

Hikikomori and Internet Addiction in U.S. College Students

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ABSTRACT. Past research has found that *hikikomori* (i.e., an extreme form of social withdrawal) is positively associated with internet addiction (i.e., an inordinate preoccupation with the internet). However, this association has only been established in Japan and a small selection of other countries. The goal of the present study was to extend this research to the United States. We administered the Hikikomori Questionnaire and Young's Internet Addiction Test to 437 U.S. college students recruited through Prolific. We found a sizeable positive correlation between overall hikikomori scores and internet addiction ($r = .30$, 95% CI [.21, .38], $p < .001$), with the correlation not significantly differing from that observed among Japanese college students in prior work ($z = 1.63$, $p = .104$). We also found that the isolation factor of hikikomori demonstrated the largest association with internet addiction ($r = .32$, 95% CI [.23, .40], $p < .001$), followed by the lack of emotional support factor ($r = .27$, 95% CI [.17, .35], $p < .001$) and the disinterest in socializing factor ($r = .20$, 95% CI [.11, .28], $p < .001$). Although more research is required to further understand these relations, the present results indicate that extreme social withdrawal may be a risk factor for internet addiction in the United States (and vice versa).

Keywords: hikikomori, social withdrawal, internet addiction, college students

The United States is facing an internet addiction crisis. Internet addiction consists of excessive or poorly controlled preoccupations, urges, and behaviors of internet access and computer use that ultimately lead to impairment and distress in the user (Shaw & Black, 2008; Vondráčková & Gabrhelík, 2016). This impairment and distress can take the form of depression (Lam, 2014), physical aggression when individuals perceive that their internet usage is being restricted (Flisher, 2010), and time disruption that interferes with academic work, professional performance, and daily routines (Chou et al., 2005). There have even been reports of individuals collapsing and passing away as a result of nonstop online gaming activities (BBC, 2005).

A 2018 cross-sectional survey found that the prevalence of internet addiction in U.S. college students was 8.0% (Tang et al., 2018), which translates to approximately 1.77 million college students, based on college enrollment data from the U.S. Census Bureau (2018). In addition, the average prevalence of internet addiction globally grew from 3.5% in 1999 to 32.4% in 2020–2021 (Meng et al., 2022), suggesting that the rates for internet addiction in the United States have likely also increased. One potential (but unexamined) reason for the concerning rate of internet addiction in the United States is *hikikomori*.

Hikikomori is a syndrome characterized by extreme social withdrawal, with one of its most notable features being physical isolation in one's living space (Kato et



Preregistration, Open Data, and Open Materials badges earned for transparent research practices. Preregistration can be viewed at <https://osf.io/jpks6/overview>. Materials and data can be accessed at <https://osf.io/cn6tp/overview>

al., 2019). To be diagnosed with hikikomori, a person must meet the following criteria: they must leave their home fewer than three days a week, this social isolation must last for at least six months, and it must cause significant functional impairment or distress. Although often assessed as a singular construct, hikikomori has been decomposed into three subconstructs: lack of socialization, isolation, and a lack of emotional support (e.g., Teo et al., 2018). These subconstructs refer respectively to the absence of meaningful socialization with others (e.g., the avoidance of social interactions; discomfort and disinterest in being surrounded by others), the act of isolating oneself (e.g., spending most of one's time alone), and the absence of perceived emotional support from others (e.g., a lack of people to share one's personal thoughts with).

The social isolation associated with hikikomori is detrimental to people's health. People with hikikomori are at risk of developmental disruption (Stavropoulos et al., 2019) and mood disorders (Koyama et al., 2010), as well as schizophrenia, social anxiety disorder, personality disorders, post-traumatic stress disorder, and autism spectrum disorder (Kato et al., 2019). In fact, hikikomori was recognized as a mental health disorder by Japan's Ministry of Health, Labour and Welfare in 2010 (Saito, 2010), with about 1.2% of people between the ages of 20 and 49 in Japan reporting having experienced hikikomori in their lifetime (Koyama et al., 2010). As of February 2024, hikikomori has also been labelled as a cultural concept of distress under the category "cultural and psychiatric diagnosis" in the DSM-V-TR.

There is good reason to believe that hikikomori and internet addiction are connected. According to Davis's (2001) cognitive-behavioral model of pathological internet use, pre-existing psychosocial problems, which presumably includes hikikomori, are risk factors of maladaptive internet usage. Moreover, Muris et al. (2023) notes that severe addiction is associated with social problems: addiction can lead to self-isolation, and the stress of self-isolation can lead to addiction. As applied to internet addiction and hikikomori, it is possible that maladaptive internet use could lead to hikikomori and hikikomori could, in turn, lead to maladaptive internet use.

Consistent with these theoretical suppositions, prior research has found that hikikomori and internet addiction are, indeed, linked. The first study to provide support for this association was conducted by Tateno and colleagues (2019). The researchers found that hikikomori demonstrated a large positive correlation with internet addiction ($r = .39$) in a sample of 478 Japanese undergraduate students.¹ Since that first study, the positive association has been found in several other

¹Because the present project considers individual differences, we use the effect size thresholds for individual differences research: .10 is a small correlation, .20 is a medium correlation, and .30 is a large correlation (Funder & Ozer, 2019; Gignac & Szodorai, 2016).

samples, including a sample of 1,141 Italian undergraduate students ($r = .37$; Orsolini et al., 2022) and a sample of 2,767 Slovakian primary school students ($\rho = .33$; Miriam et al., 2024).² Incidental evidence for the association between hikikomori and internet addiction is also provided by the substantial positive association observed between hikikomori and internet gaming disorder (Dell'Osso et al., 2023; Stavropoulos et al., 2019) and between hikikomori and addiction generally (Muris et al., 2023). Concerning the subconstructs of hikikomori, a lack of emotional support (e.g., Karaer & Akdemir, 2019) and social isolation (e.g., Puri & Sharma, 2019) have both been found to be positively correlated with internet addiction. Although not exactly socialization, social self-efficacy has also been found to be negatively correlated with internet addiction (Baturay & Toker, 2019).

Despite this prior work, no studies have, to our knowledge, examined the association between hikikomori and internet addiction in the United States. Part of the reason for this may be the fact that hikikomori was originally believed to be culture-bound to Japan (Teo & Gaw, 2010), where it was first identified. As a consequence, hikikomori has remained largely unrecognized in the United States (Kato et al., 2019), with its symptoms instead being attributed to mood disorders, substance use disorders, and anxiety disorders (Teo et al., 2015b). However, as additional cases have been identified around the world (Coeli et al., 2023), hikikomori has come to be known as a modern-society-bound syndrome, being tied more to the presence of information technologies in a society than to historical cultural differences (Kato et al., 2019). With this change, hikikomori is increasingly being recognized in the United States (Kato et al., 2019; Taku et al., 2023; Teo et al., 2015a), although not yet in relation to internet addiction.

Current Study

The present preregistered study examines the association between hikikomori and internet addiction among college students living in the United States. We focus on college students here because it allows us to provide a better comparison with the existing research on hikikomori and internet addition in other countries, which has focused almost entirely on college students. We also focus on this population because the two constructs of interest are particularly relevant to college students:

²A second recent study from Italy did not find a significant association between the two constructs (Amendola et al., 2021), but the study was underpowered. The study relied on a non-clinical sample of 47 participants ($r = .28$) and a clinical sample of 19 participants ($r = -.16$). By our estimates, samples of these sizes would only be able to detect a correlation of .30 or larger 54.5% and 24.4% of the time, respectively.

hikikomori tends to peak in one’s twenties (Imai et al., 2020) and college students are more likely to be addicted to the internet (Kandell, 1998). We hypothesized that there will be a significant positive correlation between hikikomori and internet addiction in a sample of U.S. college students recruited through Prolific (H1). Moreover, we hypothesized that the correlation we observe between hikikomori and internet addiction among the U.S. college students will not significantly differ from that observed among the Japanese college students in Tateno and colleagues’ (2019) original study (H2). By testing these two hypotheses, the present study provided an understanding of whether hikikomori and internet addiction are linked in the United States, and also indicated whether there are country-level differences in the relationship between hikikomori and internet addiction. We also examined the association between the factors of hikikomori (i.e., a disinterest in socializing, isolation, and a lack of emotional support) and internet addiction, but these analyses were conducted in an exploratory fashion.

Method

Participants and Procedure

The study was determined to be exempt from review by the IRB committee at the authors’ institution (E24018). Participants were recruited from the on-demand data collection platform Prolific to complete a Qualtrics survey, with informed consent provided at the beginning of the survey. We only recruited participants who indicated that they were (a) a student, (b) enrolled in an undergraduate degree program, and (c) 18 to 28 years of age. To achieve the specific goals of the present study, we also filtered the participants to only recruit those who (d) were located in the United States. An a priori power analysis indicated that 319 participants would be required to detect at least a moderate effect ($r = .20$) 95% of the time that such an effect existed with an alpha level of .05 (two-tailed). We aimed to collect at least 350 participants to account for potential misspecification of the power analysis.³ Participants were excluded if they failed two or more of four instructed response items embedded in the survey ($n = 2$; Curran, 2016), completed the survey in less than one-third of the median response time ($n = 4$; Bedford-Petersen & Saucier, 2021), provided the same response to over half of the survey items in a row ($n = 10$; Johnson, 2005), exhibited a response standard deviation of less than 0.50 ($n = 0$; Thalmayer & Saucier, 2014; see also Dunn et al., 2018), or provided an average response of 0 or greater to four infrequency/

³As described in our preregistration, we intended to continue collecting data until we had exhausted the funds we were granted to conduct the project, which resulted in a sample size larger than we had initially intended to collect.

frequency items embedded in the survey ($n = 11$; Kay & Saucier, 2023). After exclusions, we had a total sample of 437 valid participants (see Table 1).

Measures

The English-version of the Hikikomori Questionnaire (HQ-25; Teo et al., 2018) was used to assess hikikomori. The HQ-25 has 25 items (e.g., “I stay away from other

TABLE 1				
Demographic Information for the Sample (N = 437)				
Demographic Characteristic	M	SD	Count	%
Age	22.14	2.71		
Gender				
Women			246	56.5%
Men			172	39.4%
Non-binary			9	2.1%
Genderfluid			7	1.6%
Preferred not to answer			2	0.5%
Cultural/ethnic identity				
White			169	38.7%
Multiple cultures/ethnicities			68	15.6%
Asian or Asian American			65	14.9%
Black or African American			60	13.7%
Hispanic/Latinx			59	13.5%
Other cultural/ethnic identity			13	3.0%
Preferred not to answer			3	0.7%
Hours of internet use per day	7.89	3.81		
Reasons for using the internet				
Personal email			378	86.5%
Instant messaging			299	68.4%
Online shopping			294	67.3%
Online gaming			250	57.2%
Recreational surfing			218	49.9%
Business email			197	45.1%
News			174	39.8%
Other			96	22.0%
Chat rooms			82	18.8%
Adult entertainment			79	18.1%
Business surfing			70	16.0%
Stock trading			60	13.7%
Discussion lists			55	12.6%
Online gambling			26	6.0%
Online auctions			15	3.4%

Note. Additional demographic information (e.g., current state of residence, political orientation) can be found in the Supplementary Material.

people”) with each item scored on a scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). The 25 items can be combined to form either an overall hikikomori score or divided into three subscales: (a) Disinterest in Socializing (e.g., “I stay away from people”), (b) Isolation (e.g., “I shut myself in my room”), and (c) Lack of Emotional Support (e.g., “There are few people I can discuss important issues with”). In the present study, the overall scale demonstrated sufficient internal consistency ($\alpha = .92$), as did the subscales ($\alpha_{\text{Socialization}} = .91$; $\alpha_{\text{Isolation}} = .82$; $\alpha_{\text{EmotionalSupport}} = .80$). The Japanese version of this scale was used by Tateno et al. (2019) to investigate the association between hikikomori and internet addiction in their original study.

Young’s Internet Addiction Test (YIAT; Young, 1998) was used to assess pathological internet use (Young, 1998). The YIAT has 20 items (e.g., “How often do you find that you stay online longer than you intended?”) with each item scored on the following scale: 1 (*rarely*), 2 (*occasionally*), 3 (*frequently*), 4 (*often*), 5 (*always*).⁴ In the present study, the scale demonstrated sufficient internal consistency ($\alpha = .91$). This scale was also used in the original study by Tateno et al. (2019).

Results

To examine the association between hikikomori and internet addiction, we conducted a Pearson’s r correlation (see Figure 1; see Table 2). We found that hikikomori was significantly positively correlated with internet addiction, $r(435) = .30$, 95% CI [.21, .38], $p < .001$. This aligned with our hypothesis that there would be a significant positive correlation between hikikomori and internet addiction in the sample of U.S. college students (H1). We also conducted Pearson’s r correlations to examine whether the three individual factors of hikikomori are differentially associated with internet addiction. We found that a disinterest in socializing ($r(435) = .20$, 95% CI [.11, .28], $p < .001$), isolation ($r(435) = .32$, 95% CI [.23, .40], $p < .001$), and a lack of emotional support ($r(435) = .27$, 95% CI [.17, .35], $p < .001$) were all significantly positively correlated with internet addiction. Moreover, we entered the three individual factors of hikikomori as predictors of internet addiction in a multiple linear regression model (see Table 3). The overall regression model was statistically significant, $R^2 = .11$, $F(3, 433) = 19.7$, $p < .001$. The results showed that, when controlling for their shared variance, isolation ($\beta = .26$, $p < .001$) and a perceived lack of emotional support ($\beta = .13$, $p = .005$) significantly predicted internet addiction, but a disinterest in socializing did not ($\beta = -.06$, $p = .210$).

⁴It is unclear whether “often” is actually more frequent than “frequently.” To maintain consistency with prior studies, we did not change the response scale.

To compare the correlation observed between hikikomori and internet addiction in the United States to that observed in Japan, we conducted Fisher’s r -to- z transformations and compared the resulting z -scores. The z -score for the correlation obtained in the present study ($z = .30$) was not significantly different from the z -score for the correlation observed in Tateno et al.’s

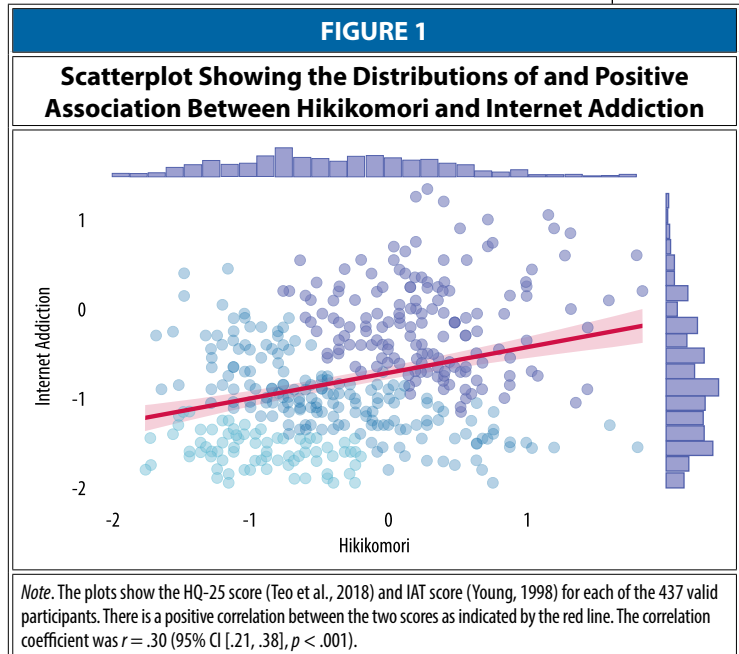


TABLE 2

Descriptive Statistics for and Zero-Order Correlation Among Internet Addiction, Overall Hikikomori, and the Three Hikikomori Subscales

Variable	M	SD	1	2	3	4	5
Internet Addiction	-0.78	0.69					
Hikikomori	-0.23	0.71	.30*				
Disinterest in Socializing	-0.15	0.86	.20*	.91*			
Isolation	-0.01	0.81	.32*	.89*	.72*		
Lack of Emotional Support	-0.69	0.80	.27*	.68*	.42*	.50*	

Note. * $p < .001$.

TABLE 3

Model Coefficients for a Multiple Linear Regression Model Predicting Internet Addiction From Socialization, Emotional Support, and Isolation

Predictor	Estimate	SE	t	p
Disinterest in Socializing	-.06	0.05	-1.25	.210
Isolation	.26	0.06	4.43	<.001
Lack of Emotional Support	.13	0.04	2.85	.005

(2019) original study ($z = .41$), $z = 1.63$, $p = .104$. This is consistent with our hypothesis that there would not be a significant difference between the correlations found among the U.S. and Japanese college students (H2).

We conducted exploratory independent samples *t* tests investigating gender differences in our variables. We have also conducted exploratory independent samples *t* tests evaluating differences in hikikomori scores between participants who reported using the internet for a specific purpose versus those who did not report using the internet for a specific purpose (e.g., instant messaging). The results of these analyses can be found in the Supplementary Material.

Discussion

Past research has indicated that hikikomori may be a potential risk factor for internet addiction. However, this research has been limited to a select few countries (e.g., Japan, Italy). The purpose of the present study was to examine whether the association also exists in the United States. We hypothesized that we would find a significant positive correlation between hikikomori and internet addiction among a sample of U.S. undergraduate students (H1) and that the correlation would not be significantly different from that observed by Tateno and colleagues (2019) in Japan (H2).

There was a large positive correlation between the two constructs, such that participants at a high risk for hikikomori were more likely to be addicted to the internet than participants at a low risk for hikikomori. This aligned with our first hypothesis that a correlation would be found within the U.S. population. It is also consistent with what has been found in past research; the more at-risk for hikikomori individuals are, the more likely they are to be addicted to the internet (e.g., Miriam et al., 2024; Orsolini et al., 2022; Tateno et al., 2019). This correlation indicates that hikikomori may be a risk factor for internet addiction in the United States. Those who have been driven to socially withdraw may use the internet to escape feelings of pain and to cope with the situation. For example, they may not reject relationships with other people entirely but, instead, turn to online platforms to interact with others in a context where the opportunity to be criticized or judged is limited. Likewise, this finding may indicate that internet addiction contributes to hikikomori, such that people become so consumed with their online lives that they end up socially withdrawing from their offline lives. If a person is excessively preoccupied with the internet, it follows that they would likely spend much of their time on the internet and, depending on what they are using the internet for, encounter fewer opportunities to socialize, leading to greater levels of social withdrawal.

In either case, this finding provides additional support for the close link between self-isolation and addiction (Muris et al., 2023).

Exploratory correlation analyses further showed that consistent with past research, each of the three factors of hikikomori were individually associated with internet addiction (e.g., Karaer & Akdemir, 2019; Puri & Sharma, 2019). This may suggest that those with hikikomori are drawn to the internet because it allows them to avoid others and isolate from their real lives, as well as because they lack emotional support. Alternatively, as levels of internet addiction rise, people may find that they are more isolated, less likely to receive emotional support, and less interested in socializing.

Interestingly, exploratory regression analysis showed that isolation and a lack of emotional support, but not a disinterest in socializing, were significantly associated with internet addiction when controlling for their shared variance. This finding may be due to the perils of partialling, whereby a construct no longer represents itself when its shared variance with other constructs is removed (Lynam et al., 2006). However, it is also possible that self-isolation and a lack of emotional support are the primary predictors of internet addiction, with a disinterest in socializing only contributing to internet addiction insofar as it tends to co-occur with self-isolation and a lack of emotional support. This could be because the internet can sometimes provide the opportunity to socialize with others. In any case, we recommend additional work investigating the unique contributions of these three constructs to internet addiction.

We further found that the correlation we observed between overall hikikomori scores and internet addiction in the United States was not significantly different from that observed by Tateno and colleagues (2019) in Japan. This finding aligned with our second hypothesis that there would be little to no cultural differences between the United States and Japan in terms of the relationship between hikikomori and internet addiction. Consequently, hikikomori may be just as closely linked to developing an addiction to the internet in the United States as it is in Japan. Researchers and practitioners interested in curbing internet addiction may, therefore, benefit from considering the role of extreme social withdrawal in the condition, regardless of whether they are practicing in the United States or Japan.

Limitations and Future Directions

The present study is not without its limitations. First, a Prolific sample of U.S. undergraduate students is not necessarily generalizable to the entire population of undergraduate students in the United States (nor to

the entire population of the United States in general). We, therefore, encourage future work examining the association between hikikomori and internet addiction in samples drawn from multiple sources.

Second, our sample was similar but not identical to that used by Tateno et al. (2019). For example, although both studies recruited college students, our sample included fewer women than Tateno and colleagues' study (56.5% versus 72.89%) and the average age was higher (22.14 versus 19.40 years). Moreover, our sample recruited participants from across the United States, whereas Tateno et al. (2019) focused on only one region of Japan. Although the correlation of hikikomori with internet addiction in the present study did not significantly differ from that reported by Tateno et al. (2019), it is worth noting that any difference in the magnitudes of the two correlations could be due to differences in the sample characteristics.

Third, the hikikomori scale that we used—the HQ-20 (Teo et al., 2018)—is only one way of assessing hikikomori. The exact definition of hikikomori is still a topic of much debate, especially given the overlap of hikikomori and existing disorders included in the DSM (e.g., mood disorders; Amendola, 2024), so the measure we used may not perfectly capture the construct. We encourage future research using additional testing methods, such as interviews.

Finally, we cannot infer causality in our study. Rather, this study only provides evidence for the correlation between hikikomori and internet addiction in the United States. It is possible (and, in fact, quite plausible) that there is a bidirectional relationship between the two constructs, such that they are mutually reinforcing. Future studies using longitudinal designs (e.g., cross-lagged models) could provide a valuable contribution to understanding how hikikomori and internet addiction influence each other over time.

Beyond addressing the limitations above, future studies could test different interventions for reducing hikikomori and internet addiction. One recently proposed intervention for hikikomori is the use of virtual reality (VR; Aguglia et al., 2024). With more than half of our participants using the internet for online gaming (57.2%), there is a possibility that hikikomori can be combated by progressively increasing the amount of social interaction required of high-risk hikikomori individuals in social-interaction VR games. Furthermore, future work could consider whether the student status of participants affects the association observed between hikikomori and internet addiction. Questions remain as to whether an association between hikikomori and internet addiction would be found for participants who are not currently enrolled in an institution of higher education, as well as for participants who only take classes online.

Conclusions

According to past research, the more at-risk a person is for hikikomori, the more at-risk they are for internet addiction. However, this prior research was restricted to only a few select countries. Our research found further support for the relationship between hikikomori and internet addiction in the United States. As in other countries, the internet may be seen by socially withdrawn U.S. users as a place of refuge, where they can be alone, find emotional support, and socialize. However, this relationship can also potentially turn maladaptive, leading to a preoccupation with the internet that not only causes impairment and distress for the user but that can also lead to even greater social withdrawal. The present study, therefore, highlights the need for greater consideration of both hikikomori and internet addiction in the United States, both in the context of research and in clinical practice, as well as at both individual and institutional levels.

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