# THE ROLE OF OXYTOCIN AND PSYCHOSOCIAL FACTORS IN ONLINE SOCIAL NETWORKING IN TIMES OF EMOTIONAL DISTRESS

by

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A thesis submitted to the Faculty of Graduate Studies and Postdoctoral Affairs

in partial fulfillment of the requirements for the degree of

Master of Science

in

Neuroscience

Carleton University
Ottawa, Canada

*Abstract*

The present study examined the use of social networking websites to give and receive social support. Participants were asked to create a hypothetical status update about a stressful time and rate their reactions to one of six messages that either contain information about calling a crisis line or indicate that no one responded. Messages with personal involvement increased positive affect, and any of the messages were received as more supportive than no message at all. In general, messages that were private were perceived as more supportive than public ones, even among individuals who felt stigmatized or depressed. An offer of personal involvement was perceived positively for most, but could be less helpful to the highly depressed or if the messages were sent publicly to individuals experiencing low levels of stigma. Overall, there is promise in using online communication tools in the treatment and prevention of mental health issues.

Acknowledgements

First and most importantly, I would like to thank my thesis supervisor, Dr. Hymie Anisman, for the invaluable support and feedback that he offered me through the process of completing my degree. I would also like to thank Dr. Alfonso Abizaid, Dr. Ahmed Almaskut and Dr. Mike Hildebrand for their contributions to my education. A great deal of help came from the other students in Dr. Anisman's lab, to whom I am grateful for support, encouragement and expertise. Last, I thank my roommates and friends, the Ketts, who provided me with a wonderful and supportive environment in which to complete my work.

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# Introduction

Early adulthood is often associated with the development of social, emotional and economic autonomy and independence (Steinberg and Morris, 2001). These life changes are often accompanied by the emergence of new and imminent stressors, including: separation from parents and old friends, academic or work related pressures, and financial hardship. The combination of new adjustments and the complications added by stressors make university and college students particularly vulnerable to mental illness. Alarmingly, despite the mental challenges faced by students and the considerable efforts expended to provide resources to help, only 15-30% actually seek help (Eisenberg, Golberstein and Gollust, 2007; Kessler, 1992; Mechanic, 1998; Roness, Mykletun and Dahl, 2005; Wang et al., 2005).

Several factors have been identified that promote or limit help-seeking for emotional distress among university students. Of particular interest is the role of social and personal stigmas towards those with mental illness and towards seeking help for treatment (Bhugra, 1989; Corrigan et al., 2003; Lyons and Ziviani, 1995; Page, 1995; Penn and Martin, 1998; Rabkin, 1972). In times of distress, young people will express themselves using social media. Even in their daily lives, they often rely on widely popular social networking websites to express their identity and to create a social support network (Subrahmanyam et al., 2008). Given the popularity of social networking and cases where individuals have used social networking websites to post suicidal messages (McVeigh, 2011), social media seems like an appropriate avenue to

increase the availability of alternate resources and promote help-seeking behavior among those who are suffering from various psychopathologies.

Facebook has responded, partnering with The National Suicide Prevention Lifeline, by adding a new way for users to react when they receive these types of messages ("Facebook provides first-of-a-kind," 2011). Users flag the post as "potentially harmful behaviour", and then Facebook reviews the users' post and sends a private message to the user offering information from The National Suicide Prevention Lifeline, including contact information and the opportunity to start a one-on-one private chat session with a counselor. The user who flagged the content remains anonymous, and the communication between Facebook and the troubled user is hidden from all other contacts.

The usefulness of these messages may depend on the recipient's interpretation of the message received. Some may perceive these messages positively, as supportive and helpful, and might increase the possibility of seeking professional counsel. Others may perceive these messages negatively, as intrusive and overstepping boundaries, or decreasing the likelihood of seeking professional counsel. Thus, it would be of interest to evaluate responses to these messages as sources of support and information for those who need help. The present study will assess the role of online networking as a source of support for young people, with a specific focus on reactions to offers of help. This study will examine participants' reactions and emotions to different forms of online support that is conveyed following an expression of distress. In this regard, these messages will be

received from hypothetical friends or through a hypothetical Facebook message. The message will also vary with respect to the nature and degree of support that might be offered by friends. It was hypothesized that messages received directly from a member of one's in-group may be perceived as more supportive than similar messages from members of an out-group (Haslam et al., 2005), such as an organization like Facebook.

In addition to psychosocial factors that could predict whether these messages are perceived as supportive, there may also be biological factors present that could influence an individual's propensity to reach out to obtain help. Oxytocin, a hormone released into the blood from the posterior lobe of the pituitary gland, has been implicated in many pro-social behaviors such as trust, empathy, and maternal bonding. Thus, it might be expected that oxytocin receptor function may play a role in the perceptions of these messages as supportive. In this regard, an oxytocin receptor gene polymorphism has been identified (rs53576) in roughly 30% of the population. Individuals possessing this polymorphism are expected to be less responsive to engaging in prosocial behaviours and to be less responsive to prosocial overtures (i.e., positive social stimuli) (Bartz et al., 2011). Thus, in the proposed investigation, we will determine whether positive perceptions of messages that respond to distress are related to oxytocin receptor polymorphisms.

*Adolescence and Mental Illness*

New stressors and adjusting to a new life may lead university and college students to experience a pronounced vulnerability to mental illness. It is estimated that

approximately 25% of Canadian University students exhibit depressive symptoms (Mackenzie et al., 2011) and almost 75% of people with mental illness experienced the first onset by age 24 (Twenge et al., 2010). The most common psychiatric disorders among the post-secondary population appear to be depressive disorders (e.g., major depression and dysthymia), anxiety disorders (e.g., generalized anxiety disorder, social anxiety disorder, panic disorder, and obsessive-compulsive disorder), and substance abuse (Craske, 1997).

*Help Seeking in Young Adults*

Despite the mental challenges faced by students and the considerable efforts expended to provide resources to help, only 15-30% actually seek help (Eisenberg, Golberstein and Gollust, 2007; Kessler, 1992; Mechanic, 1998; Roness, Mykletun and Dahl, 2005; Wang et al., 2005). Factors have been identified that promote or limit help-seeking for emotional distress among university students. As much as 36% of non-help-seeking young adults experiencing clinical levels of mental illness do not believe they are in need of help (Vanheusden et al., 2008). Similarly, 37% of non-help-seeking university aged individuals believe their problems are self-limiting (will go away on their own) (Vanheusden et al., 2008) and this belief is correlated with lower endorsement of help-seeking behavior (Halter, 2004). Further, young adults have more difficulties than adults correctly identifying depression and psychosis in vignettes (Wright et al., 2005; Jorm et al., 2006), supporting the notion that some young individuals may find it difficult to identify times when help for mental illness is required. In fact, a lack of mental health literacy was one of the barriers cited by

Gulliver et al. in a 2010 meta-analysis of barriers and facilitators to mental health. Other barriers included stigma and embarrassment and a preference for self-reliance, while facilitators, although comparatively under-researched, included positive past experiences as well as social support and encouragement.

*Stigma and Help Seeking Behavior*

Among the factors affecting help-seeking behavior, of particular interest is the role of perceived public and self-stigma towards those with mental illness and towards seeking help for treatment (Bhugra, 1989; Corrigan et al., 2003; Lyons and Ziviani, 1995; Page, 1995; Penn and Martin, 1998, Rabkin, 1972). People seeking professional help for mental illness are particularly stigmatized (Zartaloudi and Madianos, 2010) and this stigma has a broad range of effects, having been linked to mental health and help-seeking behaviour, as well as to other factors, such as physical illness, academic underachievement, infant mortality, low social status, poverty, and reduced access to housing, education and jobs (Allison, 1998; Braddock and McPartland, 1987; Clark et al., 1999; Yinger, 1994; Vogel et al., 2007). In the present study, we examined whether perceptions of stigma are related to the way individuals perceive messages of support from social networking websites and whether stigma is related to the capacity of these messages to encourage help-seeking behavior.

There are several types of stigma, each of which may play a role in influencing help-seeking behavior. Public stigma is a term used to describe the negative stereotypes and prejudices associated with mental illness held by people as a group. When referring

to an individual's endorsement of these prejudices, it is termed personal stigma. Additionally, "perceived public stigma" refers to the types of statements that individuals endorse about the beliefs of others regarding the mentally ill. Perceived public stigma has sometimes been found to be either unrelated (Eisenberg et al., 2009) or inversely related to help-seeking behavior mediated by self-stigma and attitudes towards counseling (Vogel et al., 2007). Self-stigma occurs when an individual identifies with the group being stigmatized and applies the prejudice to themselves. Self-stigma has been found to have a negative relationship with help-seeking behavior (Eisenberg et al., 2009). However, self-stigma and perceptions of public stigma do not act independently to influence help-seeking behavior. It has been proposed that perceptions of public stigma contribute to the experience of self-stigma, which, in turn, influences help-seeking attitudes and eventually help-seeking willingness (Vogel et al., 2007). Because individuals may perceive differences between public stigma and self-stigma, public messages of support were assessed to determine whether they have a different impact on the perception and efficacy of support for help-seeking behavior as compared to private messages.

*Stigma and Social Support*

While stigma may present challenges to mental health issues, social support seems to have a protective effect as supportive interactions have a stress-buffering effect (Cohen, 1992; Cohen and Wills, 1985; Aspinwall and Taylor, 1997; Berkman, 1985; Cohen and Wills, 1985; Underwood, 2000) and may facilitate effective responding to stressful situations (Matheson and Anisman, 2012). Further, social support is linked to a

greater likelihood of seeking out professional help (Barker, 2007; Gulliver, Griffiths, and Christensen, 2010). Conversely, low levels of perceived social support have been associated with increased depressive symptoms (Yang et al., 2010).

Given that both social support and stigma influence help-seeking behavior, the connection between these factors has been explored. It was found that greater perceived availability of social support from one's social network is associated with fewer feelings of stigmatization (Mansouri and Dowell, 1989; Mizuno et al., 1998). Conversely, high perceived stigma is related to poorer social support (Crandall and Coleman, 1992; Devins et al., 1994; Gibbons, 1985). Perceived stigma has also been related to other social factors such as negative perceptions of others (Crandall and Coleman, 1992), negative interactions with others (Devins et al., 1994; Gibbons, 1985; Link et al., 1989), and perceived and actual restrictions in social activities (Jacoby, 1994; MacDonald and Anderson, 1984, respectively).

*Sources of Social Support and Social Identity*

A more complete understanding of the sources and types of support being accessed and offered may help to further explain how social support relates to help-seeking. As may be expected, young adults tend to seek informal social supports rather than formal social supports when seeking help (Aderibigbe et al., 2003; Angermeyer et al., 2001; Czuchta and McCay, 2001; Benson, 1990; Boldero and Fallon, 1995; Rickwood, 1995). The most likely source of support sought by young individuals depends on the issue for which they need help. For mental health issues in particular,

they are most likely to seek help from their friends and parents (Swords et al., 2011; Leavey et al., 2011; Wright et al., 2005). As symptom severity increases, the likelihood of not seeking help at all increases (Wilson et al., 2007). However, when seeking help for issues associated with stigma, those with greater perceived stigma are more likely to depend solely on those within their household for social support (Lennon, Link, Marbach, and Dohrenwend, 1989).

Due to the importance of peers during adolescence, peer support might be among the most effective forms of support for young people seeking help for mental health issues. However, despite a higher propensity for students to disclose personal information to their peers, the effect of social support from peers on stress-related problems has not been consistent across studies. In some studies, a negative association between support from peers and depressive symptoms has been found (Yang et al., 2010), while in others, a positive relationship was revealed (Lindsey et al., 2010) or no relationship was present (Zimmerman et al., 2000). It may be that the helpfulness of peer supports depends, at least in part, on the shared identities of the individuals involved.

The social identity model suggests that identification with a particular group may lead to protective effects against adverse reactions to strain as group membership provides a basis for seeking and giving social support (Tajfel and Turner, 1979, 1986; Haslam et al., 2005). Indeed, strong positive correlations have been found between social identification and both social support and life-satisfaction, while there are strong negative correlations between social identification and stress (Haslam et al., 2005).

Further, social support was found to be a significant mediator between social identification and stress perception (Haslam et al., 2005). It has also been found that information has a greater potential for impact on an individual if the giver of support shares a group identity with the receiver (Haslam et al., 2004). Shared group identities may also work to explain why not all perceived social support is actually helpful, as group norms may encourage unhealthy behaviors (Kobus, 2003; Haslam et al., 2009). With regard to the present study, it may be that when Facebook users receive messages of support from Facebook, they are perceived as less supportive than the same message sent from a friend, as the user experiences greater levels of social identification with the friend, rather than Facebook.

It was posited that individuals possessing a devalued identity would be more likely to encounter stigma-related stressors that are assessed as both harmful to social identity and exceeding the capacity of their coping resources, termed identity-threatening (Major and O'Brien, 2005). In response to these stressors, those with current strong associations with a group further develop a strong connection (Ellemers et al., 2002) and this support could lead to increased likelihood of seeking help. On the other hand, those with weak associations with a group may further distance themselves from the group (Ellemers et al., 2002) and thus, with less social support, become less likely to seek help.

*The Role of Oxytocin*

In addition to psychosocial factors that could predict whether these messages are perceived as supportive, there may also be biological factors present that could influence an individual's propensity to reach out to obtain help. Because of its involvement in social behavior, oxytocin may be one such biological factor. Oxytocin is a neuropeptide produced in the magnocelluar neurons of the supraoptic and paraventricular nuclei of the hypothalamus, and released into the blood from the posterior lobe of the pituitary gland and has peripheral effects involved in such processes as lactation and parturition (Gimpl and Fahrenholz, 2001). Along with these peripheral functions, oxytocin has been implicated in many behavioral outcomes due to its action within the brain. Intranasal administration of this hormone has been found to influence prosocial behaviors (Campbell, 2010**),** including increased trust (Kosfeld, 2005), positive communication (Ditzen et al., 2009) and in-group favoritism (De Dreu et al., 2011). Oxytocin also plays a role in human social behavior and stress reactivity (Heinrichs and Domes, 2008; Heinrichs et al., 2009; Heinrichs et al., 2003; Van Ijzendoorn and Bakermans-Kranenburg, 2012).

Although it is clear that oxytocin has an influence on social behaviors involved in affiliation, social bonding and stress regulation, the specific social circumstances under which oxytocin takes effect are still uncertain (Crockford et al., 2014). In fact, Bartz et al. (2011) indicated that situational and individual differences accounted for 63% of the reported effects of oxytocin on prosocial behavior. Further, on some occasions oxytocin may have an antisocial rather than a prosocial effect, such as

increasing feelings of envy (Shamay-Tsoory et al., 2009), mistrust (Declerck et al., 2010; Bartz et al., 2010), attachment insecurity (Bartz et al., 2010) or out-group derogation (De Dreu et al., 2011).

To offer an explanation for these situational and individual differences, it has been hypothesized that oxytocin increases sensitivity to social cues (Bartz, 2011; McQuaid et al., 2014), rather than consistently increasing or decreasing social behavior across all situations. This could be seen when individuals suffering from depression received oxytocin treatment and were consequently less able to ignore emotionally salient (sad) faces relative to placebo-treated individuals (Ellenbogen et al., 2013).

In addition to administering exogenous oxytocin to study the connection between oxytocin and social behavior, several studies took advantage of the presence of an oxytocin receptor polymorphism to determine the social effects of oxytocin. Variations of the gene that encodes the receptor have been investigated in an attempt to explain individual differences in prosocial behavior. Of the many variations, a certain single nucleotide polymorphism (SNP) that involves a substitution of guanine for an adenine in the receptor gene has been given much attention. This SNP is in the third intron of the OXTR and has been implicated in several behavioral outcomes related to the production of affective disorders. For example, mothers with the A allele who were told to help their toddlers with a problem solving task were rated on their supportive presence, intrusiveness and clarity of instruction using a sensitivity scale and were found to be less sensitive to their child's behavior (Bakermans-Kranenberg and van Ijzendoorn, 2008).

Individuals having the A allele also have been found to possess lower empathy (Rodrigues et al., 2009), reduced reward dependence (Tost et al., 2010), lower optimism and self-esteem (Saphire-Bernstein et al., 2011) and in men, negative affect (Lucht, 2009). This oxytocin receptor polymorphism has also been shown to interact with the stress protective effects of social support. Individuals with GG or AG genotypes self-reported higher tendencies to seek social support relative to their AA counterparts. Further, individuals with the G allele of rs53576 showed lower cortisol responses to stress after social support compared to individuals of the same genotype receiving no social support, whereas people who had an AA genotype experienced no change (Chen et al., 2011). Given these results, an oxytocin receptor gene polymorphism may be involved in determining whether certain stimuli are interpreted as supportive. Thus, in the proposed investigation, it was of interest to determine whether positive perceptions of messages sent in response to distress are related to oxytocin receptor polymorphisms.

*Perspectives of Online Social Networking*

Following developments in technology in the last decade, online communication has become an increasingly important part of the life of young people. A survey of students from 2006 found that 91% of students used the site Facebook.com (Wiley and Sisson, 2006). Students use Facebook approximately 30 minutes each day as part of their daily routine (Pempek, 2009). According to Facebook (Company Info, 2014), there were on average 802 million daily active users and there were 1.28 billion monthly active users as of March 2014. Facebook is used most often for social interaction, primarily to contact friends with whom the students had a pre-existing offline relationship (Pempek,

2009). In their daily lives, young people will often rely on widely popular social networking websites to express their identity and to create a social support network (Subrahmanyam et al., 2008). Given the popularity of online social networking, social media seems like an appropriate avenue to increase the availability of alternate resources and promote help-seeking behavior among those who are suffering from various psychopathologies.

Several views were offered to explain the popularity of online social networking and its impacts on well-being. The social augmentation hypothesis suggests that social networking provides an added avenue for everyday social interaction and thus has the effect of enlarging social networks (Kraut et al., 2002). Support for this theory has come from studies that show that information technology may aide in the building of social capital as well as enhance place-based community (Hampton, 2002; Hampton and Wellman, 2003; Kavanaugh et al., 2005). The social displacement hypothesis suggests that the internet displaces everyday social interactions with family and friends, resulting in a negative impact on psychological well-being (Kraut et al., 1998; Gershuny, 2000; Mesch, 2001; Nie et al., 2002; Shklovski et al., 2004; Sanders et al., 2000). However, it has been suggested people developed textual cues to replace social cues missing in online interactions to facilitate the process of social bonding (Walther, 1992). Online interactions are not completely interchangeable with offline interactions and are less likely to lead to strong ties or enduring social support (Parks and Roberts, 1998; Cornwell and Lundgren, 2001; Moody, 2001; Weiser, 2001; Cummings et al., 2002; Wolak et al., 2003), but it was nevertheless suggested that over time, strong ties can be

formed online (Chan and Cheng, 2004). McKenna and Bargh (1998, 2000) developed a social compensation hypothesis that suggests that people with few social resources use the internet to make new connections, predicting positive impacts on well-being. For example, self-esteem moderates the relationship between Facebook use and social capital such that low self-esteem is associated with greater benefits from Facebook use than high self-esteem (Steinfield et al., 2008). However, people spend more time searching for individuals with whom they have ties in their offline life than looking at the profiles of people with whom they had no association (Lampe, Ellison, and Steinfield, 2006).

### *Social Media Use and Depressive Symptoms*

Quality online interactions may provide an avenue for users to feel connected to other users or groups with shared social identities. There is now a growing body of research that supports a negative association between social connectedness and depression (Cruwys et al., 2013), as well as evidence to support that quality social networking interactions are negatively associated with depressive symptoms (Davila et al., 2012). In fact, Facebook use has been found to provide the opportunity to develop and maintain social connectedness in the online environment, and Facebook connectedness is associated with lower depression and anxiety and greater satisfaction with life (Grieve et al., 2013). This is important as reduced social connectedness is a key symptom in depression (Wade and Kendler, 2000) and is more common in depression than in other physical or mental illnesses (Hirschfeld et al.., 2000).

Related findings have turned up from a communication and social resource perspective. People with fewer social resources are more likely to have poor psychological functioning, to feel lonely and to experience higher levels of depression (Barnett and Gotlib, 1988; Bruce and Hoff, 1994; Finch and Graziano, 2001). In contrast, more communicative people have increased social resources and this leads to better psychological functioning, lower levels of stress and greater happiness (Baumeister and Leary, 1995). As Facebook provides an avenue for communication and social resource building, these data further support the notion that increasing connectedness online may benefit psychological well-being.

Social media may assist people in communicating and achieving this increase in connectedness with their social groups, as people who use the internet to communicate with friends and family have lower depression scores after 6 months of internet use for that purpose (Bessière et al., 2008). In fact, online social support is garnered by college students as an extension of their general support (Liu and Yu, 2013) and although online social support doesn't seem to have a direct effect on well-being, it is mediated through general social support (Liu and Yu, 2013).

*Suicide, Disclosure and Social Media*

In communication via online media, many people disclose very personal information. In fact, people disclose on average 25% of all possible information that could potentially be disclosed in a Facebook profile, with that number decreasing as age increases (Nosko et al., 2010). In times of distress, young people will disclose their

feelings by expressing themselves using social media. There have been several reports of people who have posted messages expressing their distress before a suicide (Ruder et al., 2011; Judd, 2014). In a 2013 study of the social networking website, Twitter, at-risk messages were filtered from the messages being posted to twitter accounts across the USA. The data obtained were highly correlated to the state's age-adjusted suicide data, suggesting that individuals who are at risk for suicide may be detected using social media (Jashinsky, 2013).

*Facebook Responds to Suicidal Posts*

By partnering with The National Suicide Prevention Lifeline, Facebook has attempted to address growing concerns about the disclosure of distress via their website by adding a new way for users to react when they view status updates that express distress or suicidal ideation ("Facebook provides first-of-a-kind," 2011). There is now an option for users to flag status updates with "potentially harmful behaviour". Facebook reviews the flagged status update and sends a private message to the user offering information from The National Suicide Prevention Lifeline, including contact information and the opportunity to start a one-on-one private chat session with a counselor. The user who flagged the content remains anonymous, and the communication between Facebook and the troubled user is hidden from all other contacts.

*Usefulness of Social Media Based Suicide Prevention Strategies*

In order for these messages to offer support effectively and encourage help-seeking behavior, they must be positively received by the individual in need of professional counsel. Otherwise, the messages may be interpreted as intrusive and overstepping boundaries, and might thus decrease the likelihood of professional counsel being sought. In the present study, several different types of messages were evaluated in terms of the affective reactions they elicited as well as their ability to improve attitude towards help and perception of support as well as their ability to reduce negative reactions. In this regard, these messages were received from hypothetical friends or through a hypothetical Facebook message. The message also varied with respect to the nature and degree of support that might be offered by friends. It was hypothesized that messages received directly from a member of one's in-group would be perceived as more supportive than similar messages from members of an out-group (Haslam et al., 2005), such as an organization like Facebook.

## Hypotheses

As the popularity of online social networking websites skyrockets, their potential to be used in the process of help-seeking for mental health issues has become increasingly relevant. These websites are used by young individuals to increase social resources and maintain open lines of communication between friends and family, the most likely sources of social support for individuals facing mental health issues. Stigma and mental health issues go hand in hand, and seeking help, even from their closest friends and family, is not always easy. Perhaps the use of social networking websites can offer an

additional avenue of support seeking for youth who are in distress. As indicated earlier, Facebook has provided a way to respond by allowing users to flag updates that express distress. If a user's status update is flagged, Facebook sends an anonymous message informing the distressed user how to seek help by calling a hotline. Thus, in the current investigation, it was of interest to determine factors that may lead to messages containing information about calling the hotline being more or less effective. It was determined whether the type of message (public or private), source of the messages (from Facebook or from a friend), symptoms of depression, levels of stigma or oxytocin receptor gene polymorphisms are related to the effectiveness of these messages to encourage help-seeking. Specifically, it was hypothesized that:

a) Individuals would perceive messages from a friend as the most supportive, messages from Facebook as neutral, and no response as unsupportive.
b) Severely depressed participants would perceive messages of support as very helpful, mildly depressed participants will find similar messages as helpful, but less so, while people who are not depressed would react negatively to these messages, finding them unhelpful.
c) Public messages would be perceived as less supportive than private ones.
d) A message with an offer of personal involvement would be perceived as more supportive than a message without such an offer
e) High levels of perceived stigma would predict a more negative reaction to the messages received, while low levels of perceived stigma would predict more negative reactions.

f) People who possess the G/G genotype of the oxytocin receptor polymorphisms would be more likely to perceive these messages as supportive than people who possess the A/G or A/A genotype.

## Methods

Two studies were conducted to assess the ability of Facebook messages to support and encourage help-seeking behavior by offering information regarding how to call The National Suicide Prevention Lifeline. The first study involved administering online questionnaires to respondents who were between the ages of 18 and 30, living in Canada and had logged in to an online social networking website at least once. Participants were recruited through word of mouth and posts to high-traffic websites such as Kijiji, Facebook, Twitter and various message boards. In the second study, students at Carleton University were recruited via posters on campus and SONA (the university's online recruiting system) to complete questionnaires. After filling out the same questionnaires as Study 1 participants, individuals in Study 2 were asked to provide a saliva sample for genetic analysis. The following includes a description of the participants in each study, procedures and measures common to both studies, and the genotyping procedures (Study 1 only).

### *Study 1– Community Participants*

Of the 189 participants who provided their age, the mean was 21.1 SD = 4.325. There were 353 participants who provided their gender, 81 males (22.9%) and 272 females (76.8.1%). Of the 354 participants who provided their ethnicity, 49(13.8%) identified as Asian, 74 (20.9%) as South Asian, 24 (6.8%) as South East Asian, 4 (1.1%) as Arab or West Asian, 8 (2.3%) as Black, 2 (0.6%) as Latin American or Hispanic, 7 (2.0%) as Aboriginal, 159 (44.9%) as white/Euro-Caucasian and 17 (4.8%) as other. There were 270 respondents (78.7%) who reported never having been diagnosed or

treated with a mental illness, while 12 (3.5%) reported having a diagnosis, but no treatment and another 5 (1.5%) reported having never been diagnosed, but having been treated nonetheless, possibly for issues such as divorce or bereavement rather than psychopathology, while 56 (16.3%) reported having been both diagnosed and treated.

*Study 2 – Student Participants*

Participants were Caucasian students at Carleton University (N=66). The mean age of those who responded was 21.07, SD = 3.792. There were 25 males (37.9%) and 41 females (62.1%). There were 47 respondents (71.2%) who reported never having been diagnosed or treated with a mental illness, while 2 (3%) reported having a diagnosis, but no treatment and another 2 (3%) reported having never been diagnosed, but having been treated nonetheless, possibly for issues such as divorce or bereavement rather than psychopathology, while 15 (22.7%) reported having been both diagnosed and treated.

*Procedure for Study 1 and Study 2*

The studies were described to potential participants as concerning online social support networking, including how individual characteristics and social environment affect experiences of online interactions. Participants accessed the study through the hosting website, Qualtrics, from September 18, 2013 to April 3, 2014. Participants were informed that compensation in the form of a 5$ Tim Horton's gift card or 0.5% course credit (if applicable) was contingent on passing several validity checks embedded throughout the study to ensure non-random answering.

After completing the informed consent, participants filled out questionnaires regarding internet use, purposes for using online social networking (social interaction, leisure) and the perceived value of online communications (anonymity, convenience).

Following preliminary measures, participants were randomly exposed to one of five assigned manipulations or a control condition (assignment by Qualtrics). Each of the manipulations and the control condition began by asking participants to provide a short description of a time in the past year when they had experienced distress and how they dealt with it. They were then asked to imagine themselves updating their Facebook status during the stressful time they had recounted. They were also asked to rate the degree to which they felt each of 12 negative emotions at the time they were experiencing the stressor. After writing the hypothetical status update, students were presented with one of the following six possible outcomes:

(1) A standard private message is sent from Facebook when an individual has been flagged by one of their Facebook friends for posting that they are experiencing high levels of distress. This message offers the flagged user a private chat session with a counsellor from The National Suicide Prevention Lifeline as well as the organization's phone number.

(2) Hypothetical support is given from a friend who has access to their Facebook page via a private message, offering no personal involvement in supporting the distressed individual but providing the same content as the Facebook message, including the suggestion of seeking counselling from The National Suicide Prevention Lifeline website.

(3) Hypothetical support is given from a friend who has access to their Facebook page via a public message, offering no personal involvement in supporting the distressed individual but providing the same content as the Facebook message, including the suggestion of seeking counselling from The National Suicide Prevention Lifeline website.

(4) Hypothetical support is given from a friend who has access to their Facebook page via a private message, offering personal involvement in supporting the distressed individual, including the offer to contact the friend personally as well as the suggestion of seeking help from the trained counsellors at The National Suicide Prevention Lifeline website.

(5) Hypothetical support is given from a friend who has access to their Facebook page via a public message, offering personal involvement in supporting the distressed individual, including the offer to contact the friend personally as well as the suggestion of seeking help from the trained counsellors at The National Suicide Prevention Lifeline website.

(6) A message that indicates no one responded to their status update.

After reading the message, participants wrote an open-ended response indicating their reactions, followed by ratings of their positive and negative affect (Watson, Clark and Tellegan, 1988). They also filled out a scale assessing coping styles (SCOPE; Anisman and Matheson, 2006), perceived stigma from others (Vogel, Wade, & Ascheman, 2009) and the Beck Depression Inventory (BDI; Beck and Beck, 1972).

*Measures*

*Social Networking Participation.*

Items were developed for the present study to assess frequency of social networking website use. Participants indicated how often they logged in to social networking websites and how often they posted content (status updates, pictures, comments, tweets, etc.). Each item was assessed on a 9-point scale ranging from "never" to "more than 10 times a day" (e.g., "I have logged into a social networking website", "I post information about myself (status, comments, wall posts, tweets, etc.) to a social networking website " and "I post pictures of myself to a social networking website."). The items were analyzed separately and an overall score was calculated by finding the mean of the three items assessing frequency of use. For the community study, Cronbach's alpha was 0.72 and student data showed 0.70.

*Social Networking Purpose.*

A 14-item questionnaire regarding level of online social engagement was created. Statements beginning with "I visit social networking websites..." were used and included items such as "to partake in conversations", "to provide support to others" and "to belong to a group". Participants used a five point scale from 0 (not at all true of me) to 4 (extremely true of me) to rate their agreement with each item. Because the scale was created for this study, a factor analysis was completed revealing two factors, social interaction (6 items) and leisure (8 items). For the community study, Cronbach's alpha was 0.87, whereas in the student data had an alpha of 0.84.

*Perceived Value of Social Networking Websites.*

A 9-item measure was created in order for participants to rate their agreement with statements about the value of online social networking. A scale from 0 (not at all true of me) to 4 (extremely true of me) was used. A total score was calculated by summing the items and missing scores were replaced with the mean. For the community study, Cronbach's alpha was 0.84, whereas the student data had an alpha of 0.70. Because the scale was created for this study, a principal component analysis was performed. Two factors were revealed in the analysis; the first, convenience (5 items), and the second, anonymity (4 items).

*Manipulation*

Next, the manipulation was conducted (i.e., the six different Facebook messages), after which the following questionnaires were presented post-manipulation.

*Status Update Ratings*

Participants were asked to rate the degree to which they felt each of 12 negative emotions (Fear, shame, guilt, etc.) when experiencing the distressing situation they chose to describe in their hypothetical status update. They rated items on a 5-point scale from 0 (none) to 4 (extremely). A principal component analysis was performed. Three factors were revealed, including anger, shame and distress. For the anger subscale, the Cronbach's alpha for the community sample was 0.89 and it was 0.88 for the student sample. The shame subscale revealed an alpha of 0.90 for both samples and the distress subscale revealed an alpha of 0.87 for both samples. Each subscale contained 4 items.

*Response to Manipulation Received*

Participants rated 17 items using a five point scale from 0 (not at all) to 4 (a great deal) that assessed their reactions towards the message they received (e.g., “After receiving the message described above, I would feel adequate support from my social network in regards to the issues causing me distress"), the likelihood that they thought they would use any resources offered to them (e.g., “I would seek further help via any resources offered to me”), and the likelihood participants would continue to share their distress with others online (e.g., “I would be more likely to post a status update again the next time I experienced distress ”). The alpha values for the community and student data respectively for the factor reflecting positive perception of help were 0.83 and 0.65; for the factor reflecting negative reactions were 0.75 and 0.74; and for the perception of a caring social network were 0.87 and 0.88.

*Positive and Negative Affect Towards Manipulation Received*

The Positive and Negative Affect scale (Watson, Clark, & Telligan, 1988) is a 40-item scale used to assess affective reactions to the hypothetical message. The scale comprises a series of mood adjectives reflecting positive (e.g., strong, proud) and negative (e.g., distressed, angry) affect. These adjectives were rated on scale from 0 (not at all) to 4 (extremely). A principal component analysis and scree plot were produced to examine subscales, which revealed the two factors that were expected, positive and negative affect. The community study produced an alpha of 0.83 for positive affect and

0.81 for negative affect, where the student study produced alphas of 0.77 for positive affect and 0.59 for negative affect.

*Survey of Coping Profiles Endorsed (SCOPE)*

The Survey of Coping Profiles Endorsed (Matheson & Anisman, 2003) is a 50-item scale used to assess coping strategies used by participants. Using a 5-point scale ranging from 0 (never) to 4 (almost always), participants indicated whether they had in recent weeks used each of the behaviors as a way of coping with the problems or stressors. Based on a scree plot and principal component analysis, subscales included problem-focused or active coping efforts, emotional engagement and avoidance-focused coping. The problem-focused coping subscale produced alphas of 0.90 and 0.87 for community and student studies respectively, while the emotional engagement subscale produced alphas of 0.91 and 0.89 for the community and student studies respectively and the avoidance coping subscale produced alphas of 0.85 and 0.83 for the community and student samples respectively.

*Perceptions of Stigmatization by Others for Seeking Help*

Perceived Stigmatization by Others Associated with Mental Illness (Vogel, Wade, & Ascheman, 2009) is a 6-item scale developed originally to assess help-seeking for vocational or academic issues, but was adapted for the present study to assess how individuals perceived they would be judged for the decision to seek help for mental health issues (e.g., “If you sought counselling for this issue, to what degree do you believe that the people you interact with would: react negatively to you; think bad things

of you’’). Responses were made on a five-point scale ranging from 0 (not at all) to 4 (a great deal). Total scores for this measure were created by taking the mean across all items. The community study produced an alpha of 0.93, where the student study was 0.91.

*Beck Depression Inventory (BDI)*

The 13-item version of the Beck Depression Inventory (Beck & Beck, 1972) assessed depressive symptoms during the week prior to participation. This shortened version includes the cognitive and affective components of the original 21-item scale, but not the somatic component. The 13-item version is in the public domain and was used because of its brevity and proven construct validity. Participants endorsed items within groups of statements that reflected varying severity of symptoms experienced (e.g., “I do not feel sad, I feel sad or blue, I am blue or sad all of the time and I can’t snap out of it, I am so sad or unhappy that I can’t stand it”). The total score for this scale was calculated by taking the mean sum across all items. The both studies produced an alpha of 0.92.

*Demographics, Health Behaviors and Attitudes, Parental Background*

Participants then answered a series of background questions including gender, religious affiliation, ethnicity, socio-economic status, and family history of mental illness.

*Genotyping*

DNA samples were collected using Norgen Saliva DNA Collection and Preservation Device. They were stored at room temperature until the DNA was extracted using Norgen Saliva DNA Isolation Kits. Instructions for each were followed without modifications save for the centrifugation steps at 14 000rpm. They were done at 13 300 rpm, as this was the maximum speed of the centrifuge available.

DNA was sent to Genotech Inc. at McGill University in Montreal, Quebec, Canada for Sanger sequencing. The region of DNA with the SNP was first amplified by PCR using a forward and a reverse primer: rs53576F(TTGTGATTTGTACCCAGAAGG) and rs53576R(TCTGAAACAGAACTGGCAACC) in 25µL reactions using 20 ng of DNA, 0.5 units of the Kapa Taq HotStart (from Kapa Biosystems) DNA polymerase, 5µL of the 5X PCR buffer and 1 µL of each primer at 20 µM. This process used 3730xl DNA Analyzer technology (Applied Biosystems, now Life Technologies) with a Big Dye Terminator kit, also from Life Technologies, in conditions recommended by the supplier. Sequences were aligned using the phred/phrap/consed analysis package and analyzed visually.

The genotypic frequencies among the Study 2 participants were 66 G/G individuals, 66 A/G individuals and 18 A/A individuals (Hardy Weinberg, $\chi 2 = 0.06$, p = ns).

*Statistical Analysis*

A series of descriptive analyses were conducted to describe frequency of internet use and methods of participation in social networks. Correlational analyses were performed to examine the relationships between outcome variables and several factors such as coping styles, depressive symptoms, levels of perceived stigma and online social networking frequency, value and purpose. A one-way multivariate analysis of variance (MANOVA) was used to compare types of messages in terms of the affective response (positive and negative) they elicited. The same type of analysis was performed using behavioral and emotional responses as the combined dependent variable, including attitude towards help, perceived support and negative reactions. Differences across groups were evaluated using 2-way multivariate analyses of variance to compare public vs. private messages and to compare an offer of personal involvement vs. no offer of personal involvement in terms of the same affective, emotional and behavioral responses. In order to determine whether or not depressive symptoms, stigma or oxytocin receptor gene polymorphisms moderate relations between manipulation received and emotions/reactions, hierarchical regression analyses were conducted with manipulation as the predictor, depressive symptoms, stigma or polymorphisms as moderators, and emotions/reactions as outcome variables.

# Results

## Study 1

*Descriptive statistics among participants from a community sample*

Participants were generally well acquainted with using online social networking websites (Table 1). Responses about social networking website use indicated that participants used this platform to communicate with others in different ways on a regular basis.

Table 1.

*Table showing proportions of the sample who endorsed items about social networking practices.*

**I have logged in to a social networking website**

| | *Frequency* | *Percent* |
|---|---|---|
| Around once a month | 8 | 2.3 |
| A few times a month | 13 | 3.7 |
| Once a week | 8 | 2.3 |
| A few times a week | 15 | 4.2 |
| Once a day | 31 | 8.8 |
| 2-5 times a day | 116 | 32.8 |
| 5-10 times a day | 82 | 23.2 |
| More than 10 times a day | 81 | 22.9 |

**I post pictures of myself to a social networking website**

| | *Frequency* | *Percent* |
|---|---|---|
| Never | 48 | 13.6 |
| Around once a month | 149 | 42.1 |
| A few times a month | 76 | 21.5 |
| Once a week | 33 | 9.3 |
| A few times a week | 37 | 10.5 |
| Once a day | 3 | .8 |
| 2-5 times a day | 4 | 1.1 |
| 5-10 times a day | 2 | .6 |
| More than 10 times a day | 2 | .6 |

**I post information about myself (status, comments, wall posts, tweets, etc) to a social networking website**

| | *Frequency* | *Percent* |
|---|---|---|
| Never | 24 | 6.8 |
| Around once a month | 59 | 16.7 |
| A few times a month | 71 | 20.1 |
| Once a week | 30 | 8.5 |
| A few times a week | 78 | 22.0 |
| Once a day | 33 | 9.3 |
| 2-5 times a day | 38 | 10.7 |
| 5-10 times a day | 14 | 4.0 |
| More than 10 times a day | 6 | 1.7 |

**What was your primary reason for creating a social networking account?**

| | *Frequency* | *Percent* |
|---|---|---|
| Stay in touch with family | 29 | 8.2 |
| Stay in touch with friends | 234 | 66.1 |
| Everyone else has an account, why not me | 56 | 15.8 |
| I don't know why I have an account | 11 | 3.1 |
| Other (please specify) | 23 | 6.5 |

**Which social network do you check the most?**

| | *Frequency* | *Percent* |
|---|---|---|
| Facebook | 257 | 72.6 |
| Twitter | 39 | 11.0 |
| Google+ | 5 | 1.4 |
| Tumblr | 13 | 3.7 |
| Instagram | 29 | 8.2 |
| Other (please specify) | 11 | 3.1 |

*Depression and Help Seeking*

There were 119 participants (34%) who reported high levels of depressive symptoms (10 or higher on the shortened version of the Beck Depression Inventory). Of those participants, 45 (38%) had reached out to a professional to receive a diagnosis of mental illness and 43 (36%) had received treatment.

*Correlations among variables*

High perceived stigma for seeking help for mental health issues did not seem to predict use of the internet for social interactions, despite predicting frequent internet use, using the internet for leisure and valuing the anonymity and convenience of being online (Table 2). High levels of depressive symptoms predicted elevated perceived stigma, more negative reactions to the situations described in status updates, increased value of the internet because of anonymity, and more frequent use of the internet for leisure. In contrast, depressive symptoms were not related to valuing the internet for convenience or using the internet for social interactions. (Table 2). With a mean of 1.79 SD = 1.02 on a scale from 0 to 4, there seemed to be a moderate amount of distress associated with events described in status updates and these ratings were found to be positively related to social networking participation, depression, stigma, and use of the internet for leisure.

Table 2.

*Bivariate Correlations depicting relations between Social Networking Participation, Perceptions of Stigma by Others for Seeking Help for a Mental Health Issue, Depressive Symptoms, Status Update Ratings, Perceived Value of Social Networking Websites, and Social Networking Purpose Among a Community Sample*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Social Networking Participation | | | | | | | | |
| 2. Perceive Stigma of Others for Mental Health Help Seeking | .17** | | | | | | | |
| 3. Depressive Symptoms | .18** | .45** | | | | | | |
| 4. Status Update Ratings | .14** | .34** | .44** | | | | | |
| *Perceived Value of Social Networking Websites* | | | | | | | | |
| 5. Anonymity | .30** | .11* | .12* | .06 | | | | |
| 6. Convenience | .48** | .14** | .08 | .13* | .49** | | | |
| *Social Networking Purpose* | | | | | | | | |
| 7. Social Interaction | .38** | .08 | .00 | .00 | .46** | .44** | | |
| 8. Leisure | .39** | .17** | .14** | .19** | .48** | .67** | .53** | |

**p < .01 (2-tailed) , *p < .05 (2-tailed)

*Depressive Symptoms and Social Networking*

Social networking participation was positively correlated to depressive symptoms, perceived stigma, emotion focused coping, avoidance coping and negative reactions to messages. Depressive symptoms are positively related to emotion focused coping and avoidant coping as well as negative reactions to messages and negatively related to problem focused coping (Table 3). The moderating effect of coping styles on the relationship between participation in social networking and depression was not significant.

Table 3.

*Bivariate Correlations Depicting Relations Between Depressive Symptoms, Social Networking Participation, Perceived Stigma, Emotion Focused Coping, Problem Focused Coping, Avoidance Focused Coping, Negative Reactions, Perception of Support, and Attitude Towards Help*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Depressive Symptoms | | | | | | | | | |
| 2. Social Networking Participation | .18** | | | | | | | | |
| 3. Perceived Stigma | .45** | .17** | | | | | | | |
| 4. Emotion Focused Coping | .48** | .21** | .33** | | | | | | |
| 5. Problem Focused Coping | -.18** | .07 | -.05 | .30** | | | | | |
| 6. Avoidance Focused Coping | .37** | .18** | .28** | .67** | .31** | | | | |
| 7. Negative Reactions | .38** | .17** | .29** | .43** | .08 | .32** | | | |
| 8. Perception of Support | .07 | .03 | -.01 | .15** | .21** | .23** | .10 | | |
| 9. Attitude Towards Help | -.07 | .01 | -.06 | -.03 | -.14** | .00 | -.35** | .39** | |

**p < .01 (2-tailed) , *p < .05 (2-tailed)

*Effect of messages on affect and behavioral reactions*

A main effect of type of message on positive and negative affect was hypothesized (Table 4). A one-way multivariate analysis of variance (MANOVA) did not reveal any significant differences between each individual type of message. A 2 x 2 MANOVA revealed a main effect of personal involvement on the combined dependent variable that comprised positive and negative affect, Pillai's Trace = .058, $F(10, 686)=2.038$, $p=.027$, $\eta^2=.029$. Univariate analysis indicated that there was a positive association between personal involvement offered in the message and positive affect in response, $F(1,227)=6.631$ $p=.011$, $\eta^2=.029$.

Table 4

*Descriptive Statistics (Means, Standard Deviations) of Positive and Negative Affect Experienced as a Function of Condition*

| | Positive Affect | | Negative Affect | |
|---|---|---|---|---|
| | M | SD | M | SD |
| Private Message from Facebook | *1.57 | .92 | 1.87 | .94 |
| Private message from a friend with no personal involvement | *1.05 | .78 | 1.43 | .87 |
| Public message from a friend with no personal involvement | 1.17 | 1.07 | 1.50 | 1.01 |
| Private message from a friend with personal involvement | 1.36 | .96 | 1.60 | 1.00 |
| Public message from a friend with personal involvement | 1.50 | .91 | 1.47 | .87 |
| No response | 1.18 | .92 | 1.44 | .95 |

*significantly different from each other, $p<0.05$

To assess whether there was an effect of type of message on the emotional and behavioral response, a one-way MANOVA was performed using attitude towards help, perceptions of support and negative reactions as the subscales of the emotional behavioral response scale (Table 5). The type of message had a significant effect on emotional behavioral responses, Pillai's Trace =.16, $F(15, 1035)=3.99$, $p=.000$, $\eta^2=.055$. Univariate analysis revealed that the type of message had a significant effect on perception of support, $F(5,345)=9.47$, $p<.001$, $\eta^2=.121$, where every type of message was rated as providing significantly more support than no message at all. Further, the type of message had a significant effect on attitude towards help, $F(5, 345)=2.255$, $p=.049$, $\eta^2=.032$, but Bonferroni corrected t tests did not reveal any significant differences, indicating that, at best, the type of message had marginal effects on attitude. No differences were found in effect of the type of message on negative reactions, $F(5, 345)=.648$, $p=.663$, $\eta^2=.009$.

Table 5.

*Descriptive Statistics (Means, Standard deviations) of Emotional Behavioral Response as a Function of Condition*

| | Negative Reactions | | Perception of Support | | Attitude towards help | |
|---|---|---|---|---|---|---|
| | M | SD | M | SD | M | SD |
| Private Message from Facebook | 1.93 | 1.08 | *1.99 | .93 | 1.59 | .81 |
| Private message from a friend with no personal involvement | 1.73 | 1.08 | *2.22 | .96 | 1.37 | .76 |
| Public message from a friend with no personal involvement | 1.67 | .99 | *2.00 | 1.02 | 1.42 | .78 |
| Private message from a friend with personal involvement | 1.64 | .95 | *2.50 | 1.01 | 1.62 | .75 |
| Public message from a friend with personal involvement | 1.64 | 1.04 | *2.10 | 1.07 | 1.31 | .70 |
| No response | 1.76 | 1.27 | 1.28 | 1.18 | 1.26 | .78 |

* significantly more supportive than no response, $p<0.05$

To determine whether there was a difference in emotional-behavioral responses according to the privacy of a message (publicly posted on a user's wall or sent privately to their inbox) or according to whether or not there was an offer of personal involvement (i.e. a phone number and the suggestion that the user can call their friend any time for support), a 2 x 2 MANOVA was performed. It revealed that there was no significant effect of privacy on the combined dependent variables, comprising behavioral-emotional responses, Pillai's Trace=.023, $F(3, 222)=1.755$, $p=.157$. Nevertheless, based on a priori hypotheses, univariate analyses were conducted. These revealed that the private messages led to the perception of a more supportive social network, $F(1, 224)=5.300$, $p=.022$, $\eta^2=.023$.

*The relationship between manipulation and response*

A hierarchical regression examining the effects of personal involvement, the privacy of the message and perceived stigma of others on attitudes towards help was conducted by adding involvement, privacy and stigma in the first step, the two-way interaction terms in the second step, and the three-way interaction in the third step. This analysis revealed a 3-way interaction**,** $F_{cha}(7,227)=.843$, $p=.036$, $R^2_{cha}=.019$. See Table 6 for details of the 3 regression models.

Table 6.

*Summary of Hierarchical Regression Analysis for Involvement, Privacy and Stigma Predicting Attitude Towards Help.*

| | Attitude Toward Help | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| Variable | B | β | B | B | B | β |
| Constant | **1.32 | | **1.42 | | **1.42 | |
| Involvement | .09 | .06 | -.11 | -.07 | -.11 | -.07 |
| Privacy | .13 | .09 | -.05 | -.03 | -.05 | -.03 |
| Stigma | .08 | .11 | .16 | .22 | .04 | .06 |
| Involvement* privacy | | | .36 | .21 | .36 | .21 |
| involvement*stigma | | | .07 | .07 | *.30 | .28 |
| privacy*stigma | | | *-.21 | -.21 | .00 | .00 |
| Involvement*privacy* stigma | | | | | *-.42 | -.29 |
| $R^2$ | .02 | | .06 | | .08 | |
| F | 1.78 | | *2.30 | | *2.64 | |
| □$R^2$ | .02 | | .04 | | .02 | |
| □F | 1.78 | | *2.78 | | *4.47 | |

*p<.05, **p<.01

A simple slopes analysis was conducted to explore the three-way interaction between an offer of personal involvement, the privacy of the message and perceived stigma of others. The effect of personal involvement on attitude towards the help among individuals receiving private messages differed significantly depending on the perceived levels of stigma, $t(7,228)=-3.087$, $p=.002$. Specifically, private messages that included involvement were associated with a more positive attitude towards the help offered than messages that did not include an offer of personal involvement if received by individuals perceiving low levels of stigma. At high levels of stigma, private messages with or without personal involvement were not significantly different (Figure 1A). When the messages were public, no significant differences between high and low stigma with respect to personal involvement were found, $t(7,228)=1.317$, $p=0.189$ (Figure 1B).

Among individuals who perceived low levels of stigma, there was a significant difference between public and private messages, $t(7,228)=2.802$, $p=0.006$, where private messages with personal involvement were associated with increased positive attitude towards help that was offered and public messages showed the opposite trend. However, among individuals who perceived high levels of stigma, attitude towards help did not significantly depend on personal involvement or the privacy of the message, $t(7,228)=-0.207$, $p=.836$.

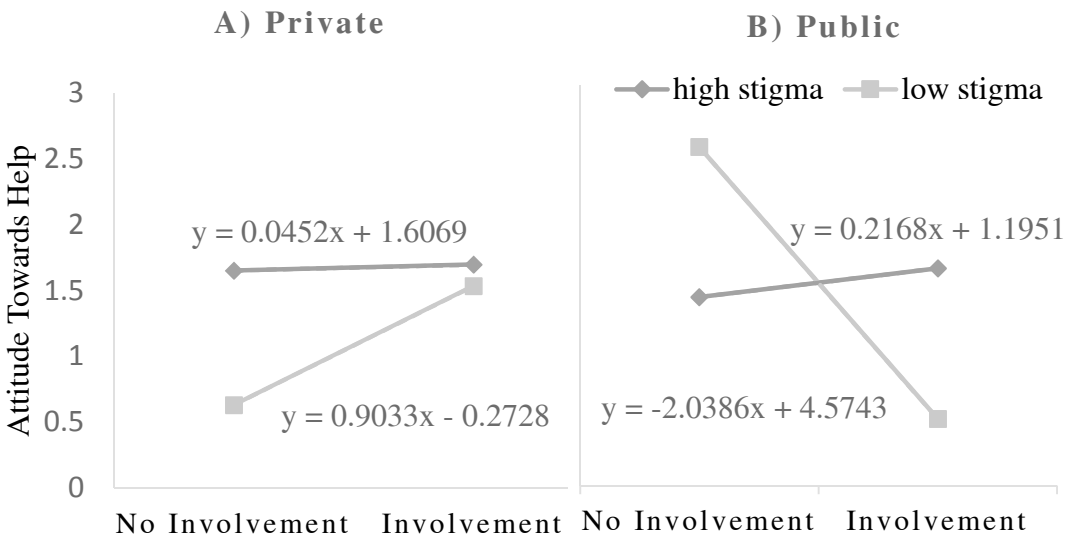


*Figure 1. The effect of personal involvement and privacy of the message on attitude towards help as moderated by perceived stigma of others.*

A hierarchical regression was completed to assess the effect of personal involvement, privacy of the message and depressive symptoms on attitude towards help. In the first step involvement, privacy and depressive symptoms were added. In the second step, the two-way interaction terms were included and in the third step, the three-way interaction term was added (Table 7). In addition to depressive symptoms having a positive relationship with attitude towards help, B=.300, t=3.400, p=.001, the analysis showed that depression moderated the effect of personal involvement on attitude towards help, $R^2_{cha}$=.055, $F_{cha}(6,227)$=2.785, p=.034. A subsequent simple slopes analysis revealed that individuals with low levels of depressive symptoms did not report significant differences in the ability of messages (with or without personal involvement) to impact their attitude towards help. However, among those who reported more severe depressive symptoms, messages with an offer of personal involvement seemed to elicit less positive attitudes towards help compared to messages with no offer of personal involvement, t=-2.1135, p=0.0357, (Figure 2).

Table 7.

*Summary of the Hierarchical Regression Analysis for Involvement, Privacy and Depressive Symptoms Predicting Attitude Towards Help*

| | Attitude Towards Help | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| Variable | B | β | B | β | B | β |
| Constant | **1.32 | | **1.42 | | **1.42 | |
| Involvement | .09 | .06 | -.11 | -.07 | -.11 | -.07 |
| Privacy | .13 | .09 | -.05 | -.03 | -.05 | -.03 |
| Depression | **.16 | .21 | **.30 | .40 | **.28 | .37 |
| Involvement*privacy | | | .36 | .21 | .36 | .21 |
| Privacy*depression | | | -.07 | -.06 | -.03 | -.03 |
| Involvement*depression | | | *-.21 | -.20 | -.17 | -.16 |
| Involvement*privacy* depression | | | | | -.07 | -.05 |
| $R^2$ | | .06 | | .09 | | .09 |
| F | | **4.32 | | **3.61 | | **3.09 |
| $\Delta R^2_{cha}$ | | .06 | | .03 | | .00 |
| $F_{cha}$ | | **4.32 | | *2.79 | | .11 |

**p<.01, *p<.05

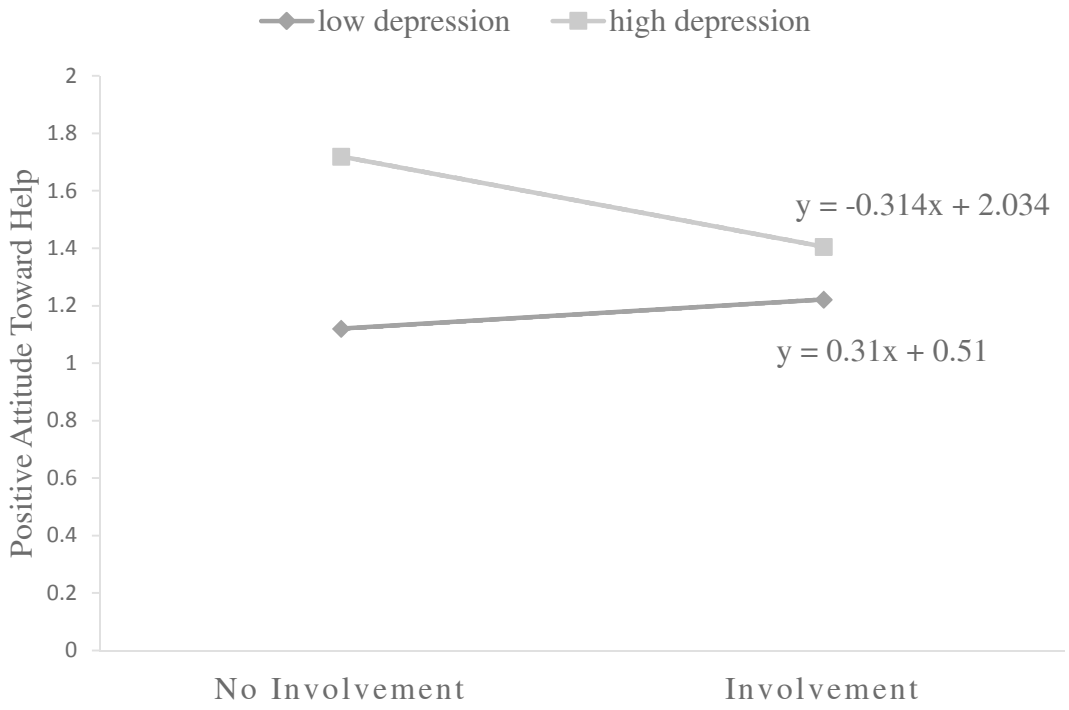


*Figure 2. The effect of an offer of personal involvement on positive attitude towards help as moderated by depressive symptoms.*

A hierarchical regression examined the relationship of depressive scores, personal involvement and the privacy of a message on negative reactions to help. In the first step, depression, involvement and privacy were added, while in the second step, the two-way interaction terms were included and in the third step, the three-way interaction term was included (Table 8). Multivariate analysis revealed there was a three-way interaction between depression scores, personal involvement and the privacy of the message. The subsequent simple slopes analysis revealed that public messages sent to individuals experiencing more severe depressive symptoms elicited a more negative reaction to help if they included an offer of involvement, as compared to a message without the offer, whereas messages sent to individuals with low depression scores found an offer of involvement to be less negative than a message without an offer of personal involvement (Figure 3A). This difference did not exist when the messages were private. Offers of personal involvement had no effect on individuals receiving private messages, regardless of whether participants had low or high depression scores (Figure 3B).

Table 8.

*Summary of the Hierarchical Regression Analysis for Involvement, Privacy and Depressive Symptoms Predicting Negative Reactions*

| | Negative Reactions | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| Variable | B | β | B | β | B | β |
| Constant | 1.78 | | 1.70 | | 1.69 | |
| Involvement | -.162 | -.08 | -.08 | -.04 | -.08 | -.04 |
| Privacy | **-.04 | -.02 | .01 | .01 | .06 | .03 |
| Depression | .43 | .42 | *.10 | .10 | .10 | .10 |
| Involvement*privacy | | | -.07 | -.03 | -.10 | -.05 |
| Privacy*depression | | | .17 | .12 | *.47 | .34 |
| Involvement*depression | | | .13 | .09 | *.41 | .31 |
| Involvement*privacy* depression | | | | | *-.51 | -.28 |
| $R^2$ | .18 | | .19 | | .20 | |
| F | **15.94 | | **8.40 | | **7.88 | |
| $\Delta R^2_{cha}$ | .18 | | .01 | | .02 | |
| $F_{cha}$ | **15.94 | | .89 | | *4.05 | |

**p<.01, *p<.05

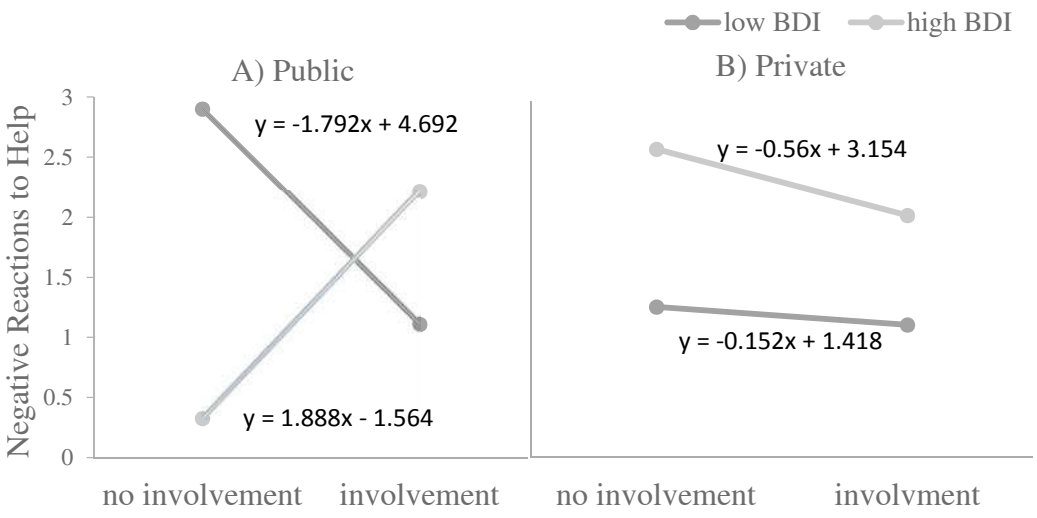


*Figure 3. The effect of an offer of personal involvement and the privacy of the message on negative reactions to help as moderated by depression scores (BDI).*

*Study 2*

*Descriptive Statistics Among Participants from a Student Sample*

The student participants were familiar with online social networking, as in Study 1. The proportions of the sample endorsing questions about internet use are presented in Table 9.

Table 9.

*Table Showing the Frequency and Percent of Participants Who Endorsed Items About Their Internet Use*

**I have logged in to a social networking website**

| | Frequency | Percent |
|---|---|---|
| Once a week | 1 | 1.5 |
| A few times a week | 3 | 4.5 |
| Once a day | 4 | 6.1 |
| 2-5 times a day | 25 | 37.9 |
| 5-10 times a day | 13 | 19.7 |
| More than 10 times a day | 20 | 30.3 |

**I post information about myself (status, comments, wall posts, tweets, etc) to a social networking w...**

| | Frequency | Percent |
|---|---|---|
| Never | 1 | 1.5 |
| Around once a month | 9 | 13.6 |
| A few times a month | 8 | 12.1 |
| Once a week | 11 | 16.7 |
| A few times a week | 14 | 21.2 |
| Once a day | 5 | 7.6 |
| 2-5 times a day | 13 | 19.7 |
| 5-10 times a day | 2 | 3.0 |
| More than 10 times a day | 3 | 4.5 |

**I post pictures of myself to a social networking website**

| | Frequency | Percent |
|---|---|---|
| Never | 5 | 7.6 |
| Around once a month | 24 | 36.4 |
| A few times a month | 20 | 30.3 |
| Once a week | 8 | 12.1 |
| A few times a week | 8 | 12.1 |
| 2-5 times a day | 1 | 1.5 |

**What was your primary reason for creating a social networking account?**

| | Frequency | Percent |
|---|---|---|
| Stay in touch with family | 3 | 4.5 |
| Stay in touch with friends | 46 | 69.7 |
| Everyone else has an account, why not me? | 13 | 19.7 |
| I don't know why I have an account | 1 | 1.5 |
| Other (please specify) | 3 | 4.5 |

**Which social network do you check the most?**

| | Frequency | Percent |
|---|---|---|
| Facebook | 46 | 69.7 |
| Twitter | 12 | 18.2 |
| Tumblr | 4 | 6.1 |
| Instagram | 4 | 6.1 |

The results of the genetic tests for the oxytocin receptor gene polymorphism revealed 28 GG participants, 31 AG participants and 7 AA participants, but because 4 of the 7 AA participants had a history of mental illness, conclusions about these genotypes would not be reliable. This is particularly the case given the small number of participants that were available. Nevertheless, these data might be of value as preliminary findings to guide further analyses regarding the link between genotype and responses to supportive or unsupportive messages, and thus are included here.

*Depression and Help-Seeking*

There were 17 participants (26%) who reported severe depressive symptoms (a score of 10 or higher on the Beck Depression Inventory). Of those participants, 11 (65%) had reached out to a professional and received a diagnosis of mental illness and 10 (59%) had received treatment.

*Correlations Among Variables*

Depressive symptoms were correlated with perceived stigma and higher levels of reported distress associated with the event disclosed in the status update, which is in agreement with the data from the community sample. However, depressive symptoms in the student sample of Study 2 were not related to any measure of online interactions regarding purpose, value or frequency of use (Table 8). There was a positive correlation between depression and both social interactions and leisure, more so with leisure than with social interactions, whereas in the

community sample, depression as only correlated with using the internet for leisure. Similar to the data from community participants, perceived stigma was positively correlated with depressive symptoms and levels of distress in response to events disclosed in status updates, but unlike that observed in the community participants, among student participants no relationships existed between internet use (frequency, value or purpose) and levels of perceived stigma (Table 10). With a mean of 1.86 SD = 0.92 on a scale from 0 to 4, there seemed to be a moderate amount of distress associated with events described in status updates and these ratings were found to be positively related to depression and stigma, but, unlike the community sample, were not related to social networking participation, and use of the internet for leisure.

Table 10.

*Bivariate Correlations depicting relations between Social Networking Participation, Perceptions of Stigma by Others for Seeking Help for a Mental Health Issue, Depressive Symptoms, Status Update Ratings, Perceived Value of Social Networking Websites, and Social Networking Purpose Among Student Participants*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Social Networking Participation | | | | | | | | |
| 2. Perceive Stigma of Others for Mental Health Help Seeking | .09 | | | | | | | |
| 3. Depressive Symptoms | .06 | .48** | | | | | | |
| 4. Status Update Ratings | .21 | .37** | .33** | | | | | |
| *Perceived Value of Social Networking Websites* | | | | | | | | |
| 5. Anonymity | .10 | .24 | .04 | .26* | | | | |
| 6. Convenience | .50** | -.01 | -.16 | .16 | .33** | | | |
| *Social Networking Purpose* | | | | | | | | |
| 7. Social Interaction | .27* | -.05 | -.06 | .25* | .17 | .53** | | |
| 8. Leisure | .40** | .21 | .00 | .22 | .39** | .57** | .53** | |

** $p < 0.01$ (2-tailed).

* $p < 0.05$ (2-tailed).

*Depressive Symptoms and Social Networking*

As in the community sample, student depressive symptoms were positively associated with stigma, internet use for the purpose of leisure, and emotion-focused coping. Conversely, there was a negative association between depressive symptoms and problem-focused coping. Contrary to the community sample, depressive symptoms were not related to avoidance focused coping. Stigma was positively related to emotion and avoidance focused coping, but was unrelated to problem focused coping. It was also positively related to negative reactions and inversely related to perception of support.

Table 11.

*Bivariate Correlations depicting relations between Social Networking Participation, Perceptions of Stigma by Others for Seeking Help for a Mental Health Issue, Depressive Symptoms, Status Update Ratings, Perceived Value of Social Networking Websites, and Social Networking Purpose Among Participants from a Community Sample*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Depressive Symptoms | | | | | | | | | |
| 2. Social Networking Participation | .06 | | | | | | | | |
| 3. Perceived Stigma | .48** | .09 | | | | | | | |
| 4. Emotion Focused Coping | .50** | .35** | .43** | | | | | | |
| 5. Problem Focused Coping | -.28* | .08 | -.07 | .21 | | | | | |
| 6. Avoidance Focused Coping | .23 | .20 | .43** | .50** | .24* | | | | |
| 7. Negative reactions | .22 | -.02 | .36** | .50** | .14 | .30* | | | |
| 8. Perception of Support | -.18 | .33** | -.32** | -.001 | .02 | .13 | -.26* | | |
| 9. Attitude Towards Help | .13 | .19 | -.14 | -.02 | -.16 | -.16 | -.42** | .35** | |

**p < .01 (2-tailed) , *p < .05 (2-tailed)

*The Effect of Type of Message on Affect*

As in the case of the data obtained from the community sample, a one-way multivariate analysis of variance did not show any significant effect of the type of message sent in response to the status update on the affective response, Pillai's Trace = .269, p=.056, ŋ=.135. However, a two-way multivariate analysis of variance revealed a significantly different impact on positive affect of public messages compared to private messages Pillai's Trace=.162, p=.038 ŋ= .162, rather than the difference between level of personal involvement seen in the community sample. A follow up univariate analysis of variance revealed that private messages lead to greater endorsement of positive affect than public messages, F(1,38)=6.386, ŋ=.144.

*Effect of type of message on behavioral emotional response*

A one-way multivariate analysis of variance conducted to assess the effect of the type of message on emotional-behavioral response, which included perceptions of support, attitude towards help and negative reactions, revealed differences as a function of the type of message, Pillai's Trace=.446, p=.012, ŋ=.149. A follow-up univariate analysis revealed effects of the type of message on the perception of a support F(5, 60)=5.124, p=.001, ŋ=.299, in that all messages were perceived as more supportive than the no response condition.

A two-way multivariate analysis of variance was completed to test the effects of public messages as opposed to private ones and messages with or without an offer of

personal involvement on behavioral emotional response, but no significant relationships were found.

A hierarchical regression examined the moderating effects of stigma on the relationship between the type of message and the reaction to that message. A similar hierarchical regression was performed with depression as a moderator. Neither case revealed any significant differences, despite their appearance in the community sample. In order to determine whether the level of distress from the event disclosed in the status update moderated the relationship between the message content (public or private, with or without personal involvement) and the perception of support, a hierarchical regression was conducted. In the first step, the variables included were distress levels, privacy and level of personal involvement. The two-way interactions were included in the second step and the three-way interaction was included in the third. No significant differences were revealed.

*Oxytocin Receptor Polymorphisms and Response to Messages*

Two MANOVAs, one assessing the emotional behavioral reaction to the messages, Pillai's Trace = .092, p=.432, ŋ=.046, and the other looking at the affective response, Pillai's Trace=.025, p=.817, ŋ=.012, did not reveal any significant differences between the genotypes.

A one-way ANOVA revealed that there were differences in depressive symptoms between the genotypes, F(2,46)=3.324, p= .045. Post hoc testing revealed that

AA genotypes were different from both the GG and AG genotypes in terms of their depressive symptoms, with the AA group experiencing more severe symptoms in both cases.

## Discussion

Although individuals with mental illness might be tempted to seek help for their problems, barriers such as stigma, might undermine these efforts. Because of the frequent use of social networks, it seems as though a shift from using computer time for leisure and escape, to potentially more productive uses, such as obtaining social support would be beneficial. In the present study, we sought to determine whether social support can be offered through a social networking platform, like Facebook, to encourage help-seeking and if so, what types of messages are the most beneficial in getting help to a distressed individual. Currently, Facebook has partnered with the National Suicide Prevention Lifeline and included a feature on the Facebook website that allows users to flag status updates as potentially suicidal (Madrigal, 2011). It is yet unclear if this is a useful strategy. It was of interest in the current study to determine whether particular types of messages (public/private, with/without personal involvement) were received more positively than others and whether depressive symptoms or perception of stigma (or oxytocin receptor polymorphisms) would be accompanied by different reactions to these types of messages.

The internet plays an important role in the life of university aged individuals (Pew Internet and American Life Project, 2014; Roberts *et al.*, 1999), as over 95% of college students access the internet on computers and at home, and most report daily use (Smith, 2011). The present study confirmed these findings, as most young people reported using social networking websites multiple times a day, posting information and

pictures once a week or more, with most of the activity occurring on Facebook (Table 1).

Aside from being frequent social networking website users, young adults are particularly vulnerable to mental illness (Craske, 1997; Twenge et al., 2010; Mackenzie, et al., 2011), but are unlikely to seek help (Eisenberg et al., 2007; Kessler, 1992; Mechanic, 1998; Moses, 2009; Roness et al., 2005; Wang et al., 2005). In the present study, approximately one third of the community sample reported significant depressive symptoms as identified by a score of 10 or higher on the shortened version of the Beck Depression Inventory, but only one third of those experiencing symptoms had reached out to a mental health professional and received a diagnosis. Previous research supports these findings and further explains this relationship by asserting that the likelihood of seeking help differs depending on the resource bring accessed, e.g., GP vs. psychologist vs. complimentary practitioner (Barney *et al*, 2006). The present data show a negative relationship between depression scores and attitude towards help offered, supporting the idea that with increased severity of depressive symptoms, individuals might be more likely to refrain from seeking help (Wilson et al., 2007).

*Depression and Social Networking*

In agreement with previous findings (Campbell, 2006; Young & Rogers, 1998; Morgan & Cotten, 2003; Lam & Peng, 2010; Morrison & Gore, 2010) depressive symptoms were positively correlated with the frequency of social networking participation. On the surface, these results appear to support the social displacement hypothesis that suggests time spent on the internet takes away from time spent with

people who otherwise might offer social support, while refuting other views that suggest internet use might have a positive effect on well-being by providing an additional avenue for support seeking (Hampton, 2002; Hampton and Wellman, 2003; Kavanaugh et al., 2005; Kraut et al., 2002) or by providing individuals with few social resources a platform to make new connections (Steinfield et al., 2008). To further explore this relationship, the subscales of our measure in the community sample revealed that depressive symptoms were not related to use of the internet for social interactions, but were positively correlated with using the internet for leisure. In the student sample, there was a positive correlation between depression and both social interaction and leisure, but the correlation was much more significant with leisure than with social interaction. It may be that the relationship between depressive symptoms and internet use was not a reflection of some negative impact of general internet use on well-being, but that this relationship depends on how the internet was being used. If the internet was being used for social interaction, this was not related to depressive symptoms perhaps because social interaction can be either supportive or unsupportive. However, the relationship between using the internet for leisure and depressive symptoms may be a result of depressed individuals attempting to regulate their affect using emotion focused or avoidance focused coping strategies to the exclusion of problem focused coping strategies. In addition to the internet, excessive use of many forms of media have been related to depressive symptoms, including television, video games and total media exposure (Primack et al, 2009; Gentile *et al*, 2011). Young individuals identified as "addicted" to video games have been found to play as a means of coping with stress (Grusser *et al*, 2005) and individuals who frequently play video games were far more

likely to do so as a means to escape the stressors in their lives than individuals who play infrequently (Wood *et al*, 2007). However, despite an ironic amount of media attention about the dangers of over-consumption of media, it has been reported (Wood & Griffiths, 2007) that over half the participants in a sample of non-problematic video game players used the games as a method of relaxation and escape from daily stressors, suggesting that video games were not problematic in and of themselves. Perhaps the use of the internet plays a similar role in the lives of individuals looking for an escape from their daily stressors. This is in agreement with a longitudinal study of adolescents, in which it was found that those who perceived low friendship quality, internet use for social interaction predicted less depression, whereas internet use for non-communication purposes predicted more depression and more social anxiety (Selfhout *et al.,* 2009). In effect, perhaps the internet is a useful resource for mental health issues when used appropriately, but excessive internet use as a means of emotion- or avoidance-focused coping may be the link to the negative impacts previously reported.

Generally speaking, emotion-focused coping has been found to be related to affective disorders (Matheson & Anisman, 2003). Perhaps if the internet is being used as a method of regulating emotions, this may contribute to an explanation of the possible link between activities taken up on the internet and the occurrence of affective disorders. For example, in a 2012 study, 51% of participants reported that the primary purpose for a status update was emotional expression (Manago *et al*, 2012). The data supported this hypothesis in that depressive symptoms were negatively related to problem solving behaviors and positively related to emotion focused and avoidant coping strategies in the

community sample. In the student sample, the same correlations between problem solving and emotion focused coping strategies existed, but no correlation between depressive symptoms and avoidant coping strategies was observed. Conversely, a study of individuals who were ill (e.g., HIV patients) showed that those who used the internet to obtain health related information reported more use of active coping strategies, greater social support and information-seeking coping (Kalichman *et al.*, 2003). Internet use for health-related purposes was associated with more positive coping responses and social support. Using the internet as a means to find solutions to stressful situations or support has a positive impact on young individuals suffering with HIV. Perhaps individuals experiencing depression could reap the same benefits if their internet use was focused on the same problem-focused coping strategies such as seeking social support or finding health related information rather than simply an escape through entertainment. Alternatively, it may be that those individuals who use problem focused coping are more likely to engage the internet as one of their coping strategies.

The relationship between internet use and depression is complex and does not warrant standing by a generalization that suggests all internet use has a negative impact on psychological well-being. This interpretation has great implications in planning ways to offer treatment, education and support. The notion that the internet has negative implications for psychological well-being may be too general and thus may limit our understanding of a more nuanced issue. The potential for development of useful online tools for mental-health education, treatment, and support should not be ignored under

this pretense. This has particular implications for populations that are underserviced such as rural and northern communities.

*Effect of Type of Message on Response to Support*

To explore the possibility of using the internet for positive coping strategies, such as social support, different types of messages were sent in response to hypothetical status updates made regarding distressing events. It was of interest to determine whether the type of message would elicit positive or negative affect in response. The type of message did not have any effect on positive or negative affect in the community or student samples. However, messages including personal involvement generally led to more positive affect in the community sample. As this offer of personal involvement can be interpreted as a form of social support, these findings are in keeping with the view that social support is among the most effective coping strategies to deal with stressful situations (Underwood, 2000; Kessler, 1992; Thoits, 1995; Carod-Artal & Egido, 2009; Frable *et al*, 1998; for reviews, see Barnett & Gotlib, 1988; Uchino *et al*, 1996). The benefits of social support in an online environment have been observed, as social interactions via the internet diminished depressive symptoms, elevated perceived social support and increased social inclusion (Barak, 2007; Ellison, Steinfield, & Lampe, 2007; Gentile, et al., 2012; Gould et al., 2002; Shaw & Gant, 2002; Notley, 2009). In the student sample, an offer of personal involvement did not seem to relate to affect, but it did reveal that private messages led to greater endorsement of positive affect than public messages. Differences between the samples might be due to the fact that the student

sample was small and only consisted of university students and thus not reflective of the general population.

It was also of interest to determine whether the type of message had an effect on the behavioral emotional response, which included subscales measuring negative reactions, perception of support and attitude towards help. The effect of the type of message on the behavioral-emotional response revealed that, regardless of the content of the message, any message is perceived as significantly more supportive than no message at all. Among these messages, those that were sent from Facebook were less supportive than messages sent from friends, although not significantly so. None of the messages had any effect on negative reactions, which included behaviors such as editing Facebook status updates in the future or becoming less trusting of online social networking through Facebook. This is encouraging, as it might assuage some of the fear of saying the wrong thing when offering support to a friend in distress through online communication. This is in agreement with findings that simply the perception of social support can have a beneficial effect, sometimes more so than the support itself (Dunkel-Schetter & Bennett, 1990; Sarason *et al*, 1987; Wethington & Kessler, 1986; Wills & Shinar, 2000). In this case, the positive perception of support was increased with messages sent privately compared to messages that were sent publicly, which supports the finding in the student population that private messages elicit more positive affect than public ones. In effect, sending a message online was perceived as a supportive act that would contribute to the resources made accessible to those in psychological distress.

*Predictors of Response to Messages – Depression*

The effect of personal involvement on the attitude towards offers of help was moderated by depression, such that individuals with low levels of depressive symptoms did not seem to respond differently to messages that included or did not include an offer of personal involvement. However, for those who were experiencing more severe depressive symptoms, an offer of personal involvement seemed to elicit less positive attitudes towards help as compared to messages with no offer of personal involvement. Studies that examined why depressed individuals are less likely to seek support revealed that this stemmed from a negative and distrustful perception of GPs and mental health professionals (Zachrisson, *et* al, 2006; Rickwood, 2011), a lesser degree of mental health literacy (Gulliver *et* al, 2010; Swami, 2012), skepticism concerning psychiatric treatment (Swami, 2012), fear of the stigma associated with mental illness, shame (Rickwood, 2005), difficulty in expressing emotions (Barker *et* al, 2005; Ciarrochi *et al,* 2003), and a preference for seeking alternative forms of help through lay strategies or reliance on one's social network (Gulliver *et* al, 2010; Martínez-Hernáez & Muñoz-García, 2010; Martínez-Hernáez &Muñoz-García, 2010). When an offer personal involvement is made to an individual who holds views such as these, perhaps there is added social pressure to seek unwanted help. This may account for the discrepancy in attitude towards help between the depressed and non-depressed in that an offer of personal involvement may seem intrusive to a depressed individual. In those with low depression scores, messages with or without involvement were no different in terms of attitude towards help. It may be that these individuals do not have the same preconceived notions about help as their

depressed counterparts and thus would not perceive an offer of personal involvement to be any more intrusive than a message that did not contain such an offer.

If this explanation is correct, it might be expected that high levels of depressive symptoms would also predict a negative reaction to the offer of help, especially with an offer of personal involvement. Indeed, this was the case, but only when the messages were public. It might be hypothesized that the fear of being stigmatized in the highly depressed is lessened when the messages are private, as there are fewer people in their social network to observe the suggestion that they need help and belong to a stigmatized group. However, since no differences were found among the highly stigmatized with regard to privacy of the message or offers of personal involvement, it appears that there must be other factors at play. Perhaps, users again experience more social pressure to seek out unwanted help when the offers are public and with the added offer of personal involvement the pressure increases as does the negative response. An offer of personal involvement has the opposite effect on individuals experiencing low levels of depressive symptoms, as personal involvement provoked a less negative reaction. The messages were more positively received in healthy individuals, perhaps because, as previously mentioned, healthy individuals are less likely to have a negative perception of help.

When the messages were private, offers of personal involvement have no effect on negative reactions, regardless of whether they have low or high depression scores. As private messages were associated with the perception of a supportive network, perhaps this positive support attenuates any of the negative effects associated with receiving

these messages. As previously mentioned, social support has been found to attenuate many negative psychological symptoms.

*Predictors of Response to Messages – Stigma*

Given the vulnerability of young people to mental illness and their lack of seeking formal supports, it is of interest to identify barriers to help-seeking behavior. One such barrier is stigma. Here, levels of depression were positively associated with levels of perceived stigma, as they have been in several other studies (Baxter, 1989; Coffey *et al*., 1996; Devins *et al*., 1994; Hermann *et al*, 1990; Mansouri & Dowell, 1989). This positive association has been found among leg amputees (Rybarczyk et al., 1995), HIV/AIDSpatients (Crandall& Coleman, 1992), family caregivers of HIV-infected women (Demi *et al.*, 1997), and parents of children with mental disabilities (Baxter, 1989). Indeed, in the present study, regardless of whether the messages were public or private, with an offer of involvement or not, attitude towards help remained unchanged in those experiencing high levels of perceived stigma, with scores falling near in the middle of the scale. For those who rejected the possible benefits of seeking help due to stigma-related attitudes, convincing them to think otherwise may require a different approach than simply providing information about how to seek help. The idea of preparing clients to receive help is mirrored in counselling psychology research, as it is recommended that the first step must be to socially orient a client to the treatment. Many techniques have been developed to accomplish this and have had positive results (Howells & Day, 2003; Lambert & Lambert, 1984; Truax *wt al*, 1968; Truax & Wargo, 1969; Piper *et al*, 1982; Piper *et al*, 1979; Walitzer *et al*, 1999; Westra & Dozois, 2006).

The content of the messages had more nuanced effects on the attitude towards help of those experiencing low levels of perceived stigma. Within this group, private messages that included an offer of personal involvement were associated with a more positive attitude towards help than similar messages that did not include an offer of personal involvement. For these individuals, social support appears to offer a valuable source of encouragement to receive help, which is to be expected owing to the benefits of social support. However, the opposite trend appeared when the messages were public. Without an offer of personal involvement, public messages were received with a more positive attitude than messages with this offer. Perhaps in the case of perceived stigma, the public messages that include support are again intrusive, as they suggest to the public that this individual belongs to a group that is perceived as stigmatized.

*Predictors of Response – Oxytocin Receptor Polymorphisms*

Because of oxytocin's involvement in human social behavior, we were interested in whether the oxytocin receptor (OXTR) polymorphisms also play a role in interpreting social events, namely, types of messages received in response to a status update of distress. Due to the fact that previous research indicated inter-ethnic differences in behavioral correlates of OXTR polymorphisms (Kim *et al*, 2011) and that genotype functioning may differ across ethnicities (Propper et al., 2007; Widom & Brzustowicz, 2006; Williams et al., 2003; Bakermans-Kranenburg & van IJzendoorn, 2014), a homogenous sample of Caucasian participants were used.

Previous studies yielded some results that support a role of OXTR polymorphisms in the production of affective disorders. Many studies suggested that OXTR rs53576 is related to increased sensitivity to stress, reduced social skills, and more negative mental health outcomes (Bakermans-Kranenburg & van Ijzendoorn, 2008; Kim *et al*., 2010; Kim *et al*., 2011; Lucht *et al*. 2009; Riem *et al*., 2011; Rodrigues *et* al., 2009; Tost et al., 2010) Although no differences were found in the present study in relation to negative affect in response to the type of message, a generally more negative affect has been associated with the A allele. For example, after completing a laboratory stress task, male G allele carriers had reduced cortisol levels and a reduced subjective stress response, while individuals with the AA genotype did not benefit from social support (Chen *et al*, 2011) Further, in a study of Korean and American culture, individuals with the A allele are less likely to seek social support compared to G allele carriers during times of distress if they are part of a culture where seeking emotional support is the norm, as it is in America (Kim *et al*, 2010). Genetic variation of OXTR appears to influence several factors related to social sensitivity. It may be through these factors that oxytocin influences the effectiveness of social support as a buffer against stressful experience and hence the production of depressive symptoms. As such, it is possible that through these relationships, genotype contributes to the development of related psychopathologies such as depression. The present findings, although problematic due to a small number of AA individuals, revealed significant differences in depressive symptoms among individuals with AA genotypes as compared to both AG and GG genotypes. The 7 individuals in the AA genotype group include 4 with a history of mental illness. This incidence is higher in the AA group than any of the genotypes,

but it is uncertain whether this was due to sampling error rather than a genuine difference between the groups, as research on the relationship between genotype and psychopathology has led to mixed results.

There is a large volume of research that seeks to link the OXTR to various social behaviors, but not all of the conclusions support such an association. A recent meta-analysis of 52 studies that provided data on a total of 17,557 subjects that suggested that the rs53576 polymorphism did not significantly explain outcomes related to biology, personality, social behavior, psychopathology or autism (Bakermans-Kranenburg & van IJzendoorn, 2014). If there is an association between OXTR and depression, the link is still unclear. Further analysis of the association between depression and oxytocin will be necessary to establish the nature of this relationship. It is possible that although oxytocin receptor polymorphisms do not directly affect the interpretation of online social networking messages, a particular gene variant may, in the presence of particular environmental factors or stressors, increase the susceptibility of developing pathology.

Individuals in the AA, AG and GG groups did not differ in terms of their affective or emotional behavioral responses to the messages that were presented in response to their distressful status updates. As the appearance of differences in behavior as a function of oxytocin polymorphisms seems to depend largely on context, perhaps the hypothetical online messages did not elicit strong enough reactions to measure these differences or perhaps there are several mediating factors that make it impossible to measure the direct relationship between genotype and the responses to messages.

## Limitations and Future Directions

There are some important limitations to this study. The data collected for the community sample included a self-selecting bias regarding the type of person willing to fill out the survey, as the recruiting was done online through various forums open to anyone willing to seek them out. However, the goal was to examine a population of frequent users of online communication technology in the online environment with which they are familiar. Previous research examining self-selection bias has indicated no differences between community and student samples (Booth-Kewley, Edwards, & Rosenfeld, 1992; Sarrazin, Hall, Richards & Carswell, 2002).

Once participants were recruited, they were asked to create hypothetical status updates. Despite the fact that users were asked to create status updates of a real distressful event in their lives and enter them in an online environment similar to that of Facebook, these are status updates generated for research rather than shared freely at the time of distress. Because these events may have been resolved and would no longer be a threat, it is possible that effects were not as large as they would be if these disclosures were assessed at the time of a freely created status update.

After participants created their status update, they received one of six messages in response. Currently, Facebook allows users to tag suicidal content and sends a messages containing similar information including the contact information for the National Suicide Prevention Lifeline. If participants are in distress, but not suicidal, this information could seem as though it were suggesting that the problem is bigger than it is,

which may be interpreted as being intrusive or alienating to the distressed individual. The language of the message was modified to better match the instructions regarding status updates so that messages indicated they were sent due to the indication of distress, rather than that of suicide. Although this makes it harder to generalize these results to a suicidal population, the general public cannot be asked to create a status update that draws on a time when they were suicidal, as this experience is not common to everyone.

Greater effect sizes or more general effects may have been reported in response to personal involvement if the messages with and without personal involvement were more distinctly different. Messages included in the condition without involvement did include a few sentences written by the friend that expressed concern. In contrast, the messages included in the condition with personal involvement had a longer message from a hypothetical friend that expressed more concern and offered their phone number. Perhaps the difference between the two messages could have been made greater if the message that had not included support was simply a link to the website and some information about calling the hotline. Another way to amplify this difference may be to make the form of communication more relevant to college-aged students by offering other forms of support such as chatting online immediately or planning to see one another soon rather than simply offering a phone call, as this method of communication is becoming less relevant to young adults.

The scale used for measuring internet use was developed in lab and resulted in two factors that explained use of the internet, social interaction and leisure. It is possible

that there are other reasons for using the internet that weren't included in the scale. For example, using the internet for information gathering may be an indication of problem solving coping strategies and may have a negative relationship with depression scores. The development of a reliable and validated scale for measuring internet use could improve the quality of results and allow for better comparisons to be made between studies.

Given the number of groups that were included in this study, the number of participants in each group was limited, especially in the student sample. With the information gleaned from the student sample, albeit limited, it is of interest to conduct further research into the relationships between oxytocin, depression and internet use involving greater numbers of participants.

## Conclusions

Overall, the present study supported the notion that online messages are potentially useful in providing social support. Any messages offered online to those in distress recommending help resources were received as more supportive than no message at all. In general, private messages tended to offer the best support, even among individuals who felt stigmatized or depressed. Also, an offer of personal involvement is a positive addition to a message for most, but can be ill-received in those who are highly depressed, for whom a different conversation might be needed in order for help-seeking to be encouraged. The data regarding messages offering information about help-seeking to those in distress through online social networking suggest that using the internet for social support, as opposed to leisure, may be a useful tool in supporting individuals experiencing distress.

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Appendix A

Informed Consent – Student Sample

The purpose of an informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent has to provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

Study Title: **Online Social Support Networking**

Study Personnel: Laura Friberg (Masters Researcher, 520-2600 ext. 7513)
Kristen Fennell (Masters Researcher, 520-2600 ext. 7513)
Dr. Kim Matheson (Faculty Investigator, 520-3570)

If you have any ethical concerns about this study please contact the study personnel listed above or Dr. Shelley Brown, Chair of the Department of Psychology Research Ethics Committee at Carleton University at 613-520-2600 x 1505.

If you have any other concerns about the study please contact the study personnel listed above or Dr. Anne Bowker, Chair, Department of Psychology, 520-2600 ext. 8218).

**Purpose and Task Requirements:** The purpose of this study is to assess how your individual characteristics along with your genes and social environment affect your experience of online interactions. We are asking all participants to fill out a number of questionnaires regarding how you feel about yourself, how you cope with things in your life, mental health, and your social interactions both online and offline.

We are also interested in looking at how genes may relate to your experience of online interactions and to other psychosocial factors. You may be selected to provide a saliva sample based on your responses to questionnaires. We are only asking some of you to provide samples to ensure that a broad range of

responses are represented in our data. By providing saliva this will allow us to determine the presence or absence of particular genes. By understanding the genetic and psychosocial factors that lead to different perceptions of online social support, we will gain a better understanding of how to use social media in order to support those who are experiencing distress. This important research will therefore help to develop improved methods of offering support to those in distress in the future.

Compensation for completion of the study is contingent on passing several checks embedded throughout the study to ensure non-random answering. Approximately two weeks after you complete the study, and upon validating that you have completed the study in good faith, you will be awarded a 0.5% experimental credit in a course approved through the SONA system or emailed with instructions on when and where you can come to Carleton Campus to pick up your $5 gift certificate. The questionnaire should take approximately 60 minutes to complete.

**What are we asking you to do?**

We are asking some participants to provide a DNA sample through the simple act of spitting into a tube. We are also collecting information about your mood, the strategies you use to cope with stress, internet use, sources of support, and fear of negative evaluations. We plan to collect this information using written questionnaires.

Potential Risk and Discomfort: There are no physical risks in this study. You may experience some discomfort or anxiety when responding to some of the questions in this study or thinking about various stressors or difficulties in your life. If this is the case, the debriefing form at the end of the study contains contact information for people who are available to help. You may also choose to withdraw at any point.

We are looking to collect about half a teaspoon of saliva, which may take a couple of minutes. Some participants may therefore feel discomfort or embarrassment about spitting into a tube in the presence of the researcher. Therefore, the researcher will leave the room to give you privacy. You will be asked to not drink, eat, smoke or chew gum for 30 minutes before providing this sample.

Anonymity/Confidentiality: The data collected in this study will be kept confidential. Your userID and password will be separated from your questionnaire data and kept in a

separate and secured file by one of the research investigators who will keep this information confidential. The personal information collected on this consent form will be kept for 3 years before being destroyed.

**Genetic testing: Common questions and concerns**

**What is DNA?**

DNA is a large molecule that contains information necessary for our bodies to build all the components needed for our development, growth and survival. This information is commonly referred to as the genetic code or the DNA sequence. Some rare diseases can be attributed entirely to simple errors in our DNA sequence. However, the majority of common diseases (including depression) are caused by a combination of many different genetic factors, together with environmental factors (how we grew up, life events, etc).

**What will my DNA be used for?**

If you compare any two people, their DNA will be about 99% identical. We are interested in the 1% of DNA that is different between people. Our current plan is to investigate these differences, focusing on just a small proportion of your genes (we are targeting less than 100 of the ~30,000 genes that humans have) which we anticipate may be involved in social behavior.

We are also planning future follow-up studies on your DNA, which will extend the analysis to substantially more genes – potentially all genes. These future studies will be limited to analyses of the DNA molecule and the genetic code, and will not involve any other use or manipulation of your DNA sample. However, in no case will your samples be kept for more than 3 years, at which time the samples and the sample container will be incinerated. At the end of this form, you have the option to opt-out of any such future uses of your DNA sample.

**How long will my DNA be stored, and potentially used in research?**

By providing a DNA sample and signing this form, you are indicating that you are willing for us to preserve and analyze your DNA sample for an extended period of time (3 years or less). During this period, use of the sample is guaranteed to be limited to studies that read the DNA molecule.

**Will I be told the results of my own genetic analysis?**

No. Your DNA sample and genetic information will be identified by a code number, and not your name. This preserves confidentiality of this information. Returning your personal genetic information to you would require that confidentiality be compromised, so will be avoided. Furthermore, as described above, genetic data collected in this study will not allow accurate prediction of whether or not you will develop any disease. It would therefore be irresponsible of the researchers to inform participants that they had a slight increase in susceptibility to disease (as this could cause undue stress to both participants and their families), or that they had increased protection against disease.

**What if something unexpected and potentially dangerous is discovered in my DNA**

None of the DNA sites that we plan to analyze are currently known to be predictive of disease with any real accuracy. However, future advances in genetic research could allow disease predictions to be possible based on information from these, or other genetic sites. In exceptional circumstances, if genetic research reveals information about a serious or life-threatening condition that can be prevented or treated through intervention, then we have an obligation to inform you of this information, and potentially also inform your biological relatives who may share similar risk of disease. This would therefore represent a potential breach of confidentiality. In this instance, only information directly relating to disease diagnosis, and participant identity, would be shared.

**Can my DNA ever be used to identify me?**

This is a complicated question to answer. Unless you have an identical twin (whose DNA will be identical to yours), your DNA is absolutely unique to you. It is this unique nature of genetic material that allows individuals to be identified based entirely on their DNA, through techniques such as DNA fingerprinting. It is therefore theoretically possible that in the future, your identity could be determined from simply analyzing your DNA sample.

It is extremely unlikely, however, that you could be identified based on your DNA sample. In order to identify you based purely on your DNA sample, it would be necessary to compare your DNA sample that you provide today, with another DNA sample from you in a DNA database, which is linked to your identity. DNA databases do exist in countries including Canada, Australia, USA and UK, but are limited to samples from criminal offenders. Access to these databases is strictly limited to law enforcement agencies thus cannot be accessed by researchers. Access to DNA samples taken for this study will similarly be limited to the researchers, and will not be provided to any law enforcement agency unless we become legally obliged to do so (to our knowledge, this has never happened to any research group). Furthermore, these government DNA databases typically contain information about only 13 regions of human DNA, none of which are to be analyzed in the present study.

**If you have any additional questions or concerns, please ask the researcher today, or contact any of the principal investigators at a later date.**

Right to Withdraw: Your participation in this study is entirely voluntary. At any point during the study you have the right to skip certain questions or to withdraw without penalty.

I have read the above description of the study concerning how genetic, psychological and social factors may influence my experience of online social support. The data collected will be used in research publications. My acceptance indicates that I agree to participate in the study, and this in no way constitutes a waiver of my rights.

Signature:_____

□ I would like to opt-out of any such future uses of my DNA sample to detect other genes for research purposes.

**Informed Consent – Community Sample**

## Study Homepage

You've now entered the study about predictors of reactions to online social networking. In this study we are interested in your use of social networking websites, the nature of your social experiences, and the possible influence of how you feel about yourself. During this study you will be asked to complete questionnaires that ask you to write about a distressing event in your life and reflect on your reaction to feedback received.

Please note that, in order to participate, you must live in Canada, be between the ages of 18 and 35 and you must have logged in to a social networking site at least once.

This study is expected to take approximately 60 minutes. You will have a total of 4 hours to complete the study before being automatically logged out. You will not be able to log in and out of the study and if you close your browser or are idle for more than 20 minutes, any information you entered will be lost. Thank you!

**Ready to begin the study?**

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## Informed Consent

*The purpose of an informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent has to provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.*

Study Title: **Online Social Support Networking**

Study Personnel: Laura Friberg (Masters Researcher, 520-2600 ext. 7513)

Dr. Kim Matheson (Faculty Investigator, 520-3570)

**If you have any ethical concerns** about this study please contact Dr. Shelley Brown, Chair of the Department of Psychology Research Ethics Committee at Carleton University at 613-520-2600 x 1505.

**If you have any other concerns** about the study please contact Dr. Anne Bowker, Chair, Department of Psychology, 520-2600 ext. 8218).

**Purpose and Task Requirements:** The purpose of this study is to assess how your individual characteristics along with your social environment affect your experience of online interactions. We are asking you to fill out a number of questionnaires that ask you to write about a distressing event in your life and reflect on your reaction to feedback received. The questionnaires also ask about how you feel about yourself, how you cope with things in your life, mental health, and your social interactions both online and offline.

Please note that, in order to participate, you must live in Canada, be between the ages of 18 and 35 and you must have logged in to a social networking site at least once.

Compensation for completion of the study is contingent on passing several checks embedded throughout the study to ensure non-random answering. Approximately two weeks after you complete the study, and upon validating that you have completed the study in good faith, a 5$ gift certificate for Tim Horton's will be mailed to you. The questionnaire should take approximately 60 minutes to complete.

**Potential Risk and Discomfort:** There are no physical risks in this study. There may be some discomfort or anxiety experienced when responding to some of the questions in this study or thinking about various stressors or difficulties in your life. If this is the case, the Debriefing form at the end of the study contains contact information for people who are available to help.

**Anonymity/Confidentiality:** The data collected in this study will be kept confidential. Your userID and password will be separated from your questionnaire data and kept in a separate and secured file by one of the research investigators who will keep this information confidential. The personal information collected on this consent form will be kept for 3 years before being destroyed.

**Right to Withdraw:** Your participation in this study is entirely voluntary. At any point during the study you have the right to not complete certain questions or to withdraw with no penalty whatsoever. On several pages throughout the study are withdrawal buttons. If you choose to withdraw from the study, please use one of these buttons to exit the study instead of closing the browser.

**Compensation:** Please note to collect your five dollar gift card your data must be deemed valid; this means that you must complete enough of the survey/questions to meet validity checks in order to be compensated. Validity is established when enough of the preselected questions have been answered in a non-random fashion.

*I have read the above description of the study concerning how psychological and social factors may influence my quality of life and my academic performance. The data collected will be used in research publications. My acceptance indicates that I agree to participate in the study, and this in no way constitutes a waiver of my rights.*

**ACCEPT** **DECLINE**

Appendix B.

**Social Networking Website Participation**

For each of the following questions, please check one response that best reflects your use of social media.

1. I have logged in to a social networking website
    - ☐ Never
    - ☐ Only around once a month
    - ☐ A few times a month
    - ☐ Once a week
    - ☐ A few times a week
    - ☐ Once a day
    - ☐ 2-5 times a day
    - ☐ 5-10 times a day
    - ☐ More than 10 times a day

2. I post information about myself (status, comments, wall posts, tweets, etc) to a social networking website
    - ☐ Never
    - ☐ Only around once a month
    - ☐ A few times a month
    - ☐ Once a week
    - ☐ A few times a week
    - ☐ Once a day
    - ☐ 2-5 times a day
    - ☐ 5-10 times a day
    - ☐ More than 10 times a day

3. I post pictures of myself to a social networking website
    - ☐ Never
    - ☐ Only around once a month
    - ☐ A few times a month
    - ☐ Once a week
    - ☐ A few times a week
    - ☐ Once a day
    - ☐ 2-5 times a day
    - ☐ 5-10 times a day
    - ☐ More than 10 times a day

4. What was your primary reason for creating a social networking account?
    - ☐ Stay in touch with family
    - ☐ Stay in touch with friends
    - ☐ Everyone else has an account, why not me
    - ☐ I don't know why I have an account
    - ☐ Other *(please specify)*

      _____

5. Which social network do you check the most?
    - ☐ Facebook
    - ☐ Twitter
    - ☐ MySpace
    - ☐ Google+
    - ☐ Tumblr
    - ☐ Instagram
    - ☐ Other *(please specify)*

      _____

**Social Networking Level of Social Engagement**

***Instructions:*** *Please respond to the following questions regarding your use of social networking websites. To do so, please use the following rating scale:*

| Not at all true of me | A little bit true of me | Somewhat true of me | Very much true of me | Extremely true of me |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | I visit social networking websites to partake in conversations. | 0 | 1 | 2 | 3 | 4 |
| 2. | I visit social networking websites because I like answering questions. | 0 | 1 | 2 | 3 | 4 |
| 3. | I visit social networking websites to contribute to discussions. | 0 | 1 | 2 | 3 | 4 |
| 4. | I visit social networking websites to belong to a group. | 0 | 1 | 2 | 3 | 4 |
| 5. | I visit social networking websites to meet new people. | 0 | 1 | 2 | 3 | 4 |
| 6. | I visit social networking websites because it is a way to gather information. | 0 | 1 | 2 | 3 | 4 |
| 7. | I visit social networking websites because I am curious about what others think about something. | 0 | 1 | 2 | 3 | 4 |
| 8. | I visit social networking websites to help others. | 0 | 1 | 2 | 3 | 4 |
| 9. | I visit social networking websites to provide support to others. | 0 | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| 10. I visit social networking websites to tell others what to do. | 0 | 1 | 2 | 3 | 4 |
| 11. I visit social networking websites to pass time. | 0 | 1 | 2 | 3 | 4 |
| 12. I visit social networking websites because I have nothing better to do. | 0 | 1 | 2 | 3 | 4 |
| 13. I visit social networking websites because people do not have to be present to receive my messages. | 0 | 1 | 2 | 3 | 4 |
| 14. I visit social networking websites because it is easier than telling something offline. | 0 | 1 | 2 | 3 | 4 |
| 15. I visit social networking websites because I am curious about what others are doing. | 0 | 1 | 2 | 3 | 4 |
| 16. I visit social networking websites to schedule plans with my friends. | 0 | 1 | 2 | 3 | 4 |

**Perceived Value of Social Networking Websites**

Please respond to the following questions regarding how you feel about social networking websites. To do so, please use the following rating scale.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Not at all true of me | A little bit true of me | Somewhat true of me | Very much true of me | Extremely true of me |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | I value social networking websites due to their convenience. | 0 | 1 | 2 | 3 | 4 |
| 2. | I value social networking websites because of their ease of use. | 0 | 1 | 2 | 3 | 4 |
| 3. | I value social networking websites because of the anonymity associated with them. | 0 | 1 | 2 | 3 | 4 |
| 4. | It is easy to use social networking websites. | 0 | 1 | 2 | 3 | 4 |
| 5. | I can choose how anonymous I want my posts on social networking websites to be. | 0 | 1 | 2 | 3 | 4 |
| 6. | I use social networking websites because all of my friends use it too. | 0 | 1 | 2 | 3 | 4 |
| 7. | I use social networking websites to communicate with people around me instead of using email to do so. | 0 | 1 | 2 | 3 | 4 |
| 8. | I find social networking websites easier than face to face communication. | 0 | 1 | 2 | 3 | 4 |
| 9. | I find social networking websites allow me to be myself more than when I am communicating with someone face to face. | 0 | 1 | 2 | 3 | 4 |

**Intervention Prompt**

Think of a time in the past year when you have felt particularly distressed and may have considered doing something that you might regret (or did regret) later. Please use the space below to provide a short description of the event, how you felt about it, why you felt that way and how you dealt with this distress.

Imagine you are a regular user of the social networking website Facebook. You set up a profile a few years ago and have several close online friends, as well as some friends-of-friends, and people you've only met once or twice. Your Facebook use includes regular status updates, comments on other friends' walls, and uploading pictures of yourself with your friends and family at events. You log on at least once a day to read your News Feed and see what is going on with your friends, and you usually post about once a day. The content of most of your Facebook messages, status updates, comments and photos are centered on your life at University, the events you attend with friends, movies, music and media.

Based on the Facebook user scenario described above, please use the following space to provide a hypothetical Facebook status update that would be the kind of message that you would post if you were going through the distressing time you described above right now. Think about what you experienced and how you felt, and indicate what you would like your friends to know.

**Status Update Ratings**

**When you experienced the situation you described** in your **status update** above, to what degree did you feel the following? Please use the scale below to indicate your answer.

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| None | A little bit | Somewhat | Very much | Extremely |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | anger | 0 | 1 | 2 | 3 | 4 |
| 2. | annoyance | 0 | 1 | 2 | 3 | 4 |
| 3. | shame | 0 | 1 | 2 | 3 | 4 |
| 4. | anxiety | 0 | 1 | 2 | 3 | 4 |
| 5. | distress | 0 | 1 | 2 | 3 | 4 |
| 6. | depression | 0 | 1 | 2 | 3 | 4 |
| 7. | embarrassment | 0 | 1 | 2 | 3 | 4 |
| 8. | frustration | 0 | 1 | 2 | 3 | 4 |
| 9. | guilt | 0 | 1 | 2 | 3 | 4 |
| 10. | helplessness | 0 | 1 | 2 | 3 | 4 |
| 11. | humiliation | 0 | 1 | 2 | 3 | 4 |
| 12. | irritability | 0 | 1 | 2 | 3 | 4 |

**Intervention One: Facebook Information Sent Privately and Anonymously**

Imagine that after posting the status update you provided above, you wait a few hours before logging on to your profile again. When you do log in to Facebook, you discover *a private message from Facebook SAYING THE FOLLOWING:*

It appears as though the most recent status update you posted may indicate that you have been experiencing high levels of distress. There are many resources in place that can help you and trained counsellors are available 24/7 to listen and talk with you. Please click on the link below to initiate a private chat with a counsellor from the National Suicide Prevention lifeline or call the following number: **1-800-273-TALK**

Initiate a private chat with a counsellor from the National Suicide Prevention lifeline.

**Why should I call 1-800-273-TALK (8255)?**

**The Lifeline Network answers thousands of calls from people in emotional distress. There are many reasons for their calls. Please call for any of the following reasons:**

**Suicidal thoughts**

**Information on suicide**

**Information on mental health/illness**

**Substance abuse/addiction**

**To help a friend or loved one**

**Relationship problems**

**Abuse/violence**

**Economic problems**

**Sexual orientation issues**

**Physical illness**

**Loneliness**

**Family problems**

**Who should call?**

- **Anyone who feels sad, hopeless, or suicidal.**
- **Family and friends who are concerned about a loved one.**
- **Anyone interested in mental health treatment and service referrals.**

**Who and where am I calling?**

- **When you dial 1-800-273-TALK, you are calling the crisis center in the Lifeline network closest to your location. To find out what center is closest to you search the Crisis Center Locator.**

- **Lifeline's service is free and confidential.**
- **The hotline is staffed by trained counsellors.**
- **We are available 24 hours a day, 7 days a week.**
- **We have information about mental health services in your area that can help you.**

**What will happen when I call?**

- **You will hear a message saying you have reached the National Suicide Prevention Lifeline.**
- **You will hear hold music while your call is being routed.**
- **You will be helped by a trained crisis worker.**
- **You will be given mental health services referrals if needed.**

**How can I call?**

**•Dial 1-800-273-TALK (8255).**

**•If you are a TTY user, please use our TTY number: 1-800-799-4TTY (4889).**

***This means that one of your Facebook friends has flagged your post as "potentially harmful behavior" and Facebook has reviewed your post and sent you the message presented above. There is no way for you to identify which one of your friends flagged your post and none of your other friends can see that you have been sent the message.***

**Intervention Two: Facebook Information Sent Privately from a Friend**

**Note:** Intervention **Three** will be the same, but rather than being a private message, it will be **public**.

Imagine that after posting the status update you provided above, you wait a few hours before logging on to your profile again. When you do log in to Facebook, you discover *a private message from a close friend whom you have known for several years and communicated with both on and offline. Your close friend sends you the following private message:*

Hey are you ok? I'm worried about you. It sounds like you might be going through a really rough time. I know a website that might be helpful to you, please take a look at it:

http://www.suicidepreventionlifeline.org/

**Why should I call 1-800-273-TALK (8255)?**

**The Lifeline Network answers thousands of calls from people in emotional distress. There are many reasons for their calls. Please call for any of the following reasons:**

**Suicidal thoughts**

**Information on suicide**

**Information on mental health/illness**

**Substance abuse/addiction**

**To help a friend or loved one**

**Relationship problems**

**Abuse/violence**

**Economic problems**

**Sexual orientation issues**

**Physical illness**

**Loneliness**

**Family problems**

**Who should call?**

**•Anyone who feels sad, hopeless, or suicidal.**

**•Family and friends who are concerned about a loved one.**

**•Anyone interested in mental health treatment and service referrals.**

**Who and where am I calling?**

**•When you dial 1-800-273-TALK, you are calling the crisis center in the Lifeline network closest to your location. To find out what center is closest to you search the Crisis Center Locator.**

**•Lifeline's service is free and confidential.**

**•The hotline is staffed by trained counsellors.**

**•We are available 24 hours a day, 7 days a week.**

**•We have information about mental health services in your area that can help you.**

**What will happen when I call?**

**•You will hear a message saying you have reached the National Suicide Prevention Lifeline.**

**•You will hear hold music while your call is being routed.**

**•You will be helped by a trained crisis worker.**

**•You will be given mental health services referrals if needed.**

**How can I call?**

- **Dial 1-800-273-TALK (8255).**
- **If you are a TTY user, please use our TTY number: 1-800-799-4TTY (4889).**

**Intervention Four: Personal Messages Sent Privately from Friend with Resources and Support**

**Note:** Intervention **Five** will be the same, but instead of a private message, it will be **public**.

**Imagine that after posting the status update you provided above, you wait a few hours before logging on to your profile again. When you do log in to Facebook, you discover *several private messages from a close friend whom you have known for several years and communicated with both on and offline. Your close friend sends you the following private messages:***

Hey are you ok? I'm worried about you. It sounds like you might be going through a really rough time. I am always here for you.

I know you can't stop how you are feeling but maybe talking about it could help. Please call me at 613 555 1234.

I am concerned about you. You should call me whenever you're feeling sad or hopeless. I am here and available to listen 24/7. If you want I can even give you the number of a trained counsellor who you could call.

The counsellors available at the National Suicide Prevention Lifeline are trained to talk about all kinds of different issues, not just suicide. They can talk to you about any problems you are facing, no matter what it is.

If you call them you will be redirected to a counsellor of mental health issues in your area. They can also redirect you to someone that you can visit in person. It is free, confidential and staffed 24 hours a day. 1**-800-273-TALK (8255).**

http://www.suicidepreventionlifeline.org/

**Why should I call 1-800-273-TALK (8255)?**

> **The Lifeline Network answers thousands of calls from people in emotional distress. There are many reasons for their calls. Please call for any of the following reasons:**
>
> **Suicidal thoughts**
>
> **Information on suicide**

**Information on mental health/illness**

**Substance abuse/addiction**

**To help a friend or loved one**

**Relationship problems**

**Abuse/violence**

**Economic problems**

**Sexual orientation issues**

**Physical illness**

**Loneliness**

**Family problems**

**Who should call?**

**•Anyone who feels sad, hopeless, or suicidal.**

**•Family and friends who are concerned about a loved one.**

**•Anyone interested in mental health treatment and service referrals.**

**Who and where am I calling?**

**•When you dial 1-800-273-TALK, you are calling the crisis center in the Lifeline network closest to your location. To find out what center is closest to you search the Crisis Center Locator.**

**•Lifeline's service is free and confidential.**

**•The hotline is staffed by trained counsellors.**

**•We are available 24 hours a day, 7 days a week.**

**•We have information about mental health services in your area that can help you.**

**What will happen when I call?**

- **You will hear a message saying you have reached the National Suicide Prevention Lifeline.**
- **You will hear hold music while your call is being routed.**
- **You will be helped by a trained crisis worker.**
- **You will be given mental health services referrals if needed.**

**How can I call?**

- **Dial 1-800-273-TALK (8255).**
- **If you are a TTY user, please use our TTY number: 1-800-799-4TTY (4889).**

**Intervention Six: No one ever responded to your status update**

Imagine that after posting the status update you provided above, you wait for a response from your friends. You never receive any kind of response. You consider their silence to be their response.

## Post-Intervention Questions

Imagine your feelings, thoughts and emotions upon discovering this message. Please use the following space provided to summarize your interpretation of the response, what you might be thinking about, and what you might do after receiving the response.

Please respond to the following questions in regards to the scenario provided in the previous section. Please use the following rating scale:

| After receiving the response described... | Not at all | A little | Somewhat | A lot | A great deal |
|---|---|---|---|---|---|
| 1. I would feel adequate support from my social network in regards to the issues causing me distress. | 0 | 1 | 2 | 3 | 4 |
| 2. I would feel ashamed for posting about my distress. | 0 | 1 | 2 | 3 | 4 |
| 3. I would edit how I expressed myself on Facebook in the future. | 0 | 1 | 2 | 3 | 4 |
| 4. I would be more likely to post a status update again the next time I experienced distress. | 0 | 1 | 2 | 3 | 4 |
| 5. I would feel like my online social network would understand me better. | 0 | 1 | 2 | 3 | 4 |
| 6. I would feel like my social network is more helpful online than in person. | 0 | 1 | 2 | 3 | 4 |
| 7. I would seek further help via any resources offered to me. | 0 | 1 | 2 | 3 | 4 |
| 8. If available, I would seek further help via a professional I could speak to in person. | 0 | 1 | 2 | 3 | 4 |
| 9. I would likely continue to use Facebook regularly. | 0 | 1 | 2 | 3 | 4 |
| 10. I do not think my friends would treat me any differently after reading my status update. | 0 | 1 | 2 | 3 | 4 |
| 11. I would appreciate my online friends for showing support and concern for my well-being. | 0 | 1 | 2 | 3 | 4 |
| 12. I would be less trusting of my online social network on Facebook in the future. | 0 | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| 13. I would tell someone (like a close friend or relative) about the message that I received from Facebook. | 0 | 1 | 2 | 3 | 4 |
| 14. I would feel cared about by my online friends. | 0 | 1 | 2 | 3 | 4 |

*Intervention Specific Questions – Only seen by participants who received Intervention One:*

| | | | | | |
|---|---|---|---|---|---|
| 15. I would be thankful for the friend who flagged my post as potentially harmful behaviour. | 0 | 1 | 2 | 3 | 4 |
| 16. I would feel inadequate if I initiated the private conversation with the counsellor for help | 0 | 1 | 2 | 3 | 4 |
| 17. I would feel that the friend who flagged my post as potentially harmful behaviour had the best intentions in mind. | 0 | 1 | 2 | 3 | 4 |

*Intervention Specific Questions – Only seen by participants who received Intervention Two or Three:*

| | | | | | |
|---|---|---|---|---|---|
| 15. I would be thankful for the friend who sent me the link to the National Suicide Prevention Lifeline. | 0 | 1 | 2 | 3 | 4 |
| 16. I would feel inadequate if I initiated the phone call with the counsellor for help. | 0 | 1 | 2 | 3 | 4 |
| 17. I would feel that the friend who sent me the link had the best intentions in mind. | 0 | 1 | 2 | 3 | 4 |

*Intervention Specific Questions – Only seen by participants who received Intervention Four or Five:*

| | | | | | |
|---|---|---|---|---|---|
| 15. I would be thankful for the friend who sent me the messages on my Facebook. | 0 | 1 | 2 | 3 | 4 |
| 16. I would feel inadequate if I initiated the phone call with my friend for further help. | 0 | 1 | 2 | 3 | 4 |
| 17. I would feel that the friend who sent me the messages had the best intentions in mind. | 0 | 1 | 2 | 3 | 4 |

**Note:** Interventions **Six** would not receive any intervention specific questions

**PANAS**

Using the rating scale beside each item, please indicate how much each adjective describes **how you would feel after receiving the response described above.** There are no right or wrong answers. We just want you to be as honest as possible in indicating how you would feel.

| | 0<br>Not at all | 1 | 2 | 3 | 4<br>Extremely |
|---|---|---|---|---|---|
| 1. Active... | 0 | 1 | 2 | 3 | 4 |
| 2. Afraid... | 0 | 1 | 2 | 3 | 4 |
| 3. Alert... | 0 | 1 | 2 | 3 | 4 |
| 4. Angry... | 0 | 1 | 2 | 3 | 4 |
| 5. Annoyed... | 0 | 1 | 2 | 3 | 4 |
| 6. Anxious... | 0 | 1 | 2 | 3 | 4 |
| 7. Ashamed... | 0 | 1 | 2 | 3 | 4 |
| 8. Attentive... | 0 | 1 | 2 | 3 | 4 |
| 9. Confused... | 0 | 1 | 2 | 3 | 4 |
| 10. Contempt... | 0 | 1 | 2 | 3 | 4 |
| 11. Depressed... | 0 | 1 | 2 | 3 | 4 |
| 12. Determined... | 0 | 1 | 2 | 3 | 4 |
| 13. Disdain... | 0 | 1 | 2 | 3 | 4 |
| 14. Disgusted... | 0 | 1 | 2 | 3 | 4 |
| 15. Distressed... | 0 | 1 | 2 | 3 | 4 |
| 16. Embarrassed... | 0 | 1 | 2 | 3 | 4 |
| 17. Enraged... | 0 | 1 | 2 | 3 | 4 |
| 18. Enthusiastic... | 0 | 1 | 2 | 3 | 4 |
| 19. Excited... | 0 | 1 | 2 | 3 | 4 |
| 20. Frustrated... | 0 | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| 21. Guilty... | 0 | 1 | 2 | 3 | 4 |
| 22. Happy... | 0 | 1 | 2 | 3 | 4 |
| 23. Helpless... | 0 | 1 | 2 | 3 | 4 |
| 24. Hostile... | 0 | 1 | 2 | 3 | 4 |
| 25. Humiliated... | 0 | 1 | 2 | 3 | 4 |
| 26. Indifferent... | 0 | 1 | 2 | 3 | 4 |
| 27. Infuriated... | 0 | 1 | 2 | 3 | 4 |
| 28. Inspired... | 0 | 1 | 2 | 3 | 4 |
| 29. Interested... | 0 | 1 | 2 | 3 | 4 |
| 30. Irritable... | 0 | 1 | 2 | 3 | 4 |
| 31. Jittery... | 0 | 1 | 2 | 3 | 4 |
| 32. Nervous... | 0 | 1 | 2 | 3 | 4 |
| 33. Proud... | 0 | 1 | 2 | 3 | 4 |
| 34. Regretful... | 0 | 1 | 2 | 3 | 4 |
| 35. Responsible... | 0 | 1 | 2 | 3 | 4 |
| 36. Sad... | 0 | 1 | 2 | 3 | 4 |
| 37. Scared... | 0 | 1 | 2 | 3 | 4 |
| 38. Strong... | 0 | 1 | 2 | 3 | 4 |
| 39. Unhappy... | 0 | 1 | 2 | 3 | 4 |
| 40. Upset... | 0 | 1 | 2 | 3 | 4 |
| 41. Worried... | 0 | 1 | 2 | 3 | 4 |

**Survey of Coping Profiles Endorsed (50-item SCOPE)**

The purpose of this questionnaire is to find out how people deal with emotional problems or stresses in their lives. The following are activities that you may have done. After each activity, please indicate the extent to which you would use this as a way of dealing with emotional problems or stresses in recent weeks.

---

*Ordinarily, in recent weeks have you:*

| *Never* *0* | *Seldom* *1* | *Sometimes* *2* | *Often* *3* | *Almost always* *4* |
|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| *1.* | accepted that there was nothing you could do to change your situation? | *0* | *1* | *2* | *3* | *4* |
| 2. | tried to just take whatever came your way? | *0* | *1* | *2* | *3* | *4* |
| 3. | talked with friends or relatives about your problems? | *0* | *1* | *2* | *3* | *4* |
| 4. | tried to do things which you typically enjoy? | *0* | *1* | *2* | *3* | *4* |
| 5. | sought out information that would help you | *0* | *1* | *2* | *3* | *4* |
| 6. | resolve your problems? | *0* | *1* | *2* | *3* | *4* |
| 7. | blamed others for creating your problems or making them worse? | *0* | *1* | *2* | *3* | *4* |
| 8. | sought the advice of others to resolve your problems? | *0* | *1* | *2* | *3* | *4* |
| 9. | blamed yourself for your problems? | *0* | *1* | *2* | *3* | *4* |
| 10. | exercised? | *0* | *1* | *2* | *3* | *4* |
| 11. | fantasized or thought about unreal things perfect revenge, or winning a million dollars) to feel better? | *0* | *1* | *2* | *3* | *4* |
| 12. | been very emotional compared to your usual self? | *0* | *1* | *2* | *3* | *4* |
| 13. | gone over your problem in your mind over and over again? | *0* | *1* | *2* | *3* | *4* |

| | | | | | |
|---|---|---|---|---|---|
| 14. asked others for help? | *0* | *1* | *2* | *3* | *4* |
| 15. thought about your problem a lot? | *0* | *1* | *2* | *3* | *4* |
| 16. became involved in recreation or pleasure activities? | *0* | *1* | *2* | *3* | *4* |
| 17. worried about your problem a lot? | *0* | *1* | *2* | *3* | *4* |
| 18. tried to keep your mind off things that are upsetting you? | *0* | *1* | *2* | *3* | *4* |
| 19. tried to distract yourself from your troubles? | *0* | *1* | *2* | *3* | *4* |
| 20. avoided thinking about your problems? | *0* | *1* | *2* | *3* | *4* |
| 21. made plans to overcome your problems? | *0* | *1* | *2* | *3* | *4* |
| 22. told jokes about your situation? | *0* | *1* | *2* | *3* | *4* |
| 23. thought a lot about who is responsible for your problem (besides yourself)? | *0* | *1* | *2* | *3* | *4* |
| 24. shared humorous stories etc. to cheer yourself and others up? | *0* | *1* | *2* | *3* | *4* |
| 25. told yourself that other people have dealt with problems such as yours? | *0* | *1* | *2* | *3* | *4* |
| 26. thought a lot about how you have brought your problem on yourself? | *0* | *1* | *2* | *3* | *4* |
| 27. decided to wait and see how things turn out? | *0* | *1* | *2* | *3* | *4* |
| 28. wished the situation would go away or be over with? | *0* | *1* | *2* | *3* | *4* |
| 29. decided that your current problems are a result of your own past actions? | *0* | *1* | *2* | *3* | *4* |
| 30. gone shopping? | *0* | *1* | *2* | *3* | *4* |
| 31. asserted yourself and taken positive action on problems that are getting you down? | *0* | *1* | *2* | *3* | *4* |
| 32. sought reassurance and moral support from others? | *0* | *1* | *2* | *3* | *4* |
| 33. resigned yourself to your problem? | *0* | *1* | *2* | *3* | *4* |
| 34. thought about how your problems have been caused by other people? | *0* | *1* | *2* | *3* | *4* |

| | | | | | |
|---|---|---|---|---|---|
| 35. daydreamed about how things may turn out? | *0* | *1* | *2* | *3* | *4* |
| 36. been very emotional in how you react, even to little things? | *0* | *1* | *2* | *3* | *4* |
| 37. decided that you can grow and learn through your problem? | *0* | *1* | *2* | *3* | *4* |
| 38. told yourself that other people have problems like your own? | *0* | *1* | *2* | *3* | *4* |
| 39. wished I was a stronger person or better at dealing with problems? | *0* | *1* | *2* | *3* | *4* |
| 40. looked for how you can learn something out of your bad situation? | *0* | *1* | *2* | *3* | *4* |
| 41. asked for God's guidance? | *0* | *1* | *2* | *3* | *4* |
| 42. kept your feelings bottled up inside? | *0* | *1* | *2* | *3* | *4* |
| 43. found yourself crying more than usual? | *0* | *1* | *2* | *3* | *4* |
| 44. tried to act as if you were not upset? | *0* | *1* | *2* | *3* | *4* |
| 45. prayed for help? | *0* | *1* | *2* | *3* | *4* |
| 46. gone out? | *0* | *1* | *2* | *3* | *4* |
| 47. held in your feelings? | *0* | *1* | *2* | *3* | *4* |
| 48. tried to act as if you weren't feeling bad? | *0* | *1* | *2* | *3* | *4* |
| 49. taken steps to overcome your problems? | *0* | *1* | *2* | *3* | *4* |
| 50. made humorous comments or wise cracks? | *0* | *1* | *2* | *3* | *4* |
| 51. told others that you were depressed or emotionally upset? | *0* | *1* | *2* | *3* | *4* |

**Perceived Stigma by Others for Seeking Help**

Imagine you had a mental health issue (e.g., felt very depressed or anxious) you couldn't solve on your own. If you sought counselling for this issue, to what degree do you believe that the people you interact with would do the following?

| | Not at all | A little | Somewhat | A lot | A great deal |
|---|---|---|---|---|---|
| 1. React negatively to you | 0 | 1 | 2 | 3 | 4 |
| 2. Think bad things of you | 0 | 1 | 2 | 3 | 4 |
| 3. See you as having serious problems | 0 | 1 | 2 | 3 | 4 |
| 4. Think of you in a less favourable way | 0 | 1 | 2 | 3 | 4 |
| 5. Think you might be a bad influence on others | 0 | 1 | 2 | 3 | 4 |
| 6. Think you are a failure | 0 | 1 | 2 | 3 | 4 |

**BDI - 13 item scale**

On this questionnaire are groups of statements. Please read the entire group of statements of each category. Then pick out ONE statement in that group which best describes the way you feel. Check off the number beside the statement you have chosen.

---

| | | | |
|---|---|---|---|
| 1. | 0 | ___ | I do not feel sad |
| | 1 | ___ | I feel sad or blue |
| | 2a | ___ | I am blue or sad all of the time and I can't snap out of it |
| | 2b | ___ | I am so sad or unhappy that it is very painful |
| | 3 | ___ | I am so sad or unhappy that I can't stand it |
| 2. | 0 | ___ | I am not particularly pessimistic or discouraged about the future |
| | 1 | ___ | I feel discouraged about the future |
| | 2a | ___ | I feel I have nothing to look forward to |
| | 2b | ___ | I feel I won't ever get over my troubles |
| | 3 | ___ | I feel that the future is hopeless and things cannot improve |
| 3. | 0 | ___ | I do not feel like a failure |
| | 1 | ___ | I feel I have failed more than the average person |
| | 2a | ___ | I feel I have accomplished very little that is worthwhile or that means anything |
| | 2b | ___ | As I look back on my life, all I can see is a lot of failures |
| | 3 | ___ | I feel I am a complete failure as a person |

| | | | |
|---|---|---|---|
| 4. | 0 | ___ | I am not particularly dissatisfied |
| | 1a | ___ | I feel bored most of the time |
| | 1b | ___ | I don't enjoy things the way I used to |
| | 2 | ___ | I don't get satisfaction out of anything anymore |
| | 3 | ___ | I am dissatisfied with everything |
| 5. | 0 | ___ | I don't feel particularly guilty |
| | 1 | ___ | I feel bad or unworthy a good part of the time |
| | 2a | ___ | I feel quite guilty |
| | 2b | ___ | I feel bad or unworthy practically all of the time now |
| | 3 | ___ | I feel as though I am very bad or worthless |
| 6. | 0 | ___ | I don't feel disappointed in myself |
| | 1a | ___ | I am disappointed in myself |
| | 1b | ___ | I don't like myself |
| | 2 | ___ | I am disgusted with myself |
| | 3 | ___ | I hate myself |
| 7. | 0 | ___ | I don't have thoughts of harming myself |
| | 1 | ___ | I feel I would be better off dead |
| | 2 | ___ | I have definite plans about committing suicide |
| | 3 | ___ | I would kill myself if I had the chance |
| 8. | 0 | ___ | I have not lost interest in other people |
| | 1 | ___ | I am less interested in other people than I used to be |
| | 2 | ___ | I have lost most of my interest in other people and I have little feeling for them |
| | 3 | ___ | I have lost all my interest in other people and don't care about them at all |

| | | | |
|---|---|---|---|
| 9. | 0 | ___ | I make decisions about as well as ever |
| | 1 | ___ | I am less sure of myself now and try to put off making decisions |
| | 2 | ___ | I can't make decisions anymore without help |
| | 3 | ___ | I can't make decisions at all anymore |
| 10. | 0 | ___ | I don't feel I look any worse than I used to |
| | 1 | ___ | I am worried that I am looking old or unattractive |
| | 2 | ___ | I feel that there are permanent changes in my appearance and they make me look unattractive |
| | 3 | ___ | I feel that I am ugly or repulsive looking |
| 11. | 0 | ___ | I can work about as well as before |
| | 1a | ___ | It takes extra effort to get started at doing something |
| | 1b | ___ | I don't work as well as I used to |
| | 2 | ___ | I have to push myself very hard to do anything |
| | 3 | ___ | I can't do any work at all |
| 12. | 0 | ___ | I don't get any more tired than usual |
| | 1 | ___ | I get tired more easily than I used to |
| | 2 | ___ | I get tired from doing anything |
| | 3 | ___ | I get too tired to do anything |
| 13. | 0 | ___ | My appetite is no worse than usual |
| | 1 | ___ | My appetite is not as good as it used to be |
| | 2 | ___ | My appetite is much worse now |
| | 3 | ___ | I have no appetite at all any more |

**Background Information**

Sex: Female/ Male (please circle one)

Age: _____

Why did you choose to come to Carleton? (if more than one apply, rank in order of importance (1= most important reason, etc.)

_____ To stay close to my family

_____ I wanted to stay in Ottawa

_____ No one else accepted me

_____ Has a program I'm interested in

_____ Parental/family pressure

_____ My friend(s) came here

_____ Other (please specify) _____

Are you a full-time_____ or part-time_____ student? (please check one)

What is your academic major (or most likely major if undecided)? _____

Where do you currently live? (please check one)

_____ Carleton University residence

_____ Off campus housing shared with other student(s) from Carleton University

_____ Off campus housing shared with other(s) who do not attend Carleton University

_____ Off campus housing by myself

_____ Off campus housing with a spouse

_____ Off campus with family members (parents)

_____ Other (please describe) _____

What city and country does your parental family live in? _____

What is your citizenship status?

_____ Canadian citizen

_____ Landed immigrant

Since what year?_____ Country of origin _____

_____ Student visa

Since what year?_____ Country of origin _____

What is your first language? _____

What is your ethnic/racial background? We realize that selecting a broad racial/ethnic category can be difficult for some people. Please select the **ONE** category that **best identifies** how you would describe yourself.

Asian (i.e., Chinese, Japanese, Korean)

South Asian (i.e., East Indian, Pakistani, Punjabi, Sri Lankan)

South East Asian (e.g., Vietnamese, Phillipino, Thai, Burmese, Cambodian, Indonesian, Laotian, Malaysian)

Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)

Black (e.g., African, Haitian, Jamaican, Somali, African-American, African-Caribbean)

Latin American/Hispanic

Aboriginal (e.g., First Nations, Inuit, Métis)

White/Euro-Caucasian

Other *Please specify* _____

**Health Behaviours and Attitudes**

Do you have any visible physical disability?

No_____ Yes_____ If yes, please specify _____

Do you have any learning disability?

No_____ Yes_____ If yes, please specify _____

Have you ever been diagnosed with a mental illness?

No_____ Yes_____ If yes, please specify _____

Have you ever been treated for a mental illness?

No_____ Yes_____ If yes, please specify who provided the treatment (e.g., psychiatrist, family physician)

_____

Do you have a family history of mental illness?

No_____ Yes_____ If yes, please specify

_____

_____

Are you currently being treated for any physical condition?

No_____ Yes_____ If yes, please specify _____

Have you ever been in psychological therapy or counselling? (please check the one that best applies)

_____ No, I have never been in therapy

_____ Yes, but I am no longer

_____ Yes, and still am

If yes, how long ago were you in, or have you been in therapy?

Began _____ month/year and continued until _____ month/year

Even if you have not personally had such an experience, if you were diagnosed with a mental illness, such as major depression, and you went to see your **family physician**…

| | Not at all | | | | | | Completely |
|---|---|---|---|---|---|---|---|
| 1. To what extent do you believe that your doctor would do his/her best to give you the best treatment? | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. To what extent do you believe that you would be treated objectively? | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. To what extent do you believe that you would be treated just as well as someone with cold or flu symptoms? | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. To what extent do you believe that you would be judged as having a character flaw? | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. To what extent do you believe that you would be seen as weak? | 0 | 1 | 2 | 3 | 4 | 5 | 6 |

## Parental Background

What is the highest level of education completed by your <u>mother</u>?

_____ 8 years or less of elementary school

_____ some high school but no diploma

_____ a high school diploma or equivalent

_____ 1 to 3 years of college/university (including study at a technical college or CEGEP)

_____ an undergraduate university degree

_____ a master's degree

_____ a doctoral degree

_____ a professional degree [medicine (M.D.), dentistry (D.D.S.), law, or other similar degrees]

What is your mother's occupation?_____

What is the highest level of education completed by your father?

_____ 8 years or less of elementary school

_____ some high school but no diploma

_____ a high school diploma or equivalent

_____ 1 to 3 years of college/university (including study at a technical college or CEGEP)

_____ an undergraduate university degree

_____ a master's degree

_____ a doctoral degree

_____ a professional degree [medicine (M.D.), dentistry (D.D.S.), law, or other similar degrees]

What is your father's occupation?_____

What is your estimate of your family's gross income per year (check one):

| | |
|---|---|
| ____ under $15,000 | ____$60,000 - $74,999 |
| ____ $15,000 - $29,999 | ____ $75,000 - $89,999 |
| ____ $30,000 - $44,999 | ____ $90,000 - $104,999 |
| ____ $45,000 - $59,999 | ____$105,000 or more |

At this time, which of the following would you say most closely describes your family's socio-economic status?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Working Class | | | Middle Class | | | | Upper Class | |

Appendix C
Distress Debrief

Depression is a condition that can occur for many reasons, including workplace, school, or relationship stressors, traumatic life events, discrimination, as well as physical/biological imbalances. Approximately 10-15% of people will suffer some degree of depression during their lifetime. With advances in modern medicine, most people can readily be treated for this illness, which if unattended can be long lasting and affect many aspects of one's life. The symptoms of depression comprise:

- Poor or depressed mood, or a reduction in the pleasure gained from otherwise positive experiences
- Sleep disturbances
- Eating disturbances (loss of appetite, or overeating despite not being hungry), which may be linked to weight changes
- Lack of sexual interest
- Fatigue and lethargy (you don't feel like doing anything)
- An inability to focus (e.g., you have a hard time reading)
- Reduced interactions with family and friends
- Thoughts of suicide

Someone who is depressed may experience several (3-4), but not necessarily all of the above symptoms. It is likewise the case that 60% of individuals will encounter a severe traumatic event in their lives and of these people, a fair number will develop symptoms that cause severe anxiety. Illnesses of this nature, including posttraumatic stress disorder (PTSD) can be treated. Once again, if unattended, the repercussions can be severe. Symptoms include:

- Hyperarousal (e.g., feelings of anxiety and reactivity even to minor situations)
- Intrusive thoughts (memories of the event come into your head frequently)
- Avoiding thoughts or stimuli related to the event

These symptoms can persist for more than a month following the event, and influence your day-to-day functioning.

Your responses to this survey suggest that you may be experiencing one of the above disorders. If you are not already receiving attention for this problem, it is suggested that you contact your family physician. It is not a good idea to allow problems to fester, as ruminating over these problems will typically not make them go away. Your family physician or counsellor will usually be able to help you or to refer you to someone who can. If you do not have a family physician, then you can contact any of the organizations on the Mental Health Resources Information Sheet that follows.

**Mental Health Resources Information Sheet**

**Carleton University Counselling Services**

Confidential personal counselling services are available for current Carleton University students. Our primary responsibility is to alleviate distress and promote healthy functioning by providing short-term counselling services. Students can self-refer to counselling. Some examples of the issues students may discuss with a counsellor include: coping with stress/homesickness, increasing sadness, handling a crisis, improving communication, learning to be assertive, increasing self-esteem, gender identity, understanding one's sexuality and dealing with alcohol and drug concerns.

To make an appointment for counselling:

**For students living off campus:** Main Clinic Rm. 2600 CTTC Bldg. to book in person or Call 613-520-6674

**For students living in residence:** Counselling is available Sept. to April Rm. 223D Res Commons Bldg. Call 613-520-2600 ext. 8061 for intake.

**For International and Exchange students:** Call 613-520-6674 and ask to book with the International Student Counsellor.

Drop-in 30 minute counselling sessions are available for all international students on Mondays at the ISSO starting at 1:30 p.m. This is an opportunity for you to speak with the International Student Counsellor about any concerns or challenges that you might be having.

**When**: Drop-in sessions will be held on Mondays from 1:30 to 3:00 p.m.

**Where**: Sessions will be held at the ISSO office, 128 University Centre.

**What Do I Need to Do**?: A same-day sign-up sheet will be at the reception desk of the ISSO starting at 8:30 a.m. on Monday mornings. You may also show up during the drop-in times to see if there is time available to meet with the Counsellor. You will be asked to fill out a 2 page intake form. Please arrive 10 minutes early to fill out the form.

**Ottawa Distress Centre**: (613) 238 1089, Web Site: www.dcottawa.on.ca.

**Mental Health Crisis Line:** within Ottawa (613) 722-6914, outside Ottawa 1-866-996-0991, Web Site: http://www.crisisline.ca/

Appendix D

Debriefing

***What are we trying to learn in this research?*** Adolescence and early adulthood are often associated with the development of social, emotional and economic autonomy and independence. These life changes are often accompanied by the emergence of new and imminent stressors: separation from parents and old friends, academic or work related pressures, financial hardship, etc. The combination of new adjustments and the complications added by stressors make university and college students a particularly vulnerable population to mental illness. Alarmingly, despite these mental challenges faced by students and the considerable efforts expended to provide helpful resources, students often do not seek help. In this study we are trying to determine what factors (e.g., support/unsupport, perceptions of mental health, social networks) are associated with students' willingness to seek help; specifically, through the use of online social networking websites. This study will examine participants' reactions to a new support system put in place by Facebook, which allows users to flag their friends' Facebook post as "potentially harmful behaviour". After reviewing the content of the flagged post, Facebook may send a message of support to the user with information provided by the National Suicide Prevention Lifeline, as well as a link to a private chat with a professional counsellor. The study will assess students' reactions and emotions to social support on social media and the likelihood of continuing to post messages seeking support after receiving private support, public support or no support. In addition, some participants were asked for a sample of their saliva for DNA analysis. This will help us to determine whether specific genes involved in social behavior are also linked to participant responses to these types of social support.

***Why is this important to scientists or the general public?*** Previous research has demonstrated that the reason individuals may not want to seek help, especially from professional sources (e.g., doctors, psychologists) is because of the stigma attached mental illnesses. However it is still unclear what the specific reasons are that keep people from seeking help. The current study extends previous research by incorporating recognition that young people will often rely on widely popular social networking websites to express their identity and to create a social support network. Investigating students' reactions to various types of online support may help us gain a better understanding of how social networks may respond and offer help to those who are distressed.

***What are our hypotheses and predictions?*** We predict that those who use social networking websites to seek support for mental health issues or in times of distress will react positively to the support provided by both Facebook friends and the message provided by Facebook offering support services. Furthermore, that support received after posting will increase the likelihood of posting similar content in the future to seek help from their online social network.

***Where can I learn more?*** If you are interested in learning more about this research topic, see:

*Facebook provides first-of-a-kind service to help prevent suicides*. (2011, December 13). Retrieved from http://www.suicidepreventionlifeline.org/App_Files/Media/PDF/PressRelease/FacebookPressRelease12-13-2011.pdf

Gilbert, E., & Karahalios, K. (2009). Predicting tie strength with social media. *Association for Computing Machinery,* 211-220.

***Is there anything I can do if I found this experiment to be emotionally upsetting?*** Yes, if you have any worries or concerns about your personal well-being, or study skills, please feel free to contact the following services:

**Carleton University Health and Counselling Services** 520-6674

**Student Services** 520-3663

**Student Academic Success Centre** 520-7850

**International Student Services Office** 520-6600

**First in Family Peer Mentor Program** 520-7595

***What if I have questions later?*** If you have any remaining concerns, questions, or comments about the experiment, please feel free to contact Laura Friberg at laurafriberg@cmail.carleton.ca (613-520-2600, ext. 7513), Dr. Kim Matheson (Faculty Sponsor), at kim_matheson@carleton.ca (520-3570). Should you have any ethical concerns about this research, please contact Dr. Shelley Brown (Chair, Psychology Ethics Board) at shelley_brown@carleton.ca, 613-520-2600 x 1505. For other concerns, please contact Dr. Anne Bowker (Chair, Department of Psychology) at psychchair@carleton.ca, 613-520-2600, ext. 8218).

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This study has received clearance by the Carleton University Psychology Research Ethics Board (Reference #13-186).