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Severe Social Withdrawal: Cultural Variation in Past Hikikomori Experiences of University Students in Nigeria, Singapore, and the United States

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ABSTRACT

Hikikomori (social withdrawal that lasts six months or longer) is a growing problem among Japanese adolescents and young adults, with recent estimates that approximately 1% of Japanese youths will suffer from an episode of hikikomori in their lifetimes. What remains unclear is whether hikikomori is a culture-bound syndrome or a condition impacting youths around the globe. Hence, the self-reported prevalence and psychosocial correlates of past experiences with hikikomori were examined in cross-sectional samples of university students from Singapore ($n = 147$), Nigeria ($n = 151$), and the United States ($n = 301$). Following tests of measurement invariance, comparisons showed that past experiences with hikikomori were related to elevated levels of current loneliness and depressive symptoms in each sample. However, analyses also revealed evidence of cultural variation in both the prevalence and the psychosocial correlates associated with past experiences of hikikomori, which taken together, provide preliminary evidence that the culture-bound characterization of hikikomori may not be appropriate.

KEYWORDS

Social withdrawal; hikikomori; loneliness; anxiety; depression; university students

Hikikomori refers to a period of severe social withdrawal from society lasting for six months or longer (Teo, Stufflebam, & Kato, 2014). Individuals suffering from this extreme form of social withdrawal spend the majority of their time alone in the rooms of their family homes, refusing social contact and outside activity, including that with peers and teachers (Teo et al., 2014). However, some sporadic social interaction (face to face or online) may occur, particularly during the night hours (Li & Wong, 2015). From a developmental perspective, hikikomori is most common during the middle and late adolescent and emerging adulthood developmental periods (16–25 years old). This may be due to the myriad of adolescent-specific developmental stressors and challenges, including expectations for increased independence from family, and pressures for societal conformity and educational and occupational attainment (De Luca, 2017; Li & Wong, 2015; Norasakkunkit & Uchida, 2014; Tateno, Park, Kato, Umene-Nakano, & Saito, 2012; Teo, 2013; Wong et al., 2015). Hikikomori also appears to be most common in urban populations, and in middle- to upper-middle class families, likely due to increased stressors associated with urban life and because financially secure families can support a nonworking member (Li & Wong, 2015). In addition, some scholarly and popular accounts comprehend hikikomori as a “disease born of prosperity,” excess, and indulgence that could only occur in resource abundant societies (Kato et al., 2012; Varnum & Kwon, 2016).

The study of hikikomori is relatively new. It was first studied in Japan in the late 1990s and was formally introduced to the Japanese lexicon in 1998 with the publication of Tamaki Saito’s book, *Social Withdrawal: A Never-ending Adolescence*. At the time, researchers, clinicians, and law enforcement began to notice a startling increase in the number of youths who were withdrawing or “dropping out” from society. The hikikomori problem in Japan continues, despite national efforts to address the phenomenon. Recent estimates indicate that over 500,000 Japanese citizens between the ages of 15 and 39 years are currently suffering from an episode of hikikomori and that approximately 1% of the Japanese population will suffer from at least one episode of hikikomori in their lifetimes (Koyama et al., 2010; Tajan, Yukiko, & Pionni'e-Dax, 2017). The importance of studying hikikomori is highlighted by its serious psychological (e.g., depression,

loneliness, anxiety) and social costs (e.g., impaired social relationships with family members and friends; Krieg & Dickie, 2013; Teo et al., 2014). Finally, it should be emphasized that although initial reports characterized hikikomori as a symptom of more serious psychiatric disturbances (e.g., schizophrenia, social phobia, agoraphobia), more recent studies, including an epidemiological survey study in Japan, suggest a lack of significant psychiatric comorbidity for more than 50% of individuals suffering from hikikomori (Suwa & Suzuki, 2013).

It has been argued that hikikomori is a culture-bound syndrome, unique to Japanese society with culture-specific causes (e.g., the unique pressures of the Japanese educational system, overprotective parenting in Japan, overwhelming Western influences in an introverted society; Teo et al., 2014; Teo & Gaw, 2010). This may explain why relatively few investigators have investigated the experience and correlates of hikikomori outside of Japan. However, findings from several recent studies raise doubts about whether it is accurate to characterize hikikomori as a culture-bound syndrome. For example, indirect evidence challenging the notion of hikikomori as a culture-bound syndrome can be found in recent studies of clinicians' observations in which cases of hikikomori are reported outside of Japan (particularly in urban areas and in youth populations), in both Western (e.g., the United States, Spain, Portugal) and non-Western (e.g., Bangladesh, Hong Kong, Oman, India) societies (Kato et al., 2012; Macedo, Pimenta, Alves, Uria, & Salgado, 2017). However, this line of research relies heavily on clinicians' varied understandings of the features and pathology of hikikomori (Suwa & Suzuki, 2013). As noted by Kato et al., such studies also fail to provide reliable evidence concerning the frequency and correlates of hikikomori in different countries.

Related forms of youth disengagement and withdrawal have been documented outside of Japan, such as NEET ("not in employment, education, or training") and internet addiction, which are growing problems in several Asian and European countries (Carli et al., 2014; Yen, Yen, & Ko, 2010). Although such phenomena share some overlapping features and potential causes, they differ from hikikomori in the extent to which withdrawal occurs (i.e., hikikomori involves lengthier and more consistent withdrawal).

Thus, although there is some indication that hikikomori may occur for youths outside of Japan, there is a clear need for additional research in both Western and non-Western societies.

Present study

The objective of the present study is to examine the prevalence of and associated psychosocial correlates of hikikomori outside of Japanese, and specifically in one Western (United States) and two non-Western cultural contexts (Nigeria, Singapore). By definition, individuals suffering from hikikomori rarely interact with others (including researchers) and rarely seek treatment. Thus, it is difficult to study individuals suffering from a current episode of hikikomori. When they do participate, those suffering from hikikomori may be so distressed that their responses may be invalid (Tajan et al., 2017). Therefore, we gathered retrospective information about hikikomori experiences from university students in Nigeria (Lagos), Singapore, and the United States (Buffalo, NY), as commonly (and reliably) done in other areas of research, including research on traumatic events and childhood and adolescent social withdrawal (e.g., Kim, Rapee, Oh, & Moon, 2008).

In terms of assessment, we shortened a standardized assessment used previously in Japanese lifetime hikikomori research (Koyama et al., 2010). We view our economical and convenient cross-sectional data collection as an important first step toward enhancing cross-cultural knowledge regarding hikikomori, particularly in Nigeria. Our design allows us to investigate the potential effects of past hikikomori on current functioning. However, we acknowledge here the exploratory nature of the present study and that our assessment of hikikomori could reflect biased recollections.

We consider hikikomori in three distinct urban locales, none of which has been considered previously in this area of research but each of which is empirically and theoretically likely to host youths suffering from current and past hikikomori. Indeed, all three locations are resource abundant regions, including Lagos, a city of more than 15 million people and the largest economy in Nigeria. Of note, the economy in the city of Lagos is larger than the economy in the entire country of Kenya (Carmody & Owusu, 2016).

Although the three locations differ in many ways, they also share commonly discussed risk factors for hikikomori (in Japan and elsewhere), including globalization and modernization, rapidly increasing emphasis on individualistic goals and values in traditionally collectivistic societies, and recent economic challenges or reorganization (Varnum & Kwon, 2016).

The findings on hikikomori in relation to externalizing problems have been mixed (Frankova, 2017; Koyama et al., 2010; Ovejero, Caro-Carrazares, de León-Martínez, & Baca-García, 2014), but evidence linking past and current hikikomori and psychological and social impairment is consistent (e.g., Kato, Shinfuku, Sartorius, & Kanba, 2017; Koyama et al., 2010). Thus, in the present study, we evaluate whether past experiences of hikikomori are related to current levels of psychological and social difficulties. We focus on four of the most well-documented psychosocial outcomes in clinical case and epidemiological studies conducted in Japan and elsewhere: loneliness, anxiety, depressive symptoms, and disturbed parent relationships (indexed herein by assessments of parental support or lack thereof). Because “dropping out” of society for six months or longer is likely impairing in any society, we hypothesize that students with past hikikomori experiences will report elevated levels of current impairment in each of the samples considered herein.

Also of interest is whether hikikomori is associated with social anhedonia, or reduced desires to seek out and experience pleasure from social interactions and relationships (Kwapil, 1998). As noted previously, available data consistently highlight the social difficulties of individuals with histories of hikikomori. Although longitudinal data is needed to elucidate the exact ways in which social-related factors are relevant for understanding hikikomori, we explore the novel possibility that social anhedonia tendencies might underlie the avoidant tendencies of individuals who experience hikikomori and thereby function as a risk factor for the development and perhaps reoccurrence of the problem. Although our study is the first to consider this possibility, the lack of desires for and reduced abilities to experience pleasure in hikikomori individuals have been hypothesized (Suwa & Suzuki, 2013).

An application of developmental science and Child x Environment models of risk and adaptation (Bronfenbrenner, 1989; Magnusson, 1988), which emphasize the

interaction between individual risk characteristics and environmental features (i.e., the larger cultural context) in the determination of adjustment outcomes, would suggest that the prevalence of hikikomori and associated psychosocial outcomes might vary across cultures. Our study is the first to consider this hypothesis, although such models have guided cross-cultural developmental research on social withdrawal, or the temperamentally based behavioral tendency to avoid familiar and unfamiliar peers. In this related area of research, there is growing evidence that the cultural context is a moderator of the psychosocial risks associated with social withdrawal (Chen & French, 2008; Rubin, Coplan, & Bowker, 2009). We make no specific a priori country difference predictions, however, due to the novelty of the specific research questions addressed and the samples considered herein. Finally, because previous research shows mixed associations between gender and the prevalence of hikikomori (e.g., Koyama et al., 2010; Tateno et al., 2012), gender differences are explored in this study without prior gender differences predictions.

Method

Participants and procedure

Participants included 599 university students ($M_{age}=20.31$ years, $SD = 2.24$ years, 62% women) recruited from introductory psychology classes at universities located in urban areas of Nigeria, Singapore, and the United States, University at Buffalo, SUNY, Singapore Institute of Management, University of Lagos. The samples recruited were similar in age and gender distributions (Table 1) and the university setting, but an analysis of variance revealed that the Singapore sample was significantly older than the U.S. sample, $F(2, 583) = 70.43, p = .001$.

All participants completed self-report measures administered using SurveyMonkey (in Singapore and the United States) or paper-and-pencil method (in Nigeria, due to unreliability in internet connections). Before the completion of the measures, signed informed consent was obtained. American participants received partial course credit for their participation; Nigerian and Singaporean participants received neither course credit

nor any other form of compensation. It is important to emphasize, however, that the Nigerian and Singaporean participants were not required to participate, and all participants were informed that their local instructors would not be told decisions to participate or be privy to responses. Past research indicates few differences between undergraduate student volunteers who participate for course credit and the “love of science” (McDonald, 1972). The medium of instruction was English at all three universities and therefore all measures were in English. There were no Institutional Review Boards at the Nigerian and Singaporean universities. Therefore, after the procedures and materials were judged to be appropriate for the Nigerian and Singaporean contexts by the fourth and sixth authors of this study, who are local to these areas, all methods were subjected to and approved by the IRB at the American university. Missing data were minimal (<5%); list-wise deletion was used.

Table 1. Sample characteristics.

	Nigeria (<i>n</i> = 151)	Singapore (<i>n</i> = 147)	United States (<i>n</i> = 301)
Female	53.70	78.20	58.50
Age, years	19.93 ± 2.54	22.01 ± 1.91	19.66 ± 1.76
Ethnicity			
African-American/Black			7.60
Caucasian/White			37.20
Hispanic/Latino			5.60
Igbo	24.70		
North-East Asian		89.20	38.50
South Asian		6.10	7.00
Yoruba	61.30		
“Other”	14.00	4.80	4.00
Religion			
Buddhist		20.40	14.30
Christian	82.10	32.00	50.50
Hindu		3.40	2.30
Jewish			5.00
Muslim	17.20	10.20	2.70
Taoist		5.40	
“Other”		28.60	25.20
None	0.70		

Note. Values are % or *M* ± *SD*.

Measures

Hikikomori

Participants were asked to respond “yes,” “no,” or “not sure” to the following question used in past lifetime hikikomori research (Koyama et al., 2010): “Have you ever experienced a period of social withdrawal for six months or longer, not going to work or school except for occasional going out and not communicating with people except for family members?” If they responded in the affirmative, participants were instructed to indicate the age when they first experienced the social withdrawal and the length of the period of withdrawal.

This assessment was originally developed, in accordance with the definition of hikikomori used in past and current research (e.g., Teo et al., 2015), to capture hikikomori in the Japanese context. However, as noted previously, findings from several studies indicate that clinicians in cultures other than Japan, including the United States, can identify examples of long periods of social withdrawal in their patients (e.g., Kato et al., 2012). For the present study, the single-item assessment was judged to be conceptually equivalent in the Nigerian and Singaporean cultural contexts by Adesola Adebisola Ojo and Radhi Raja. Also before the start of the study, Matthew H. Bowker discussed hikikomori with U.S. and Singaporean university students in his undergraduate psychology courses; he found that the students understood and discussed the phenomenon in ways that were consistent with characterizations by Japanese scholars and clinicians. In addition, findings from one prior study suggested that Nigerian university students interpret different types of social withdrawal similar to youths in other Western (the United States, Canada) and non-Western cultural contexts (China; Bowker, Ojo, & Bowker, 2016).

Nevertheless, Koyama et al. (2010) used the aforementioned questions about hikikomori in face-to-face interviews; they also included additional follow-up questions that queried about reasons for hikikomori, worries about hikikomori, and any work or school responsibilities during the hikikomori experience. In this study, the resources were not available for in-person interviews. Additionally, we were not permitted sufficient time to ask the follow-up questions, such as questions about why the severe social withdrawal

occurred. Thus, we acknowledge here that focus group data as well as other qualitative (e.g., observations, discussions with clinicians; in the United States, Nigeria, and Singapore) and quantitative investigations will be needed in future research to better establish the validity of our hikikomori assessment and the conceptual equivalence of the hikikomori phenomenon across cultures (Harachi, Choi, Abbott, Catalano, & Bliesner, 2006).

Psychosocial maladjustment

The following self-report measures were used to assess depressive symptoms, anxiety, loneliness, social anhedonia, and parental support respectively: (a) the 20-item Beck Depression Inventory (Beck, Steer, & Brown, 1996), (b) the 20 state-specific items from the State–Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), (c) the Loneliness and Social Dissatisfaction Scale (16 items; Asher, Hymel, & Renshaw, 1984), (d) Social Anhedonia Scale (15 items; Winterstein et al., 2011), and (e) the 21 items specific to maternal and paternal social support from Network of Relationships Inventory (Furman & Buhrmester, 1985). These measures were developed in the United States, but all items were judged to be suitable and culturally appropriate (and conceptually equivalent) in a Nigerian and Singaporean cultural context by Adesola Adebusola Ojo and Radhi Raja . Also of note: all measures have been used previously in published work with samples of adolescents and young adults in Singapore and Nigeria (e.g., Leung et al., 2004; Nlemadim, Falaye, & Okoiye, 2013; Ukpong & Owolabi, 2004), with the exception of Loneliness and Social Dissatisfaction Scale in Singapore and the Social Anhedonia Scale Please provide in Nigeria and Singapore.

Results

Descriptive statistics

Chi-square analyses revealed location-specific differences in past experiences with hikikomori, $\chi^2(4) = 45.45, p = .001, \eta_p^2 = .19$. As seen in Table 2, a greater proportion of university students from Nigeria reported past experiences of hikikomori relative to university students in Singapore and the United States; the difference between those from

Singapore and the United States was also significant. The three groups also all differed from each other in the likelihood of responding “no” to the hikikomori question, but there were no differences in responses of “not sure.” The mean age of onset of hikikomori was 16.43 years ($SD = 3.34$ years), and the average length of withdrawal was 12.36 months. There were no significant gender or gender by country-specific differences in the likelihood of reporting past hikikomori, the age of onset, or the length of withdrawal ($ps > .05$).

Table 2. Percentages of participants reporting past experiences of hikikomori.

	Yes	No	Not Sure
Nigeria	20.90 (31) ^a	70.30 (104) ^a	8.80 (13) ^a
Men	25.40 (17)	64.20 (43)	10.40 (7)
Women	17.70 (14)	74.70 (59)	7.60 (6)
Singapore	9.50 (14) ^b	83.70 (123) ^b	6.80 (10) ^a
Men	12.50 (4)	78.10 (25)	9.40 (3)
Women	8.70 (10)	85.20 (98)	6.10 (7)
United States	2.70 (8) ^c	92.40 (278) ^c	5.00 (15) ^a
Men	2.40 (3)	90.40 (113)	7.20 (9)
Women	2.80 (5)	93.80 (165)	3.40 (6)

Note. Percentages are reported outside the parentheses; counts are reported within the parentheses. within each column, different subscripts denote significant differences.

Measurement invariance

Before examining the correlates associated with past hikikomori experiences, measurement invariance for each construct of psychosocial adjustment was evaluated, using MPlus version 7.2 (Muth'en & Muth'en, 2017). To do so, we first began with the full complement of indicators for each construct and then used a smaller subset of items for the purposes of model parsimony. At this point, we examined the factor structures with increasingly restrictive equality constraints (configural, metric, and scalar) across groups. Specifically, we first tested invariance in the overall factor structure across the three samples, followed by the factor loadings and then the intercepts. Next, we tested for error variance invariance, and when appropriate, covariance invariance, and last, factor variance invariance (see Table 3 for fit statistics). We followed Kline's (2015) guidelines for acceptable model fit at each step of the measurement invariance process (i.e., nonsignificant chi-square, comparative fit index $>.90$, root mean square error of

approximation < .06, and standardized root mean square residual < .08). For each measure, the use of the full set of indicators was not an acceptable fit to the data, due to a lack of model parsimony. To address this, we used the five strongest indicators and created more parsimonious models, which showed acceptable fit to the data. We then tested for invariance in the factor structure and the factor loadings, with results showing no appreciable loss of model fit.

Table 3. Measurement invariance steps for the study variables.

Measurement invariance steps	Loneliness	Depressive symptoms	Anxiety	Social anhedonia	Mother support	Father support
	χ^2 (df), CFI, RMSEA, SRMR					
1. Full Model	703.92 ₍₁₀₄₎ [*] , .75, .10, .08	579.57 ₍₁₇₀₎ [*] , .84, .06, .06	989.15 ₍₁₇₀₎ [*] , .77, .10, .85	269.52 ₍₉₀₎ [*] , .80, .06, .06	868.63 ₍₄₄₎ [*] , .74, .18, .12	976.37 ₍₄₄₎ [*] , .77, .19, .11
2. Parsimonious Model	2.56 ₍₂₎ ^{n.s.} , .99, .02, .01	3.13 ₍₄₎ ^{n.s.} , 1.00, .02, .01	.76 ₍₂₎ ^{n.s.} , 1.00, .03, < .01	.24 ₍₂₎ ^{n.s.} , 1.00, .02, < .01	5.67 ₍₄₎ ^{n.s.} , .99, .03, .01	8.92 ₍₄₎ ^{n.s.} , .99, .05, .01
3. Configural Invariance	3.91 ₍₆₎ ^{n.s.} , 1.00, .03, .01	17.49 ₍₁₂₎ ^{n.s.} , .99, .05, .03	6.04 ₍₆₎ ^{n.s.} , 1.00, .04, .01	5.38 ₍₆₎ ^{n.s.} , 1.00, .04, .03	13.02 ₍₁₂₎ ^{n.s.} , .99, .02, .02	17.36 ₍₁₂₎ ^{n.s.} , .99, .05, .01
4. Metric Invariance	12.07 ₍₁₂₎ ^{n.s.} , 1.00, .03, .05	22.90 ₍₂₀₎ ^{n.s.} , .99, .03, .04	12.71 ₍₁₂₎ ^{n.s.} , .99, .02, .04	12.41 ₍₁₂₎ ^{n.s.} , .99, .01, .05	17.54 ₍₂₀₎ ^{n.s.} , 1.00, .02, .08	24.66 ₍₂₀₎ ^{n.s.} , .99, .04, .05
5. Scalar Invariance	25.91 ₍₁₈₎ ^{n.s.} , .99, .05, .05	45.46 ₍₂₈₎ [*] , .96, .06, .05	29.08 ₍₁₈₎ [*] , .98, .06, .06	26.64 ₍₁₈₎ ^{n.s.} , .90, .05, .07	75.13 ₍₂₈₎ [*] , .95, .09, .11	73.58 ₍₂₈₎ [*] , .97, .09, .05
6. Partial Scalar invariance		23.74 ₍₂₃₎ ^{n.s.} , .99, .01, .04	12.71 ₍₁₂₎ ^{n.s.} , .99, .02, .04		20.45 ₍₂₃₎ ^{n.s.} , 1.00, .02, .08	26.38 ₍₂₃₎ ^{n.s.} , 1.00, .03, .05
7. Full Error Variance invariance	23.30 ₍₂₁₎ ^{n.s.} , .99, .02, .04	30.44 ₍₂₈₎ ^{n.s.} , .99, .02, .06	16.11 ₍₁₇₎ ^{n.s.} , 1.00, .03, .05	28.94 ₍₂₂₎ ^{n.s.} , .90, .04, .08	42.67 ₍₃₃₎ ^{n.s.} , .99, .04, .07	29.08 ₍₃₀₎ ^{n.s.} , 1.00, .02, .05
8. Factor Variance Invariance	24.19 ₍₂₃₎ ^{n.s.} , .99, .02, .06	29.89 ₍₃₀₎ ^{n.s.} , 1.00, .02, .06	16.86 ₍₁₉₎ ^{n.s.} , 1.00, .03, .05	29.25 ₍₂₄₎ ^{n.s.} , .93, .03, .08	42.52 ₍₃₅₎ ^{n.s.} , .99, .03, .08	30.98 ₍₃₄₎ ^{n.s.} , 1.00, .03, .07
9. Covariance Invariance		41.36 ₍₃₂₎ ^{n.s.} , .98, .04, .07			39.07 ₍₃₇₎ ^{n.s.} , .99, .02, .08	30.00 ₍₃₂₎ ^{n.s.} , 1.00, .03, .07

Note. CFI = comparative fit index; RMSEA = root mean square error of approximation, SRMR = standardized root mean square residual.

n.s. = model fit not significantly different from the data:

* $p < .05$.

However, attempting to constrain all item intercepts to be the same across samples led to models with unacceptable fit for depression, anxiety, and mother and father support (Table 3). Nevertheless, a revised model testing for partial intercept invariance (allowing

one or two intercepts to vary across groups) provided acceptable fit statistics. Subsequently, constraining the error variances, factor variances and covariances across groups left us with acceptable fit statistics for each our measures. After establishing measurement invariance, reliable factor scores were extracted (estimated reliabilities = .73–.88). See Table 4 for the correlations among the finalized factor scores; correlations are in the expected directions, for each sample, and thus provide further evidence of validity. As such, the findings provide support for the measurement of these constructs across samples, thereby allowing us to compare group differences based on past hikikomori experiences.

Table 4. Zero-order correlations among psycho-social outcomes, presented separately by country.

	Nigeria						Singapore						United States					
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
1. Loneliness		.49***	.56***	.01	-.27***	-.24***		.59***	.57***	.28***	-.30***	-.26***		.52***	.50***	.10	-.24***	-.24***
2. Depressive symptoms			.44***	.26***	-.30***	-.14			.60***	.30***	-.28***	-.24***			.56***	.10	-.17***	-.25***
3. Anxiety				.10	-.22***	-.28***				.36***	-.44***	-.34***				.10	-.31***	-.37***
4. Social anhedonia					-.23***	-.01					-.24***	-.23***					-.14*	-.07
5. Mother support						.35***						.64***						.40***
6. Father support																		
<i>M</i>	0.04	0.01	-.017	0.04	-.005	-.009	0.18	0.08	0.17	-.002	-.010	-.009	0.00	0.00	0.00	0.00	0.00	0.00
<i>SD</i>	0.77	0.34	0.58	0.07	0.68	0.96	0.88	0.37	0.64	0.08	0.70	0.87	0.86	0.34	0.63	0.09	0.64	0.89

Note.
* $p < .05$.
*** $p < .001$.

Examining the correlates of past hikikomori experiences

To compare the correlates of past hikikomori across the three samples, we conducted a series of 2 Group (absence vs. presence of past hikikomori) x 3 Country x 2 Gender analysis of variance with Type II sums of square (to best account for the unbalanced factorial design; Langsrud, 2003). Least Significant Difference (LSD) test comparisons with simple effect testing were used to probe main and interaction effects. Students who responded “not sure” to the hikikomori question were not considered in these analyses, and only significant effects are described in the pre- sent article (Table 5).

When depressive symptoms were considered, significant hikikomori group, $F(1, 542) = 16.67, p = .001, \eta_p^2 = .03$, and country effects were found, $F(2, 542) = 3.50, p = .03, \eta_p^2 = .01$. Similarly, hikikomori group, $F(1, 542) = 6.30, p = .01, \eta_p^2 = .01$, and county effects, $F(2, 542) = 2.93, p = .054, \eta_p^2 = .01$, were found when loneliness was evaluated as the outcome variable. In terms of anxiety, a significant hikikomori group effect was found, $F(1, 536) = 4.33, p = .04, \eta_p^2 = .01$, along with a significant country main effect, $F(2, 536) =$

11.92, $p = .001$, $\eta_p^2 = .04$, and significant hikikomori group by country interaction effects, $F(2, 536) = 3.44$, $p = .03$, $\eta_p^2 = .01$. For social anhedonia, we found a significant effect for hikikomori group, $F(1, 526) = 10.13$, $p = .0012$, $\eta_p^2 = .02$; country, $F(2, 526) = 9.05$, $p = .001$, $\eta_p^2 = .03$; and gender, $F(1, 526) = 11.71$, $p = .001$, $\eta_p^2 = .02$, along with a significant hikikomori group by country effect, $F(2, 526) = 3.03$, $p = .049$, $\eta_p^2 = .01$, and hikikomori group by country by gender interaction effects, $F(2, 526) = 3.56$, $p = .029$, $\eta_p^2 = .01$. When maternal support was considered, significant hikikomori group, $F(1, 530) = 7.91$, $p = .005$, $\eta_p^2 = .02$; gender, $F(1, 530) = 8.93$, $p = .003$, $\eta_p^2 = .02$; and hikikomori group by country effects, $F(2, 530) = 3.17$, $p = .043$, $\eta_p^2 = .01$, were revealed. Finally, the only significant effects when paternal support was evaluated as the outcome was a country by gender effect, $F(2, 511) = 5.08$, $p = .007$, $\eta_p^2 = .02$.

Table 5. Means for the study variables for the hikikomori groups by gender and country.

	Singapore						Nigeria						United States					
	Men		Women		Total		Men		Women		Total		Men		Women		Total	
	HI-Y	HI-N	HI-Y	HI-N	HI-Y	HI-N	HI-Y	HI-N	HI-Y	HI-N	HI-Y	HI-N	HI-Y	HI-N	HI-Y	HI-N	HI-Y	HI-N
Depression	-0.04	0.05	0.50	0.03	0.35	0.04	0.04	-0.45	0.05	-0.04	0.04	-0.03	0.35	-0.01	0.40	-0.01	0.38	-0.01
Anxiety	0.13	0.26	0.58	0.08	0.45	0.11	-0.31	-0.22	-0.14	-0.18	-0.24	-0.20	0.72	-0.27	0.56	-0.03	0.62	-0.03
Anhedonia	0.18	-0.01	0.00	-0.03	0.06	-0.03	0.07	0.05	0.03	0.02	0.05	0.03	0.06	0.01	0.04	-0.01	0.05	0.00
Loneliness	0.01	0.38	0.75	0.06	0.54	0.12	-0.03	-0.20	0.31	0.02	0.12	-0.06	-0.12	0.01	0.66	-0.08	0.37	-0.05
Support-M	-0.16	-0.37	-0.35	0.05	-0.25	-0.16	-0.29	-0.12	0.01	0.05	-0.14	-0.01	-0.92	-0.02	-0.69	0.06	0.81	0.02
Support-F	0.38	-0.52	0.06	0.04	0.16	-0.09	-0.21	-0.11	0.06	0.04	0.16	-0.09	-0.84	0.16	-0.15	-0.05	-0.41	0.04

Note. HI-N without past hikikomori experiences; HI-Y = with past hikikomori experiences; Support-F father support; Support-M = mother support.

Follow-up comparisons revealed that all university students with past hikikomori experiences reported higher current levels of loneliness ($M_s = 0.27$ vs. -0.01) and depressive symptoms ($M_s = 0.01$ vs. -0.004) relative to those without such experiences. Other hikikomori group differences were specific to one or two of the countries. For instance, elevated levels of anxiety symptoms were found for those with past experiences, relative to those without, $F(1, 536) = 8.61$, $p = .003$, $\eta_p^2 = .02$, in the United States only. Similarly, in the U.S. sample only, those with past experiences of hikikomori reported lower levels of maternal support relative to those without such experiences, $F(1, 530) = 11.96$, $p = .001$, $\eta_p^2 = .02$. Also of note, the U.S. and Singapore students with past experiences of hikikomori reported higher levels of anxiety than did those from Nigeria, $F(2, 536) = 7.97$, $p =$

.001, $\eta_p^2 = .03$. U.S. students with past experiences also reported lower levels of maternal support than did those with past experiences in Nigeria, but not Singapore, $F(1, 530) = 3.20$, $p = .04$, $\eta_p^2 = .01$.

Probing of the three-way interaction between hikikomori group, country, and gender revealed that male Singaporean students with past experiences reported (a) higher levels of social anhedonia than did male Singaporean students without such experiences, $F(1, 526) = 19.32$, $p = .001$, $\eta_p^2 = .04$; and (b) more social anhedonia than did female Singaporean students with such experiences, $F(1, 526) = 12.87$, $p = .001$, $\eta_p^2 = .02$. Finally, Singapore students reported higher levels of loneliness relative to other students ($ps < .05$). They also reported significantly higher levels of depressive symptoms relative to students in Nigeria ($p = .03$) and tended to report higher levels of depressive symptoms relative to U.S. students ($p = .057$). With regard to parental support, Nigerian female students ($M = 0.28$) reported higher levels than did Nigerian male students ($M = -0.16$), with no other gender differences found, $F(1, 511) = 5.45$, $p = .02$, $\eta_p^2 = .01$. The means for all measures are presented in Table 5.

Discussion

The present study begins to evaluate the appropriateness of characterizing hikikomori as a culture-bound syndrome based on self-report measures completed by university students in three distinct urban contexts in Nigeria, Singapore, and the United States. Results show that many university students in these countries do experience hikikomori during adolescence, findings that represent the first from community samples to directly challenge the view in hikikomori research that it is a culture-bound phenomenon specific to Japan. Of course, our study was limited by the lack of a Japanese community sample, a limitation that should be addressed in future cross-cultural comparisons of hikikomori. That said, we believe that the findings from Nigeria are still particularly noteworthy as they are the first to document the existence of hikikomori anywhere in the African continent, where 15% of the world population resides. No gender differences in prevalence were found, results that differ from early research on hikikomori in Japan (e.g., Koyama et

al., 2010) but are consistent with more recent evidence and suggestions that “one could not reasonably claim that hikikomori is essentially a problem among men” (Tajan et al., 2017, p. 15). We speculate that recent global changes in the socialization of and opportunities for women may create conditions in which hikikomori is more possible for women than in the past (Midgley, Twells, & Carlier, 2016). Additional research though will be needed to test this hypothesis. We did, however, find variations in the prevalence of hikikomori by country. Nigerian students most often reported past hikikomori experiences. Singaporean students reported more past experiences than U.S. students. This variation across urban contexts on three different continents suggests that societal or cultural differences in hikikomori may be best understood not in terms of its absence or presence but in terms of the degree to which it is present.

This does not, however, imply that the prevalence rates of hikikomori in different societies should be interpreted according to the same conceptual framework. Indeed, although all of our samples included university students in urban environments, participants differed significantly in race, ethnicity, religion, educational system, socioeconomic conditions, socialization goals, and geopolitical histories. Taken together, these differences begin to distinguish the social, political, and cultural contexts that might influence the meaning and causes of hikikomori, as they impact other aspects of human growth and development (Bronfenbrenner, 1989; Mathew & Perreault, 2015). For instance, in many Western urban contexts, such as the one considered herein, socialization tends to focus on self-confidence and independence from parents and peers, particularly during adolescence (Qu, Pomerantz, Wang, Cheung, & Cimpian, 2016). Such emphasis on autonomy may actually discourage the development of hikikomori, which involves considerable reliance on others for food and shelter.

Variations in schooling may also matter. Most Nigerian adolescents enter the workforce after secondary school (applying later to college or university). In the United States, however, most adolescents who graduate from high school attend college or university immediately, with less than 1% electing to take a gap year. Singaporean boys often fulfill military-service requirements after secondary school, before enrollment in

college/university. Although educational pressures are an oft-discussed cause of hikikomori amongst Japanese scholars, non-Western educational systems that do not allow for immediate postsecondary education could promote experiences of hikikomori by fostering extreme uncertainty about “next steps” in at-risk and psychologically vulnerable youths and affording additional time to withdraw from others and society.

As noted previously, the present study did not include an assessment of the reasons for hikikomori - similar to several other studies in this research area (e.g., Teo et al., 2015). It will be helpful though to include such an assessment in future cross-cultural research to understand whether the etiology of hikikomori differs in different cultural contexts. However, it is worth noting that analyses of the psychosocial correlates showed that all students with past hikikomori experiences, regardless of country, reported higher levels of loneliness and depressive symptoms. Additional research is clearly needed, but these findings appear to support the notion that any experiences with severe social withdrawal or “dropping out” of society for six months or longer, regardless of the reason, are not desirable and confer some degree of psychological risk in each of the countries studied herein.

That said, we also think that the cultural variation found in the psychosocial correlates of past hikikomori experiences is noteworthy. For instance, our analyses showed that U.S. students with past hikikomori experiences reported elevated levels of anxiety and lower levels of maternal support. In contrast, similar within-country differences were not evidenced for Nigerian or Singaporean students. Yet, we did find that male Singaporean students with past hikikomori experiences reported higher levels of social anhedonia relative to female Singaporean students with such experiences and also male students without such experiences. The findings on social anhedonia are intriguing and will require replication. Nevertheless, taken together, a major contribution of our findings is that they suggest, for the first time, that there may be more risk associated with hikikomori in Western populations like the United States, perhaps because it is less common and conflicts more sharply with culture-specific socialization goals for and social learning of independence and assertiveness (Mathew & Perreault, 2015). Thus, hikikomori

individuals in Western societies may suffer more because their behavior is more nonnormative. Although speculative, this interpretation is consistent with developmental theory and research on socially withdrawn behavioral tendencies during childhood and adolescence, which appear to carry different “meanings” across cultures and are associated with greater psychosocial risk in societies that emphasize independent socialization goals and values (Rubin et al., 2009). The findings from the present study thus also contribute to the larger social withdrawal literature by revealing similar cultural variation in the risks associated with severe episodes of social withdrawal.

Our study is the first to investigate cultural variation in the prevalence and correlates of hikikomori experiences, thus providing a novel contribution to the hikikomori and social withdrawal literatures. Of course, additional research is needed to replicate and better understand the specific mechanisms responsible for these variations. Although we focused on university students in large urban areas to target those likely to be most at-risk for past hikikomori, samples that also include nonuniversity students and individuals from nonurban areas would be useful to more broadly interpret our results and to evaluate recent discussions that hikikomori is only possible in more resource abundant societies (Varnum & Kwon, 2016). Our Nigerian sample was selected from Lagos, one of the most populous and economically developed or advanced cities in Africa. However, Nigeria itself is highly socioeconomically stratified country. Thus, our findings may suggest that even within less wealthy countries, there may be specific regions and selected samples that are vulnerable to hikikomori.

In future research, it would also be helpful to include other informants (e.g., parents), not only to corroborate findings, but also to understand why a sizable minority of students in our three samples indicated uncertainty as to whether they had experienced hikikomori. Although it would be challenging due to the nature of hikikomori (e.g., those suffering from it avoid interactions with others, including clinicians and researchers), longitudinal data with those currently suffering from hikikomori would also be necessary to better understand the limitations of relying on retrospective data of hikikomori. Such data would also help establish whether the correlate differences found

herein reflect causes or consequences of hikikomori.

Nevertheless, our study offers a promising start toward a better understanding the nature of hikikomori as a phenomenon to which all young people may be susceptible. Such an understanding would not only enhance etiological models, but also help improve the effectiveness of clinical intervention efforts. The consideration of community samples of university students with lifetime or past experiences with hikikomori in our study reveals new insights about a previously unknown subgroup of students at risk for psychological difficulties and perhaps also hikikomori relapses. The focus and findings are also noteworthy as they suggest that the consequences of hikikomori may not also persist after the episode has resolved, but also vary across cultures. The next step is to extend knowledge with investigations of university and nonuniversity students, those with current and past experiences with hikikomori, in various regions in Western and non-Western countries with cultural similarities and differences, to further evaluate leading theories about when and why hikikomori occurs.

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