Abstract

Pathological social withdrawal (PSW) refers to a set of socially-avoidant behaviours including low social engagement. Because social disconnectedness is associated with loneliness, which in turn is linked with psychiatric conditions, investigating loneliness in PSW is important for understanding the societal burden of PSW. Here, we investigated relationships between PSW, disconnectedness from other social groups, loneliness and psychiatric disturbances in Taiwan. Individuals with PSW showed greater perceived disconnection with their peers and more loneliness than those without PSW. Duration of being socially-withdrawn and the degree of disconnection with peers were each associated with loneliness. A positive correlation between loneliness and psychiatric disturbances also emerged. As poorer perceived closeness with friends may explain loneliness and psychiatric symptoms amongst individuals with PSW, future treatment should focus on social skills or nurturing social interactions with peers, beyond family members.

Keywords: social withdrawal, hikikomori, avoidance, loneliness, relationships

1. Introduction

Pathological Social Withdrawal (PSW) – characterized by a lack of interest in social relationships and extreme avoidant behaviours including spending most of their time at home – has emerged as a possible psychiatric condition or an extreme avoidant personality trait (Kato et al., 2012). First described in Japan as a culture-bound condition (hikikomori), recent data indicate that these behaviours are globally present and associated with emotional distress and societal burden (Wu, Catmur, Wong, & Lau, 2019). Despite being associated with social withdrawal and emotional distress, few studies have measured loneliness in individuals with PSW. Here, we seek to address this gap.

Loneliness is proposed to be an aversive yet adaptive emotion that emerges when there is perceived social disconnect and thus, potential for reduced social support (Adams et al., 1988). Loneliness acts to signal this threat and motivates a course of social behaviour to address social disconnectedness (Cacioppo & Hawkley, 2009). Loneliness can follow persistent social withdrawal (Cacioppo et al., 2015; Parkhurst & Hopmeyer, 1999) but is proposed to activate the initial period of social withdrawal too (Hawkley & Cacioppo, 2010). Specifically, several psychological theories propose that a brief period of social withdrawal could promote re-engagement with others by enabling individuals to observe and evaluate immediate social situations, facilitating re-engagement. Recent studies have begun to recognise the frequency with which loneliness is experienced in the transition from late adolescence into early adulthood (Qualter et al., 2015). As the age of onset of PSW is late adolescence/early adulthood (Koyama et al., 2010), loneliness may not

be just a consequence of extreme avoidance of social relationships, but also activate early withdrawal behaviours after the initial perceived social disconnection. Indeed, while previous studies have reported associations between loneliness and PSW, but there are few data on relationships between all three variables (social disconnect, loneliness, withdrawal behaviour).

We aimed to investigate loneliness and perceived closeness with other social groups in PSW and their connections. The first research question assessed whether there was lower perceived closeness with other social groups among individuals with PSW than those without. We hypothesized that this greater disconnect would be greater for peers than family members given that the needs of belonging shift from family to peers by early adulthood (Parkhurst and Hopmeyer, 1999). We also tested a second hypothesis that higher loneliness levels would characterise those with PSW than those without, and explored whether, amongst those with PSW, the length of withdrawal and perceived closeness with friends would correlate with loneliness. Finally, the third research question investigated the correlation between loneliness and psychiatric disturbances. We expected that PSW individuals who were most lonely would report more psychiatric symptoms.

2. Materials and Methods

2.1. Sample and general procedures

Participants were 343 individuals aged 18 to 45 (mean age = 27.34; 61.2%

female) who took part in an online survey to assess the frequency of PSW in Taiwan (see Wu, Catmur, Wong, & Lau, 2019, for details). Entry criteria for the study were being aged over 18 years, being a Taiwanese national, and currently living in Taiwan. Participants with difficulties reading Chinese script were asked to self-exclude. At Phase 1, 1046 eligible respondents completed a scale assessing PSW behaviours. Of these, 341 completed a set of questionnaires at Phase 2 (between 1 and 5 months after Phase 1). These included measures of loneliness, social disconnectedness and psychiatric symptoms. This study was approved by the research ethics committee of King's College London (reference: HR-17/18-5323). All participants gave informed consent.

2.2. Measures

Pathological social withdrawal questionnaire: Consistent with Koyama and colleagues (2010); and Wong and colleagues (2015), participants were asked whether they had ever experienced the following behaviours: Do you spend most of your time at home? Do you refuse to interact with others? Do you avoid maintaining social relationships? Response options for these items were 'yes' or 'no'. Where participants indicated a 'yes' response, they reported when the behaviour started and finished, representing the length of social withdrawal duration, consistent with previous studies (Koyama et al., 2010; Wong et al., 2015).

Overlap scale: A modified version of the overlap scale (Schubert and Otten, 2002) measured perceived social connectedness with others. For each social partner, participants were asked to choose one graph from 7 graphs showing two

circles on a line; the graphs differed in how close the circles were to represent their distance with themselves and an individual from a particular social group (i.e. family/friends/strangers). The graphs were then quantified with larger numbers representing a perceived closer distance. The Cronbach's alpha of this scale in our sample was .66.

UCLA Loneliness scale: This 10-item questionnaire measured the perception of being socially isolated (Russell, 1996), with each item rated on a four-point scale ('never' to 'always'), and all items being summed to a total score. The Cronbach's alpha of our sample was .85.

General Health Questionnaire 12-items (GHQ12): The Chinese version of the GHQ12 presents participants with symptoms of short-term minor psychiatric disorders and asks them to rate its frequency in the last month on a 4-point scale (Chong & Wilkinson, 1989). Individual items are summed to a total score. The Cronbach's alpha of these data in our sample was .9.

2.3. Data analysis

The Phase 1 survey assessed presence or history of PSW. Respondents were considered 'affected' if they said 'yes' to all three withdrawal items; 'unaffected' if they said 'no' to all three items; and 'borderline' if they said 'yes' to one or two of the items. To address the first research question, mental distance between themselves and the three social groups (i.e. the scores of Overlap scales of family, friends and strangers) were compared across the three PSW groups using a mixed 3x3 ANOVA

with between-subjects factor of PSW group and within-subjects factor of social group. To address our second research question, we compared the UCLA loneliness scale scores using a one-way ANOVA with between-subjects factor of PSW group. To investigate associations between loneliness, withdrawal duration and closeness with other social groups, multiple linear regressions were conducted. Correlation analysis between loneliness and GHQ scores was conducted to assess relationships between these variables. Where data did not meet normality assumptions, appropriate transformations were performed and analysis conducted with transformed scores.

3. Results

Sixty-three (18.5%) individuals were affected, 200 (58.4%) were borderline and 80 (23.2%) were unaffected. Of those affected, 4 were currently experiencing withdrawal. The mean and standard deviation of withdrawal duration were 25.15 and 33.2 months respectively. The original mean scores for loneliness and the closeness for each PSW group are presented in Table 1. The pattern of results was similar whether or not we included the 4 participants currently experiencing withdrawal in the affected group.

Table 1

Questionnaire scores across PSW groups

	All	Affected	Borderline	Unaffected

	M(SD)	M(SD)	M(SD)	M(SD)
Overlap				
friends	3.87(1.32)	3.27(1.07)	3.9(1.35)	4.25(1.29)
family	4.72(1.56)	4.49(1.63)	4.67(1.57)	5.03(1.45)
strangers	1.93(0.96)	1.95(1.13)	1.9(0.92)	1.99(0.91)
Loneliness	24.12(5.38)	26.95(5.16)	24.05(5.30)	22.06(4.79)

3.1. Do individuals with PSW show greater social disconnectedness with other individuals?

Of note, although the overlap-stranger data was slightly positively skewed, transformation to ensure normality would make it difficult to compare against the overlap-family and friends subscales. Therefore transformed overlap-stranger scores (achieved through a cube root transformation) were only used when assessing effects of PSW group on each subscale to decompose interactions. The main effects of PSW group and social group were significant, $F_{group}(2,340) = 4.83$, $p = .009$, $\eta^2 = .03$; $F_{distance}(2,680) = 512.59$, $p < .001$, $\eta^2 = .75$, as was their interaction, $F(4,680) = 5.35$, $p = .002$, $\eta^2 = .03$. To disentangle the interaction, three one-way ANOVAs were conducted. A significant main effect of PSW group emerged in the mental distance with friends, $F(2,340) = 10.46$, $p < .001$, but not in the mental distance of family and

Commented [JL1]: Use raw scores otherwise the main effect of social group does not make sense

strangers. Simple main effects of social group for the friends showed that distance from friends was greater for the affected group compared to borderline, *mean difference*affected-borderline = -0.64, *SD* = 0.19, *p* = .002, and the unaffected groups, *mean difference*affected-unaffected = -0.98, *SD* = 0.22, *p* < .001.

3.2. Do individuals with PSW show more loneliness than those without PSW, and is loneliness in this group related to duration of social withdrawal and social disconnect?

Using one-way ANOVA, significant group differences were found on loneliness scores, $F(2,338)$ = 15.68, *p* < .001, η^2 = 0.09. Bonferroni-corrected comparisons showed that the three groups were significantly different from each other with the highest loneliness scores in the affected group and the lowest scores in the unaffected group, *mean difference*affected-borderline = 2.91, *SD* = 0.75, *p* < .001; *mean difference*affected-unaffected = 4.88, *SD* = 0.87, p < .001; *mean difference*borderline-unaffected = 2, *SD* = 0.69, *p* = .013.

A multiple linear regression model with duration and mental distance with friends as predictors explained 29% of the variance in loneliness among affected individuals, $F(2,57)$ = 11.04, *p* < .001. Both duration and mental distance with friends contributed significantly to the model, $B_{duration}$ = 0.053, *p* = .007; $B_{mental distance with friends}$ = -1.57, *p* = .005.

3.3. Is loneliness correlated with poorer psychiatric disturbances in those with PSW?

Loneliness and GHQ were positively correlated, $r(61) = .61$, $p < .001$, amongst PSW individuals. When including the borderline group too, the correlation was: $r(262) = .57$, $p < .001$.

4. Discussion

We investigated loneliness in individuals with PSW. Individuals with PSW reported lower perceived closeness with friends (but not family and strangers), and greater loneliness than those without PSW. The extent to which they felt disconnected with friends, along with the duration of being withdrawn, associated with loneliness. Loneliness and psychiatric disturbances were positively correlated.

Although individuals with PSW avoid social interactions and relationships, nonetheless, disconnection with others, especially with peers, associates with loneliness. A previous study has also shown that individuals with PSW manifest higher loneliness than those without PSW (Teo et al., 2015). Here, we replicated this finding but also showed a continuous association between social withdrawal and loneliness, as shown by those correlations between withdrawal duration and loneliness in those with PSW, and also that those with borderline withdrawal behaviours reporting intermediate levels of loneliness. These findings are all consistent with by psychological theories of loneliness (Cacioppo et al., 2015; Parkhurst & Hopmeyer, 1999). Loneliness or disconnect from others is proposed to

follow social withdrawal but also be key to precipitating initial social withdrawal. Hypothesized as an adaptive emotion to signal social threat, loneliness may facilitate opportunities to plan new social strategies for reconnection within social groups by precipitating social withdrawal. However, when such reconnection efforts are unsuccessful, this may prolong social withdrawal in turn contributing to persistent loneliness. Breaking this vicious circle by facilitating reconnection opportunities within social (friendship) groups at earlier stages of social withdrawal may be beneficial. Techniques borrowed from evidence-based psychological interventions such as social skills training or interpersonal psychotherapy could be appropriate.

As expected, our findings showed that psychiatric disturbances were related to greater loneliness in both the affected but also borderline withdrawal group. This is consistent with previous studies in the general population showing that loneliness is a correlate and even longitudinal risk factor for many mental illnesses (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006). In turn, psychiatric symptoms may reciprocally impact loneliness. Future studies should investigate these bidirectional pathways in PSW. If present, then, intervening to reduce loneliness at an early stage of PSW could also impact psychiatric disturbances and reciprocal pathways too.

There are some study limitations. We collected all data at the same time-point, making it difficult to establish temporal relationships. Longitudinal assessments with three time-points are needed to fully interrogate relationships between PSW and loneliness to further inform theories. Also, our data did not provide information on the preferences of connections with other social groups. Instead participants reported perceived disconnect with others using a simple scale containing one item per social

group. More generally, the Cronbach's alpha of this overlap scale (across all three items) was below .7, raising concerns over its reliability. Finally, this was an online survey, which could incur sampling biases.

5. Conclusions

This was the first study looking into the relationships between loneliness, perceived social connection with different social groups and psychiatric symptoms among individuals with PSW. Our data also call for a shift in focus from family relationships to friendships in current treatment efforts (Ohashi, 2008).

6. References

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