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Efficacy of a Multicomponent Intervention with Animal-Assisted Therapy for Socially Withdrawn Youths in Hong Kong

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Abstract

This is an evaluation study of a pilot multicomponent program with animal-assisted therapy (AAT) for socially withdrawn youth with or without mental health problems in Hong Kong. There were fifty-six participants. Decreased level of social anxiety, and increased levels of perceived employability and self-esteem across two withdrawn groups were observed. When comparing those who did and did not receive the AAT component(s), however, AAT did not seem to have additional impacts on outcomes. The qualitative data collected through interviews with ten participants reflected that

the AAT component was attractive because the nonhuman animals made them feel respected and loved. This pilot study showed that a multicomponent program with a case management model correlated with increased levels of self-esteem and perceived employability, and a decreased level of social interaction anxiety. In addition, using nonhuman animals in a social service setting appears to be a good strategy to engage difficult-to-engage young people.

Keywords

hikikomori – socially withdrawn youth – animal-assisted therapy – multicomponent program – Hong Kong

Introduction

Young people who seclude themselves at home, do not attend school or work, and have minimal social contact appear to be an increasingly common in urbanized and technologically advanced societies (Kato, Shinfuku, Sartorius, & Kanba, 2011; Kato et al., 2012; Li & Wong, 2015b). In Japan, people with social withdrawal behaviors are referred to as *hikikomori* (Kato et al., 2011), and they are referred to as “socially withdrawn youth” in Korea (Lee, Lee, Choi, & Choi, 2013), Hong Kong (Wong et al., 2014; Yong, 2010), and other countries (De Michele, Caredda, Delle Chiaie, Salviati, & Biondi, 2013; Garcia-Campayo, Alda, Sobradiel, & Abos, 2007; Ovejero, Caro-Canizares, de Leon-Martinez, & Baca-Garcia, 2014; Newman, 2008; Furuhashi et al., 2013). Two observational studies that reported data on the epidemiology of social withdrawal estimated that the prevalence rate of social withdrawal among youth is about 1 to 2% in Japan ($n = 232,000$; Koyama, & Kawakami, 2010) and Hong Kong ($n = 16,900$ - $41,000$; Wong et al., 2014).

Recently, with the increase in research on *hikikomori* in Japan, some researchers proposed that *hikikomori* can be further divided into primary *hikikomori* and secondary *hikikomori* (Kato et al., 2012; Suwa, Suzuki, Hara, Watanabe, & Takahashi, 2003). Primary *hikikomori* refers to social withdrawal in youth that is not associated with psychiatric disorders, while secondary *hikikomori* refers to social withdrawal in youth that seems to be caused by one of the currently recognized psychiatric disorders: affective, anxiety, personality, autism-spectrum, social anxiety, psychotic, and developmental disorders (Kondo et al., 2007; Kondo et al., 2013). However, because of the limited understanding on this issue, the differentiation between primary and second-

ary *hikikomori*, in terms of their intervention and prognosis, is largely unknown and unexplored (Li & Wong, 2015a).

There is a lack of evidence-based practices for socially withdrawn youth. According to a narrative review by Chan and Lo (2014), there are many forms of help and support available for socially withdrawn youth in Japan that range from job training, online counseling, psychotherapy, and residential care, to horse therapy; however, many of their efficacies remain untested. As far as we know, there is only one empirically tested intervention on helping socially withdrawn youth reported in the English literature (Li & Wong, 2015b).

In Lee et al.'s (2013) study, youth with social withdrawal behaviors in Korea were visited at home and case-managed by well-trained caseworkers and assistants. A team visited the home of each withdrawn youth and delivered five manual-based, person-centered psychotherapy intervention sessions. After the home visits, most of the young people utilized treatment centers, such as attending community mental health centers, visiting psychiatric clinics, participating in camps for socially withdrawn youth, and receiving online counseling. Lee et al. (2013) found that after the intervention, the Global Assessment Functioning scores and participation in social activities had improved somewhat in 68.3% of the participants. However, their study did not examine or discuss the different impacts of such a program on withdrawn participants with or without psychiatric disorders.

Social withdrawal behavior in youth began to attract public attention as an emerging youth problem in Hong Kong in the 2000s. However, only a few local studies have been conducted to explore this issue (Ngai & Ngai, 2007; Wong et al., 2014; Wong, 2009). Wong et al. (2014) telephone-interviewed 1,010 young individuals to examine the prevalence and correlates of socially withdrawal behaviors in Hong Kong measured by a proposed research diagnostic criteria for *hikikomori* (Teo & Gaw, 2010). They found that the prevalence rates of social withdrawal among young people aged 12 to 29 years in Hong Kong were 1.9%, 2.5%, and 2.6%, respectively, for those who had the problem for more than six months, less than six months, and those who met the diagnostic criteria but self-perceived as non-problematic. Youth who withdrew for more than three months faced a number of risks—for example, bullying and self-injurious behavior, as well as low rates of help-seeking behavior (Wong et al., 2014).

This paper reports the development and evaluation of a pilot multicomponent intervention for withdrawn youth in Hong Kong. This program adopted a case management model aimed at addressing a wide range of concerns of socially withdrawn youth, including self-esteem, social needs, and employment, in addition to their social withdrawal behaviors through a variety set of

components. Animal-assisted therapy (AAT) with dogs and job training were introduced as core components of the program.

AAT was introduced for three main reasons: (1) the intrinsic attributes of the nonhuman animals, in particular dogs, that could create a calming effect that might help to ease the anxieties of withdrawn youth in individual or group situations (Katcher & Wilkins, 1993; Kruger & Serpell, 2010); (2) the therapeutic function of the nonhuman animals that can facilitate cognitive and behavioral changes that supplement the working relationship between the youth and the professionals, which can help enhance self-efficacy and facilitate the mastery of new skills (Adams, 2009; Fine, 2006; Kruger & Serpell, 2010); and (3) previous research has shown that inpatient settings have a positive impact on individuals with social withdrawal behaviors due to mental health problems (Matuszek, 2010). Employment training was included because many of the withdrawn individuals were unemployed, and it was hypothesized that this component would assist the participants in their job search.

The present study evaluated the feasibility, efficacy, and also the potential harm of the “Regain Momentum” (RM) program: a pilot multicomponent program that involves dogs. We aimed to answer three major research questions (RQ): (RQ1) What is the efficacy of the RM program in enhancing self-esteem and perceived employability, as well as reducing social interaction anxiety of youth who have been withdrawn with and without mental health problems?; (RQ2) What are the differences in outcomes of the youths who did and did not receive the animal-assisted therapeutic component of the program?; and (RQ3) What are the roles of the nonhuman animals in this innovative program, the first multicomponent program with an AAT component to undergo empirical testing in Hong Kong?

Materials and Methods

Design

A pre-post evaluation design was adopted to investigate the effectiveness of the RM program. A less rigorous approach was adopted because this was a pilot study, and inclusion of a comparison group, therefore, was beyond the scope of this preliminary investigation. Individual and small focus group interviews were conducted to investigate the perspectives on using non-human animals in the multicomponent program.

Participant Recruitment

In this program, withdrawn youth were defined as young people who, by self-report, had been socially withdrawn with or without mental health problems.

Youth in these two groups who did not exhibit other mental health problems were considered to be primary *hikikomori*. Youth who had withdrawal behavior and exhibited other mental health problems were considered to be secondary *hikikomori*, regardless of the duration of their withdrawal state.

Participants were recruited through referrals mainly from non-governmental organizations, schools, and the hotline inquiry service. Initially, participants were limited to youth between the ages of 15 and 24 who were suspected of having been withdrawn for three months or more. However, the program accepted referrals beyond the age range for ethical reasons due to the limited services available for socially withdrawn people in Hong Kong.

Participants

A total of 115 youths participated in the RM program. Among them, 56 consented to take part in the research study and completed both the pre- and post-questionnaires. The percentages of male and female study participants were 66.1% and 33.9%, respectively. Around 16% ($n = 9$) of the participants were older than 25 years and 7% ($n = 4$) were younger than 14 years old. Fifty-two (92.9%) were eligible to participate in the labor force, but 79% were unemployed at intake. About 70% ($n = 39$) were considered to be primary *hikikomori*; 22 of these subjects participated in the AAT, and 17 did not. About 30% ($n = 17$) were withdrawn individuals with mental health problems, and they were considered to be secondary *hikikomori*; 15 of these subjects participated in the AAT, and 2 did not. Depressive or anxiety disorders (41%, $n = 7$) and psychosis (23%, $n = 4$) were the most common disorders among those with mental health problems.

Intervention

The RM Program adopted a multicomponent intervention approach with a case management model. Components of the intervention included four non-AAT components and four AAT components. The Pet Partners' (previously Delta Society) definition of AAT was used to guide the design of the AAT components, which defines "animal-assisted therapy as a goal oriented, planned, structured and documented therapeutic intervention directed by health and human service providers as part of their profession" (Pet Partners, n.d.). The non-AAT components included (1) a hotline for referrers, parents, and socially withdrawn youths; (2) referral to further clinical assessment; (3) 3 to 5 face-to-face, individual counseling sessions with social workers; (4) support groups led by professionals. The AAT components included (5) AAT in the form of individual counseling and small group activities with the therapy dog as a support to the trained social worker; (6) AAT in the form of social gatherings with dogs and volunteers from several dog visitation agencies; (7) a pre-employment

training program focused on companion animal grooming; and (8) a pre-employment training program focused on taking care of the therapy dog in the youth center.

As a case management model was adopted, the mobilization and coordination of various service components were tailor-made to the participants' needs. In general, participants in the RM program received all the non-AAT components (1 to 4). They were then invited to receive the AAT components (5 to 8) on a voluntary basis. However, not all the participants in the RM program received the AAT components due to reasons such as cultural beliefs, previous negative experiences with nonhuman animals, or potential allergies to nonhuman animals. The combination of the service components was tailor-made and formulated in conjunction with the participant to meet their personal goals. AAT was carried out by qualified social workers under the close supervision of a psychiatrist specialist through a monthly case conference to discuss and review the progress of the cases and to identify psychosocial factors underlying the social withdrawal behavior.

Nonhuman Animals in the AAT Component

Dogs were the nonhuman animals used in the program. They served as an adjunct to the social workers either in individual or group sessions. The therapy dog supported the social workers in fulfilling two major therapeutic tasks: (1) facilitating personal expression and social interaction; and (2) creating a safe environment where the human-nonhuman animal relationship could be reflected on as mirroring the interpersonal issues of the participants.

For the individual counseling sessions, an on-site therapy dog was recruited. The dog was adopted from a dog shelter after being assessed by a qualified dog trainer who was familiar with AAT as suitable for the tasks. To ensure that the on-site therapy dog could adapt to the new environment smoothly, support from all the team members in the center was secured before the study recruitment began. In addition, a member of staff at the center, who was a social worker and the team leader of the AAT program, was designated to take care of and provide continuous training for the on-site dog to fulfill the role as a therapy dog. Measures were also taken to protect the health and well-being of both the therapy dog and individuals who had contact with the dog; for example, provisions were made for frequent medical check-ups, veterinarian back-up for the dog during weekends or holidays, and training for all center staff on the care and management of the dog. Each session involving the on-site therapy dog lasted no longer than one hour.

Therapy dogs for the group sessions were provided by two local organizations in Hong Kong specialized in registering/training therapy dogs for

services. Before the commencement of the program, volunteers of the two organizations were briefed on the special characteristics of the target participants to ensure that therapy dogs with suitable temperaments were selected. Around 3 to 5 therapy dogs, accompanied by their guardians, participated in each group session, which did not last for more than 45 minutes.

Quantitative Measurements

Rosenberg Self-Esteem Scale (RSES)

The RSES is a widely-used instrument to measure an individual's sense of self-worth. It consists of 10 items regarding both positive and negative feelings about the self. All items are answered using a four-point Likert scale that ranges from Strongly Agree to Strongly Disagree with the corresponding statement. Scores range from 0 to 30, and a higher score indicates higher self-esteem with the cut-off for high self-esteem being 15; for instance, individuals scoring less than 15 are considered to have low self-esteem (Rosenberg, 1962).

Interaction Anxiousness Scale (IAS)

The IAS is a 15-item self-report measure that assesses the dispositional social anxiety of an individual. The items relate to subjective feelings of anxiety and are answered on a five-point Likert scale. The scores ranges from 15 to 75, and a higher score indicates a higher level of social anxiety. In a sample of over 1,000 students in three U.S. universities, the mean value was 38.9 (Robinson, Shaver, & Wrightsman, 1991).

Perceived Employability Self-Efficacy Scale (PESES)

The PESES is a 14-item self-report test designed to measure participants' beliefs about their ability to successfully deal with situations and act in ways that facilitate their career development (Daniels, D'Andrea, & Gaughen, 1998). A five-point Likert scale was used to indicate their perceived capability in accomplishing job-related tasks. Scores range from 15 to 75 and a higher score indicates a participant's stronger belief in his/her ability to accomplish those tasks (Daniels et al., 1998).

Qualitative Measurements

The files of ten cases were reviewed, and unstructured individual and small group interviews were conducted within three months of completing the RM program with participants who had received the AAT component(s) that examined the potential harm of using nonhuman animals in the program and participants' experiences and perceptions of the assisted nonhuman animal component of the program.

Statistical Analysis

Cronbach's alpha coefficients were calculated for the three measurements. A repeated measures analysis of variance (ANOVA) was conducted to compare the effects of the two intervention groups (no AAT vs. with AAT) on RSES, IAS, and PESES in the three withdrawal groups (withdrawn vs. withdrawn and with mental health problems; between-subjects factor). Following any significant interaction effects and main effects, pre- and post-test correlated t-tests were conducted for each group, and the effect sizes (Cohen's d) were reported. The sample was weighted by the sample sizes to address the unbalanced design for the ANOVA analyses and the t-tests. Estimated marginal means in the ANOVA analyses (rather than the actual means) were reported, given the disparity in sample sizes. All data analyses were conducted using SPSS software.

Results

Reliability of the Measurements

In the pre-test, Cronbach's alpha coefficients were 0.769, 0.859, and 0.929 for RSES, IAS, and PESES, respectively. In the post-test, Cronbach's alpha coefficients were 0.876, 0.845, and 0.925 for RSES, IAS, and PESES, respectively.

Three-Way ANOVA Analyses

RSES

The time \times withdrawn groups interaction was marginally significant, Wilk's Lambda = .96, [$F(1, 71) = 3.36, p = .071$], with a small effect size (eta-squared = .04). Mean RSES was significantly greater at post-test ($M = 16.4$) than at pre-test ($M = 14.5$) in the withdrawn group ($d = 0.43, p = .005$). The change from pre- to post-test fell short of significance in the group with mental health problems. There were no other significant interaction effects and main effects.

IAS

There was a statistically significant main effect for time, Wilk's Lambda = .81, [$F(1, 71) = 16.25, p < .001$]. Post-test IAS was significantly lower ($M = 44.3$) than pretest IAS ($M = 47.6, p = .003, d = 1.16$). The time \times intervention groups interaction was statistically significant, Wilk's Lambda = .94, [$F(1, 71) = 4.48, p = .038$], with a small effect size (eta-squared = .04). Mean IAS was significantly lower at post-test ($M = 45.3$) than at pre-test ($M = 49.1$) in the non-AAT group, $d = 1.17, p = .019$. The change from pre- to post-test fell short of significance in the AAT.

The time \times withdrawn groups interaction was marginally significant, Wilk's Lambda = .95, [$F(1, 71) = 3.73, p = .057$], with a small effect size (eta-squared = .04). Mean IAS was significantly lower at post-test ($M = 44.5$) than at pretest ($M = 47.4$) in the withdrawn group ($d = 1.14, p = .032$) and significantly lower at posttest ($M = 43.7$) than at pretest ($M = 48.4$) in the group with mental health problems ($d = 1.21, p = .017$).

The time \times intervention groups \times withdrawal groups interaction was statistically significant, Wilk's Lambda = .92, [$F(1, 71) = 5.96, p = .017$], with a moderate effect size (eta-squared = .06). The significant triple interaction was probed by conducting simple main effects tests of the effect of time within each of the four groups. The change from pre- to post-test was significant only for the withdrawn with mental health problems without AAT. For the ones with mental health problems with no AAT, the means of IAS reduced from pre-test ($M = 48.5$) to post-test ($M = 33.5, d = 1.48, p = .014$).

PESES

There was a statistically significant main effect for time, Wilk's Lambda = .94, [$F(1, 71) = 4.56, p = .038$]. Post-test PESES was significantly greater ($M = 48.6$) than pretest PESES ($M = 44.8, p < .001, d = 0.96$). There were no other significant interaction effects and main effects.

Self-Reported Qualitative Process Outcomes

Ten respondents who had participated in the AAT components were interviewed either individually or in small groups of 2 to 3. Examples of the interview questions included "Why did you decide to stay at home in the first place?", "What did the social workers in the organization do to make you interested in the program?", and "How did you feel about having a therapy dog in the program?" The interviews were transcribed and a thematic analysis was conducted.

In general, participants gave positive feedback about the intervention. No potential harm was recorded in the case files or reported in the interviews. We identified two major themes: (1) The AAT component(s) served as a catalyst for program participation. Some participants were attracted by the inclusion of dogs in the program, which aroused their interest to learn more about it. Among the ten participants interviewed, three participants stated that if it were not for the inclusion of nonhuman animals, they probably would not have joined the RM program at all. This result was echoed by findings of the intake assessment. Respondents were asked in the intake assessment if there were no AAT component, would they would join the RM program. Around

one fourth (23.2%) of the respondents stated that they would definitely not or probably not do so. Further, engagement through the therapy dog was found to have minimized the negative stigma attached to being “in counseling.”

(2) The presence of the therapy dog(s) enhanced the therapeutic environment. A majority of the interviewees expressed that the most helpful element in the RM project was feeling that the therapy dog(s) accepted them as they were. One participant who had previously experienced being bullied said he felt more at ease when interacting with the on-site therapy dog, whom he perceived to be “very straightforward and simple.” Some participants originally felt that seeing a social worker was threatening and anxiety provoking; but the presence of the on-site therapy dog was enough to calm them down and provided a distraction from their anxiety. One participant expressed that she felt less depressed and that her mood improved with the therapy dog during her counseling session. The participants also spoke of having a sense of achievement after the dog grooming training session. Taking care of the on-site therapy dog provided the participants with a high level of satisfaction and a sense of worth. As one participant described, “If you helped them [the nonhuman animals], they would show their happiness directly, as if they wanted to say “Thank you.”

Discussion

In this study, we sought to provide empirical data to evaluate the efficacy of a multicomponent program with AAT and job training in enhancing self-esteem and perceived employability, and reducing social anxiety of young people who were socially withdrawn with and without mental health problems, using an uncontrolled research methodology. Although this was an uncontrolled study with a small number of participants, irrespective of whether the participant had received AAT as an intervention component, the RM program appeared to have achieved its goals of enhancing self-esteem and perceived employability, as well as reducing social anxiety for socially withdrawn youth without (primary *hikikomori*) and with mental health problems (secondary *hikikomori*). The AAT component did not seem to provide statistically significant additional impacts on the outcomes of the program.

Based on the analysis of qualitative findings from the ten in-depth interviews, it seems that the involvement of nonhuman animals (therapy dog, visiting dogs, dog grooming training) was an important factor in attracting withdrawn youth to join and remain in the program, helping the participants to feel comfortable with the intervention setting, and giving them extra opportunities and responsibilities to look after the on-site therapy dog. Most

importantly, adverse harmful effects were not observed in the participants who completed the program, although we acknowledge that most likely, those who felt uncomfortable with nonhuman animals had already refused to participate in the AAT component at the very beginning. Also, post-intervention data showed that the percentage of those unemployed at intake dropped from 85% to 33%, indicating that the job training component was helpful and that the participants were able to step out from their withdrawn status and re-enter the society.

This study was one of the very first programs developed for socially withdrawn youth being evaluated in places with such youth issues, and the inclusion of nonhuman animals in social services was novel in Hong Kong. At this stage, it is premature to conclude that such multicomponent programs with AAT are effective in helping socially withdrawn youth in terms of their withdrawn status. Participation in the AAT component(s) was self-selected, and on a voluntary basis, probably driven by previous positive experience in keeping companion animals and a more positive attitude toward dogs. This might limit the generalizability of the results to those who are less comfortable with nonhuman animals. Future evaluation studies should focus on the content and designs of the programs to determine the correlational or causal effects of the improvements of outcomes with specific program components.

Conclusion

In sum, the RM program has provided an alternative model for providing social services for withdrawn youth who are usually difficult to identify, engage, and retain for services. There were correlations between the program as a whole with post-intervention improvement in self-esteem, reduction in social anxiety level, and increased perceived employability of the participants. The RM program is distinctive from other service approaches for withdrawn youth who tend to be “invisible” in society (Li & Wong, 2015a) and shy away from traditional service models. We believe that the results drawn from this study are an important reminder of the real difficulties we face in dealing with emerging problems among youth and that innovation is needed to tackle this new problem.

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References

- Adams, N. (2009). *Animal assisted interventions for adolescents with emotional and behavioural problems: A review of selected literature*. Unpublished postgraduate diploma dissertation. Monash University: Melbourne.
- Census and Statistics Department. HKSAR. (2006). *Thematic household survey report no.26: Keeping of pets by household*. Retrieved Oct 17, 2016, from <http://www.statistics.gov.hk/pub/B11302262006XXXXB0100.pdf>.
- Daniels, J., D'Andrea, M., & Gaughen, K. J. S. (1998). Testing the validity and reliability of the Perceived Employability Scale (PES) among a culturally diverse population. *Journal of Employment Counseling, 35*(3), 114-123.
- De Michele, F., Caredda, M., Delle Chiaie, R., Salviati, M., & Biondi, M. (2012). [Hikikomori (ひきこもり): A culture-bound syndrome in the web 2.0 era]. *Rivista di Psichiatria, 48*(4), 354-358.
- Furuhashi, T., Tsuda, H., Ogawa, T., Suzuki, K., Shimizu, M., Teruyama, J., ... Pionnié-Dax, N. (2013). État des lieux, points communs et différences entre des jeunes adultes retirants sociaux en France et au Japon (Hikikomori). *L'Evolution Psychiatrique, 78*(2), 249-266.
- Garcia-Campayo, J., Alda, M., Sobradie, N., & Abos, B. S. (2007). A case report of hikikomori in Spain. *Medicina Clinica, 129*, 318-319.
- Fine, A. H. (2006). Incorporating animal-assisted therapy into psychotherapy: Guidelines and suggestions for therapists. In A. H. Fine (Ed.), *Handbook on animal-assisted therapy: Theoretical foundations and guidelines for practice* (pp. 167-206). San Diego: Academic Press.
- Katcher, A., & Wilkins, G. (1993). Dialogue with animals: Its nature and culture. In S. R. Kellert & E. O. Wilson (Eds.), *The biophilia hypothesis* (pp. 173-200). Washington, D.C.: Island Press.
- Kato, T. A., Shinfuku, N., Sartorius, N., & Kanba, S. (2011). Are Japan's hikikomori and depression in young people spreading abroad?. *The Lancet, 378*(9796), 1070.

- Kato, T. A., Tateno, M., Shinfuku, N., Fujisawa, D., Teo, A. R., Sartorius, N., & Kanba, S. (2012). Does the 'hikikomori' syndrome of social withdrawal exist outside Japan? A preliminary international investigation. *Social Psychiatry and Psychiatric Epidemiology*, 47, 1061-1075.
- Kondo, N., Iwazaki, H., Kobayashi, M., & Miyazawa, H. (2007). [Psychiatric background of social withdrawal in adolescence]. *Seishin Shinkeigaku Zasshi*, 109, 834-843.
- Kondo, N., Sakai, M., Kuroda, Y., Kiyota, Y., Kitabata, Y., & Kurosawa, M. (2013). General condition of hikikomori (prolonged social withdrawal) in Japan: Psychiatric diagnosis and outcome in mental health welfare centres. *International Journal of Social Psychiatry*, 59(1), 79-86.
- Koyama, A., Miyake, Y., Kawakami, N., Tsuchiya, M., Tachimori, H., Takeshima, T., & World Mental Health Japan Survey Group. (2010). Lifetime prevalence, psychiatric comorbidity and demographic correlates of "hikikomori" in a community population in Japan. *Psychiatry Research*, 176(1), 69-74.
- Kruger, K. A., & Serpell, J. (2010). Animal-assisted interventions in mental health: Definitions and theoretical foundations. In A. H. Fine (Ed.), *Handbook on animal-assisted therapy: Theoretical foundations and guidelines for practice* (pp. 33-46). Amsterdam: Elsevier.
- Lee, Y. S., Lee, J. Y., Choi, T. Y., & Choi, J. T. (2013). Home visitation program for detecting, evaluating and treating socially withdrawn youth in Korea. *Psychiatry and Clinical Neurosciences*, 67(4), 193-202.
- Li, T. M. H., & Wong, P. W. C. (2015a). Editorial commentary: Pathological social withdrawal during in adolescence: A culture-specific or a global phenomenon? *Journal of Child Psychology and Psychiatry*, 56(10), 1039-1041.
- Li, T. M. H., & Wong, P. W. C. (2015b). Youth social withdrawal behavior (hikikomori): A systematic review of qualitative and quantitative studies. *Australian and New Zealand Journal of Psychiatry*, 49(7), 595-609.
- Matuszek, S. (2010). Animal-facilitated therapy in various patient populations: Systematic literature review. *Holistic Nursing Practice*, 24(4), 187-203.
- Newman, K. S. (2008). Ties that bind: Cultural interpretations of delayed adulthood in western Europe and Japan. *Sociological Forum*, 23(4), 645-669.
- Ngai, S. S. Y., & Ngai, N. P. (2007). Empowerment or disempowerment? A review of youth training schemes for non-engaged young people in Hong Kong. *Adolescence*, 42(165), 137.
- Nimer, J., & Lundahl, B. (2007). Animal-assisted therapy: A meta-analysis. *Anthrozoös*, 20(3), 225-238.
- Ovejero, S., Caro-Cañizares, I., de León-Martínez, V., & Baca-García, E. (2014). Prolonged social withdrawal disorder: A hikikomori case in Spain. *International Journal of Social Psychiatry*, 60(6), 562-565.
- Pet Partners. (n.d.). Terminology. Retrieved Oct 17, 2016, from <https://petpartners.org/learn/terminology/>.

- Robinson, J. R., Shaver, P. R., & Wrightsman, L. S. (1991). *Measures of personality and social psychological attitudes*. London: Academic Press Limited.
- Rosenberg, M. (1979). *Conceiving the self*. New York: Basic Books.
- Suwa, M., Suzuki, K., Hara, K., Watanabe, H., & Takahashi, T. (2003). Family features in primary social withdrawal among young adults. *Psychiatry and Clinical Neurosciences*, 57(6), 586-594.
- Teo, A. R., & Gaw, A. C. (2010). Hikikomori, a Japanese culture-bound syndrome of social withdrawal?: A proposal for DSM-5. *The Journal of Nervous and Mental Disease*, 198(6), 444-449.
- Wong, P. W. C., Li, T. M. H., Chan, M., Law, Y. W., Chau, M., Cheng, C., ... Yip, P. S. F. (2015). The prevalence and correlates of severe social withdrawal (hikikomori) in Hong Kong: A cross-sectional telephone-based survey study. *International Journal of Social Psychiatry*, 61(4), 330-342.
- Wong, V. (2009). Youth locked in time and space? Defining features of social withdrawal and practice implications. *Journal of Social Work Practice*, 23(3), 337-352.
- Yong, R. (2010). *Exploring hikikomori: A mixed methods qualitative approach* (Unpublished master's dissertation). The University of Hong Kong.