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The Impact Social Withdrawal in Depression has on Social Functioning

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Abstract

Depression is a major health concern worldwide, particularly through its impact on individuals' level of functioning. However, noticeably absent from the study of depression and social functioning is an examination of social withdrawal. This paper examines if social withdrawal predicts social functioning above and beyond symptoms of depression and anhedonia. We developed the Social Withdrawal Scale (SWS) and tested it, along with other measures of depression and social functioning, using participants from Amazon MTurk. The results of the study indicated that the SWS functioned best as a single factor measure. The SWS did in fact predict additional variability in social functioning accounted for by the *Beck Depression Inventory—Second Edition* (BDI–II) and the Specific Loss of Interest and Pleasure Scale (SLIPS). The SWS demonstrated good convergent and divergent validity. Social withdrawal appears to be a distinct construct that aids understanding of depression. We hope the SWS will be used in future studies as well as a supplement to traditional measures of depression.

Introduction

Major depressive disorder (MDD) is a frequently occurring, debilitating mental illness. Estimates show that MDD, the second leading cause of disability, affects 5% of the world's population, or 350 million people, at any given time (Ferrari et al., 2013; Mathers, Boerma, & Fat, 2008). The National Comorbidity Survey Replication (NCS-R) found the lifetime prevalence for MDD to be 16.2 percent (Kessler et al., 2003). Thus, depression and its effects are a major public health concern. The DSM-5 stipulates that a diagnosis of MDD requires the presence of 5 out of 9 symptoms that must include either depressed mood or anhedonia, and may include weight changes, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue, feelings of worthlessness or excessive guilt, inability to concentrate, and recurrent thoughts of death or suicide. The symptom cluster must have persisted for at least 2 weeks and have caused significant distress or impairment, as assessed by a clinician (*DSM-5*; American Psychiatric Association, 2013).

Depression is one of the world's leading causes of the global burden of disease by contributing to lost work hours, healthcare costs, and other factors (Mathers et al., 2008). It also severely impairs social functioning, which is defined as an "individual's ability to perform and fulfill normal social roles" (Hirschfeld et al., 2000, p. 268). Social functioning is a broad construct, however, and can be more fully defined by examining related constructs, such as quality of life, anhedonia, social participation, and social cognition.

The World Health Organization (WHO) defines quality of life as "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (WHO, 1997, p. 1). Quality of life is determined by personal goals and beliefs as well as societal goals and beliefs, so the construct

differs from person to person and from culture to culture. A person with a low quality of life that puts them at risk for depression in one culture might meet cultural norms in another environment.

Depression is often characterized by lack of pleasurable engagement, or anhedonia. A lack of engagement in activities can be a key component of one's social functioning, particularly if one has stopped engaging in social activities. Joiner, Catanzaro, Rudd, and Rajab (1999) found lack of pleasurable engagement to include a deficit in the person's ability to adequately develop a social network. Lack of pleasurable engagement is linked to the onset of depression (Joiner, Lewinsohn, & Seeley, 2002). If anhedonia is related to an impaired social network and also predicts depression, then an impaired social network is also linked to depression.

In addition to quality of life and anhedonia, social participation is also a component of social functioning. The International Classification of Functioning, Disability, and Health (ICF) considers social participation to be when someone is involved in a specific domain of life and accepted by others, or when someone has their needs met overall (WHO, 2001). Social participation differs from social cognition which includes the identification, perception, and interpretation of important social stimuli (Kandalaft et al., 2012). Social cognitive performance in depression may have an effect on the trajectory of the disorder because of social functioning impairment. When people come to inaccurate conclusions based on feedback received during interpersonal interactions, mood is lowered. This lowered mood might reduce the drive to be socially active, thereby lessening the benefits of social interaction and increasing isolation (Weightman, Air, & Baune, 2014). An inadequately developed social network is predictive of depression, but this problem is exceedingly difficult to correct because depression impairs social functioning.

There are several environmental factors related to social interaction which suggest

recovery from depression. Ezquiaga, García, Bravo, and Pallarés (1998) found in their longitudinal study of depression that patients who did not recover from MDD lacked a developed family network and received less partner support. This finding points to social relationships having an important part in symptom recovery. Romera, Pérez, Menchón, Polavieja, and Gilaberte (2010) compared social and occupational functioning impairment in patients with partial versus complete remission of an MDD episode. The majority of complete remitters showed normal functioning on the Social and Occupational Functioning Assessment Scale (SOFAS) at baseline, unlike partial remitters. Judd et al. (2000) found that patients with MDD were still slightly more psychosocially impaired even when not experiencing symptoms compared to the control group that was not depressed.

Rhebergen et al. (2010) conducted a three-year follow-up of trajectories of recovery of social and physical functioning in patients with MDD, dysthymic disorder, and double depression (DD). Patients with MDD showed the greatest improvement in social functioning, while those with dysthymia showed the least improvement. Social functioning in MDD would improve the most because it is an episodic disorder. DD includes an MDD episode as well as dysthymia, which is chronic depression at a lower rate compared to MDD. When the major depressive episode passes in DD, improvement in social functioning follows but does not return to its original levels. In the case of dysthymia, however, where individuals are in a constant state of mild depression, there is little improvement in social functioning because the symptoms are always present.

There are several mechanisms explaining how depression and social isolation might be linked. The rejection sensitivity (RS) model proposes that experiences of rejection can sensitize children to the potential of future rejection (Downey, Lebolt, Rincon, & Freitas, 1998). Utilizing

the RS model in middle school students, anxious expectations of rejection predicted increases in social anxiety and withdrawal (London, Downey, Bonica, & Paltin, 2007). RS is also positively correlated with loneliness (Watson & Nesdale, 2012). Emotional loneliness refers to a lack of others with whom the individual can form an emotional attachment, while social loneliness is found when an acceptable social network is absent (Weiss, 1973). In a study of depressed older people, depression was found to strongly predict emotional loneliness but not social loneliness (Peerenboom, Collard, Naarding, & Comijs, 2015). Emotional attachment seems to be both a barrier to depression as well as an aspect of social functioning that can be significantly impaired as a result of depression. RS, social withdrawal, loneliness, and depression are all linked.

Certain personality types can predispose people to depression. Preference-for-solitude was found to be particularly disruptive in early adolescence (Wang, Rubin, Laursen, Booth-LaForce, & Rose-Krasnor, 2013). Adolescence is a time of personal discovery, and social interaction seems to be a necessary component. In a study by Barry, Nelson, and Christofferson (2013) on emerging adults, shy emerging adults demonstrated reduced levels of religious strength, identity commitment, and quality of relationships with friends, romantic partners, and parents compared to their asocial counterparts. Shy individuals fear social contact, whereas asocial individuals have a disinterest in social contact. This study found anxious-shyness to be a potential risk-factor for successful development into the emerging-adult years because it interferes with particularly formative tasks.

Social isolation, or the state of being alone, clearly has a relationship to depression. I think that social withdrawal, or the act of removing oneself from social interaction, may also be related to depression. Social withdrawal precedes social isolation; therefore, social withdrawal could provide insight into depression that is not grasped in the review of social isolation. Social

withdrawal indicates a change in social activity, which is more important to measure than current activity because prior levels of social functioning better indicate what is normal for the individual. Level of social activity could be altered by anxiety or depression, and in order to know what changed, the measurement needs to take into account baseline behavior. Recent changes in social withdrawal would be more responsible for impairment in social functioning than would be a lifestyle of social withdrawal that is normative for the individual.

In my review of the literature, I have not found a measure for social withdrawal. However, the BDI-IA, which is a previous version of the most commonly used measure of depression, included a Social Withdrawal item which encompassed interpersonal relations. In the updated BDI-II, this item was changed to Loss of Interest to include both people and activities (Beck, Steer, & Brown, 1996). While the inclusion of lack of pleasurable engagement, or anhedonia, is certainly necessary for the assessment of depression, the shift inadvertently lost any means of accounting for social withdrawal specifically. Social withdrawal could be a predictor of depression or a symptom of depression that prolongs recovery, but these claims have not been tested thoroughly so as to be adequately validated. In order to do so, one needs a measure of social withdrawal that is separate from measures of depression and anhedonia. Thus, in my study, I developed a measure of social withdrawal termed the Social Withdrawal Scale (SWS). It is important to determine if the SWS measures a construct that is related to but distinct from depression and anhedonia. Therefore, I compared the SWS to other measures of depression and social functioning.

To investigate the validity of the SWS, we compared it to the Beck Depression Inventory (BDI-II) as an indicator of depressive symptoms, the Positive and Negative Affect Schedule (PANAS) as indicators of predisposition to experience positive and negative emotions, the

Specific Loss of Interest and Pleasure Scale (SLIPS) as a measure of anhedonia, and the UCLA Loneliness Scale as a measure of loneliness. We also assessed the social functioning of the participants using three measures: the Social Adaptation Self-evaluation Scale (SASS), the Work and Social Adjustment Scale (WSAS), and the Social and Occupational Functioning Assessment Scale (SOFAS). I used the BDI and the SLIPS to determine if social withdrawal predicts social functioning above and beyond the symptoms of depression, generally, and anhedonia, specifically.

Methods

Participants

Participants included 374 MTurk workers (57.2% female, 42.0% male). They ranged in age from 18 to 74 ($M = 35.74$, $SD = 11.96$). Participants were recruited and paid through Amazon MTurk. The only qualifying factor was that they be at least 18 years of age. The racial composition consisted of 78.6% white or Caucasian, 9.4% Asian, 6.4% black or African American, 1.1% American Indian or Alaskan Native, 0.3% Native Hawaiian or Pacific Islander, and 4.0% other. Seven percent were Hispanic or Latino, while 92.5% were not. For nationality, 77.54% reported to be from the U. S., 25.55% were not from the U. S., and 3.74% did not report nationality. The participants also indicated their highest level of education received (see Table 1) and estimated annual family income (see Table 2). When asked whether they or someone they knew had ever been diagnosed with depression, 67.4% said “yes”, while 32.4% said “no.” Of all the participants, 44.7% said they had personally seen a mental health professional before, while 55.1% said they never had. MTurk workers have been shown to provide quality and reliable responses (Mason & Suri, 2012). They have also been described as a potential source of information regarding clinical and subclinical populations (Shapiro, Chandler, & Mueller, 2013).

Measures

Beck Depression Inventory-Second Edition. Severity of depression in adults and adolescents 13 years and older based on the criteria for diagnosing depressive disorders in the *Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition* is measured with the *Beck Depression Inventory—Second Edition* (BDI-II; Beck et al., 1996). The BDI-II was included in order to test for depressive symptoms among the participants and to see whether social withdrawal is a predictor of social functioning above and beyond depressive symptoms. The measure consists of 21 self-report items that are rated from 0 to 3, with higher numbers indicating more severe symptoms of depression. Among college students and outpatients, the BDI-II had an alpha coefficient of .93 and .92, respectively (Beck et al., 1996).

Social Adaptation Self-evaluation Scale. Social motivation and behavior were measured with the Social Adaptation Self-evaluation Scale (SASS; Bosc, Dubini, & Polin, 1997). The SASS was included as an outcome measure of social functioning because it explores the areas of work and leisure, family and extra-family relationships, intellectual interests, satisfaction in roles, and self-perception of ability to manage and control the environment. The scale is comprised of 21 items scored from 0 to 3, with 0 indicating minimal social adjustment and 3 indicating maximal social adjustment. The SASS was developed as a participant-rated scale that is neutral to demographics, which allows for the subjective view of social functioning by the person. Bosc et al. (1997) found that the SASS demonstrated good internal reliability, $\alpha = .74$. Correlations between items were from .40 to .51, indicating the items were complementary and not redundant. The scale demonstrated good validity, reliability, and sensitivity to change (Bosc et al., 1997).

Work and Social Adjustment Scale. The Work and Social Adjustment Scale (WSAS)

is a self-report scale that measures functional impairment due to a specified problem (Marks, 1986). It was included as an outcome measure for social functioning. The scale consists of five items that are answered on a scale from 0 to 8, with 0, 2, 4, 6, and 8 representing “not at all”, “slightly”, “definitely”, “markedly”, and “very severely”, respectively. Scores are summed, resulting in a maximum score of 40. A score of 20 indicates moderately severe or worse psychopathology, scores from 10 to 20 suggest significant functional impairment, and scores below 10 are affiliated with subclinical populations. Mundt, Marks, Shear, and Greist (2002) found that the WSAS exhibited good internal consistency in a longitudinal study of depression, $\alpha = .94$. In a test of convergent validity, the WSAS had a .76 correlation with the Hamilton Rating Scale for Depression.

Positive and Negative Affect Schedule. Positive affect (PA), or the degree to which someone feels enthusiastic, active, and alert, and negative affect (NA), or the degree of subjective distress someone feels, were measured in the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). This measure was included in order to discriminate negative affect from social withdrawal. The PANAS consists of 20 items—10 PA items and 10 NA items—on which participants rate from 1 to 5 the degree to which their mood corresponds to the mood descriptor in a specified time frame. The options included “very slightly or not at all”, “a little”, “moderately”, “quite a bit”, and “very much”, respectively. The PANAS was developed in order to provide reliable, valid, brief, and easy to administer PA and NA scales. The alpha values in previous studies indicate strong internal reliability, with PA ranging from .86 to .90 and NA ranging from .84 to .87. The PANAS demonstrated good external validity with measures that examine similar constructs (Watson et al., 1988).

Specific Loss of Interest and Pleasure Scale. Changes in previously pleasurable

activities over the past 2 weeks were measured with the Specific Loss of Interest and Pleasure Scale (SLIPS; Winer, Veilleux, & Ginger, 2014). The SLIPS was included in order to determine if social withdrawal differs from changes in anhedonia. The scale is composed of 23 items that are rated from 0 to 3, with a response of 3 also scored as a 0. Items answered with a 1 or 2 indicate change in anhedonia. Items answered with a 0 or 3 indicate a constant state. An initial pool of 58 questions were developed based upon the anhedonia literature, but these were narrowed to the 23-item scale which evidenced great internal reliability ($\alpha = .94$). The SLIPS demonstrated strong divergent and convergent validity (Winer et al., 2014).

Social and Occupational Functioning Assessment Scale. The Social and Occupational Functioning Assessment Scale (SOFAS) was developed by Goldman, Skodol, and Lave (1992) to be used by clinicians to improve upon the Global Assessment of Functioning Scale (GAF). The GAF included both symptom ratings and functioning within a single scale and rated functioning based on psychological impairment alone without considering physical impairments. The SOFAS measured social and occupational functioning as determined by mental impairments and physical limitations. It was included as an outcome measure for social functioning. Scores on the scale range from 0 to 100, with lower scores indicating more impairment in social functioning (Rybarczyk, 2011). The SOFAS demonstrated excellent reliability and convergent and divergent validity (Hilsenroth et al., 2000). Participants completed the SOFAS as a self-report measure out of necessity rather than it being rated by a clinician due to the online format of the survey.

UCLA Loneliness Scale. The UCLA Loneliness Scale was developed by Russell, Peplau, and Ferguson (1978) as a concise measure of general loneliness. The initial scale included 25 items taken from a 75-item loneliness scale developed by Sisenwein (1964). The

final version (Russell et al., 1978) included 20 items that were statements answered with O (I *often* feel this way), S (I *sometimes* feel this way), R (I *rarely* feel this way), and N (I *never* feel this way). Scoring was continuous with O responses scoring 3, S responses scoring 2, R responses scoring 1, and N responses scoring 0. Higher scores indicated greater loneliness. Russell et al. found the scale to demonstrate high internal consistency ($\alpha = .96$), a test-retest correlation of .73, and good convergent and divergent validity. The UCLA Loneliness Scale was included to measure convergent validity of the SWS because loneliness is related to social withdrawal.

Social Withdrawal Scale. The Social Withdrawal Scale (SWS) measured change in social engagement within the past month. I developed the Social Withdrawal Scale (SWS) to measure withdrawal from social activities in which people were previously engaged. I originally developed 43 Likert scale items that were reviewed by our research lab. The team helped eliminate redundant content and double-barreled items as much as was possible. Items that were related to other constructs besides social withdrawal were removed. Several items were deleted, reworded, or added. The final scale was modeled after the SLIPS and consisted of 28 items rated from 0 to 3, with a response of 3 also scored as a 0. Items answered with a 1 or 2 indicate change in social withdrawal. Items answered with a 0 (i.e., social engagement) or 3 (i.e., social disinterest) indicate stable social behavior. See Appendix A for a copy of the SWS.

Demographics. Participants were asked to give their age, gender, race, ethnicity, and nationality. They were also asked to indicate the highest level of education they had attained, their estimated annual family income, whether or not they had been diagnosed with depression or knew someone with depression, and whether or not they had ever seen a mental health professional. Participants were not required to answer these questions and could skip any they

chose. The demographics were presented last.

Procedure

Participants were directed to our study through Amazon MTurk. They completed the BDI, SASS, WSAS, PANAS, SLIPS, SOFAS, UCLA Loneliness Scale, and SWS in random order. Validity questions were randomly dispersed throughout. The demographic questionnaire was presented last. Participants who completed the survey received \$0.75. The surveys were programmed in Qualtrics.

Results

Data Cleaning

Five-hundred one participants were recruited through MTurk. The data of 127 participants was excluded because of participants' failure to complete the survey or because they missed too many validity questions. There were twenty validity questions interspersed randomly throughout the survey. Missing three or more disqualified participants because we could not be sure they adequately attended to the content of the survey. This data cleaning resulted in 374 participants' data that were used for analysis.

Initial Factor Analysis of the SWS

We conducted an exploratory factor analysis of the Social Withdrawal Scale using a principal components extraction method. We first extracted all factors with eigenvalues over 1. Four factors met this threshold, accounting for 36.13%, 5.61%, 4.31%, and 3.77% of the variance, respectively. Examining the scree plot (see Figure 1), there appeared to be only one factor but possibly two. We examined factor loadings for both a single factor solution and a two factor solution (see Table 3). To help increase the interpretability of the two factor solution, we used a rotated component matrix with Varimax rotation and Kaiser Normalization. Values of .40

or greater were considered significant loadings on a factor. Only two items did not load on the single factor solution (items 3 and 4). One item did not load on the two factor solution (item 3). Nineteen items loaded on Factor 1 of the two factor solution; twelve items loaded on Factor 2. Four items loaded on both factors (items 7, 12, 15, and 20). For the single factor solution, $\alpha = .93$. For Factor 1 in the two factor solution, $\alpha = .93$; for Factor 2, $\alpha = .84$. We examined if alpha would increase by removing any items for either factor solution. Item 3 was the only item for which this was the case. For all the items which loaded significantly, alpha would only decrease if these items were removed. Item 3, which addressed religious service attendance, was removed from inclusion in the final version of the scale.

Factor Validity

We looked at a variety of tests to determine whether the single factor solution or two factor solution offered a better representation of the data. When we looked at the pattern of factor loadings, the two factor solution was less clear because four items loaded on both factors, even after rotation. After comparing the factor solutions with other variables in the dataset, we discovered that the two factors in the two factor solution followed the same pattern of relation with all the other variables, thereby indicating that having an additional factor did not offer any additional information (see Table 4).

In order to determine if the components of the two factor solution predict unique variability, we entered the two factors in a hierarchical regression which predicted our primary outcome measures—SASS, WSAS, and SOFAS. We used the BDI as a control predictor variable, given that the SWS is intended to predict variability in social functioning above and beyond depressive symptoms. The hierarchical regression for the BDI and the two factor solution (see Table 5) showed that including factor 1 and factor 2 along with the BDI accounted

for an additional 4% [$F(2, 370) = 16.41, p < .001$] of variability in SASS scores. However, factor 2 was not a significant predictor in the model. For WSAS scores, factor 1 and factor 2 added a significant prediction in addition to what was accounted for by the BDI [4%; $F(2, 369) = 16.02, p < .001$], but again factor 2's impact was not significant. Factor 1 and factor 2 were responsible for an additional 4% [$F(2, 370) = 12.09, p < .001$] of variability in SOFAS scores, but this time factor 1 did not add significant prediction to the model. In all three outcome measures, factor 1 and factor 2 were never both significant because their variability overlapped substantially.

We repeated the hierarchical regression with the SLIPS entered into the model to assess the ability of SWS to predict social functioning above and beyond the effect of anhedonia. The hierarchical regression for the SLIPS and the two factor solution (see Table 6) indicated that including factor 1 and factor 2 along with the SLIPS accounted for an additional 1% [$F(2, 370) = 4.93, p < .01$] of variability in SASS scores. For WSAS scores, factor 1 and factor 2 significantly predicted 3% [$F(2, 369) = 11.86, p < .001$] of variability in addition to what was accounted for by the SLIPS. Factor 1 and factor 2 were responsible for an additional 4% [$F(2, 370) = 10.73, p < .001$] of variability in SOFAS scores. Across all three outcome measures, factor 1 was never a significant predictor when factor 2 was also in the model. For these reasons, we decided to use the single factor solution for all further analyses.

Prediction of Social Functioning

We conducted a hierarchical regression using the single factor solution to determine whether or not the SWS predicted social functioning above and beyond the effect of depression, which was accounted for by the BDI. The hierarchical regression for the BDI and the single factor solution (see Table 7) indicated that 46% of the variability in SASS scores was predicted

using the BDI alone [$F(1, 372) = 317.28, p < .001$], while adding the SWS increased variability by 4% [$F(1, 371) = 31.75, p < .001$]. Fifty-seven percent of the variability in WSAS scores was predicted by the BDI alone [$F(1, 371) = 482.45, p < .001$]. The SWS added a significant prediction to the variability already accounted for by the BDI [4%; $F(1, 370) = 34.53, p < .001$]. The pattern remained the same for the SOFAS, where the BDI predicted a significant amount of variability [40%; $F(1, 372) = 247.19, p < .001$], and the SWS added significantly to that prediction [3%; $F(1, 371) = 22.13, p < .001$]. The BDI was always a stronger predictor than the SWS when both variables were in the model.

We repeated the hierarchical regression with the SLIPS entered into the model to assess the ability of the SWS to predict social functioning above and beyond the effect of anhedonia. The hierarchical regression for the SLIPS and the single factor solution (see Table 8) indicated that 46% of the variability in SASS scores was predicted using the SLIPS alone [$F(1, 372) = 318.73, p < .001$], while adding the SWS increased variability by 1% [$F(1, 371) = 6.47, p < .05$]. Forty-five percent of the variability in WSAS scores was predicted using the SLIPS alone [$F(1, 371) = 303.01, p < .001$]. The SWS added a significant prediction to the variability already accounted for by the SLIPS [3%; $F(1, 370) = 22.78, p < .001$]. The pattern continued for the SOFAS, where the SLIPS predicted a significant amount of variability [34%; $F(1, 372) = 187.34, p < .001$], and the SWS added significantly to that prediction [2%; $F(1, 371) = 14.12, p < .001$]. The SLIPS was always a stronger predictor of the SWS when both variables were in the model. These regressions showed that the SLIPS and the SWS were highly correlated, which we expected, because anhedonia and social withdrawal are highly related. However, the SWS accounts for additional variability beyond that accounted for by the SLIPS, suggesting that social withdrawal is a distinct construct.

Convergent and Divergent Validity of the SWS

We used Pearson product-moment correlation coefficients to compare the SWS with all the other measures that were administered (see Table 9). The SWS was positively correlated with the BDI ($r = .68, n = 374, p < .001$), negative affect (NA; $r = .49, n = 374, p < .001$), the SLIPS ($r = .82, n = 374, p < .001$), the WSAS ($r = .65, n = 373, p < .001$), and the UCLA Loneliness Scale ($r = .58, n = 374, p < .001$). The SWS was negatively correlated with positive affect (PA; $r = -.43, n = 374, p < .001$), the SASS ($r = -.61, n = 374, p < .001$), and the SOFAS ($r = -.56, n = 374, p < .001$). These correlations were all in the expected direction and indicate convergent validity.

Using an independent samples *t*-test, we compared the SWS scores in participants who had personally seen a mental health professional and those who had not. Participants who had seen a clinician ($M = .81, SD = .44$) endorsed significantly more social withdrawal than those who had not ($M = .58, SD = .44$); $t(371) = 4.93, p < .001$. Further, we compared the SWS scores in participants who answered that they knew someone diagnosed with depression or had ever been diagnosed themselves and those who had not. Participants who knew someone with depression or who had been diagnosed themselves ($M = .75, SD = .45$) were more likely to be socially withdrawn than those who had not ($M = .54, SD = .44$); $t(371) = 4.23, p < .001$. These analyses indicated convergent validity because we would expect individuals who have experienced social withdrawal to have also seen a mental health professional and experienced depression.

We used a Pearson product-moment correlation coefficient to determine if age correlated with scores on the SWS. There was no correlation between age and SWS scores, $r = -.07, n = 373, ns$. Although the population of our study was younger, age was not affiliated with social

withdrawal. A one-way between subjects ANOVA was conducted to compare the effect of education level on SWS scores. There was not a significant effect of education level on SWS scores [$F(6, 366) = 1.10, ns$]. Having different levels of education did not affect one's level of social withdrawal. A point biserial correlation was conducted to compare the effect of estimated family income on SWS scores. There was no correlation between family income level and SWS scores, $r = -.10, n = 373, ns$. People with high incomes were just as likely to be socially withdrawn as those with low incomes. These analyses indicated divergent validity because we would not expect social withdrawal to be related to age, education level, or family income level.

Discussion

From the onset of the study, I hypothesized that social functioning in depression was not adequately measured using the BDI alone. I thought that social withdrawal might predict additional impairment in social functioning above and beyond symptoms of depression. In my review of the literature, I was unable to find a measure of social withdrawal, so I developed a new scale, the SWS, and tested it alongside the BDI and other measures of social functioning. The initial results suggested that there might be two distinct factors measured by my items, but further analyses showed my scale functioned best under a single factor model. In other words, social withdrawal, as measured by the SWS, is a unitary construct.

The SWS demonstrated good convergent validity. It was positively correlated with the BDI, negative affect, the SLIPS, the WSAS, and the UCLA Loneliness Scale. Depression is related to social withdrawal because depressed people usually do not participate in relationships and activities to the extent that they did before they became depressed. People with depression also view life through a negative lens, which causes them to withdraw from former social activity. As such, we expected and found a relationship between depression and our new

measure of social withdrawal. Loss of interest is most closely related to social withdrawal because loss of interest motivates individuals to withdraw from previously meaningful activities. Indeed, it evidenced the highest correlation between any measure and the SWS. Social withdrawal at work would obviously present some problems because most jobs have a significant social component. The term social withdrawal implies that there must have been some previous activity or relationship from which to withdraw. Withdrawing could certainly lead to loneliness, but social withdrawal and loneliness are not identical because loneliness could be caused by social relationships and activities which are not personally meaningful.

The SWS was negatively correlated with positive affect, the SASS, and the SOFAS. Positive affect increases as social withdrawal decreases because people are social creatures who generally need to interact with each other in order to feel happy. In fact, perceived social support is associated with a decrease in depression (Cohen & Hoberman, 1983). Higher scores on the SASS and SOFAS indicate better social functioning, while the opposite is true for the SWS. People who scored higher on the SWS were more likely to have seen a mental health professional and to know someone diagnosed with depression or to have been diagnosed with depression themselves. It makes sense that socially withdrawn individuals would seek a mental health professional to address their lack of social involvement. Certainly knowing someone with depression or experiencing it personally would make people more familiar with its related constructs, such as social withdrawal.

The SWS also demonstrated good divergent validity because social withdrawal was unrelated to age, education level, or family income level. Individuals can be socially withdrawn throughout the lifespan. There is no special reason that it should vary systematically with age. Education level and family income level do not influence the likelihood of social withdrawal,

either, because social withdrawal is not dependent on demographic variables. Anybody can become depressed, lose interest, or have life experiences that cause them to withdraw.

The measure did in fact predict social functioning above and beyond what was accounted for by the BDI as well as what was accounted for by the SLIPS. Symptoms of depression predict social functioning the most, but social withdrawal does account for additional variability. Loss of interest and pleasure predicts social functioning more than social withdrawal, but again, social withdrawal accounts for additional variability. These findings suggest that social withdrawal is an important construct, and the SWS should be used in assessment to better measure social functioning and used in treatment to inform strategy and improve trajectory.

The SWS has the potential to be used among clinical populations or populations at risk of experiencing impairment in social functioning. The measure was intended to help clinicians better assess social functioning in a variety of contexts, such as depression and anxiety, in which social withdrawal might play a significant role. Perceived social support serves as a barrier to stress (Cohen & Hoberson, 1983), so withdrawal might have particularly deleterious effects on emerging adults who are at greater risk for depression (Kessler et al., 2003). The SWS could be used as a precautionary measure for emerging adults to ensure that they remain socially involved. It could also be used in a precautionary way with older adults who may be homebound, disabled, or without a lot of friends. Future work would have to validate the measure for any of these uses with additional populations.

The SWS could be used to expound on the study by Rhebergen et al. (2010) that examined recovery trajectory among individuals with MDD, dysthymia, and DD, because social withdrawal almost certainly plays a role in the timetable of recovery. Individuals who are less active in social contexts are more vulnerable to the effects of depression (Ezquiaga et al., 1998;

Joiner et al., 1999; Joiner et al., 2002). If socially withdrawn individuals could find a way to get involved in social contexts as they were previously, it might reduce the length of depressive episodes.

Social withdrawal may differ from constructs such as preference-for-solitude (Wang et al., 2013) and anxious-shyness (Barry et al., 2013) which have both been shown to be destructive during the adolescent years. Personality plays a significant part in people's social involvement and intrinsic social needs. Although someone may be socially withdrawn based on the SWS, their social functioning may not be impaired because their individual needs are being met. With social withdrawal, there seems to be a lack of motivation or ability to be socially active even when social interaction is the goal. People find it difficult to retain their previous level of social involvement.

Limitations

There were several limitations to the study. Participants were online MTurk workers and measuring social withdrawal strictly among a clinically depressed population might have yielded different results, such as better indicating how social withdrawal predicts social functioning in addition to the general symptoms of depression. While the study did test whether the SWS predicted social functioning above and beyond symptoms of depression and anhedonia, it did not look at how the SWS was related to rejection sensitivity, preference-for-solitude, or anxious-shyness. These additional comparisons are crucial to articulate fully the boundaries of the construct of social withdrawal. The study only measured social functioning through self-report scales, and a clinician-rated assessment of social functioning might better indicate an individual's true degree of social impairment. Clinicians are outside observers and have multiple points of comparison, whereas individuals just have themselves. People sometimes overestimate

or underestimate their level of functioning, and for this reason, it is important for them to seek an outside opinion.

Future Directions

Future studies should examine the SWS among a clinically depressed population to more fully assess how social withdrawal predicts social functioning in addition to the symptoms of depression. A paper version should also be checked for reliability and validity. Our measure was designed for adults 18 and above. Future studies may wish to develop and test a child or adolescent version.

Conclusion

Our study suggests that social withdrawal does indeed predict social functioning above and beyond symptoms of depression and anhedonia. Social withdrawal is its own distinct construct. Hopefully the SWS will be used among clinical populations in the future to inform clinicians about patients' social functioning in order to prevent social withdrawal from developing into full-blown social isolation.

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Table 1

Participants' Highest Level of Education Achieved

Education	Percent
Less than a High School Diploma	.3
High School Diploma	9.4
Trade School	1.3
Some College	35.6
Bachelor's Degree	36.9
Master's Degree	13.6
Doctorate/Professional Degree	2.7
Not Reported	.3

Table 2

Participants' Estimated Annual Family Income

Income	Percent
Less than \$10,000	5.3
\$10,000 - \$19,999	9.1
\$20,000 - \$29,999	14.7
\$30,000 - \$39,999	17.1
\$40,000 - \$49,999	9.6
\$50,000 - \$59,999	11.8
\$60,000 - \$69,999	9.4
\$70,000 - \$79,999	5.1
\$80,000 - \$89,999	5.1
\$90,000 - \$99,999	3.5
More than \$100,000	9.1
Not Reported	.3

Table 3

Single Factor and Two Factor Loadings for the Social Withdrawal Scale

Item	Component		
	Single Factor	Factor 1	Factor 2
1.	.689	.588	.362
2.	.692	.633	.303
3.	.297	.246	.167
4.	.362	.012	.613
5.	.622	.587	.247
6.	.560	.530	.218
7.	.627	.436	.469
8.	.628	.525	.345
9.	.648	.536	.364
10.	.519	.175	.656
11.	.516	.334	.422
12.	.616	.433	.455
13.	.747	.723	.269
14.	.707	.758	.149
15.	.653	.482	.450
16.	.512	.155	.670
17.	.664	.660	.216
18.	.561	.390	.421
19.	.585	.319	.564

SOCIAL WITHDRAWAL IN DEPRESSION

20.	.597	.449	.401
21.	.656	.612	.270
22.	.660	.747	.084
23.	.643	.670	.164
24.	.635	.568	.295
25.	.650	.676	.168
26.	.444	.173	.526
27.	.522	.521	.166
28.	.590	.284	.624

Table 4

Single Factor and Two Factor Correlations with Other Measures

	Single Factor	Factor 1	Factor 2
BDI	.679	.642	.678
PA	-.425	-.430	-.362
NA	.494	.468	.500
SLIPS	.820	.794	.769
SASS	-.612	-.588	-.597
WSAS	.652	.622	.625
UCLA	.578	.571	.534
SOFAS	-.564	-.525	-.567

Note: All correlations were significant at the $p < .001$ level. BDI = Beck Depression Inventory;

PA = Positive Affect; NA = Negative Affect; SLIPS = Specific Loss of Interest and Pleasure

Scale; SASS = Social Adaptation Self-evaluation Scale; WSAS = Work and Social Adjustment

Scale; UCLA = UCLA Loneliness Scale; SOFAS = Social and Occupational Functioning

Assessment Scale.

Table 5

Hierarchical Regression for BDI and Two Factor Solution

Predictor	Outcome Measures					
	SASS		WSAS		SOFAS	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.460***		.565***		.399***	
BDI		-.678***		.752***		-.632***
Step 2	.044***		.035***		.037***	
BDI		-.480***		.580***		-.448***
Factor 1		-.172*		.184**		-.061
Factor 2		-.129		.080		-.213**

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. SASS = Social Adaptation Self-evaluation Scale; WSAS = Work and Social Adjustment Scale; SOFAS = Social and Occupational Functioning Assessment Scale; BDI = Beck Depression Inventory.

Table 6

Hierarchical Regression for SLIPS and Two Factor Solution

Predictor	Outcome Measures					
	SASS		WSAS		SOFAS	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.461***		.450***		.335***	
SLIPS		-.679***		.670***		-.579***
Step 2	.014**		.033***		.036***	
SLIPS		-.525***		.417***		-.347***
Factor 1		-.035		.125		-.004
Factor 2		-.165*		.201**		-.297***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. SASS = Social Adaptation Self-evaluation Scale; WSAS = Work and Social Adjustment Scale; SOFAS = Social and Occupational Functioning Assessment Scale; SLIPS = Specific Loss of Interest and Pleasure Scale.

Table 7

Hierarchical Regression for BDI and Single Factor Solution

Predictor	Outcome Measures					
	SASS		WSAS		SOFAS	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.460***		.565***		.399***	
BDI		-.678***		.752***		-.632***
Step 2	.043***		.037***		.034***	
BDI		-.488***		.574***		-.462***
SWS		-.281***		.262***		-.250***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. SASS = Social Adaptation Self-evaluation Scale; WSAS = Work and Social Adjustment Scale; SOFAS = Social and Occupational Functioning Assessment Scale; BDI = Beck Depression Inventory; SWS = Social Withdrawal Scale.

Table 8

Hierarchical Regression for SLIPS and Single Factor Solution

Predictor	Outcome Measures					
	SASS		WSAS		SOFAS	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.461***		.450***		.335***	
SLIPS		-.679***		.670***		-.579***
Step 2	.009*		.032***		.024***	
SLIPS		-.542***		.415***		-.355***
SWS		-.168*		.312***		-.273***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. SASS = Social Adaptation Self-evaluation Scale;

WSAS = Work and Social Adjustment Scale; SOFAS = Social and Occupational Functioning

Assessment Scale; SLIPS = Specific Loss of Interest and Pleasure Scale; SWS = Social

Withdrawal Scale.

Table 9

Correlations Between Measures

	SWS	BDI	PA	NA	SLIPS	SASS	WSAS	UCLA	SOFAS
SWS	1								
BDI	.679	1							
PA	-.425	-.508	1						
NA	.494	.711	-.346	1					
SLIPS	.820	.724	-.449	.543	1				
SASS	-.612	-.678	.617	-.520	-.679	1			
WSAS	.652	.752	-.473	.555	.670	-.629	1		
UCLA	.578	.710	-.591	.585	.570	-.657	.640	1	
SOFAS	-.564	-.632	.426	-.508	-.579	.583	-.662	-.611	1

Note: All correlations were significant at the $p < .001$ level. SWS = Social Withdrawal Scale; BDI = Beck Depression Inventory; PA = Positive Affect; NA = Negative Affect; SLIPS = Specific Loss of Interest and Pleasure Scale; SASS = Social Adaptation Self-evaluation Scale; WSAS = Work and Social Adjustment Scale; UCLA = UCLA Loneliness Scale; SOFAS = Social and Occupational Functioning Assessment Scale.

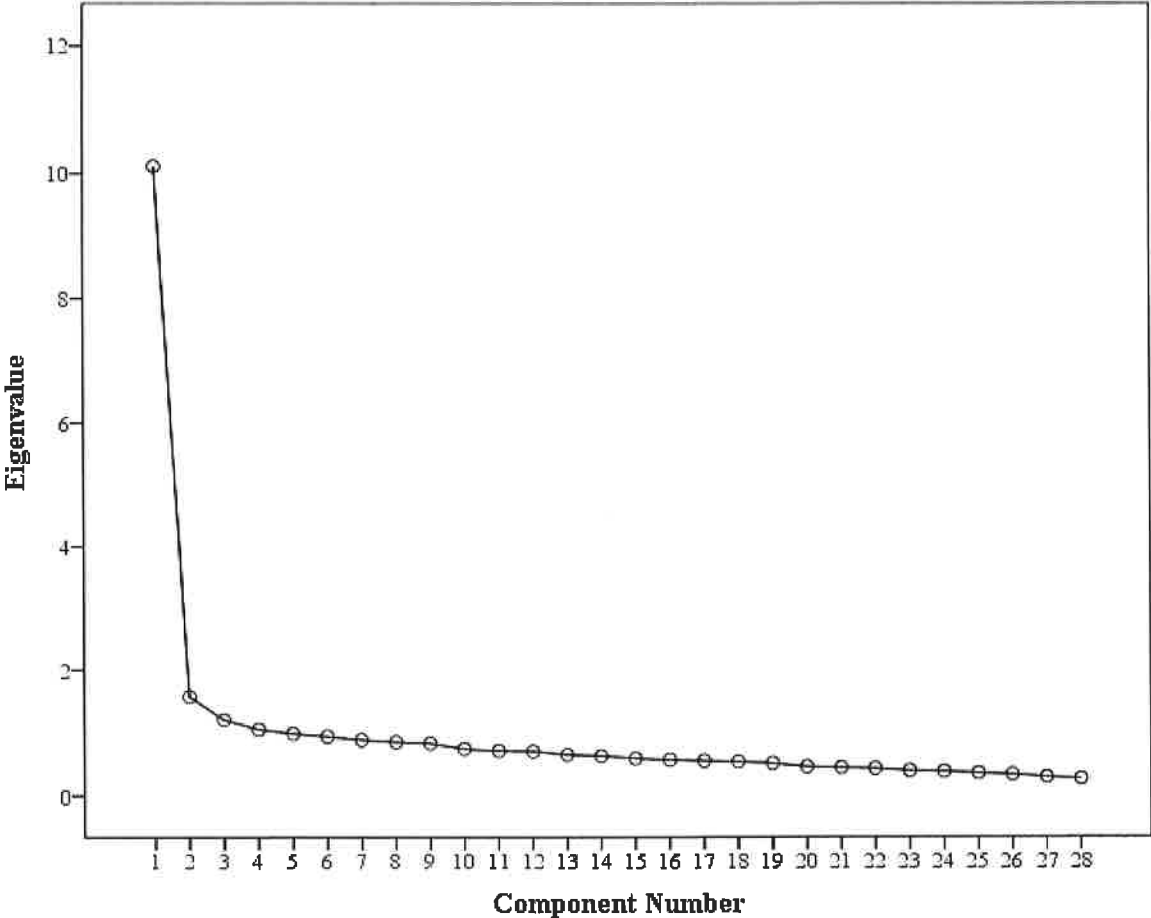


Figure 1. Scree plot for initial factor analysis of Social Withdrawal Scale

Appendix A*Social Withdrawal Scale*

Please carefully read the following groups of statements and choose only one from each group which best describes your behavior during the past month.

1. 0 I engage in social interactions at work/school as much as I ever have.
 1 I engage in social interactions at work/school less than I used to.
 2 I avoid almost all social interactions at work/school, even though I used to engage
 in them more.
 3 I have always avoided social interactions at work/school.
2. 0 I accept social invitations as much as I ever have.
 1 I accept social invitations less than I used to.
 2 I reject almost all social invitations, even though I used to accept them more.
 3 I have always rejected social invitations.
3. 0 I attend religious services as much as I ever have.
 1 I attend religious services less than I used to.
 2 I rarely attend religious services, even though I used to attend them more.
 3 I have never attended religious services.
4. 0 I keep up with the news as much as I ever have.
 1 I keep up with the news less than I used to.
 2 I rarely keep up with the news, even though I used to keep up with it more.
 3 I have never been interested in keeping up with the news.
5. 0 I invite friends into my home as much as I ever have.
 1 I invite friends into my home less than I used to.

- 2 I rarely invite friends into my home, even though I used to invite them more.
- 3 I have never invited friends into my home.
6. 0 My friends never have to ask me twice to do things with them.
- 1 My friends sometimes have to ask me multiple times to do things with them, even though they used to not have to.
- 2 My friends have to beg me to do things with them, even though I used to willingly do things with them.
- 3 My friends don't ask me to hang out with them because they know I won't.
7. 0 I attend family events as much as I ever have.
- 1 I attend family events less than I used to.
- 2 I rarely attend family events, even though I used to attend them more.
- 3 I have never been interested in attending family events.
8. 0 I engage in social-based hobbies as much as I ever have.
- 1 I engage in social-based hobbies less than I used to.
- 2 I rarely engage in social-based hobbies, even though I used to engage in them more.
- 3 I have never engaged in social-based hobbies.
9. 0 I am actively seeking companionship.
- 1 I am seeking companionship, but not as actively as I used to.
- 2 I have given up on finding companionship.
- 3 I have never been interested in finding companionship.
10. 0 I attend class/work at the same rate I always have.
- 1 I have been missing class/work more than I used to.

- 2 I almost never attend class/work, even though I used to attend more.
- 3 I have hardly ever attended class/work.
11. 0 I seek to be involved in my community as much as I ever have.
- 1 I seek to be involved in my community less than I used to.
- 2 I rarely seek to be involved in my community, even though I used to more.
- 3 I have never sought to be involved in my community.
12. 0 I share with my family how my day went as much as I ever have.
- 1 I share with my family how my day went less than I used to.
- 2 I rarely share with my family how my day went, even though I used to share more.
- 3 I have never shared with my family how my day went.
13. 0 I engage socially as much as I ever have.
- 1 I engage socially less than I used to.
- 2 I rarely engage socially, even though I used to more.
- 3 I have never engaged socially.
14. 0 I have always had a high motivation to engage socially.
- 1 My motivation to engage socially is slightly less than what it used to be.
- 2 My motivation to engage socially is significantly diminished from what it used to be.
- 3 I have never had any motivation to engage socially.
15. 0 I answer my phone regularly (no change).
- 1 Sometimes I will not answer my phone, although I used to be better about it.
- 2 I have begun to avoid answering phone calls, even from friends.

- 3 I have never answered phone calls.
16. 0 When greeted by people, I have always greeted them in return.
- 1 When greeted by people, I greet them less than I used to.
- 2 When greeted by people, I almost never greet them in return, even though I used to.
- 3 When greeted by people, I have never greeted them in return.
17. 0 My friends would say I am as social as ever.
- 1 My friends would say I am not as social as I used to be.
- 2 My friends would say I have become withdrawn or reclusive.
- 3 I don't have any friends.
18. 0 I leave my home practically every day.
- 1 I leave my less than I used to.
- 2 I rarely leave my home, even though I used to leave more.
- 3 The only times I have ever left my home were in absolute emergencies.
19. 0 I give the most important people in my life (e.g. partner, children, parents) the attention they deserve.
- 1 I don't give the most important people in my life as much attention as I used to.
- 2 I barely give any attention to the most important people in my life, even though I used to do a better job.
- 3 I have never given attention to the most important people in my life.
20. 0 When in need, I have always reached out to others for help.
- 1 When in need, I reach out to others for help less than I used to.
- 2 When in need, I rarely reach out to others for help, even though I used to more.

- 3 When in need, I have never reached out to others for help.
21. 0 I have always felt close to my friends.
1 I don't feel as close to my friends as I used to.
2 I don't feel close to my friends at all, even though I used to feel close to them.
3 I have always felt distant from friends.
22. 0 I frequently invite friends to do things together.
1 I don't ask friends to do things together as much as I used to.
2 I rarely ask friends to do things together, even though I used to more.
3 I have never asked friends to do things together.
23. 0 I have always been a people person.
1 I really like people, but I need my space more than I used to.
2 I used to really like people, but now I wish they would just leave me alone.
3 I have never liked people.
24. 0 I never break social commitments unless absolutely necessary.
1 I break social commitments more than I used to.
2 I almost always break social commitments, even though I used to rarely do this.
3 I never make social commitments.
25. 0 I have always enjoyed mingling with others at social events.
1 I enjoy mingling with others at social events less than I used to.
2 I don't enjoy mingling with others at social events, even though I used to more.
3 I never mingle at social events.
26. 0 I have always enjoyed checking social media to stay informed.
1 I don't check social media to stay informed as much as I used to.

- 2 I rarely check social media to stay informed, even though I used to do this more.
- 3 I have never checked social media to stay informed.
27. 0 The more people at an event, the better.
- 1 I attend events with large numbers of people less than I used to.
- 2 I increasingly desire events which involve fewer people, even though I used to like large events more.
- 3 I do not attend events with large numbers of people.
28. 0 I respond to email at the same rate I always have.
- 1 I respond to email less than I used to.
- 2 I hardly ever respond to email, even though I used to be better about this.
- 3 I have never responded to email.