Social Functioning in Anhedonics: A Daily Diary Study

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Abstract

Anhedonia is a symptom of both schizophrenia and depression and is a term to describe the loss of pleasure in once enjoyable activities, such as social interaction or playing a sport. In this study we examined how social anhedonia relates not only to in person communication, but also phone call communication, text messaging communication, and internet communication. The landscape of long-distance communication is evolving fast, the use of smart-phones, the internet, and now virtual reality are more and more being utilized to stay in contact with others and the research needs to reflect these changes in social dynamics. In order to understand how social anhedonia is related to these newer modes of communication we investigated how our undergraduate sample communicated day to day using a daily diary approach. Over a two week period we found that social anhedonia has a significantly negative correlation with the number of phone call communications and the number of text messaging communication a person has in addition to the number of in person communications, but not with the number of internet communications. Future research would benefit from creating better measures of internet communication. While the current study was restricted to archival data, being able to gauge how often and how enjoyable these internet conversations are will reveal many new ideas on solitude in anhedonia and will hold greater implications for how depression is treated in the 21st century and beyond.

Keywords: anhedonia, social media, internet communication, ESM

Introduction

One of the key symptoms of depression is the inability to experience pleasure, otherwise known as anhedonia. In many studies researchers split anhedonia into two different components, physical and social. Physical anhedonia is defined as the loss of pleasure in physical activities such as losing enjoyment in playing a sport or reading books, while social anhedonia is defined by the loss of pleasure in the social relationships we have with others. Previous research has shown a demonstrated relationship between social anhedonia and social functioning, such as social anhedonics having less satisfaction and less commitment to social relationships (Assaad & Lemay, 2017) and greater difficulty in adjusting to new social settings (Harrison, Mountford & Tchanturia, 2014). It has also been shown that individuals with high social anhedonia have a tendency to be more aggressive (Fanning, Berman & Guilot, 2012). Furthermore, there has been evidence to show that individuals high on social anhedonia interact with others less than those with lower social anhedonia scores (Brown, Silvia, Myin-Germeys & Kwapil, 2007) and prefer to be alone (Kwapil et al., 2009).

While the desire to be alone or spend less time around others is not unique to anhedonia, there are differences in the type of dysfunction that occurs. Introversion is also shown to be related with a preference to be alone, but the data shows that while introverts spend more time alone they still rate most social activities as being pleasant (Burger, 1995). When social dysfunction does occur it is often in the context of social anxiety. Socially anxious people also have a preference to be alone, but instead rate many of their social interactions as being unpleasant and use solitude as a retreat from the negative emotions these interactions cause. (Cheek & Buss, 1981). The type of support found in social interaction is crucial to healthy living

though, such as social support being associated with better coping (Feeney & Collins, 2014), social support being able to teach people different skills related to self care (Bandura, 1977), and social support being a protective factor against mental illnesses such as depression (Pössel et al., 2018).

Of particular interest is the role of anhedonia in recovery from depression. There are many treatments available for depression and schizophrenia that range from traditional psychosocial therapy such as Cognitive Behavioral Therapy and Interpersonal Psychotherapy to psychopharmacological approaches. While many who suffer from these disorders find help in these methods, we see that those with anhedonia often have the most difficulty in treatment. Data suggests that anhedonia is one of the symptoms that best predicts remission and poor recovery in depression (McMakin et al., 2012; Vinckier, Gourion, & Mouchabac, 2017). It has also been shown that individuals with social anhedonia display lower motivation (Wang et al., 2018) which could lead to lower economic standing which is correlated with poorer mental outcomes (Sykes, Hanley, Boyle, Higginson, & Wilson, 1999). As such, anhedonia is an important concept to study in terms of both understanding and treating depression.

Typically when studying anhedonia, scales and measures are used to generate a trait score. Researchers most often use these trait anhedonia scores to produce comparisons to other constructs such as anger or social functioning. Some common measures used to assess anhedonia include the Physical Anhedonia Scale and Social Anhedonia Scale (Chapman, Chapman & Raulin, 1976) which utilize true/false responses to items (e.g. "I have enjoyed flirting with a women") and, the Snaith-Hamilton Pleasure Scale (Snaith et al., 1995) which also has participants respond to situational events such as "I would enjoy being with my family or close friends". Several measures of depression have subscales or single items that focus on anhedonia

such as the Mood and Anxiety Questionnaire (Casillas & Clark, 2000). When using these

measures it is possible to examine correlations with other trait measures, and some studies utilize

experience sampling methods, or ESM. ESM is a design which is used to assess participant's

thoughts, feelings, and behaviors multiple times over the course of a few days or other set period

of time. ESM is particularly valuable when the study variables in question focus on social

behaviors. While there are many different ways to run an ESM study, there are circumstances

where it is more beneficial than models using questionnaires. As questionnaires usually rely on

retrospective reports, using an ESM model that collects data at more frequent time points reduces

the risk of exaggerated reports on mood, as previous research has shown that negative mood

states associated with depression are particularly prone to be over exaggerated after the fact

(Sato, & Kawahara, 2011). In addition, ESM models also allow for stronger ecological validity

as questions and prompts happen most often outside the lab and involve day to day tasks or

current moods (Schwartz, 2012).

Some of the studies by Kwapil and colleagues detailing social anhedonia utilize

experience sampling methods. Kwapil et al.'s 2009 study used PDA devices to ping participants

multiple times per day over the course over a week and at each testing period they filled out a

quick survey. Some important findings from these studies demonstrated that there is evidence to

show that social anxiety and social anhedonia are separate constructs and operate differently in

the context of face to face relationships. Brown et al.'s 2007 study which utilized a similar model

to Kwapil et al.'s 2009 study showed that people with higher social anhedonia interact with

others less often and prefer to be alone whereas people with social anxiety preferred to be alone

when around others but still desired to be with others when in solitude. Observational studies

have been used to study social functioning in relation with anhedonia as well, as Llernea and her

colleagues (2012) have shown that those high on social anhedonia perform worse on face to face social interactions tasks based on observer-rated interviews indicating that social anhedonics are less expressive verbally and show less expressive facial emotion.

As most studies on social functioning focus on in person interactions, there has been little research on the topic of long distance communication styles such as instant messaging and other social media platforms and their relationship with social anhedonia. A 2003 study by Caplan found data to suggest that depression and loneliness facilitated how much one would prefer online social interaction over face to face contact. Research by Nowland, Necka, and Cacioppo (2017) shows that the replacement of face to face interaction with internet relationships increases feelings of loneliness and reinforces depressive symptoms. Although the opposite has been seen in cases where the measures differentiate between time online in general versus time just spent online interacting with others; with depressive symptoms are better correlated with general browsing time over time talking online. There are measures designed to gauge internet use such as the Technology Use Questionnaire (Ohannessian, 2009); this and other measures such as those utilized in studies performed by the Pew Research Center (Perrin, 2015) measure internet usage in time and do not discern between communicating and browsing. Studies that focus on time spent just communicating tend to show a negative relationship between online communication and loneliness (Lemieux, Lajoie, & Trainor, 2013). In terms of Brown et al.'s 2007 study those high on social anxiety showed negative affect when in the company of others but at the same time desired to be with them, while those with high social anhedonia showed negative affect around others but showed a preference for being alone. Furthermore, the data suggest that up to 15% of internet addicts could be diagnosed with social anxiety disorder (Bernardi, Pallanti, 2009). Given this, the data supports the idea that the internet is used as a tool to combat

loneliness in some people. It has been shown that socially anxious individuals will use the internet as a tool to communicate, but since there is also evidence to show that social anxiety is a measurably different from social anhedonia, can we expect the same results?   .

In our study we will be using a daily diary method to investigate how social and physical anhedonia relate to different modes of communication. In particular we will look into long-distance communication styles that previous studies have not completely explored. As previous studies have shown that people high on social anhedonia prefer to be alone, we predict that anhedonia scores will be negatively correlated with the amount of in-person communications a person has. Research has shown that good face to face communication is associated with frequent social media use (Valkenburg, & Peter, 2009), and since socially anhedonic individuals have been shown to less enjoyable in person relationships we also predict that anhedonia will be negatively correlated with the number of phone calls an individual has, the number of text conversations they have, and the number of social media conversations they have.

Method

Participants

One hundred and sixty six undergraduates were recruited through SONA and introductory PSY-121 classes at the University of North Carolina at Greensboro. Participants were compensated with two participation credits upon completion of the initial lab visit and were awarded four more participation credits upon completion of 12 of the 14 daily surveys making a total possible of six participation credits. 75% of the sample self-labeled as female, and reported ethnicity consisted of 31.8% black/African American, 39.4% white, 11.8% Asian, 8.2%

Hispanic, 2.4% middle eastern, and 6.5% in other categories. The average age of our sample was 18.99 ($SD = 1.81$).

Measures

Anhedonia was assessed using the Mini-Mood and Anxiety Questionnaire (Casillas & Clark, 2000). The Mini-MASQ is an abbreviated version of the full MASQ designed with the intention of retaining good validity and reliability. The Mini-MASQ consists of statements (e.g., "Felt depressed") where individuals are instructed to rate how much they have experienced the statement in the past week (1=not at all; 5=extremely) and has 26 items ($\alpha = .82$). The Snaith-Hamilton Pleasure scale (Snaith et al., 1995) was also utilized to measure anhedonia. The SHAPS is a 14 item measure ($\alpha = .86$) that consists of questions related to the possible enjoyment an event (e.g., "I would enjoy a warm bath of refreshing shower") wherein participants would rate on a four-point scale likert scale (1=strongly disagree; 4=strongly agree). Social interactions was measured by 6 items daily and consisted of fill in the blank items (e.g., "Today I had __ In-person conversations with different people…") that cover different forms of communication such as in-person, internet, texting, and phone conversations. We also assessed social media use as a part of social interactions which used a Likert scale to rate how much time is spent using social media and how the participants interacted with others. Social functioning was assessed using 11 items daily that gauge thoughts on social interactions for that day (e.g., "I enjoyed being around other people today"). Most of the items related to social functioning are rated on a seven-point scale (1=strongly disagree; 7=strongly agree). 3 items on social functioning are yes/no items.

Procedure

Data for the current study were collected as a part of a larger study. The initial visit consisted of participants providing informed consent, completing a multitude of measures that relate to anhedonia and depression symptomology including the Snaith-Hamilton Pleasure Scale (Snaith et al., 1995) and the Mini-MASQ (Casillas & Clark, 2000).   After leaving the lab, participants were instructed to complete a daily diary once a day for 14 days following the initial visit. Daily diaries were sent out each day through emails that were scheduled to be sent out each day at 5 PM via qualtrics, an online data collection platform (https://www.qualtrics.com/). The survey included in the email was available until 12 AM of the same day. Each daily diary assessed mood and social functioning for that particular day. The final survey on the 14th day is the exit survey and was required to be completed in order to receive full participation credit.

Statistical Analyses

Of the original 166 participants, we ultimately used 114 for the purpose of analysis. We only used data from participants that completed at least 10 of the 14 surveys in addition to the measures in the intake section. All correlation analyses were performed using SPSS. Each of the four communication styles had their own mean calculated from the 14 daily surveys. Using each participant's average communication score a composite communication score was calculated for each of these four communication styles. These composite communication averages were then used in three separate correlation analyses; between an individual's anhedonic depression score on the MASQ, and between their SHAPS score. In addition, four social items on the SHAPS were used to create a social anhedonia subscale and correlations were calculated between this subscale score and each of the four composite communication style scores.

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Results

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Participants completed an average of 11.98 (*SD* = 1.69) surveys over the course of 14 days. In our analysis of communication styles and anhedonia we found that on average people had 6.20 (*SD* = 5.35) face to face communications per day. For phone communications, the number of communications each person had averaged at 1.57 (*SD* = 1.25) times per day. For text-messaging communications, there was an average of 4.14 (*SD* = 3.27) communications per day for each participant. Internet communications was much lower, with an average of 0.46 (*SD* = 0.75) communications per day. Ranges are also provided in table 1.

As can also be seen in table 1, the SHAPS nor the Social SHAPS subscale did not significantly correlate with any of the communication styles we measured. The Anhedonic Depression Subscale on the MASQ was found to be significantly correlated with the mean number of in person communications, phone communications, and text messaging communications. In all of 3 of these styles we found a moderate negative correlation. While the Anhedonic Depression Subscale on the MASQ was not significantly correlated with the mean number of internet communications it still presented a moderately small negative correlation. In addition, means, standard deviations, ranges, and Cronbach's alpha can also be found in table 1.

Discussion

Individuals with social anhedonia are shown to have lower social functioning; when with people considered close to the individual, such as a romantic partner, they tend to be less satisfied and less committed to the relationship (Assaad & Lemay, 2017). Furthermore, social anhedonia is negatively correlated with how much someone interacts with others (Brown, Silvia, Myin-Germeys & Kwapil, 2007) and can indicate a preference for being alone (Kwapil et al.,

2009). This study extended previous findings on social anhedonia, showing that anhedonic tendencies are also present in communication styles other than face to face communication.

Previous research has indicated that face to face communication is bolstered by frequent social media communication with the people interacted in person (Valkenburg, & Peter, 2009). Loneliness is also a factor in how much one would prefer online interaction over face to face communication (Caplan, 2003). One possibility is that people with higher levels of anhedonia would use long-distance communication styles to replace face to face interaction. Another possibility is that people with higher levels of anhedonia would forego long-distance communication styles in the same way that they prefer to be alone when it comes to face to face communication (Kwapil et al., 2009). Results from the current study lend credence to the second clause, as we found that people with higher levels of anhedonia also interact less with others on the phone and via text-messaging than those without people with lower levels of anhedonia.

While we were able to find that anhedonia, as assessed by the MASQ AD scale, is significantly negatively correlated with the number of phone calls and the number of text conversations a person has, we were not able to find a significant correlation between the number of internet communications and anhedonia. We expected to find a significant correlation among all of the long-distance communication styles with anhedonia. While the data did not support the relationship between internet communication and anhedonia, it is of interest that all of the long-distance communication styles were significantly positively correlated with each other, but not with face to face communications. We can extend previous findings by Kwapil and see that people with higher levels of anhedonia prefer solitude, but when they do communicate with others they will lean towards long-distance communication styles. So while people with higher levels of anhedonia are not necessarily replacing face to face communication with long-distance

communication styles as Caplan would suggest lonely people do, people with higher levels of anhedonia do use long-distance communication more often.

This is not to suggest that internet communication will never be associated with anhedonia however. While the current study was a good start in evaluating how differing communication styles relate to anhedonia, we were limited by archival data. As we did not have a dedicated measure of social anhedonia we can only generalize the current results to general anhedonia using a depressive anhedonia scale and not social anhedonia. Given that the MASQ is a depression scale and that the SHAPS is focused on physical anhedonia; with 10 of the 14 items relating to physical activities, it is not entirely surprising to see that the MASQ generated favorable results while the SHAPS did not. Previous research has shown that in non-clinical samples, people with higher depression scores have less rewarding social interactions (Nezlek, Imbrie, & Shean, 1994). Physical anhedonia and depression are related, but previous work indicates that clinical patients score significantly higher on physical anhedonia scales compared to nonclinical samples (Loas, Salinas, Guelfi, & Samucl-Lajeunesse, 1992). Given the nonclinical sample of our study, we find it likely that the MASQ was able to capture depressive tendencies and thus impaired social interactions, but that average depression levels did not meet a clinical level and by extension we were not able to capture high levels of anhedonia on the SHAPS. It is possible that if we had a clinical sample the SHAPS would have had stronger correlations with our communication styles, since previous research has shown a moderate positive relationship between measures that distinctly measure physical and social anhedonia (Fonseca-Pedero et al., 2009).

Due to the nonclinical and undergraduate sample of our study, it is possible that these results will not generalize to different groups. Of particular interest is older populations, studies

have shown that depression levels of people older than 70 tend to stay stable over time, while

anhedonia scores increase with age (Sharpley et al., 2016). So while anhedonia is still present,

there has been little research on if they use communication technology in the same way as

younger adults. There is evidence that nonclinical adults over the age of 55 also use the internet

to bolster face to face interactions like younger populations (Russell, Campbell, & Hughes,

2008), and that older adults in care communities can use the internet to communication as a

means to decrease loneliness (Cotten, Shelia, Anderson, William, McCullough, & Brandi, 2013).

Beyond this, not much research has been done on anhedonic tendencies in older nonclinical

samples nor older populations living outside of community care centers, so future research would

benefit from analyzing these populations.

In addition to including a dedicated measure on social anhedonia, future research would

benefit from using a different measure of internet communication. Previous research has faced

the same limitation, as it has both been shown that internet communication can increase feelings

of loneliness (Nowland, Necka, & Cacioppo, 2017), and decrease feelings of loneliness

(Lemieux et al., 2013). In both of these studies, the difference was in how internet usage was

measured. Given the current results of the study, it is likely we failed to accurately capture

internet communication as a construct as well. Given the nature of internet communication,

where conversations may be sporadic over time but still cover one conversation topic, simply

asking how many conversations or how long an internet communication lasted is most likely not

enough to capture this phenomena. An ESM or daily diary approach still might be able to

accurately measure internet communication in relation with anhedonia, as we did not have the

right measure, a study method like the one used by Kwapil et al.'s 2009 ESM study has the

potential to gauge internet usage more accurately. In that particular study, pings were sent out to

participants and questions were based on if they answered if they were with another individual. In much the same way, a ping could be sent to ask if an internet communication is currently happening. Given the prevalence of cell phones, it is likely people will be caught while using an instant massager or other social media app and be able to report on it.

In conclusion, the current research is a good stepping stone in evaluating how ESM and daily diary methods can be used to investigate long-distance communication styles. In this study we just examined the number of conversations, but future research will be needed to see how enjoyable long-distance communications experiences are compared to face to face communication. While we found that higher levels of anhedonia is still negatively correlated with long-distance communication styles, it is hopeful to see that long-distance communication could be used as an alternative to face to face communication in terms of finding social support. Social support is a crucial protective factor against depressive symptoms (Pössel et al., 2018), so as communication technology becomes more prevalent, the potential for how it can be used with current psychosocial treatment is growing more relevant by the year.

Tables

Variables	1	2	3	4	5	6	7
1. Anhedonic Depression Subscale-MASQ	-						
2. SHAPS	0.12	-					
3. SHAPS Social	-.01	0.64**	-				
4. # In-Person Communications	-0.35**	-0.10	-0.12	-			
5. # Phone Communications	-0.29**	0.02	-0.02	0.23	-		
6. # Text Messaging Communications	-0.29**	-0.05	-0.09	0.17	0.39**	-	
7. # Internet Communications	-0.20	0.02	0.14	-0.03	0.36**	0.34**	-

Table 1. Correlations of anhedonic scales and mean # of each communication styles

Variables	1	2	3	4	5	6	7
M	21.26	1.30	0.21	6.20	1.57	4.14	0.46
SD	6.08	1.74	0.61	5.35	1.25	3.27	0.75
Range	8 - 39	0 - 14	0-4	.82 - 44	0 - 7.31	.18 - 30.50	0 - 4.43
α	.82	.86	.70				

*Table 1 Continued. **p < .01*

References

Assaad, L., & Lemay, E. P. (2017). Social anhedonia and romantic relationship processes.

Journal Of Personality, doi:10.1111/jopy.12300

Bandura, A. (1977). *Social learning theory.* New York, NY: General Learning Press.

Bernardi, S., & Pallanti, S. (2009). Internet addiction: A descriptive clinical study focusing on

comorbidities and dissociative symptoms. *Comprehensive Psychiatry, 50,* 510-516.

Berridge, K. C., & Robinson, T. E. (2003) Parsing reward. *Trends in Neuroscience, 26*(9), 507

513. doi:10.1016/S0166-2236(03)00233-9

Brown, L. H., Silvia, P. J., Myin-Germeys, I., & Kwapil, T. R. (2007). When the need to belong

goes wrong: The expression of social anhedonia and social anxiety in daily life.

Psychological Science, 18(9), 778-782. doi:10.1111/j.1467-9280.2007.01978.x

Burger, J. M. (1995). Individual differences in preference for solitude. *Journal of Research in*

Personality, 29, 85-108.

Carlson, M., Charlin, V., & Miller, N. (1988). Positive mood and helping behavior: A test of six

hypotheses. *Journal Of Personality And Social Psychology, 55*(2), 211-229.

doi:10.1037/0022-3514.55.2.211

Caplan, S.E. (2003). Preference for online social interaction a theory of problematic internet use

and psychosocial well-being. *Communication Research, 30*(6), 625-648.

Casillas, A., & Clark, L. A. (2000). *The Mini Mood and Anxiety Symptom Questionnaire (Mini*

    MASQ). Poster presented at the 72nd Annual Meeting of the Midwestern Psychological

    Association, Chicago, IL.

Chapman, L. J., Chapman, J. P., & Raulin M. L. (1976). Scales for physical and social

    anhedonia. *Journal of Abnormal Psychology, 85*, 374-382

Cheek, J. M., & Buss, A. H. (1981). Shyness and sociability. *Journal of Personality and Social*

    Psychology, 41(2), 330-339.

Cotten, Shelia, R., Anderson, William, A., McCullough, & Brandi, M. (2013). Impact of internet

    use on loneliness and contact with others among older adults: Cross-sectional analysis.

    Journal of Medical Internet Research, 15(2), 215-227

Fanning, J. R., Berman, M. E., & Guillot, C. R. (2012). Social anhedonia and aggressive

    behavior. *Personality And Individual Differences, 53*(7), 868-873.

    doi:10.1016/j.paid.2012.06.019

Feeney, B. C. , & Collins, N. (2014). A theoretical perspective on the importance of social

    connections for thriving. In M. Mikulincer & P. R. Shaver (Eds.), *Mechanisms of social*

    connection: From brain to group. Washington, DC: American Psychological

    Association.

Fonseca-Pedero, E., Paino, M., Lemos-Giraldez, S., Garcia-Cueto, E., Villazon-Garcia, U.,

Bobes, J., & Muniz, J. (2009) Psychometric properties of the Revised Physical and Social

Anhedonia Scales in non-clinical young adults. *The Spanish Journal of Psychology,*

Harrison, A., Mountford, V.A., & Tchanturia, K. (2014). Social anhedonia and work and social

functioning in the acute and recovered phases of eating disorders. *Psychiatry Research,*

218(1-2), 187-194. Doi:10.1016/j.psychres.2014.04.007

Hawthorne, G. (2006). Measuring social isolation in older adults: Development and initial

validation of the friendship scale. *Social Indicators Research, 77*(3), 521-548. Doi:

10.1007/s11205-005-7746-y

Kwapil, T. R., Silvia, P. J., Myin-Germeys, I., Anderson, A. J., Coates, S. A., & Brown, L. H.

(2009). The social world of the socially anhedonic: Exploring the daily ecology of

asociality. *Journal Of Research In Personality, 43*(1), 103-106.

doi:10.1016/j.jrp.2008.10.008

Lemieux, R., Lajoie, S., & Trainor N. E. (2013). Affinity-seeking, social loneliness, and social

avoidance among Facebook users. *Psychological Reports: Mental & Physical Health,*

112(2), 545-552.

Llerena, K., Park, S. G., Couture, S. M., & Blanchard, J. J. (2012). Social anhedonia and

affiliation: Examining behavior and subjective reactions within a social interaction.

Psychiatry Research, 200(2-3), 679-686.

Loas, G., Salinas, E., Guelfi, J. D., & Samucl-Lajeunesse, B. (1992). Physical anhedonia in

major depressive disorder. *Journal of Affective Disorders, 25,* 139-146.

McMakin, D. L., Olino, T. M., Porta, G., Dietz, L. J., Emslie, G., Clarke, G., . . . Brent, D. A.

(2012). Anhedonia predicts poorer recovery among youth with selective serotonin

reuptake inhibitor treatment-resistant depression. *Journal of the American Academy of

Child & Adolescent Psychiatry, 51*(4), 404-411.

Nakonezny, P., Carmody, T., Morris, D., Kurian, B., & Trivedi, M. (2010). Psychometric

evaluation of the Snaith-Hamilton pleasure scale in adult outpatients with major

depressive disorder. *International Clinical Psychopharmacology, 25*(6), 328-333.

Nezlek, J. B., Imbrie, M., & Shean, G. D. (1994). Depression and everyday social interaction.

Journal of Personality and Social Psychology, 67(6), 1101-1111.

Nowland, R., Necka, E.A., & Cacioppo, J.T. (2017). Loneliness and social internet use:

Pathways to reconnection in a digital world? *Perspectives on Psychological Science,

13*(1), 70-87

Ohannessian, C.M. (2009). Media use and adolescent psychological adjustment: An examination

of gender differences. *J Child Fam Stud, 18*, 582-593.

Pössel, P., Burton, S. M., Cauley, B., Sawyer, M. G., Spence, S. H., & Sheffield, J. (2018).

Associations between social support from family, friends, and teachers and depressive

symptoms in adolescents. *Journal of Youth and Adolescence, 47*(2), 398-412.

Perrin, A. (2015). Social network usage.

Russell, C., Campbell, A., & Hughes, I. (2008). Ageing, social capital and the internet: Findings

from an exploratory study of Australian 'silver surfers'. *Australian Journal of Ageing,*

27(2), 78-82.

Sato, H., & Kawahara, J. (2011). Selective bias in retrospective self-reports of negative mood

states. *Anxiety, Stress, and Coping, 24,* 359-367

Schwarz, N. (2012). Why researchers should think "real-time": A cognitive rationale. In M. R.

Mehl & T. S. Conner (Eds.), Handbook of research methods for studying daily life (pp.

22-42). New York, NY: Guildford Press.

Sharpley, C. F., Hussain, R., Wark, S. G., Bitsika, V., McEvoy, M. A., & Attia, J. R. (2016).

Prevalence of depressed mood versus anhedonia in older persons: Implications for

clinical practice. *Asia Pacific Journal of Counseling and Psychotherapy, 8,* 3-14.

Snaith, R. P., Hamilton, M., Morley, S., Humayan, A., Hargreaves, D., & Trigwell, P. (1995). A

scale for the assessment of hedonic tone: The Snaith-Hamilton pleasure scale. *British*

Journal of Psychiatry, 167, 99-103.

Sykes, D. H., Hanley, M., Boyle, D. M., Higginson, D. J., & Wilson, C. (1999). Socioeconomic

status, social environment, depression and postdischarge adjustment of the cardiac

patient. *Journal of Psychosomatic Research, 46*(1), 83-98.

Treadway, M. T., & Zald, D. H. (2011). Reconsidering anhedonia in depression: lessons from

translational neuroscience. *Neuroscience and Biobehavioral Reviews, 35*(3), 537-555.

Doi:10.1016/j.neubiorev.2010.06.006

Valkenburg, P. M., & Peter, J. (2009). The effects of instant messaging on the quality of

adolescents' existing friendships: A longitudinal study. *Journal of Communication, 59*,

79-97.

Vinckier, F., Gourion, S., & Mouchabac, S. (2017) Anhedonia predicts poor psychosocial

functioning: Results from a large cohort of patients treated for major depressive disorder

by general practitioners. *European Psychiatry, 44*, 1-8.