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**The presence, characteristics and correlates of pathological social withdrawal**

**in Taiwan: An online survey**

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## Abstract

**Objectives:** Pathological social withdrawal (PSW) has become a public health concern, especially in Asia. However, few studies have investigated the presence of PSW and its characteristics in Taiwan. In this study, we aimed to discover whether individuals in Taiwan display PSW behaviors, the demographic characteristics and psychiatric history of those meeting criteria for PSW, and the associated psychological risks.

**Methods:** An online self-report survey collected participants' demographic characteristics, social behaviors and their psychiatric history, along with information on adherence to cultural norms and mental health.

**Results:** Amongst 1,046 valid respondents, 9% reported behaviors consistent with PSW for at least 6 months, commensurate with other online surveys in Asian countries. Around 20% of these also reported current or past psychiatric disorders, although this was lower than previous findings (50-80%). Participants with PSW reported poorer mental health and lower confidence in social/academic/work skills than unaffected participants.

Conclusion: This study identified for the first time the presence of PSW in Taiwan.

Except the lower rates of psychiatric comorbidity (which could be explained by **self-reports**, sociocultural factors and sampling methods), data were consistent with previous findings. We also extended our understanding of possible psychological risk factors associated with this pathological condition.

Keywords:

Severe social withdrawal, hikikomori, psychopathology, correlate factors, social epidemiology

## Introduction

Pathological social withdrawal (PSW) refers to a set of atypical, extreme persistent social behaviours, which include: the avoidance of social interactions; having low motivation to maintain social relationships; and spending most of the time at home (Kato et al., 2012; Saitō, 1998). Although past research has considered social avoidance and social anhedonia as symptoms of other psychiatric diagnoses, such as depression, schizophrenia or social anxiety (Holt-Lunstad, Smith, & Layton, 2010), more recently, these extreme social behaviours have been recognised in many cultural contexts as isolated, single conditions, with such disabling impact that they are regarded as a societal concern. The term 'Hikikomori' was first coined in Japan to describe these isolated cases; while much of the earlier work reported cases of individuals who met these three social withdrawal behaviours for at least 6 months in Japan (Furukawa, Oyama, Funayama, Hayashi, & Yamamoto, 2014; Horikawa, Udaka, Crow, Takayama, & Stein, 2014; Kato, Kanba, & Teo, 2016; Nishida, Kikuchi, Fukuda, & Kato, 2016; Tajan, 2015), there has also been assessment of these behaviours using face-to-face interviews in general population samples, where an estimated prevalence of 1-2% has been ascertained (Koyama et al., 2010).

However, more recently this repertoire of behaviours has also been reported in increasing numbers of individuals in South Korea, Hong Kong and China, albeit using slightly different criteria across studies, such as shorter duration periods of symptoms (Lee, Lee, Choi, & Choi, 2013; Takasu, Takenaka, Fujiwara, & Toichi, 2012; Wong, Liu, Li, Kato, & Teo, 2017). While some studies have defined PSW according to lifestyle choices such as refusing to attend school or being unemployed; and mainly staying at home (Lee et al., 2013), most studies have used the same criteria as that used in the early Japan studies, notably the avoidance of social interaction, low social motivation to maintain social relationships and staying mostly at home, with varying durations of these behaviours required to meet the criteria. In a phone-call interview survey in Hong Kong (Wong et al., 2015), estimated the prevalence of PSW as being around 1-2% of the population, whereas an online survey of 137 people from several cities in China found that around 9% of participants reported having these behaviours (Wong et al., 2017). The increased rate reported in the latter study could have resulted from individuals with PSW relying more on using the Internet. Therefore, more people with this situation were readily identifiable using an online survey.

Typically across studies individuals with PSW have been found to be male (Wong et al., 2017), and from middle- or upper middle-class families with high educational expectations. In addition, individuals with PSW report significant mental health difficulties, with many studies reporting patterns of co-morbidity with conditions such as depression, anxiety and psychosis (Koyama et al., 2010; Malagón-Amor, Córcoles-Martínez, Martín-López, & Pérez-Solà, 2015), or elevated scores on general mental health questionnaires (Wong et al., 2015).

The presence of PSW has not yet been studied in Taiwan, despite this being a region that shares similar sociocultural and economic values to these other countries. More particularly, the rapid socioeconomic and cultural changes used to explain the emergence of these conditions in Japan (Furlong, 2008; Wong et al., 2015), also characterise Taiwan. That PSW could also characterise individuals in Taiwan has been suggested by data from a study of 9 countries by Kato et al. (2012). This investigated the degree to which psychiatrists and mental health-related professionals recognised patterns of PSW in their own countries. Although Taiwanese professionals recognised the presence of this situation in Taiwan, no research to our knowledge has

been conducted to directly assess the presence of PSW in Taiwan using self-reports of affected individuals. The primary aim of the present study is to address this gap by assessing the number of individuals who meet the criteria proposed by Kato et al. (2012) and which have been applied in other Asian countries. We also assessed the demographic characteristics, possible reasons for being socially withdrawn, and associated mental health difficulties of individuals meeting these criteria.

While there is now a range of studies investigating PSW in Asian and non-Asian countries (Wu et al., 2019), there are still many outstanding questions around the psychosocial correlates of these withdrawal conditions. Some researchers have considered social withdrawal as arising amongst individuals who deviate from mainstream cultural attitudes and values. Indeed, Uchida and Norasakkunkit (2015) created a scale, called NEET/Hikikomori risk scale (NHR), to investigate the cultural deviance associated with being socially withdrawn. This scale probed endorsement of three factors associated with cultural deviance: having a Freeter lifestyle preference (i.e. consciously choosing to not work despite job availabilities), lacking self-competence particularly around social situations and culturally-normative interpersonal contexts, and having unclear ambitions and plans for the future. As

predicted, people who were defined as having PSW had higher scores on all three subscales than non-PSW participants. A second objective of the current paper was to replicate these previous findings in a new regional context.

In summary, we posed three research questions in this study. First, we aimed to investigate the presence of PSW behaviours amongst Taiwanese adults by using an online survey. We expected to find the presence of PSW in Taiwanese society due to the similar socioeconomic changes and background in Taiwan with other Asian countries and areas, such as Japan. Based on prior work, we expected that participants with PSW were more likely to be male, from better socioeconomic areas; with higher maximum educational levels; and would have more significant co-occurring mental health difficulties than those without social withdrawal. Second, according to previous findings, we also expected to find significantly higher rates of cultural deviance (manifesting through NHR scores) in individuals with PSW.

## Method

### Sample and general procedures

This study was approved by the research ethics committee of King's College London (reference number: HR-17/18-5323); all participants gave their informed consent online prior to participation. Data collection occurred in two steps. In the first step, an online survey was distributed through popular Taiwanese websites and social media, including Facebook, Bulletin Board Systems, universities websites and online forums. This occurred between 2<sup>nd</sup> of January and 31<sup>st</sup> of May 2018. Entry criteria for participating in the study were being aged over 18 years, being a Taiwanese national, and currently living in Taiwan. In addition, as the survey was written in traditional Chinese script, participants with difficulties reading this were asked to self-exclude. Of the 1768 respondents who clicked onto the link and began the survey, only 1068 respondents completed enough questions to evaluate the presence/absence of PSW behaviours. Amongst these 1068 valid respondents, 22 did not currently reside in Taiwan and were excluded from the study. In the second step, a follow up invitation was sent on the 1<sup>st</sup> May 2018 to the 708 individuals who agreed to be contacted again, along with a further set of online questionnaires. 341 completed the second set of questionnaires between 1 and 5 months after their completion of the first.

## Measures

Step 1 measures comprised three sections. The first part assessed participants' demographic characteristics including age, gender, maximum educational level reached, current occupation, who they lived with, and where they lived (district and city of Taiwan). We further categorised the cities and districts into three categories based on the middle/low income family ratio of the districts: 1) low rate: 0-15% of families were middle/low income family; 2) middle rate: 15-35% and 3) high rate: above 35%. The second part assessed the degree to which participants endorsed three social withdrawal items either currently or in the past: spending most of their time at home, refusing social interaction and avoiding maintaining social relationships. Response options for these items were 'yes' or 'no'. Where participants indicated that the response was 'yes', they were asked to report when the behaviour started and when it finished consistent with previous studies (Koyama et al., 2010; Wong et al., 2015). Using a free text box, they were also asked to describe the possible reasons that led to the social withdrawal behaviours. Finally, in the third part, participants were asked whether they had previously been or currently diagnosed with a mental

disorder, with response options of 'yes' and 'no'. If they checked 'yes', they were asked for more details on their psychiatric history including which diagnosis they had received, when they received this diagnosis and if they had received any treatment. Free text boxes for each of these items were given.

Step 2 measures comprised three questionnaires, which were administered in the same order across participants.

*General Health Questionnaire 12-items (GHQ12)*: The Chinese version of the GHQ12 is a self-report instrument for the screening and detection of short-term minor psychiatric disorders in the general population within the community or non-psychiatric clinical settings (M. Chong & Wilkinson, 1989). Participants are presented with a symptom and asked to rate its frequency on a four-point response scale, from 0 'not at all' to 3 'much more than usual'. For example, 'if they lost much sleep over worry' and 'had they been feeling unhappy and depressed'. The total score derived from summing up the individual items reflects the impact of these conditions on normal functioning. The Cronbach's alpha of these data in our sample was 0.9.

The Chinese version of the GHQ-12 has been assessed for validity against another measure of psychiatric health in the community (M. Chong & Wilkinson, 1989).

*NEET-Hikikomori Risk factor scale (NHR)*: NHR is a self-report scale developed to measure an individual's degree of cultural deviance (Uchida & Norasakkunkit, 2015). Within this questionnaire, there are three factors for marginalization: 1) adopting a freeter lifestyle preference, which refers to the tendency of choosing not to work; 2) showing a lack of self-competence particularly in interpersonal contexts, and 3) having unclear plans/ambitions for the future. The overall score represents the overall cultural deviance, which could influence the tendency to withdraw socially from society. As this questionnaire was not available in Chinese script, permission was sought from the authors to translate this measure. The first author translated each item, and asked an independent colleague to back-translate the materials. This was then checked with the last author, and any discrepancies between the back-translation and the original version of the questionnaire were highlighted. Where the discrepancy emerged in the translation, this item was translated again, but where the discrepancy emerged in the back-translation, a new colleague was asked to

back-translate. The original Cronbach's alpha was 0.82, 0.83, 0.83 and 0.79 for overall NHR score, factor 1, factor 2 and factor 3, respectively. In our sample, Cronbach's alphas were 0.86, 0.67, 0.88 and 0.9 for these same scores respectively. In the original sample, NHR scores correlated with subjective general health ( $r = -0.45, -0.23, -0.49$  and  $-0.46$  for overall scores, factors 1, 2 and 3 respectively, all  $p < 0.01$ ).

#### Data analysis

Measures from part 2 of the first step were used to assess presence of PSW.

Respondents were considered to be 'affected' if they said 'yes' to all three of the social withdrawal items. Participants were considered 'unaffected' if they said 'no' to all three items, and 'borderline' if they said 'yes' to one or two of the three items.

Demographic characteristics of these three groups, including gender, occupation, maximum educational level reached, who they lived with and where they lived, were described and compared. To describe those who were considered 'affected' and to explore potential differences associated with duration of illness on demographic

characteristics, mental health, and cultural deviance, we further divided the affected participants into four duration groups : a) 6+: those where the average duration of having all three social withdrawal behaviours was over 6 months; b) 3-6: the average duration was between 3 and 6 months; c) 3-: the average duration was under 3 months and d) Not Reported (NR): the duration was not reported. The possible reasons for social withdrawal were categorised and reported. In addition, participants' GHQ scores were compared across the 'affected', 'borderline', and 'unaffected' groups using one-way ANOVA. To address our second research question, the overall NHR scores from the second phase were analyzed using one way ANOVA and the NHR subscale scores were analyzed using one-way MANOVA to determine any differences between the 'affected', 'borderline', and 'unaffected' groups. **Of note, because of disagreements in the literature over whether PSW should be categorized on the basis of illness duration (with only those having experienced the symptoms for at least 6 months considered to have met criteria), we carried out the same comparisons on GHQ and NHR across individuals who met PSW for more and less than 6 months.**

## Results

### Step 1 measures

There were 168 participants who were categorised as 'affected', 620 who were 'borderline' and 258 who were 'unaffected' (see Table 1). Around 40% of the participants of the total sample at phase 1 were male but the highest rate of men was found in the affected group (46.4% compared to 39.2% and 32.9% in the borderline and unaffected groups respectively,  $X^2 = 7.87$ ,  $p = 0.02$ , see Table 1). Also, the affected group included numerically more participants who were not currently working or studying (12.5%) than the other two groups although this difference did not reach statistical significance (see Table 1). **Nonetheless, the high ratio of 'affected' individuals who were working/studying warranted a further look at the occupation status of those with current versus past PSW; of the 24 affected individuals who were currently suffering from PSW, only 9 (37.5%) were working.**

In terms of the maximum education level reported, around 90% of the participants in

each group reached a bachelor's degree or above. Most of the participants (around 85%) in these groups did not live alone, rather they lived with their family members or flatmates. In terms of the places the participants lived, around 70% of the participants across groups lived in a district with a low ratio of middle/low income families.

Amongst the affected duration groups (6+, 3-6, 3- and NR), the demographic characteristics (gender, occupation, education level, people they live with, and residential areas) did not differ statistically.

Table 1. The demographic traits of the three groups

	All	Unaffected	Borderline	Affected
<b>n</b>	1046	258 (24.67%)	620 (59.27%)	168 (16.06%)
<b>Age mean (SD)</b> <b>(year)</b>	28.48 (0.24)	29.79 (0.51)	27.84(0.30)	28.82(0.60)
<b>% Male</b>	38.8%	32.9%	39.2%	46.4%
<b>Occupation</b>				
<b>Student</b>	36.8%	31.4%	40.2%	32.7%

<b>Working</b>	54.6%	62.8%	51.1%	54.8%
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<b>None</b>	8.6%	5.8%	8.7%	12.5%
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The level of middle/low income family rate of the district where the participants lived

<b>Low rate</b>	70.7%	69.8%	70.6%	72.6%
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<b>Middle rate</b>	20.9%	23.3%	20.6%	18.5%
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<b>High rate</b>	2.8%	1.9%	2.9%	3.6%
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<b>Unreported</b>	5.5%	5%	5.8%	5.4%
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The reasons for being withdrawn were grouped into 12 types and other: 1) illness, e.g. being sick; 2) psychiatric conditions, e.g. having depression or ASD; 3) low self-esteem, e.g. low self-value or having bad appearance; 4) being bullied, e.g. being bullied by peers or colleagues; 5) low mood, e.g. feeling depressed or lonely; 6) difficulties in social interaction, e.g. bad social skills; 7) work/education, e.g. incapable of finding a job and/or school; 8) family/partner issue, e.g. being divorced, having conflicts with family members; 9) difficulties in fitting in society, e.g. having different values from other people; 10) personality, e.g. being shy; 11) religion; 12) internet

addiction, 13) other, e.g. having a social life is thought to be a waste of time and/or a mix of reasons (see table 2). Across the types of reasons for being withdrawn, having difficulties in social interaction, work/education and having difficulties in fitting in society were the most frequently stated (see table 2).

Table 2. Reasons provided for being social withdrawn

Reasons	Number
General illness	2
Psychiatric conditions	11
Low self-esteem	18
Being bullied	8
Low mood	13
Difficulties in social interaction	35
Work/education	24
Family/partner issue	10

Difficulties in fitting in society	23
Personality	3
Religion	1
Online game addiction	1
Other	3
No reason reported	16

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33 participants in the affected group (19.64%) reported previous or current psychiatric conditions, including depression, ADHD, adjustment disorder, anxiety, social anxiety, ASD, bipolar, OCD, PTSD, schizophrenia and social phobia (see table 3). Amongst these conditions in the affected group, depression was the most reported comorbidity and the second most common co-morbid mental disorders were anxiety and bipolar.

Within these 33 participants with at least one psychiatric condition, 30 of them sought professional help, including medicine or psychotherapy. Of note, only looking at self-reported psychiatric co-morbidity in individuals with PSW for at least 6 months, this was 21%.

Table 3. The psychiatric co-morbidity of the affected groups

	<b>Affected</b>	<b>Borderline</b>	<b>Unaffected</b>
Number with psychiatric conditions	33 (19.64%)	23 (3.7%)	4 (2.4%)
Mental disorders			
Depression	15	9	
ADHD	1		
Adjustment disorder	1		
Anxiety	4	1	
Social Anxiety	1		
ASD	2		
Bipolar	4	4	
OCD	3	1	
PTSD	1		

Social Phobia	1		
Schizophrenia	1	1	
Panic disorder			1
Dysautonomia			1
<hr/>			
Looking for professional help			
Medicine	8	4	2
Psychotherapy/counseling	5	5	
Both	17	8	
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#### Step 2 measures

Within the 341 respondents, 79 were unaffected (23.2%), 199 were borderline (58.4%) and 63 were affected (18.5%).

Table 4. The means and SDs of the three questionnaires and subscales.

	Unaffected (79)		Borderline (199)		Affected (63)		All (34)
	Mean	SD	Mean	SD	Mean	SD	Mean
GHQ	12.97	0.75	15.99	0.49	18.48	0.76	15.75
NHR all	86.75	2.19	95.36	1.36	102.33	2.39	94.65
Freeter lifestyle	44.24	1.00	46.32	0.64	48.57	1.29	46.25
Lack of self-competence	35.27	1.31	40.66	0.82	44.7	1.32	40.16
Unclear ambition	7.24	0.37	8.38	0.25	9.06	0.45	8.24

GHQ scores were compared across groups using one-way ANOVA with a between-subjects factor of group (affected, borderline, unaffected). Significant group differences were found ( $F(2, 338) = 12.71, p < 0.001, \eta^2 = 0.07$ ). Bonferroni-corrected comparisons showed that the affected group had the highest scores, followed by borderline (mean difference<sub>affected-borderline</sub> = 2.5, SD = 0.97,  $p = 0.03$ ) and unaffected groups (mean difference<sub>borderline-unaffected</sub> = 3.02, SD = 0.89,  $p = 0.002$ ; mean difference<sub>affected-unaffected</sub> = 5.5, SD = 1.13,  $p < 0.001$ ), indicating higher psychiatric disorder potential in the affected group (see Table 4). **We also compared scores**

across the two duration groups (PSW over and below 6 months) but no significant differences emerged (all  $t$ 's  $> 0.05$ ).

The overall psychosocial risk for becoming socially withdrawn was assessed by NHR scores. One-way ANOVA with between-subjects factor of group (unaffected, borderline, affected) demonstrated a significant main effect of group ( $F(2, 338) = 11.85, p < 0.001, \eta^2 = 0.7$ , see Figure 1). Bonferroni-corrected comparisons showed that affected group had the highest levels of cultural deviance and the unaffected group had the lowest scores (mean difference<sub>affected-borderline</sub> = 6.97, SD = 2.78,  $p = 0.038$ ; mean difference<sub>affected-unaffected</sub> = 15.57, SD = 3.28,  $p < 0.001$ ; mean difference<sub>borderline-unaffected</sub> = 8.62, SD = 2.56,  $p = 0.003$ ).

[insert Figure 1.]

Figure 1. The scores of NEET/Hikikomori Risk Factor Scale and its three subscales.

We further looked at the three factors of cultural deviance, including freeter lifestyle preference, a lack of self-competence and having unclear ambitions for the future.

The one way MANOVA of these three factors showed significant group differences ( $F(2,338) = 4.28, p < 0.01, \eta^2 = 0.04$ ). For the factor of freeter lifestyle preference, the Bonferroni analysis showed that the only significant difference was found between the affected and unaffected group (mean difference = 4.33, SD = 1.56,  $p = 0.017$ ), with a higher score in the affected group (see Figure 1). In terms of the second factor, a lack of self-competence, the results showed that these three groups were all significantly different from each other with the highest scores in the affected group, and the lowest scores in the unaffected groups (mean difference<sub>affected-borderline</sub> = 4.04, SD = 1.65,  $p = 0.045$ ; mean difference<sub>affected-unaffected</sub> = 9.43, SD = 1.93,  $p < 0.001$ ; mean difference<sub>borderline-unaffected</sub> = 5.4, SD = 1.52,  $p = 0.001$ , see Figure 2). The results of the third factor, having unclear ambitions for the future, showed that significant differences were found in unaffected vs. borderline and unaffected vs. affected groups (mean difference<sub>affected-unaffected</sub> = 1.82, SD = 0.59,  $p = 0.006$ ; mean difference<sub>unaffected-borderline</sub> = 1.14, SD = 0.46,  $p = 0.042$ , see Figure 1). The difference between affected and borderline groups was not significant. We also compared scores across the two duration groups (PSW over and below 6 months) but no significant differences emerged (all  $t$ 's  $> 0.05$ ).

## Discussion

In the present study, we investigated the presence of PSW in Taiwan, associated demographic features of those meeting definitional criteria and the psychosocial correlates associated with PSW. We found that around 10% of our sample from an online survey had currently or previously experienced PSW but with varying levels of duration reported, and the majority reporting a duration of 26 months. They showed similar demographic characteristics with previous findings such that males and individuals who had achieved higher education levels being more likely to report PSW. However, while prior studies suggested that individuals with social withdrawal tended not to work or study, we did not find any significant differences amongst our groups in this study. Indeed, a relatively high proportion of the affected group reported working/studying. **Inspecting these numbers as a function of those who currently or had previously experienced PSW, we found that only 9 (37.5%) individuals with current PSW worked.** Also, here we did not find any association between PSW and the financial wealth of their residential area. Furthermore, compared to previous

findings (Koyama et al., 2010; Malagón-Amor et al., 2015) we found lower rates of psychiatric co-morbidity using a simple self-report measure of history of mental illness. However, as revealed by GHQ scores, higher mental health disturbance was found in the affected group, compared to those who were unaffected or considered borderline. Finally, individuals with PSW reported higher levels of cultural deviance potentially contributing to the risk of being socially withdrawn. These results carry several implications. Each of these is discussed in turn.

### **The presence of PSW in a Taiwanese population and their demographic features**

Our online survey results were consistent with a previous study using a similar online survey in urban areas in China (Wong et al., 2017) but inconsistent with previous studies conducted in Japan or Hong Kong. These discrepancies across studies could be due to different research methods and sampling population. To be more specific, in these previous studies done in Japan and Hong Kong, their sampling populations were from the whole country or city through phone-interview or face-to-face interview

while in the survey in China, the survey was only distributed in selected urban cities through the Internet. Here, we also distributed our survey through the Internet, finding similar rates to that of the China online study. The higher portion of people with social withdrawal found from online surveys compared with other face to face and phone surveys tentatively suggests that this way of engaging participants might be more fruitful than traditional face-to-face methods.

With regard to gender effects, in our study the highest ratio of males was found in the affected group although a greater proportion of females had social withdrawal behaviours than previous studies. This might reflect the greater number of female respondents in our overall sample. Previous studies have also found social withdrawal to be linked to being male, possibly because males in Asian societies encounter higher pressure regarding their personal achievements, such as graduating with better university degrees or having better jobs (Li & Wong, 2015b). Some studies have suggested that, due to the particular focus on personal achievement in males, their parents might neglect their emotional support and criticise their failures (S. Chong & Chan, 2012). These factors might also decrease their level of confidence

during failures (Lee et al., 2013), leading to socially withdrawal.

The possible reasons why 9 currently affected individuals could have PSW and a job at the same time might due to the nature of their job. **It may be that with being in an increasingly connected working environment, working from home was an option.**

Indeed, Nelson (2019) mentioned that due to the modern telecommunicating methods, such as surfing the Internet, many individuals with PSW were able to maintain their basic needs.

### **Psychiatric co-morbidity**

Previous studies found that around 50-80% of participants with PSW experienced co-morbid psychiatric conditions (Koyama et al., 2010; Malagón-Amor et al., 2015).

However, in the present study, we found only around 20% of the affected group self-reported at least one psychiatric co-morbidity. This relatively low co-morbidity could result from several factors, including not enough professional knowledge about mental disorders and mental disorders as a cultural taboo in Taiwanese society.

Although there is increasing attention about mental disorders in Taiwanese society, the overall society still has a lack of sufficient or accurate knowledge about mental disorders (Chang & Chingching, 2008). Indeed, according to a survey by Zhuang, Wong, Cheng, and Pan (2017), depression or schizophrenia literacy among the Taiwanese community is relatively low compared with Australia. With this situation, people might not seek professional help when they have a mental health issue. An additional factor is that mental disorders may be thought of as a taboo discussion (Chang & Chingching, 2008). Within Taiwanese culture, if an individual has a mental health issue, people would attribute this situation to their upbringing or some spiritual experiences (Chang & Chingching, 2008; Zhuang et al., 2017), affecting help-seeking behaviours. While these reasons could explain the under-reporting of psychiatric comorbidity, Zhuang et al. (2017) also found a similar mental health literacy within the Japanese community, which cannot explain the higher rates of co-morbidity in those with Hikikomori. Another reason is that the present method of assessing psychiatric conditions was limited by using a simple and rather crude self-reported assessment of history of mental illness – which could under-estimate rates of psychiatric co-morbidity reported. This could explain why on GHQ scores, there were significant

group differences between affected and unaffected individuals suggesting greater levels of (minor) psychiatric disturbances.

Another unexpected finding was that only one participant with PSW reported abnormal Internet use in our sample. PSW has been found to be highly related to Internet addiction (Stip, Thibault, Beauchamp-Chatel & Kisely, 2016). For example, a study in Korea showed that up to 56% of PSW may be at-risk of Internet addiction (Lee et al., 2013). The low numbers in our sample may arise from participants not considering their Internet use as being problematic. Indeed, Suwa and Suzuki (2013) have suggested that the invention of the Internet has changed individuals' communication methods, with more people adopting Internet media for communication (Chan & Fang, 2007). Individuals with social withdrawal who have already cut off their relationships with others might be more likely to depend on the Internet because they could still achieve their need for being connected. Indeed, Taylor (2006) suggested that Internet was experienced as beneficial to individuals with PSW since it provides a way of easily interacting with others.

## **Reasons for being socially withdrawn**

The reported reasons for being socially withdrawn were consistent with previous studies and reviews indicating that these were related to personal mental state or personality, social interaction and social factors, such as low job availability (Li & Wong, 2015a; Umeda, Kawakami, & World Mental Health Japan Survey, 2012; Wong et al., 2015). Furthermore, group differences found in the NHR scores, especially the second factor (i.e. lacking self-competence), also suggested that individuals with PSW might explicitly endorse behaviours that deviate from societal expectations.

Some of the reasons for being withdrawn were that individuals had different values from societal norms, or more specifically, a freeter lifestyle, which led them to avoid interacting with others. Future studies could investigate in more detail how inconsistencies between personal mental state and societal values influence individuals' social behaviours.

## **Study limitations**

One limitation of this study was that because this was an online survey, people with little access to the Internet were unable to take part. This might result in a sampling bias. Also, there was not a systematic or structural assessment of participants' mental health, which might lead to an underestimation of mental health difficulties. Finally, this survey categorized participants who had currently or previously experienced PSW. However, people who were experiencing withdrawal might show different mental states and demographic characteristics to people who had already recovered from the state. This might increase the heterogeneity of the affected group by confounding state and trait factors.

## **Conclusion**

This study was the first study that systematically investigated PSW in Taiwan, which has experienced similar socio-economic change to other Asian areas, such as Japan or South Korea. Although the sampling population was from an online survey, which does not necessarily represent the whole Taiwanese society, the sample demonstrates the presence of PSW traits in Taiwan. We also pointed out the

important role played by the psychological risks of being withdrawn, which might provide some insights for future prevention or treatments. It is noteworthy that within the withdrawn group, we did not find associations between duration of being withdrawn and questionnaire scores, which may imply a need to revisit the criteria for PSW. As Wong and colleagues (2015) also found few differences associated with duration of illness in GHQ scores, internet addiction symptoms and professional help-seeking behaviours, a focus in the original criteria on symptoms lasting for over 6 months might delay the detection of PSW. More studies are needed to investigate risks/correlates and other characteristics (e.g. psychological features and the relationship between self and the society) of PSW in the future.

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## **Declaration of interest**

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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