale, some items showed rather weak factor loadings (for example item 16 (0.31) and item 22 (0.29) (Brown, 2015)).

#### 3.3.2 | Concurrent validity of the HQ-25-G

The pairwise correlations are shown in Table 5. Higher levels of hikikomori were significantly (in each case:  $p < 0.001$ ) associated with more depressive symptoms ( $r = 0.50$ ), more anxiety symptoms ( $r = 0.45$ ), higher loneliness levels ( $r = 0.56$ ), higher levels of objective social isolation ( $r = -0.47$ ), higher levels of perceived social isolation ( $r = 0.59$ ) and a higher preference for solitude ( $r = 0.45$ ). It may be worth noting that higher levels of objective social isolation correspond to lower LSNS-6 scores. More details are given in Table 4.

Furthermore, it may be worth noting that the pairwise correlation between the socialization subscale of the HQ-25-G and the isolation subscale of the HQ-25-G equaled  $r = 0.76$ . Moreover, the pairwise correlation between the socialization subscale of the HQ-25-G and the emotional support subscale of the HQ-25-G equaled  $r = 0.57$ . Additionally, the pairwise correlation between the isolation

TABLE 4 Standardized factor loadings of the HQ-25-G (SE in parentheses).

	Socialization	Isolation	Emotional support
Item 1	0.69 (0.03)		
Item 4 (r)	0.42 (0.03)		
Item 6	0.71 (0.03)		
Item 8	0.82 (0.02)		
Item 11	0.64 (0.02)		
Item 13	0.73 (0.02)		
Item 15 (r)	0.60 (0.03)		
Item 18	0.79 (0.02)		
Item 20	0.73 (0.03)		
Item 23	0.53 (0.03)		
Item 25 (r)	0.40 (0.03)		
Item 2		0.49 (0.03)	
Item 5		0.78 (0.02)	
Item 9		0.66 (0.02)	
Item 12		0.77 (0.02)	
Item 16		0.31 (0.03)	
Item 19		0.74 (0.02)	
Item 22 (r)		0.29 (0.03)	
Item 24		0.80 (0.02)	
Item 3			0.78 (0.02)
Item 7 (r)			0.44 (0.03)
Item 10 (r)			0.54 (0.02)
Item 14			0.49 (0.03)
Item 17			0.69 (0.02)
Item 21 (r)			0.52 (0.02)

Abbreviation: r, reversed scoring.

All items were highly significant ( $p < 0.001$ ).

TABLE 2 Internal consistency for HQ-25-G (and subscales).

	HQ-25-G	Socialization	Isolation	Emotional support
Cronbach's alpha	0.93	0.89	0.83	0.78
McDonald's omega	0.93	0.89	0.84	0.79

TABLE 3 Confirmatory factor analysis of data (three-factor solution).

Chi <sup>2</sup>	df	RMSEA [90% CI]	SRMR	NFI	RNI	CFI
6125.21 ( $p < 0.001$ )	261	0.067 [0.066–0.069]	0.053	0.898	0.902	0.902

Note: Covariances between errors added: item 4 and item 15, item 2 and item 9, item 10 and item 21, item 15 and item 25, item 20 and item 25, item 7 and item 10, item 7 and item 21, item 9 and item 22, item 4 and item 25, item 2 and item 22, item 14 and item 17. The theoretical justification for incorporating these covariances lies in the fact that each pair of items is associated with the same underlying factor.

TABLE 5 Pairwise correlations (convergent validity analysis with  $n = 5000$ ).

	1	2	3	4	5	6	7
1: Depressive symptoms	1						
2: Anxiety symptoms	0.85***	1					
3: Loneliness (De Jong Gierveld tool)	0.48***	0.45***	1				
4: Objective social isolation (LSNS-6)	-0.18***	-0.15***	-0.41***	1			
5: Perceived social isolation	0.64***	0.61***	0.60***	-0.23***	1		
6: Preference for solitude	0.11***	0.08***	0.19***	-0.36***	0.11***	1	
7: Hikikomori (HQ-25)	0.50***	0.45***	0.56***	-0.47***	0.59***	0.45***	1

Note: Pearson correlations are presented; Bonferroni-adjusted significance levels.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

subscale of the HQ-25-G and the emotional support subscale of the HQ-25-G equaled  $r = 0.61$  (in each case:  $p < 0.001$ ).

## 4 | DISCUSSION

Our study aimed to translate and validate the German HQ-25 version (HQ-25-G) for research purposes in German-speaking populations and thus contributes to our understanding in this research domain.

As initially proposed by Teo et al. (2018) we confirmed a three-factor solution (with socialization, isolation and emotional support). This is also in accordance with other international validation studies (e.g., Gundogmus et al., 2021; Je et al., 2022; Lyakina et al., 2023). However, it may be worth noting that particularly two factor loadings were relatively low. Item 16 (“I do not live by society’s rules and values”) was such an item (see also: Gundogmus et al., 2021). This could be explained by the fact that participants in Germany may interpret such an item in the direction of criminal behavior (and they could consequently respond in a socially desirable way). In the Japanese version, item 16 also had the lowest factor loading of all items (0.45). We would therefore encourage further research in this area. Moreover, item 22 (“I rarely spend time alone.”) had also a low factor loading. We suspect that the wording (“Ich verbringe nur selten Zeit allein”) caused some confusion among German respondents and therefore recommend future research on this topic. Perhaps, an item such as “I often spend time with others” (German: “Ich verbringe oft Zeit mit anderen”) might be easier to interpret for the participants nearly at the end of the HQ-25 (or individuals of our online survey may refer to online contacts).

The excellent reliability ( $r = 0.93$ ) is similar to the original study conducted in Japan which found a Cronbach’s alpha of 0.96 (Teo et al., 2018). Moreover, it is also similar to other validation studies (Turkey: 0.91 (Gundogmus et al., 2021); China: 0.93 (Yinan et al., 2023)). However, we found somewhat lower values for the subscales, for example, compared to the original study (socialization: 0.94, isolation: 0.89, emotional support: 0.88)—which are, in contrast, a bit higher compared to a validation study from Turkey (socialization: 0.90, isolation: 0.77, emotional support: 0.75) (Gundogmus

et al., 2021) and another validation study from China (socialization: 0.84, isolation: 0.86, emotional support: 0.74) among medical students in Beijing (Yinan et al., 2023).

We found that the level of hikikomori was low to moderately associated with the preference for solitude ( $r = 0.45$ ). The original study by Teo et al. (2018), however, identified even a high association (e.g., association between HQ-25 and Preference for Solitude Scale:  $r = 0.73$ ) reflecting a clear link between being hikikomori and the desire for being alone in Japan. In Japan, in contrast to Germany, “being alone” in certain conditions (e.g. eating alone or “solo dining”: “koshoku”) appears to be much more socially accepted. On the other side, Japan is a country of deep-rooted traditions and strict social norms (Gelfand et al., 2011; Schreier et al., 2010), even if, for example, fewer and fewer people fulfill the norm of marriage (or stay childless) (Matsuda & Sasaki, 2020). If you have a preference for being alone, you may feel less accepted in Japan, which may correlate with hikikomori. Moreover, the preference for solitude may also reflect introversion. Former research showed that introversion is higher in Japan compared to Germany (Cohen’s  $d$  about 0.3, Kajo-nius, 2017). Such factors could also contribute to these differences. It is also worth noting that the Turkish study (Gundogmus et al., 2021) found a moderate association between the level of hikikomori and the preference for solitude ( $r = 0.57$ ). Similarly, a Korean study identified a moderate association of  $r = 0.54$  (Je et al., 2022).

We also identified a moderate association of the HQ-25-G with loneliness ( $r = 0.56$ ). In contrast, the Japanese validation study identified a high association of  $r = 0.88$  (Teo et al., 2018). Moreover, our identified association was somewhat lower compared to the Turkish study (moderate association:  $r = 0.66$ ) (Gundogmus et al., 2021) and a Russian study (moderate associations; sample 1:  $r = 0.65$ ; sample 2:  $r = 0.67$ ) (Lyakina et al., 2023). The Korean study identified a high association between the HQ-25 and loneliness ( $r = 0.87$ ) (Je et al., 2022). While the other studies mainly used different UCLA versions (differing in the number of items; however, which are very similar to the Bude and Lantermann tool included in this study) to quantify loneliness, we do not think that this is the key reason for these differences. We cautiously assume that there is a very specific association between loneliness and hikikomori in East



Asia. However, future research is required to verify this speculative assumption and to explore further details. Lastly, it may be worth noting that in Germany the level of hikikomori is particularly associated with the level of perceived social isolation ( $r = 0.59$ ; reflecting, e.g., feelings of not belonging to the society or feeling excluded from the society).

Our identified mean score of the HQ-25-G (37.5, SD: 18.1) is in the middle range. Our scores, however, are very difficult to compare with former studies, since they do not use samples of the general adult population. The original study by Teo et al. (2018) reported an average of 41.5 (SD: 22.3; observed range between 1 and 98) among 399 participants from clinical and community settings (mean age: 32 years, SD: 9.8; 33.3% lived alone), whereas an Italian study reported average values of 23.5 (SD: 16.8) among Italian adults aged 18–50 years. The Korean study (Je et al., 2022) also found similar means for the HQ-25 compared to Teo (offline: 43.7, SD: 2.0; online: 48.7, SD: 4.1). Of note, the Korean study (Je et al., 2022) focused on participants who were at high risk of feeling lonely.

It may also be worth noting that our identified prevalence (42.8%) was very similar to a study conducted in Oman (44%) (Al-Sibani et al., 2023). However, it should be acknowledged that the study conducted in Oman used a snowball technique to recruit individuals. The mean age of this former study was 31.2 years (SD: 7.7, ranging from 19 to 45 years), 67.7% were female and 86% had a university degree (Al-Sibani et al., 2023). The former study partly attributed their high prevalence to the characteristics of their sample and recruiting individuals online (which may be associated a bit with social anxiety disorder); The possibly low threshold value (HQ-25-G: 42) could also be of significance here. Worth noting that Teo et al. (2018) found in their original study a specificity of 61%. This may imply that individuals were incorrectly classified to be hikikomori. For example, when we used a cut-off score of 59 (sensitivity: 0.74; specificity: 0.90 in the original study by Teo et al. (2018)) the prevalence was 12.4% and when we used a cut-off score of 71 (sensitivity: 0.58; specificity: 0.90 in the original study by Teo et al. (2018)), the prevalence equaled 3.4%.

Overall, future cross-country comparisons are therefore recommended to further examine potential differences in the prevalence of hikikomori between countries and regions. As very recently stated by Neoh et al. (2023): there is a “recent paradigm shift of hikikomori as a society-bound syndrome rather than a cultural-bound syndrome unique to Japan” (p. 1).

In general, the positive psychometric attributes of the HQ-25-G support its application in future research. For instance, there is an opportunity to investigate the potential harmful effect of hikikomori on various outcomes within German-speaking populations in future studies. For example, our study also revealed some associations between hikikomori and mental health (in terms of depressive symptoms and anxiety symptoms). This may also guide and inspire future research. Moreover, future research is needed to elucidate the underlying mechanisms how hikikomori is linked to various health-related and psychosocial factors. Furthermore, validating the German HQ-25 opens up the possibility for cross-cultural

comparisons, which can enhance the comprehension of hikikomori. This is crucial because many studies on hikikomori are limited to specific samples, such as convenience or clinical samples, posing challenges in generalizing the findings (Li & Wong, 2015; Nonaka et al., 2022).

Certain strengths and weaknesses warrant recognition. This study is the first validation study of the German HQ-25. In contrast to prior small sample and convenience samples, a large sample ( $n = 5000$ ) based on quotas (ensuring representation across age, sex, and state) was utilized in this study. Furthermore, unlike previous studies, our study covered a wide age range (including younger adults, middle-aged adults and older adults). A comprehensive translation process was executed in adherence to established guidelines. In this endeavor, the authors maintained close collaboration with the developer of the HQ-25. It is important to acknowledge that this study followed a cross-sectional design, which precluded the assessment of test-retest reliability. Our study included individuals aged 18–74 years, whereas former studies often solely focused on young or middle-aged adults (or somewhat specific groups). Nevertheless, there exists a necessity for future research to encompass individuals aged 75 and above, as well as children and adolescents.

## 5 | CONCLUSION AND FUTURE RESEARCH

The German version of the HQ-25 proves to be a psychometrically robust instrument, providing a tool for evaluating the phenomenon of hikikomori within the German-speaking population. Future longitudinal studies should investigate the test-retest reliability of the German version. It would be valuable to examine whether hikikomori changes within individuals over time, providing insights that could inform the development of intervention strategies. Implementing strategies to reduce this phenomenon may contribute to the preservation of health and overall well-being. Furthermore, more translation and validation studies in other languages/countries are needed to enable meaningful comparisons across countries. Recently, another tool was developed to assess the risk of Hikikomori in both Western and Eastern countries (Hikikomori Risk Inventory (HRI-24)) (Loscalzo et al., 2022). Future research could explore the correlation between the HQ-25 and the HRI-24.

### AUTHOR CONTRIBUTIONS

**André Hajek:** Conceptualization; data curation; methodology; project administration; visualization; writing - review & editing; writing - original draft; formal analysis. **Alan R. Teo:** Conceptualization; writing - review & editing; visualization. **Larissa Zwar:** Writing - review & editing; visualization; conceptualization. **Hans-Helmut König:** Conceptualization; resources; supervision; writing - review & editing.

### ACKNOWLEDGMENTS

We acknowledge financial support from the Open Access Publication Fund of UKE - Universitätsklinikum Hamburg-Eppendorf.

Open Access funding enabled and organized by Projekt DEAL.

## CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Department of Veterans Affairs.

## DATA AVAILABILITY STATEMENT

Data are not publicly available but interested parties may contact the authors for more information. The data are not publicly available due to ethical restrictions.

## ETHICS STATEMENT

Each participant provided their informed consent before participating. Additionally, the study received approval from the Local Psychological Ethics Committee at the University Medical Center Hamburg-Eppendorf (LPEK-0629).

## INFORMED CONSENT STATEMENT

Every participant provided their consent before engaging in the study.

## PATIENT CONSENT STATEMENT

Not applicable.

## PERMISSION TO REPRODUCE MATERIAL FROM OTHER SOURCES

Not applicable.

## CLINICAL TRIAL REGISTRATION

Not applicable.

## INSTITUTIONAL REVIEW BOARD STATEMENT

The study was conducted in accordance with the Declaration of Helsinki.

## ORCID

André Hajek  <https://orcid.org/0000-0002-6886-2745>

## REFERENCES

- Al-Sibani, N., Chan, M. F., Al-Huseini, S., Al Kharusi, N., Guillemin, G. J., Al-Abri, M., Ganesh, A., Al Hasani, Y., & Al-Adawi, S. (2023). Exploring Hikikomori-like idiom of distress a year into the SARS-CoV-2 pandemic in Oman: Factorial validity of the 25-item Hikikomori Questionnaire, prevalence and associated factors. *PLoS One*, 18(8), e0279612. <https://doi.org/10.1371/journal.pone.0279612>
- Amendola, S., Presaghi, F., Teo, A. R., & Cerutti, R. (2022). Psychometric properties of the Italian version of the 25-item hikikomori questionnaire. *International Journal of Environmental Research and Public Health*, 19(20), 13552. <https://doi.org/10.3390/ijerph192013552>
- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, 25(24), 3186–3191. <https://doi.org/10.1097/00007632-200012150-00014>
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. Guilford publications.
- Bude, H., & Lantermann, E.-D. (2006). Soziale Exklusion und Exklusionsempfinden. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 58(2), 233–252. <https://doi.org/10.1007/s11575-006-0054-1>
- Burger, J. M. (1995). Individual differences in preference for solitude. *Journal of Research in Personality*, 29(1), 85–108. <https://doi.org/10.1006/jrpe.1995.1005>
- Cabinet Office of the Government of Japan. (2010). Director-general for policy on cohesive society national young adults attitude survey. Retrieved from <https://www8.cao.go.jp/youth/kenkyu/hikikomori/pdf/gaiyo.pdf>. Accessed December 22, 2023.
- Cabinet Office of the Government of Japan. (2019). Director-general for policy on cohesive society national survey on living conditions. Retrieved from <https://www8.cao.go.jp/youth/kenkyu/life/h30/pdf/cover.pdf>. Accessed December 22, 2023.
- Cai, H., Sha, S., Zhang, Q., Si, T. L., Liu, Y. F., Zheng, W. Y., Su, Z., Cheung, T., Ungvari, G. S., Teo, A. R., Kato, T. A., & Xiang, Y. (2023). Hikikomori: A perspective from bibliometric analysis. *Psychiatry and Clinical Neurosciences*, 77(10), 541–549. <https://doi.org/10.1111/pcn.13573>
- Fino, E., Iliceto, P., Carcione, A., Giovani, E., & Candilera, G. (2023). Validation of the Italian version of the 25-item hikikomori questionnaire (HQ-25-I). *Journal of Clinical Psychology*, 79(1), 210–227. <https://doi.org/10.1002/jclp.23404>
- Fong, T. C., & Yip, P. S. (2023). Prevalence of hikikomori and associations with suicidal ideation, suicide stigma, and help-seeking among 2,022 young adults in Hong Kong. *International Journal of Social Psychiatry*, 0(0), 00207640231174376. <https://doi.org/10.1177/00207640231174376>
- Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim, B. C., Duan, L., Almaliach, A., Ang, S., Arnadottir, J., Aycan, Z., Boehnke, K., Boski, P., Cabecinhas, R., Chan, D., Chhokar, J., D'Amato, A., Subirats Ferrer, M., Fischlmayr, I. C., ..., & Yamaguchi, S. (2011). Differences between tight and loose cultures: A 33-nation study. *Science*, 332(6033), 1100–1104. <https://doi.org/10.1126/science.1197754>
- George, D. (2011). *SPSS for windows step by step: A simple study guide and reference*, 17.0 update (Vols. 10/e). Pearson Education India.
- Gierveld, J. D. J., & Tilburg, T. V. (2006). A 6-item scale for overall, emotional, and social loneliness: Confirmatory tests on survey data. *Research on Aging*, 28(5), 582–598. <https://doi.org/10.1177/0164027506289723>
- Gundogmus, I., Unsal, C., Alma, L., Kul, A. T., Aydin, M. S., Bolu, A., & Oznur, T. (2021). Reliability and validation of Turkish version of the 25-item hikikomori questionnaire. *Psychiatry and Behavioral Sciences*, 11(4), 235. <https://doi.org/10.5455/pbs.20210919124046>
- Hajek, A., & König, H.-H. (2021). The prevalence and correlates of probable major depressive disorder and probable generalized anxiety disorder during the COVID-19 pandemic. Results of a nationally representative survey in Germany. *International Journal of Environmental Research and Public Health*, 18(23), 12302. <https://doi.org/10.3390/ijerph182312302>
- Hajek, A., & König, H.-H. (2022). Prevalence and correlates of loneliness, perceived and objective social isolation during the COVID-19 pandemic. Evidence from a representative survey in Germany. *Social Psychiatry and Psychiatric Epidemiology*, 57(10), 1969–1978. <https://doi.org/10.1007/s00127-022-02295-x>
- Hinkle, D. E., Wiersma, W., & Jurs, S. G. (2003). *Applied statistics for the behavioral sciences* (Vol. 663). Houghton Mifflin.
- Je, S. R., Choi, T. Y., Won, G. H., & Bong, S. H. (2022). Developing Korean version of the 25-item hikikomori questionnaire. *Journal of Korean Neuropsychiatric Association*, 61(2), 80–89. <https://doi.org/10.4306/jknpa.2022.61.2.80>
- Kajonius, P. J. (2017). Cross-cultural personality differences between East Asia and Northern Europe in IPIP-NEO. *International Journal of Personality Psychology*, 3(1), 1–7.



- Kato, T. A., Kanba, S., & Teo, A. R. (2019). Hikikomori: Multidimensional understanding, assessment, and future international perspectives. *Psychiatry and Clinical Neurosciences*, 73(8), 427–440. <https://doi.org/10.1111/pcn.12895>
- Kato, T. A., Kanba, S., & Teo, A. R. (2020). Defining pathological social withdrawal: Proposed diagnostic criteria for hikikomori. *World Psychiatry*, 19(1), 116–117. <https://doi.org/10.1002/wps.20705>
- Kaya, R., Tanrıverdi, D., & Özgüç, S. (2023). Turkish validity and reliability of the hikikomori (social withdrawal) Scale (HQ-25). *European Journal of Therapeutics*.
- Koyama, A., Miyake, Y., Kawakami, N., Tsuchiya, M., Tachimori, H., Take-shima, T., & Group, W. M. H. J. S. (2010). Lifetime prevalence, psychiatric comorbidity and demographic correlates of “hikikomori” in a community population in Japan. *Psychiatry Research*, 176(1), 69–74. <https://doi.org/10.1016/j.psychres.2008.10.019>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606–613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Li, T. M., & Wong, P. W. (2015). Youth social withdrawal behavior (hikikomori): A systematic review of qualitative and quantitative studies. *Australian and New Zealand Journal of Psychiatry*, 49(7), 595–609. <https://doi.org/10.1177/0004867415581179>
- Loscalzo, Y., Nannicini, C., Huai-Ching Liu, I.-T., & Giannini, M. (2022). Hikikomori risk inventory (HRI-24): A new instrument for evaluating hikikomori in both Eastern and Western countries. *International Journal of Social Psychiatry*, 68(1), 90–107. <https://doi.org/10.1177/0020764020975800>
- Lubben, J., Blozik, E., Gillmann, G., Iliffe, S., von Renteln Kruse, W., Beck, J. C., & Stuck, A. E. (2006). Performance of an abbreviated version of the Lubben Social Network Scale among three European community-dwelling older adult populations. *The Gerontologist*, 46(4), 503–513. <https://doi.org/10.1093/geront/46.4.503>
- Lyakina, Y., Fedorov, A., & Teo, A. R. (2023). Validation and application practice of the Russian-language version of the 25-item Hikikomori Questionnaire (HQ-25). *Psychology Journal of Higher School of Economics*, 20(2), 257–281. <https://doi.org/10.17323/1813-8918-2023-2-257-281>
- Malagón-Amor, Á, Martín-López, L. M., Córcoles, D., González, A., Bellsolà, M., Teo, A. R., Bulbena, A., Pérez, V., & Bergé, D. (2020). Family features of social withdrawal syndrome (hikikomori). *Frontiers in Psychiatry*, 11, 138. <https://doi.org/10.3389/fpsy.2020.00138>
- Matsuda, S., & Sasaki, T. (2020). Deteriorating employment and marriage decline in Japan. *Comparative Population Studies*, 45. <https://doi.org/10.12765/cpos-2020-22>
- Neoh, M. J. Y., Carollo, A., Lim, M., & Esposito, G. (2023). Hikikomori: A scientometric review of 20 Years of research. *International Journal of Environmental Research and Public Health*, 20(9), 5657. <https://doi.org/10.3390/ijerph20095657>
- Nonaka, S., Takeda, T., & Sakai, M. (2022). Who are hikikomori? Demographic and clinical features of hikikomori (prolonged social withdrawal): A systematic review. *Australian and New Zealand Journal of Psychiatry*, 56(12), 1542–1554. <https://doi.org/10.1177/00048674221085917>
- Perrot, B., Bataille, E., & Hardouin, J.-B. (2018). validscale: A command to validate measurement scales. *STATA Journal*, 18(1), 29–50. <https://doi.org/10.1177/1536867x1801800104>
- Prinsen, C. A., Mokkink, L. B., Bouter, L. M., Alonso, J., Patrick, D. L., De Vet, H. C., & Terwee, C. B. (2018). COSMIN guideline for systematic reviews of patient-reported outcome measures. *Quality of Life Research*, 27(5), 1147–1157. <https://doi.org/10.1007/s11136-018-1798-3>
- Riedel-Heller, S., & Richter, D. (2020). COVID-19 pandemic and mental health of the general public: Is there a tsunami of mental disorders? *Psychiatrische Praxis*, 47(8), 452–456. <https://doi.org/10.1055/a-1290-3469>
- Schreier, S. S., Heinrichs, N., Alden, L., Rapee, R. M., Hofmann, S. G., Chen, J., Oh, K. J., & Bögels, S. (2010). Social anxiety and social norms in individualistic and collectivistic countries. *Depression and Anxiety*, 27(12), 1128–1134. <https://doi.org/10.1002/da.20746>
- Schweizer, K. (2011). Some thoughts concerning the recent shift from measures with many items to measures with few items. *European Journal of Psychological Assessment*, 27(2), 71–72. <https://doi.org/10.1027/1015-5759/a000056>
- Shaw, B. P. (2021). Meeting assumptions in the estimation of reliability. *STATA Journal*, 21(4), 1021–1027. <https://doi.org/10.1177/1536867x211063407>
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, 166(10), 1092–1097. <https://doi.org/10.1001/archinte.166.10.1092>
- Tamaki, S., & Angles, J. T. (2013). *Hikikomori: Adolescence without end*. University of Minnesota Press.
- Teo, A. R., Chen, J. I., Kubo, H., Katsuki, R., Sato-Kasai, M., Shimokawa, N., Hayakawa, K., Umene-Nakano, W., Aikens, J. E., Kanba, S., & Kato, T. A. (2018). Development and validation of the 25-item hikikomori questionnaire (HQ-25). *Psychiatry and Clinical Neurosciences*, 72(10), 780–788. <https://doi.org/10.1111/pcn.12691>
- Teo, A. R., & Gaw, A. C. (2010). Hikikomori, a Japanese culture-bound syndrome of social withdrawal? A proposal for DSM-V. *The Journal of Nervous and Mental Disease*, 198(6), 444–449. <https://doi.org/10.1097/nmd.0b013e3181e086b1>
- Teo, A. R., Nelson, S., Strange, W., Kubo, H., Katsuki, R., Kurahara, K., Kanba, S., & Kato, T. A. (2020). Social withdrawal in major depressive disorder: A case-control study of hikikomori in Japan. *Journal of Affective Disorders*, 274, 1142–1146. <https://doi.org/10.1016/j.jad.2020.06.011>
- Wan Hussain, W. M. H. (2023). Evolution and trends of hikikomori: A bibliometrics analysis. *International Journal of Psychiatry in Clinical Practice*, 27(4), 385–396. <https://doi.org/10.1080/13651501.2023.2233580>
- Watts, J. (2002). Tokyo Public health experts concerned about “hikikomori”. *The Lancet*, 359(9312), 1131. [https://doi.org/10.1016/S0140-6736\(02\)08186-2](https://doi.org/10.1016/S0140-6736(02)08186-2)
- Wong, P. W., Li, T. M., Chan, M., Law, Y., Chau, M., Cheng, C., Fu, K., Bacon-Shone, J., & Yip, P. S. (2015). The prevalence and correlates of severe social withdrawal (hikikomori) in Hong Kong: A cross-sectional telephone-based survey study. *International Journal of Social Psychiatry*, 61(4), 330–342. <https://doi.org/10.1177/0020764014543711>
- Yinan, G., Guanghui, J., & Xiaolin, L. (2023). Chinese adaptation of the HQ-25 and its reliability and validity among medical students in a university in Beijing. *Medical Education Management*, 9(3), 404.
- Yong, R., & Nomura, K. (2019). Hikikomori is most associated with interpersonal relationships, followed by suicide risks: A secondary analysis of a national cross-sectional study. *Frontiers in Psychiatry*, 10, 247. <https://doi.org/10.3389/fpsy.2019.00247>

## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Hajek, A., Teo, A. R., Zwar, L., & König, H.-H. (2024). Validation of the German version of the 25-item hikikomori questionnaire 25. *International Journal of Methods in Psychiatric Research*, e2027. <https://doi.org/10.1002/mpr.2027>