

The prevalence and correlates of severe social withdrawal (*hikikomori*) in Hong Kong: A cross-sectional telephone-based survey study

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Abstract

Background: Severe social withdrawal behaviors among young people have been a subject of public and clinical concerns.

Aims: This study aimed to explore the prevalence of social withdrawal behaviors among young people aged 12–29 years in Hong Kong.

Methods: A cross-sectional telephone-based survey was conducted with 1,010 young individuals. Social withdrawal behaviors were measured with the proposed research diagnostic criteria for *hikikomori* and were categorized according to the (a) international proposed duration criterion (more than 6 months), (b) local proposed criterion (less than 6 months) and (c) with withdrawal behaviors but self-perceived as non-problematic. The correlates of social withdrawal among the three groups were examined using multinomial and ordinal logistic regression analyses.

Results: The prevalence rates of more than 6 months, less than 6 months and self-perceived non-problematic social withdrawal were 1.9%, 2.5% and 2.6%, respectively. In terms of the correlates, the internationally and locally defined socially withdrawn youths are similar, while the self-perceived non-problematic group is comparable to the comparison group.

Conclusions: The study finds that the prevalence of severe social withdrawal in Hong Kong is comparable to that in Japan. Both groups with withdrawal behaviors for more or less than 6 months share similar characteristics and are related to other contemporary youth issues, for example, compensated dating and self-injury behavior. The self-perceived non-problematic group appears to be a distinct group and the withdrawal behaviors of its members may be discretionary.

Keywords

Hong Kong, severe social withdrawal behavior, hikikomori, epidemiology, social communication, psychopathology, youth social issues

Introduction

Severe social withdrawal, also known as *hikikomori*, among young people has been a subject of concern in urbanized and technologically advanced societies such as Japan (Watts, 2002), Spain (Garcia-Campayo, Alda, Sobradie, & Abos, 2007), Korea (Lee, Lee, Choi, & Choi, 2013) and Hong Kong (Wong, 2012). A severe social withdrawal condition is defined as ‘a condition where a youth withdraws into the home and does not participate in society for a period of over six months, of which a mental illness is not likely to be the primary cause’ (Saito, 1998, p. 25). Saito (1998) and Teo and Gaw (2010) have proposed that hikikomori could be considered as a culture-bound syndrome but merited further international research as a

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psychiatric disorder. A set of diagnostic criteria for *hikikomori* was proposed by Teo and Gaw to stimulate more observational studies in order to inform future development of the *Diagnostic and Statistical Manual of Mental Disorders*.

Although it is commonly cited that there are about 1 million hikikomori cases within Japan (Saito, 1998), the actual numbers are likely to be overestimated (Furlong, 2008). To our understanding, the only epidemiological study on severe social withdrawal has estimated that the prevalence was about 1.2% of the respondents aged 20–49 years experiencing withdrawal lasting more than 6 months in Japan, which is equivalent to about 232,000 cases of *hikikomori* in Japan (Koyama et al., 2010).

Qualitative studies generally find that the causes of severe social withdrawal can be categorized into individual, family, school and societal and cultural levels. On an individual level, withdrawal is related to low self-confidence, little trust in others, pessimism, narcissism and psychopathology (Krieg & Dickie, 2013; Uchida, 2011). On a family level, withdrawal is related to parental psychopathology, being in middle- and upper middle-class families, high academic expectations, and overprotection (Umeda & Kawakami, 2012). On a school level, withdrawal is related to bullying and academic failure (Furlong, 2008; Uchida, 2010; Wong, 2009). On a socio-cultural level, withdrawal is related to individualization, technological advancement and globalization of socioeconomic conditions and the resulting labor market demand for highly educated and skilled young people (Krieg & Dickie, 2013; Teo, 2010; Wong, 2009). Asian cultural values, such as allowing children to live with their families until they leave school or get married, and delayed adulthood, are also believed to contribute to severe social withdrawal (Furlong, 2008; Wong, 2009).

It is noteworthy that there are criticisms about the popularity in use and recognition of severe social withdrawal as a significant problem. Some sociologists believe that social withdrawal is fundamentally a transient phenomenon caused by social factors (Furlong, 2008), or a positive and necessary process in the search for self-identity and the meaning of life (Serizawa, 2002; Takaoka, 2001, cited in Goodman, Imoto, & Toivonen, 2012). Some scholars suggest that the psychological dimension, in which the withdrawn individual longs for contact with others but cannot establish it in the digital era, is much more important than focusing on the physical seclusion aspect of the phenomenon (Tomita, 2002, cited in Goodman et al., 2012).

This study aimed to explore the prevalence of social withdrawal behaviors and their correlates among young people in Hong Kong by using a community sample. We hypothesized that because Japan and Hong Kong have relatively similar contemporary socioeconomic cultures, social withdrawal is also likely to exist in Hong Kong.

Besides, since social withdrawal can take various forms from total seclusion at home to occasionally going out on one's own (Teo, 2010), this leads us to postulate that some social withdrawal may also be regarded as discretionary behavior, rather than a psychopathology (Chan & Lo, 2013). Hence, we speculate that there are at least three groups of young people who demonstrate social withdrawal behaviors. First, there are withdrawn individuals who, probably due to personal preferences, do not consider the withdrawal behavior to be problematic. We refer to this hereafter as *self-perceived non-problematic social withdrawal*. Second, there are individuals who withdraw for no more than 6 months but do consider this condition to be problematic. We refer to this situation as *social withdrawal for less than 6 months*. Third, there are individuals who withdraw for more than 6 months and consider their behavior to be problematic. This is the group on which the majority of current literature has described. We refer to this situation *social withdrawal for longer than 6 months*.

This study aims to examine four research questions (RQs). RQ1: What is the prevalence of each of the three types of social withdrawal classified by the research diagnostic criteria for *hikikomori* (Teo & Gaw, 2010)? RQ2: What are the correlates of social withdrawal lasting more than and less than 6 months? RQ3: What are the differences, if any, between individuals with social withdrawal behavior but self-perceived as non-problematic with the non-withdrawn individuals? RQ4: What factors are associated with longer periods of social withdrawal?

Methods

Data collection

We conducted a cross-sectional telephone survey in Hong Kong between January and March 2013. Trained researchers from the Social Science Research Centre, The University of Hong Kong, with 2 full-day training on telephone survey, and basic knowledge of research methodology and usage of research-related computer programs, coding and rules briefing conducted the telephone interviews. Before the survey period, they attended briefing and role-play interviews under the supervision of senior researchers at the Centre. To ensure the quality of the survey, the supervisor randomly checked the recorded phone interviews and called back interviewees and asked a few selected questions to reconfirm the answers. All interviews were conducted in Cantonese. A sample of 80,000 mobile numbers was randomly generated using the mobile numbers prefix data published by the Office of the Telecommunications Authority. Among the holders of these 80,000 numbers, 8,912 were aged below 12 years or above, 29,725 were not available and 12,500 produced a busy tone or other communication problem. A further 22,970 numbers were invalid. We successfully contacted 2,854 people via their

mobile phones, with 214 dropping out during the survey and 1,630 refusing to participate, giving a final response rate of 35.4% ($=1,010/1,010 + 214 + 1,630$). The Human Research Ethics Committee for Non-Clinical Faculties in the authors' university approved this study (reference number: EA190712).

Measures

We classified the variables under study into five domains: (a) sociodemographic, (b) psychological, (c) behavioral, (d) negative life events, and (d) social communication and relationships.

Social withdrawal behavior – the dependent variable. The pattern of social withdrawal behaviors was assessed using the proposed research diagnostic criteria for *hikikomori* developed by Teo and Gaw (2010). These include (1) spending most of the day and nearly every day confined at home; (2) persistently avoiding social situations (such as going to school or working) and social relationships (such as friendships and contact with family members); (3) experiencing significant interference with academic, work, family and social functioning as a result of withdrawal and (4) feeling irritable, ashamed or worried about the situation while it is going on. Participants were also asked whether they had been diagnosed with social phobia, major depressive disorder, schizophrenia or avoidant personality disorder. In terms of duration, the rating options presented to participants were 0–3 months, 3–6 months, 6–12 months and more than a year. They were also asked whether or not they consider their behavior to be problematic.

In this study, we defined individuals as suffering from social withdrawal and more or less than 6 months' social withdrawal if (a) they met criteria (1) and (2), (b) they had not been diagnosed with any of the listed disorders, and (c) the reported duration of any of the social withdrawal behaviors was 6 months more or less. We defined individuals as belonging to the self-perceived non-problematic group if (a) they met criteria (1) and (2), (b) they had not been diagnosed with the listed disorders, and (c) they self-reported that they did not find the withdrawal behaviors to be problematic, regardless of the duration of social withdrawal. The difference of this group and the other two social withdrawal groups is the self-reported non-problematic in this group, but not in the previous two groups. Individuals who did not fall into any of the three groups were defined and served as the comparison group in this study (Figure 1).

Sociodemographic characteristics. Sociodemographic characteristics included educational level, marital status, living arrangements, employment status and individual monthly income.

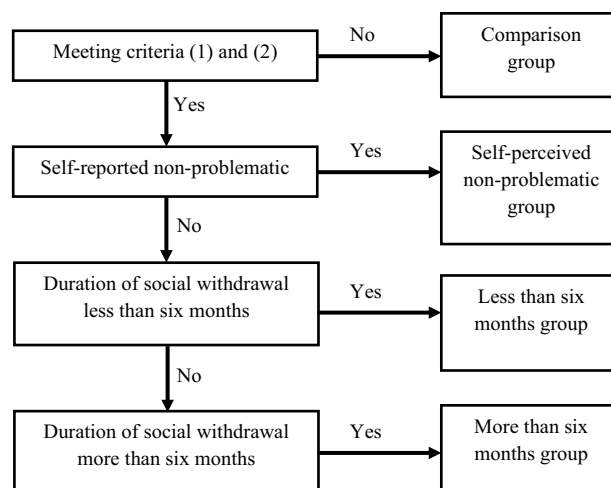


Figure 1. Categorization of the three social withdrawal groups and the comparison group.

Psychological variables. The psychological factors investigated in this study included health-related quality of life, measured using the 12-item locally validated General Health Questionnaire (GHQ-12, Li, Chung, Chui, & Chan, 2009).

Behavioral variables. The behavioral factors investigated included Internet addiction, lifetime risk behaviors, and off- and online help-seeking behaviors.

1. Internet addiction.

The presence of Internet addiction was assessed using an eight-item checklist developed by Young (1999). We have used them in previous work (Fu, Chan, Wong, & Yip, 2010). The total score of the scale is used as a continuous variable in this study.

2. Risk behaviors.

In all, 15 risk behaviors were measured using a yes/no checklist format. The list of behaviors was adapted from the Youth Risk Behavior Survey (YRBS) established by the Centers for Disease Control and Prevention. The YRBS has been validated and used in a local setting (Lee, Tsang, Lee, & To, 2001). Each risk behavior was used as a categorical variable (presence vs absence). The total number of risk behaviors was also used as a continuous variable.

3. Help-seeking behavior.

We measured the offline and online help-seeking behaviors of the participants. The offline helping sources included, for example, family/relatives, friends/classmates/colleagues, teachers and social workers. The online sources included family/relatives, friends/class-mates/

colleagues, teachers and online professional services. The total number of sources from which help had been sought by the participant within the last month was used as a continuous variable in this study. Furthermore, the willingness to be approached by helping professionals via online means was also evaluated using a five-point Likert scale (1 = *least likely*; 5 = *most likely*).

Past-month negative life event categories. A list of locally relevant past-month negative life event categories, that is, academic situation, job, finances, social networks (relationships with colleagues, friends, and classmates), health, relationships with family and relationships with spouse or partner was developed. The overall negative psychological impact of the seven life situations was quantified using a five-point Likert scale (1 = *not at all* to 5 = *very serious*).

Social communication and relationship variables. The social communication and relationship variables investigated in this study included means of communicating with others, ways of expressing distress and interpersonal relationships.

1. *Means of communicating with others and expressing distress.*

This section included nine communications methods, for example, face-to-face conversation, phone conversation via mobile or home landline, text messages sent via mobile phone and social networking sites such as Facebook. The frequency of using each method to contact others and express distress were also measured using a five-point (0 = *none*, 1 = *once a week*, 2 = *several times a week*, 3 = *once a day* and 4 = *several times a day*) and a four-point Likert scale (1 = *not at all*; 2 = *rarely*, 3 = *sometimes* and 4 = *very often*), respectively.

2. *Interpersonal relationships.*

The interpersonal relationships investigated here included Internet social support and the size of the participant's network in Facebook and WhatsApp. The first of these was assessed using a self-developed list of items. The latter was measured by the number of friends on the participant's Facebook and WhatsApp accounts respectively (set at fewer than 150 friends and 150 or more). In all, 150 friends were used as the cutoff because it was suggested that 150 is a reflection of a maximum number of stable social relationships among Facebook users (Gonçalves, Perra, & Vespignani, 2011).

Statistical analyses

First, descriptive analyses were conducted, and comparisons were made between the four groups of participants.

Second, multinomial logistic regression analyses were conducted. The comparison group served as the reference group in the multinomial logistic regression analyses. Third, ordinal logistic regression analyses were used to identify the correlates associated with social withdrawal. The dependent variable was defined as ordinal with four progressive levels from (1) *without any social withdrawal behavior*, (2) *with withdrawal behavior but self-perceived as non-problematic*, (3) *withdraw for less than 6 months* to (4) *withdraw for more than 6 months*. Ordinal logistic regression utilizes the ordinality of the dependent variable to provide a single odds ratio for each independent variable, which improves the parsimony and power of the model (Agresti, 2002). All data analyses were conducted using the SPSS software.

Results

Characteristics of the population aged 12–29 years in Hong Kong

In 2011, there were 1,537,619 Chinese individuals aged 12–29 years in Hong Kong, of whom 776,520 (50.50%) were male, and 1,411,952 (91.76%) had never been married. About 58.39% ($n=968,027$) were studying full- or part-time and 41.53% ($n=688,527$) had either completed or stopped their education by 2011.

Characteristics of the study participants

Among the 1,010 participants, 542 (54%) were male. The average age was 20.79 years (standard deviation (SD)=4.59), and there was no age difference between males and females ($t=1.03$; $p=.30$). The majority were single ($n=949$; 93.96%); 789 (78.11%) participants had received at least 12 years of education. The majority ($n=833$; 87.43%) lived with their parents or others. The demographic profile of the participants is similar to that of the population aged 12–29 years in 2011 as a whole.

RQ1: The pattern and prevalence of social withdrawal behaviors. The frequencies of the social withdrawal criteria are as follows (see Table 1): (1) 372 (36.83%) participants reported spending most of the day and nearly every day confined to their homes; (2) 146 (14.46%) reported persistently avoiding social situations and relationships; (3) 123 (12.18%) reported that social withdrawal and avoidance interfered significantly with academic, work, family and social functioning and (4) 101 (10.00%) reported feeling irritable, ashamed, or worried about their situation while remaining at home.

Among those meeting both the social withdrawal criteria (1) and (2) ($n=70$, 6.93%), 21 (30.00%) had experienced this for 0–3 months, 4 (0.06%) for 3–6 months, 4 (0.06%) for 6–12 months, 15 (21.43%) for more than a

Table 1. Characteristics of the participants based on the proposed research diagnostic criteria for *hikikomori*.

Variables	No. of	No. of	No. of	No. of	No. of
	Participants (%)	Participants (%)	Participants (%)	Participants (%)	Participants (%)
	All Participants, (n=1,010)	Met Criteria 1*, (n=372)	Met Criteria 2*, (n=146)	Met Criteria 3*, (n=123)	Met criteria 4*, (n=101)
Diagnosis of the listed disorders					
Yes	25 (3)	11 (3)	9 (6)	8 (7)	2 (2)
No	985 (97)	361 (98)	137 (94)	115 (94)	99 (98)
Duration of symptoms					
No symptom	479 (48)	0 (0)	0 (0)	0 (0)	0 (0)
0–3 months	141 (14)	87 (24)	39 (27)	37 (30)	55 (55)
3–6 months	21 (2)	12 (3)	9 (6)	7 (6)	10 (10)
6–12 months	17 (2)	8 (2)	8 (6)	4 (3)	7 (7)
More than a year	51 (5)	31 (8)	27 (19)	15 (12)	15 (15)
Non-problematic	298 (30)	233 (63)	62 (43)	59 (48)	14 (14)
Gender					
Male	542 (54)	166 (45)	81 (55)	59 (48)	54 (54)
Female	468 (46)	206 (55)	65 (45)	64 (52)	47 (46)
Age, years					
18<	262 (26)	106 (29)	40 (27)	29 (24)	28 (28)
18–24	473 (47)	165 (45)	66 (45)	50 (41)	44 (44)
24>	273 (27)	100 (27)	40 (27)	44 (36)	29 (29)
Educational level					
Above Form 3	789 (78)	270 (73)	100 (69)	98 (80)	79 (78)
Form 3 or below	218 (22)	101 (27)	46 (32)	25 (20)	22 (22)
Marital status					
Never married	949 (94)	345 (93)	138 (95)	111 (90)	96 (95)
Separated/divorced	7 (1)	2 (1)	1 (1)	1 (1)	1 (1)
Currently married	52 (5)	24 (7)	7 (5)	11 (9)	4 (4)
Living arrangement					
Living alone	23 (2)	9 (2)	2 (1)	5 (4)	3 (3)
Lived with someone including parents	883 (88)	311 (84)	132 (90)	95 (79)	85 (84)
Lived with someone but not parents	97 (10)	49 (13)	12 (8)	21 (17)	13 (13)
Employment status					
Employed	395 (39)	128 (34)	45 (31)	48 (39)	34 (34)
Unemployed	30 (3)	18 (5)	8 (6)	6 (5)	7 (7)
Economically inactive (student)	585 (58)	226 (61)	93 (64)	69 (56)	60 (59)
Monthly income					
HKD6000 or above	369 (37)	119 (33)	45 (31)	45 (37)	30 (30)
Below HKD6	12 (1)	3 (1)	0 (0)	1 (1)	2 (2)
No income	30 (3)	18 (5)	8 (6)	6 (5)	7 (7)
Student with no income	585 (59)	226 (62)	93 (64)	69 (57)	60 (61)

*Criteria 1 refers to confinement at home, criteria 2 refers to social isolation, criteria 3 refers to impairment in daily functioning and criteria 4 refers to irritability due to withdrawal.

year and 26 (37.14%) stated they did not think their withdrawal behaviors were problematic. Among these 70 individuals, none had been diagnosed with social phobia, major depressive disorder, schizophrenia or avoidant personality disorder. In other words, 19 individuals (1.9%) were classified in the more than 6 months' social withdrawal category; 25 (2.5%) in the less than 6 months'

group; 26 (2.6%) as self-perceived non-problematic; and 940 (93.1%) were classified in the non-withdrawn or comparison group. The prevalence rates of more than 6 months, less than 6 months, and self-perceived non-problematic social withdrawal were 1.9% (95% confidence interval (CI): 1.1–2.7), 2.5% (95% CI: 1.5–3.5) and 2.6% (95% CI: 1.6–3.6), respectively.

RQ2: The correlates of less than and more than 6 months of social withdrawal in Hong Kong

The sociodemographic characteristics of the more than 6 months' and less than 6 months' groups are shown in Table 2. Unemployed individuals were 11.4 times as likely to be in the more than 6 months' group, and 7.5 times as likely to be in the less than 6 months' group, than those who were working. Students were 2.8 times as likely to be in the less than 6 months' group. Those with no monthly income were 10.6 times as likely to be in the more than 6 months' group, and 7.0 times as likely to be in the less than 6 months' group than those who were employed.

Tables 3 and 4 present the differences between the two groups of participants. First, the GHQ-12 total scores of the more than 6 and less than 6 months' social withdrawal individuals were around three points higher than those in the comparison groups. Second, those in the more than 6 months' group reported one more lifetime risk behavior than the comparison group. Those in the more than 6 months' social withdrawal group were less motivated to seek help than the comparison group. Third, the individuals in both the less than and more than 6 months' social withdrawal groups had experienced more intense negative life events including job, social network and family problems than the comparison group. Fourth, those in both the more than and less than 6 months' groups were less likely to express distress face to face, and were more likely to express distress and contacting others through online forums.

RQ3: The correlates of self-perceived non-problematic social withdrawal in Hong Kong

As shown in Tables 2 to 4, there were no statistically significant differences between this group and the comparison group in terms of all examined variables except educational level and some behavioral variables. Individuals in the self-perceived non-problematic social withdrawal group reported more self-injury behavior than the comparison group; however, the non-problematic ones used more online help resources than the comparison group.

RQ4: What factors are associated with longer periods of social withdrawal?

Table 5 presents the findings of the ordinal logistic regression analyses. First, sociodemographic characteristics including gender, age, educational level, employment status and monthly income were found statistically significant. Individuals with an education level of lower than Form 3 had a 2.3 times higher risk of being at a higher level of social withdrawal. Unemployed individuals were

five times as likely to be at a higher level of social withdrawal. Second, a higher GHQ-12 total score was associated with an increased risk of social withdrawal. Third, more Internet addiction symptoms, and reported intentional self-injury, unintended pregnancy, abortion, compensated dating and bullying of others were all associated with an increased risk of social withdrawal. Fourth, job stress was significantly associated with an increased risk of being at a higher level of social withdrawal. Fifth, individuals who were willing to express distress face to face and on the phone were less likely to be at a higher level of social withdrawal.

Discussion

In sum, the prevalence of more than 6 months' social withdrawal in Hong Kong is comparable to the prevalence of *hikikomori* among young people in Japan (Koyama et al., 2010). It seems that severe social withdrawal is not a culture-bound syndrome or phenomenon that exists only in Japan. It can be estimated that there are about 16,900–41,000 young people who may exhibit problematic social withdrawal for more than 6 months in Hong Kong.

We found that socially withdrawn individuals form two major groups. The less than 6 months' group showed similar features with the more than 6 months' group, and the self-perceived non-problematic group seems to form another cohort which was more similar to the comparison group. The study showed males have a higher chance than females of becoming socially withdrawn as also found in other studies (Teo, 2010). Young Asian men may have a stronger desire for success coupled with a greater need to save face if they are not successful, so they may be more sensitive to failure and more likely to decide to simply withdraw from society if they consider themselves to have failed (Uchida, 2010).

Social withdrawal behavior: A compulsion or discretion

The results show a mixed picture of psychiatric and social factors for severe social withdrawal. The results on one hand indicate that there are increased risk behaviors, negative life events and higher GHQ-12 scores for social withdrawal individuals, which are proxy correlates of psychiatric concerns. On the other hand, less than 50% of those in the more than and less than 6 months' groups reported any social and psychological impairment as a result of their social withdrawal behaviors. The majority of participated withdrawn individuals match with the characteristics of '*primary hikikomori*' (withdrawn individuals without any prior psychiatric disorders) as suggested by Teo and Gaw (2010). Besides, only 4% had received psychiatric treatment in the past. These findings are inconsistent with the work carried out in Japan indicating that

Table 2. Comparison of sociodemographic characteristics of the classified individuals and adjusted odd ratios from multinomial logistic regression.

Variables	Comparison	Self-perceived non-problematic		Less than 6 months		Longer than 6 months	
		No. (%), (n = 940)	No. (%), (n = 26)	Adjusted OR (95%CI)	No. (%), (n = 25)	Adjusted OR (95%CI)	No. (%), (n = 19)
Gender							
Male	426 (45)	16 (62)	1	15 (60)	1	11 (58)	1
Female	514 (55)	10 (39)	0.5 (0.2–1.2)	10 (40)	0.6 (0.2–1.3)	8 (42)	0.6 (0.2–1.5)
Age							
18<	249 (27)	9 (34)	1	7 (28)	1	8 (42)	1
18–24	449 (48)	7 (27)	0.4 (0.2–1.2)	9 (36)	0.7 (0.3–1.9)	8 (42)	0.5 (0.2–1.5)
24>	240 (26)	10 (39)	1.1 (0.4–2.8)	9 (36)	1.3 (0.5–3.5)	3 (16)	0.4 (0.1–1.4)
Educational level							
Above Form 3	745 (80)	14 (54)	1	19 (76)	1	11 (58)	1
Form 3 or below	192 (21)	12 (46)	3.3 (1.5–7.3)**	6 (24)	1.2 (0.5–3.1)	8 (42)	2.8 (1.1–7.1)*
Marital status							
Never married	883 (94)	26 (100)	1	23 (92)	1	17 (90)	1
Separated/divorced	6 (1)	0 (0)	n/a	1 (4)	5.6 (0.6–50.5)	0 (0)	n/a
Currently married	49 (5)	0 (0)	n/a	1 (4)	0.8 (0.1–6.1)	2 (11)	2.5 (0.5–11.3)
Living arrangement							
Lived with someone including parents	823 (88)	23 (89)	1	19 (76)	1	18 (95)	1
Lived with someone but not parents	87 (9)	3 (12)	1.3 (0.4–4.3)	6 (24)	3.0 (1.2–7.9)*	1 (5)	0.5 (0.1–4.0)
Lived alone	23 (3)	0 (0)	n/a	0 (0)	n/a	0 (0)	n/a
Employment status							
Employed	375 (40)	9 (35)	1	5 (20)	1	6 (32)	1
Unemployed	24 (3)	1 (4)	2.1 (0.3–17.9)	2 (8)	7.5 (1.3–42.4)*	3 (16)	11.4 (2.5–52.3)**
Economically inactive (student)	541 (58)	16 (62)	1.4 (0.6–3.2)	18 (72)	2.8 (1.0–7.7)*	10 (53)	1.2 (0.4–3.2)
Monthly income							
HKD6000 or above	349 (38)	9 (35)	1	5 (20)	1	6 (32)	1
Below \$6 K	12 (1)	0 (0)	n/a	0 (0)	n/a	0 (0)	n/a
No income	24 (3)	1 (4)	2.0 (0.2–16.8)	2 (8)	7.0 (1.3–39.6)*	3 (16)	10.6 (2.3–48.7)**
Student with no income	541 (58)	16 (62)	1.3 (0.6–3.0)	18 (72)	2.6 (1.0–7.2)	10 (53)	1.1 (0.4–3.1)

CI: confidence interval; OR: odds ratio.

Adjusted OR was controlled with age and gender; n/a: adjusted OR was not obtained because of no subject in the category; the comparison group served as the reference group for the dependent variable; when OR = 1, the category in a categorical variable is the reference group to the other category(s).

* $p < .05$; ** $p < .01$.

around 54.5% had experienced a lifetime psychiatric disorder (Koyama et al., 2010). We acknowledge that the inclusion of a psychiatric assessment in the study would significantly affect this particular finding. However, we regard this as a very large discrepancy which cannot be explained solely by the presence of psychiatric assessment factor. This leads us to suspect that social withdrawal among young people in Hong Kong could be a result of the complex interaction between developmental, social, psychological and employment challenges in Hong Kong. Qualitative studies using in-depth interviews are needed to examine what the pull-and-push factors are leading to social withdrawal in Hong Kong.

Similarities between the more than and less than 6 months' groups

One of the core commonalities between the two groups of socially withdrawn participants is that they seem to be less psychologically healthy as reflected by their higher GHQ-12 scores. Based on the similarities of the two groups, it is worth considering whether the traditional 6-month criterion for severe social withdrawal may be too long and the duration for early detection and intervention may have been prolonged.

Confining oneself at home limits the opportunities for work and social activities, which are two most

Table 3. Comparison of psychological, behavioral, negative life event, social communication and relationship continuous variables of the classified individuals and adjusted odd ratios from multinomial logistic regression.

Variables	Comparison	Self-perceived non-problematic		Less than 6 months		Longer than 6 months	
	M (SD), (n=940)	M (SD), (n=26)	Adjusted OR (95%CI)	M (SD), (n=25)	Adjusted OR (95%CI)	M (SD), (n=19)	Adjusted OR (95%CI)
Psychological variables							
GHQ-12 total score	22.4 (4.8)	22.0 (3.5)	1.0 (0.9–1.1)	25.1 (5.5)	1.1 (1.0–1.2)**	25.0 (6.9)	1.1 (1.0–1.2)*
Behavioral variables							
No. of Internet addiction symptoms	1.6 (1.6)	1.9 (2.2)	1.1 (0.9–1.4)	2.9 (2.2)	1.4 (1.2–1.8)***	2.6 (2.1)	1.4 (1.1–1.7)*
No. of lifetime risk behaviors	1.4 (1.8)	1.5 (2.3)	1.0 (0.8–1.2)	1.3 (1.4)	0.9 (0.7–1.2)	2.5 (3.1)	1.3 (1.0–1.5)*
No. of offline helping sources sought	1.2 (1.1)	1.3 (1.1)	1.0 (0.6–1.8)	1.4 (1.1)	1.2 (0.8–1.8)	0.6 (0.9)	0.5 (0.3–0.9)*
No. of online helping sources sought	0.5 (0.6)	0.9 (1.2)	2.2 (1.1–4.2)*	0.4 (0.6)	0.9 (0.4–1.9)	0.1 (0.3)	0.3 (0.1–1.0)
Willingness to be approached online by professionals	2.9 (1.0)	2.9 (1.2)	1.0 (0.7–1.4)	2.8 (0.9)	1.0 (0.7–1.4)	2.5 (1.1)	0.7 (0.4–1.1)
Negative life event categories							
Academic	1.9 (1.1)	1.5 (0.9)	0.6 (0.3–1.1)	2.2 (1.2)	1.2 (0.8–1.8)	2.0 (1.3)	1.1 (0.6–1.9)
Job	1.8 (1.0)	1.5 (0.7)	0.7 (0.3–1.6)	2.4 (1.5)	1.7 (1.0–2.9)	2.9 (1.6)	2.1 (1.2–3.6)**
Finance	1.4 (0.8)	1.2 (0.5)	0.7 (0.4–1.4)	1.7 (1.2)	1.4 (0.9–2.0)	1.5 (1.0)	1.1 (0.7–1.9)
Social networks	1.2 (0.6)	1.0 (0.2)	0.3 (0.04–1.6)	1.5 (0.9)	1.7 (1.1–2.8)*	1.5 (0.7)	1.9 (1.1–3.3)*
Health	1.3 (0.7)	1.3 (0.6)	1.0 (0.6–1.8)	1.4 (0.7)	1.3 (0.8–2.1)	1.6 (0.9)	1.5 (0.9–2.4)
Relations with family	1.2 (0.6)	1.0 (0.2)	0.3 (0.04–1.6)	1.6 (0.8)	1.8 (1.2–2.7)**	1.3 (0.5)	1.3 (0.7–2.4)
Relations with spouse/partner	1.2 (0.6)	1.2 (0.4)	0.8 (0.3–2.0)	1.2 (0.4)	1.0 (0.3–2.7)	1.1 (0.4)	0.7 (0.2–3.5)
Social communication and relationship variables							
Means of expressing distress							
Face to face	2.9 (0.9)	2.7 (1.0)	0.8 (0.5–1.2)	2.2 (0.9)	0.5 (0.3–0.7)**	2.3 (1.2)	0.5 (0.3–0.8)**
Phone	2.8 (1.0)	2.5 (1.0)	0.8 (0.5–1.1)	2.5 (0.9)	0.8 (0.5–1.1)	2.4 (1.0)	0.7 (0.5–1.1)
SMS on mobile phone	1.7 (0.9)	1.8 (1.0)	1.1 (0.7–1.6)	1.7 (0.8)	1.0 (0.6–1.5)	1.6 (0.9)	0.9 (0.5–1.4)
WhatsApp	2.8 (1.1)	2.4 (1.2)	0.8 (0.5–1.0)	2.9 (1.2)	1.1 (0.7–1.6)	2.6 (1.3)	0.9 (0.6–1.3)
Instant message	2.1 (1.0)	2.3 (1.1)	1.2 (0.8–1.7)	2.4 (1.1)	1.3 (0.9–1.8)	2.4 (1.3)	1.3 (0.8–2.0)
Blog	1.3 (0.7)	1.1 (0.3)	0.4 (0.1–1.3)	1.4 (0.8)	1.2 (0.6–2.0)	1.4 (1.0)	1.4 (0.7–2.3)
Forum	1.2 (0.5)	1.3 (0.5)	1.1 (0.6–2.3)	1.4 (0.9)	1.5 (0.9–2.8)	1.6 (1.1)	2.0 (1.2–3.5)**
Micro-blogging	1.6 (0.9)	1.4 (0.9)	0.7 (0.4–1.2)	2.0 (1.2)	1.6 (1.0–2.1)*	1.7 (1.0)	1.2 (0.7–1.8)
Social networking site	2.1 (0.9)	2.0 (1.0)	0.9 (0.6–1.4)	2.3 (0.9)	1.3 (0.8–1.9)	2.4 (1.1)	1.5 (0.9–2.3)
Means of contacting others							
Face to face	2.9 (1.3)	2.8 (1.6)	0.9 (0.7–1.2)	2.6 (1.4)	0.8 (0.6–1.1)	2.4 (1.5)	0.7 (0.5–1.0)
Phone	3.2 (1.1)	3.2 (1.1)	1.0 (0.7–1.5)	2.6 (1.3)	0.7 (0.5–0.9)*	2.9 (1.2)	0.8 (0.6–1.2)
SMS on mobile phone	1.3 (1.5)	1.4 (1.7)	1.0 (0.8–1.4)	1.5 (1.6)	1.1 (0.9–1.4)	1.2 (1.5)	1.0 (0.7–1.4)
WhatsApp	3.5 (1.1)	3.2 (1.6)	0.8 (0.6–1.1)	3.4 (1.2)	0.9 (0.7–1.3)	3.5 (1.1)	1.0 (0.7–1.4)
Instant message	2.2 (1.6)	2.6 (1.5)	1.2 (0.9–1.6)	2.7 (1.6)	1.3 (1.0–1.6)	2.5 (1.6)	1.1 (0.8–1.6)
Blog	0.4 (0.9)	0.3 (0.8)	0.9 (0.6–1.5)	0.3 (0.9)	0.9 (0.6–1.5)	0.7 (1.4)	1.3 (0.9–2.0)
Forum	1.0 (1.4)	1.0 (1.5)	1.0 (0.8–1.3)	0.9 (1.4)	0.9 (0.7–1.2)	1.8 (1.8)	1.4 (1.0–1.8)*
Micro-blogging	1.5 (1.7)	1.2 (1.6)	0.9 (0.7–1.1)	2.3 (1.6)	1.4 (1.0–1.6)*	1.6 (1.7)	1.0 (0.8–1.3)
Social networking site	3.0 (1.3)	2.6 (1.3)	0.8 (0.6–1.0)	3.7 (0.6)	2.2 (1.2–3.9)*	3.3 (1.3)	1.2 (0.8–1.8)
Internet social support	4.5 (1.1)	4.6 (1.0)	1.1 (0.7–1.5)	5.0 (0.7)	1.5 (1.0–2.2)	4.2 (1.3)	0.8 (0.5–1.1)

CI: confidence interval; GHQ: General Health Questionnaire; OR: odds ratio.

Adjusted OR was controlled by age and gender; the comparison group served as the reference group.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4. Comparison of psychological, behavioral, negative life event, social communication and relationship categorical variables of the classified individuals and adjusted odd ratios from multinomial logistic regression.

Variables	Comparison	Self-perceived non-problematic		Less than 6 months		Longer than 6 months	
		No. (%), (n=940)	No. (%), (n = 26)	Adjusted OR (95%CI)	No. (%), (n=25)	Adjusted OR (95%CI)	No. (%), (n=19)
<i>Psychological variables</i>							
Hikikomori diagnostic criterion 3							
Not met	839 (89)	21 (81)	1	13 (52)	1	14 (74)	1
Met	101 (11)	5 (19)	1.9 (0.7–5.2)	12 (48)	7.5 (3.3–17.0)***	5 (26)	3.2 (1.1–9.1)*
Hikikomori diagnostic criterion 4							
Not met	848 (90)	26 (100)	1	20 (80)	1	15 (79)	1
Met	92 (10)	0 (0)	n/a	5 (20)	2.2 (0.8–6.0)	4 (21)	2.4 (0.8–7.3)
<i>Behavioral variables</i>							
Lifetime risk behaviors							
Consider suicide							
Absence	753 (80)	19 (73)	1	17 (68)	1	14 (74)	1
Presence	187 (20)	7 (27)	1.4 (0.6–3.5)	8 (32)	1.9 (0.8–4.4)	5 (26)	1.4 (0.5–3.9)
Injure self intentionally							
Absence	849 (90)	20 (77)	1	22 (88)	1	14 (74)	1
Presence	91 (10)	6 (23)	2.7 (1.1–7.1)*	3 (12)	1.3 (0.4–4.3)	5 (26)	3.2 (1.1–9.1)*
Drink >5 drinks in one occasion							
Absence	670 (71)	22 (85)	1	21 (84)	1	12 (63)	1
Presence	269 (29)	4 (15)	0.4 (0.1–1.2)	4 (16)	0.4 (0.1–1.2)	7 (37)	1.4 (0.5–3.6)
>5 cigarettes per day							
Absence	845 (90)	24 (92)	1	22 (88)	1	16 (84)	1
Presence	95 (10)	2 (8)	0.6 (0.1–2.8)	3 (12)	1.1 (0.3–3.7)	3 (16)	1.5 (0.4–5.3)
Drug/substance use							
Absence	916 (97)	25 (96)	1	25 (100)	1	19 (100)	1
Presence	24 (3)	1 (4)	1.1 (0.1–8.9)	0 (0)	n/a	0 (0)	n/a
Gambling							
Absence	668 (71)	21 (81)	1	22 (88)	1	15 (79)	1
Presence	272 (29)	5 (19)	0.5 (0.2–1.3)	3 (12)	0.3 (0.1–0.9)*	4 (21)	0.6 (0.2–1.8)
Debt problems							
Absence	883 (94)	24 (92)	1	24 (96)	1	17 (90)	1
Presence	57 (6)	2 (8)	1.2 (0.3–5.0)	1 (4)	0.6 (0.1–4.2)	2 (11)	1.8 (0.4–8.1)
Unsafe sex							
Absence	857 (92)	23 (89)	1	25 (100)	1	17 (90)	1
Presence	80 (9)	3 (12)	1.3 (0.4–4.5)	0 (0)	n/a	2 (11)	1.2 (0.3–5.6)
Sexually transmitted diseases							
Absence	936 (100)	26 (100)	1	25 (100)	1	19 (100)	1
Presence	3 (0)	0 (0)	n/a	0 (0)	n/a	0 (0)	n/a
Unintended pregnancy							
Absence	931 (99)	26 (100)	1	25 (100)	1	16 (84)	1
Presence	9 (1)	0 (0)	n/a	0 (0)	n/a	3 (16)	37.9 (7.9–182.1)***
Abortion							
Absence	935 (100)	26 (100)	1	25 (100)	1	17 (90)	1
Presence	5 (1)	0 (0)	n/a	0 (0)	n/a	2 (11)	39.8 (6.3–250.9)***
Compensate dating							
Absence	919 (98)	24 (92)	1	24 (96)	1	16 (84)	1
Presence	21 (2)	2 (8)	3.7 (0.8–16.8)	1 (4)	1.8 (0.2–14.1)	3 (16)	7.8 (2.1–29.2)**
Bully others							
Absence	857 (91)	22 (85)	1	21 (84)	1	14 (74)	1
Presence	83 (9)	4 (15)	1.5 (0.5–4.6)	4 (16)	1.6 (0.5–5.0)	5 (26)	3.4 (1.1–10.0)*
Bullied by others							
Absence	808 (86)	22 (85)	1	20 (80)	1	13 (68)	1
Presence	132 (14)	4 (15)	1.0 (0.3–3.1)	5 (20)	1.4 (0.5–3.9)	6 (32)	2.9 (1.1–7.8)*
Legal offences							
Absence	914 (97)	26 (100)	1	25 (100)	1	18 (95)	1
Presence	26 (3)	0 (0)	n/a	0 (0)	n/a	1 (5)	2.1 (0.3–17.0)

(Continued)

Table 4. (Continued)

Variables	Comparison	Self-perceived non-problematic		Less than 6 months		Longer than 6 months	
		No. (%), (n = 940)	No. (%), (n = 26)	Adjusted OR (95%CI)	No. (%), (n = 25)	Adjusted OR (95%CI)	No. (%), (n = 19)
<i>Social communication and relationship variables</i>							
Size of social network in Facebook							
150 friends or above	699 (77)	18 (72)	1	19 (76)	1	8 (44)	1
Below 150 friends	205 (23)	7 (28)	1.2 (0.5–3.0)	6 (24)	1.0 (0.4–2.6)	10 (56)	4.0 (1.6–10.4)**
Size of social network in WhatsApp							
150 friends or above	134 (15)	5 (22)	1	1 (4)	1	2 (11)	1
Below 150 friends	744 (85)	18 (78)	0.6 (0.2–1.8)	23 (96)	4.1 (0.5–30.9)	16 (89)	1.4 (0.3–6.5)

CI: confidence interval; OR: odds ratio.

Adjusted OR was controlled with age and gender; n/a: adjusted OR was not obtained because of no subject in the category; the comparison group served as the reference group for the dependent variable; when OR = 1, the category in a categorical variable is the reference group to the other category(s).

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 5. Significant unadjusted and adjusted odds ratios estimated from ordinal logistic regression, significant factors with levels of social withdrawal.

Variables	Unadjusted OR (95%CI)	Adjusted OR (95%CI)
Gender		
Male	1	1
Female	0.6 (0.3–0.9)*	0.6 (0.3–0.9)*
Age		
18<	1	1
18–24	0.6 (0.3–1.0)*	0.5 (0.3–1.0)*
24>		
Educational level		
Above Form 3	1	1
Form 3 or below	2.3 (1.4–3.8)**	2.3 (1.4–3.8)**
Employment status		
Employed	1	1
Unemployed	5.0 (1.9–13.4)**	6.4 (2.3–17.6)***
Economically inactive (student)	1.5 (0.9–2.6)	1.7 (1.0–2.9)
Monthly income		
HKD6000 or above	1	1
Below HKD6	n/a	n/a
No income	4.7 (1.8–12.4)**	6.0 (2.2–16.4)**
Student with no income	1.4 (0.8–2.5)	1.6 (0.9–2.7)
Psychological variables		
GHQ-12 total score		
Hikikomori diagnostic criterion 3	1.1 (1.0–1.1)*	1.1 (1.0–1.1)**
Not met	1	1
Met	3.9 (2.2–6.6)***	3.8 (2.2–6.7)***
Behavioral variables		
No. of Internet addiction symptoms		
	1.3 (1.1–1.5)***	1.3 (1.1–1.5)***
Lifetime risk behaviors		
Injure self intentionally		
Absence	1	1
Presence	2.3 (1.3–4.3)**	2.3 (1.2–4.3)*
Gambling		

Table 5. (Continued)

Variables	Unadjusted OR (95%CI)	Adjusted OR (95%CI)
Absence	1	1
Presence	0.5 (0.3–1.0)*	0.4 (0.2–0.8)**
Unintended pregnancy		
Absence	1	1
Presence	6.0 (1.7–20.6)**	8.6 (2.4–31.4)**
Abortion		
Absence	1	1
Presence	7.5 (1.6–34.5)*	11.1 (2.3–54.0)**
Compensated dating		
Absence	1	1
Presence	4.3 (1.7–10.8)**	4.2 (1.6–10.7)**
Bully others		
Absence	1	1
Presence	2.4 (1.3–4.5)**	2.0 (1.1–3.9)*
Negative life event categories		
Job	1.4 (1.0–2.0)*	1.5 (1.0–2.0)*
<i>Social communication and relationship variables</i>		
Means of expressing distress		
Face to face	0.6 (0.5–0.8)***	0.6 (0.5–0.8)***
Phone	0.7 (0.6–0.9)*	0.8 (0.6–1.0)
Forum	1.6 (1.2–2.3)**	1.6 (1.1–2.2)*
Means of contacting others		
Face to face	0.8 (0.7–1.0)*	0.8 (0.7–1.0)
Phone	0.8 (0.7–1.0)*	0.8 (0.7–1.0)
Instant message	1.2 (1.0–1.4)*	1.2 (1.0–1.4)*
<i>Social communication and relationship variables</i>		
Size of social network in Facebook		
150 friends or above	1	1
Below 150 friends	1.8 (1.1–3.0)*	1.7 (1.0–2.8)

CI: confidence interval; GHQ: General Health Questionnaire; OR: odds ratio.

Adjusted OR was controlled by age and gender; n/a: adjusted OR was not obtained because of no subject in the category; when OR = 1, the category in a categorical variable is the reference group to the other category(ies).

* $p < .05$ ** $p < .01$ *** $p < .001$

important sources of happiness in many people's lives. Although some individuals who have socially withdrawn may consider relationships or making social contact to be annoying (Yong, 2010), our study shows that these participants do communicate with others through the Internet. It seems that being physically invisible and anonymous in online communication may reduce their anxiety because they may lack nonverbal communication skills. Hence, engaging the socially withdrawn through digital means seems to be a feasible pathway to detection and intervention.

Differences between the more than and less than 6 months' groups

Although the differences between the two socially withdrawn groups are minimal, individuals who had received

less education tended to exhibit more risk behaviors than the comparison group. We speculate that people with more education may have better coping flexibility and have more chance of being able to self-direct themselves out of a socially withdrawn period. Those with less education are likely to be seen as 'failures' in the Hong Kong education system, which is narrowly focused on academic excellence. Such individuals will continue to be treated as failures, labeled as lazy, and excluded by people in the 'mainstream' (Borovoy, 2008) and may ultimately develop a learned helplessness attitude that keeps them from exploring opportunities. Furthermore, those vulnerable long-term socially withdrawn individuals are more susceptible to online information and new media influence, as a result, to involve in different contemporary risk behaviors, for example, cyberbullying and compensated dating.

The uniqueness of the self-perceived non-problematic group

The self-perceived non-problematic withdrawn individuals have not been receiving much discussion in the literature. Yong (2010) discusses those who are psychologically but not behaviorally withdrawn from social interactions and named them as quasi-*hikikomori*. We found that this group is similar to the comparison group in terms of the variables studied. Unlike the less than 6 months' group, those in the self-perceived non-problematic category may be undergoing an identity formation stage (Erikson, 1968) and taking their time to rethink their lives and redevelop themselves in a harmless period of retreat (Goodman et al., 2012). We suggest that the pace of self-development among the young people should be respected and they should not be forced to live in a hurried young adulthood.

Study strengths and limitations

This is probably one of the largest observational studies about this recent phenomenon being conducted. The participants seem to be a representative sample of the young population in Hong Kong. The study covers a wide range of possible psychosocial correlates of social withdrawal and other youth issues. However, there are several limitations and the telephone survey may be biased in several aspects. First, persons without a mobile phone were excluded, while those with multiple phone numbers had higher chance to be selected. Second, the response rate might not be high. Third, there is no validated fieldwork measure or recognized clinical diagnosis for severe social withdrawal. The research diagnostic criteria for *hikikomori* adopted here was one of very few available, if not the only one, guiding frameworks at the time this study was designed and conducted. Finally, each of the subgroups in this study was also small which may influence the interpretation of the results.

Implications

To our knowledge, there is only one empirically evaluated intervention for socially withdrawn youth reported in the literature in English (Lee et al., 2013). In other words, there is not much information on how best to help the withdrawn individuals. A few programs have been conducted in Japan that invite socially withdrawn young people to participate in communication- or employment-oriented activities to enhance their skills and help them to find a job, hence sustaining their social role (Goodman et al., 2012); however, the efficacies of these programs have not been examined. It is important to note that it is difficult to engage socially withdrawn young people using traditional means of engagement (Wong, 2012). Our study found that

socially withdrawn individuals do not oppose being contacted through digital platforms. Thus, future studies will need to explore and evaluate the best ways to engage and attract those who appear to be unreachable. We can provide online counseling services that offer a secure and distant channel for young people to reestablish their trust in others. Since the socially withdrawn young people are willing to express their distress via online platforms such as forums and microblogs, a more proactive approach can be adopted such as commenting on their posts and discussing their problems with them on these platforms.

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