# INTIMACY OF CONTACT WITH PEOPLE WITH EMOTIONAL OR MENTAL HEALTH PROBLEMS AND EXPECTATION OF NEGATIVE PUBLIC ATTITUDES TOWARD PEOPLE WITH DEPRESSION

by

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A thesis submitted to the Graduate Program in Epidemiology

In conformity with the requirements for

Degree of Master of Science

Queen's University

Kingston, Ontario, Canada

(October, 2014)

# Abstract

**Background**: Previous research has shown that there is an association between prior contact with a person with emotional or mental health problems and an expectation of negative public attitudes toward people with a mental illness. Expectation of negative public attitudes is an extra burden that is associated with mental illnesses.

**Objectives**: 1) Describe Canadians' expectations of negative attitudes toward people with depression. 2) Examine the association between intimacy of prior contact with a person with emotional or mental health problems and the expectation of negative public attitudes towards those with depression.

**Methods**: Data from the rapid response portion of the 2010 Canadian Community Health Survey were used. There were 10,389 respondents. Exposure was divided into any prior contact and no prior contact and for further analyses any contact was sub-divided into most intimate contact (self, family member, friend, co-worker) or total number of types of contact (0, 1, 2, 3/4). Outcome was determined using a reduced version of Link's Devaluation-Discrimination Measure. A stigma score was determined and the respondent was categorized into one of three groups based on score (low, moderate, or high expectations of negative public attitudes). Stratified analyses and ordinal regression were used to determine if Canadians were less likely to hold negative attitudes if they had prior personal contact with someone who had a mental illness and if negative attitudes were inversely associated with intimacy of contact.

**Results**: There was only one statistically significant result. Compared to those who had personally experienced a mental illness, those who identified knowing a co-worker with a mental illness had higher odds of expecting negative public attitudes (OR= 10.61, 95% CI: 1.41, 79.70), however, this may have been a spurious association owing to the large number of comparisons made.

**Conclusion**: In this study, with one possible exception, previous prior contact with a person with emotional or mental health problems was not associated with expectation of negative public attitudes toward people with depression.

# Co-Authorship

This thesis presents the work of Alex Phillips in collaboration with her supervisor, Dr. Heather Stuart. The idea for examining the association between intimacy of contact with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression was developed collaboratively. The Canadian Community Health Survey was distributed and data were collected by Statistics Canada. Data were made available from the Queen's Research Data Centre with the help of Analyst Bin Hu. Alex Phillips completed the statistical analyses, interpretation of results, and the writing of the thesis document with frequent edits and guidance from Dr. Heather Stuart.

## Acknowledgements

The last two years completing this thesis have been challenging and rewarding. There are many people I would like to thank for their guidance and support.

Firstly, thank you so much to my supervisor Dr. Heather Stuart. Your passion for mental health research has inspired me to contribute what I can to the field. Your advice and guidance were invaluable and I am honoured to have had the chance to work alongside such an influential and kind person.

I owe many thanks to my funding sources, The BP Singh Fellowship in Mental Health and Queen's University. Thank you to Bin Hu at the Queen's Research Data Centre. The analysis for this thesis went smoothly because of Bin's help and knowledge. As well, thank you to Dr. Paul Peng and Dr. Michael McIsaac for their feedback and guidance with the statistical analysis.

Thank you to the Department of Public Health Sciences. I have learned so much, both professionally and personally. I wish the best of luck to all of the ladies of the MSc class of 2014. I have no doubt everyone will be successful. To my friends both within and outside of the department, I thank you for all of the advice, time and laughs you've given me. Queen's has been my home for the last 6 years and I am grateful for all of the amazing opportunities I've had.

Finally, thank you to my family, Dale, Cathy and Cam Phillips. I am so lucky to have you guys in my life. Thanks for your love and encouragement. I would not be where I am today without you.

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# Chapter 1

# Introduction

## 1.1 Introduction & Rationale

This study examined negative attitudes toward people with depression. This thesis (a) describes Canadians' expectations of negative attitudes toward people with depression and (b) examines the association between intimacy of prior contact with a person with emotional or mental health problems and the expectation of negative public attitudes towards those with depression.

Our first hypothesis was that Canadians would be less likely to hold negative attitudes if they have had prior personal contact with someone who has had a mental illness. Secondly, we expected that negative attitudes would be inversely associated with intimacy of contact (Corrigan et al., 2012). Intimacy of contact refers to the closeness one has experienced with someone with a mental illness, ranging from "I have never observed a person that I was aware had a mental illness" to "I have a mental illness" (Holmes et al., 1999).

Negative public attitudes are a key component of stigma and are defined as, "[W]ays in which the general public reacts to a group based on stigma about that group" (Watson & Corrigan, 2001). Stigma, as defined by Link and Phelan, exists when five interrelated components combine: identifying and labeling differences; linking the labeled person to undesirable characteristics; separating labeled people into "them" and "us"; discrimination and loss of status; and exercise of power (Link and Phelan, 2006).

Expectations of negative public attitudes becomes particularly problematic when one is diagnosed with a mental illness, as one will expect to be stigmatized and perceive others as stigmatizing. Allport deems this the "Self-fulfilling Prophecy" (1954). Most physical illnesses do not have stigma associated with them, most mental illnesses do. This is also evident when looking at families of those who have been diagnosed with a mental illness. In their study, Wahl and Harmon (1989) found that families perceived more negative public attitudes toward people with a mental illness than actually affected their family. The families stated that though they did not experience negative public attitudes themselves, they believed other families did.

Contact with a person with a mental illness is one of the most powerful ways of reducing negative public attitudes. Contact interventions stem from research initially conducted by Allport (1954), the originator of the contact hypothesis. It was originally used to explain racial prejudice, noting that social contact reduces prejudice between groups. Allport describes four types of contact (from least to most intimate) and how each type of contact changes public attitudes: casual contact, acquaintances, residential contact, and occupational contact. Differing types of contact can reinforce or dispel negative public attitudes.

## 1.2 Thesis Organization

This thesis follows the guidelines set out by the Queen's University School of Graduate Studies for a traditional (non-manuscript style) thesis. The first chapter gives a general overview of the thesis. The second chapter describes and critiques the literature looking at the association between intimacy of contact with a person with emotional or mental health issues and stigma toward people with depression. The third chapter provides a detailed description of the epidemiological methods used to assess the relationship of interest, including study design, data collection, and data analysis. The fourth chapter describes the results found, addressing both objectives. The fifth and final chapter contains a summary and interpretation of the findings and an assessment of the strengths, limitations, and implications of this research. Conclusions and final summaries are also included. Detailed information on the CCHS rapid response, as well as ethics information, and power calculations are included as appendices.

## References


Allport, G.W. (1954). The Nature of Prejudice. Reading, MA: Addison-Wesley.

Corrigan, P.W., Morris, S.B., Michaels, P.J., Rafacz, J.D., and Rusch, N. (2012). Challenging the public stigma of mental illness: A meta-analysis of outcome studies. Psychiatric Services, 63(10), 963-973.

Holmes, E.P., Corrigan, P.W., Williams, P., Canar, J. & Kubiak, M.A. (1999). Changing Attitudes About Schizophrenia. Schizophrenia Bulletin, 25(3), 447-456.

Link, B.G. & Phelan, J.C. (2006). Stigma and its public health implications. Lancet, 367, 528-529.

Wahl, O.F. & Harman, C.R. (1989). Family Views of Stigma. Schizophrenia Bulletin, 15(1), 131-139.

Watson, A.C. & Corrigan, P.W. The Impact of Stigma on Service Access and Participation: A guideline developed for the Behavioral Health Recovery Management Project [Internet]. Chicago: Fayette Companies and Chestnut Health Systems; 2001 [cited 2013 January 14]. Available from: http://www.bhrm.org/guidelines/stigma.pdf.

# Chapter 2

# Literature Review

## 2.1 Negative Public Attitudes

Negative public attitudes are a key component of stigma. Stigma, as defined by Link and Phelan (2001), exists when five interrelated components combine: identifying and labeling differences; linking the labeled person to undesirable characteristics; separating labeled people into "them" and "us"; discrimination and loss of status; and exercise of power (Link and Phelan, 2006). Public attitudes toward people with mental illnesses are defined by Watson and Corrigan (2001) as "[W]ays in which the general public reacts to a group based on stigma about that group". People who stigmatize devalue and discriminate against those in the group (Link, 1987). The World Health Organization (2003) has stated, "In addition to the obvious suffering caused by mental disorders there is a hidden burden of stigma and discrimination".

Expectation of negative public attitudes is an important concept that is especially relevant to mental illnesses. According to Link and Phelan (2001), "People form expectations as to whether most people will reject an individual with a mental illness as a friend, employee, neighbor, or intimate partner." This becomes particularly problematic when one is diagnosed with a mental illness, as one will expect to be stigmatized and perceive others as stigmatizing. Allport deems this the "Self-fulfilling Prophecy" (1954). This is also evident when looking at families of those who have been diagnosed with a mental illness. In a 1989 study, Wahl and Harmon found that families perceived more negative public attitudes toward people with a mental illness than actually affected their family. The families stated that though they did not experience negative public attitudes themselves, they believed other families did. In this study, approximately 1500 questionnaires were sent to 26 affiliates of the National Alliance for the Mentally Ill in the United States. The questionnaire included questions on how respondents felt stigma (defined as "a mark of disgrace or infamy, a stain or reproach, as on one's reputation") was related to mental illnesses and how it affected their family. The response rate was approximately 35%, mostly mothers of children with severe mental illnesses. The vast majority of respondents (88%) indicated that stigma was much or very much associated with mental illnesses and 89% indicated that stigma was a problem for their family. However, only 8 to 22% of respondents could specifically indicate how stigma had affected them personally. The authors state that this may be a positive finding that families experience less stigma than what they expect, but they say "the expectation itself – the perception of stigma – may be enough to produce problems for families with those expectations."

Few studies have examined intimacy of contact and expectations of negative public attitudes. The studies that do have focused on either people with a mental illness or their family members. General population studies have not examined level of personal contact in relation to stigma. This study will compare five levels of intimacy of contact and expectation of negative public attitudes in a population sample. This will be the first study in Canada to do so.

## 2.2 Measuring Negative Public Attitudes

The first study to use Link's Devaluation-Discrimination measure to assess public attitudes toward people with mental illnesses was published in 1987. Link recruited 429 community respondents and 164 psychiatric patients (either with major depression, schizophrenia, or schizophrenia-like psychotic disorders) from New York City (Washington Heights neighbourhood) to participate. The community sample was chosen by selecting houses from a telephone directory and asking a person between the ages of 19 and 59 years in the house to participate. The response rate was 57%. The sample was divided into 5 groups: first-treatment contact patients, repeat-treatment contact patients, former patients, untreated cases, untreated community well respondents. The sample was divided into these groups based on inpatient/outpatient status, interviews, and results from the Psychiatric Epidemiology Research Interview (PERI). Each participant was given the Devaluation-Discrimination measure, which consisted of 12 statements regarding public attitudes toward people with mental illnesses and to what degree they thought most people agreed with the statements presented (on a scale of 1 to 6). A mean score above 3.5 indicated a stigmatizing attitude. When responses to all 12 statements were averaged, all five groups had mean scores greater than 3.5 (with p-values $<0.001$). Therefore, all five groups believed that most people have negative public attitudes toward people with a mental illness. The mean scores for each of the groups were as follows:

| Group | Mean DDM Score |
|---|---|
| First-treatment contact patients | 4.03 |
| Repeat-treatment contact patients | 4.15 |
| Former patients | 4.33 |
| Untreated cases | 4.13 |
| Untreated community well respondents | 4.08 |

Former patients seemed to have had the most negative public attitudes while first-treatment contact patients had the most positive public attitudes. When a one-way analysis of variance was conducted, there was no significant difference in mean stigma score across the five groups. The lack of variability across the groups validated the scale as a measure of broad cultural levels of stigma, rather than individual or personal feelings.

## 2.3 Measurement Bias

When examining public attitudes, it is important to focus on one mental illness rather than mental illnesses in general, as differences have been noted in public attitudes toward severe mental illnesses (such as schizophrenia) compared to more common mental health issues (such as depression) (Thompson et al., 2002; Mann & Himelein, 2004; Anderson & Austin, 2012). For example, a 2004 study by Mann and Himelein found a statistically significant difference in public attitudes about schizophrenia and depression. A sample of University students were recruited and given a vignette describing a person with either schizophrenia or major depression. They were then asked 6 questions based on social distance scales. Respondents were given 6 situations in which they may come in contact with a person with the given mental illness and asked on a scale of 1 to 5 how comfortable they would be in that situation (1 = very uncomfortable, 5 = very comfortable). An example of one of the questions used is: How comfortable would you be dating the person? For the vignette of the person with depression the average score was 2.2. For the vignette of the person with schizophrenia the average item score was 1.9, reflecting greater stigma. In this sample, people were more comfortable with the idea of dating the person with depression than the person with schizophrenia, but overall were uncomfortable with either. When the scores for each of the 6 questions were combined, the scores for the depression vignette were statistically significantly higher (indicating they thought they would be more comfortable near a person with depression) than those for the schizophrenia vignette.

A study of a random sample of the United States population (Link et al., 1999) also found that public attitudes differed depending on the diagnostic group. Data for this study were collected from the MacArthur Mental Health Module of the 1996 General Social Survey. This survey was sent to a nationally representative sample of US residents biannually, excluding anyone in institutions. Participants were given a vignette describing a person who had alcohol dependence, major depressive disorder, schizophrenia, cocaine dependence, or who was troubled. Respondents were asked to what degree they would distance themselves socially from the person in their given vignette on a scale of 1 to 4, where 4 reflects higher stigma. The most negative attitudes were toward those with cocaine dependence with 90% of participants scoring above 2.5 on the social distance scale, reflecting higher social distance. The proportions of those with a score of 2.5 or greater for the remaining vignettes were: alcohol dependence (70%), schizophrenia (63%), major depressive disorder (47%), and troubled person (29%). It is possible that the war on drugs that began in the United States in 1986 has influenced the highly negative perceptions of substance users so it is not clear that this ranking would be transferable to the Canadian context. In 1995 approximately 50% of people in US prisons were incarcerated on drug related charges (Goetz, 1995). People tend to have negative public attitudes toward substance users as they are thought of not only as drug users but also as criminals (Jensen, Gerber & Mosher, 2004).

In order to avoid the potential for measurement bias when diagnostic groups are combined, Statistics Canada measured public attitudes toward people with depression in a rapid response survey conducted for the Mental Health Commission of Canada. Statistics Canada focused on depression because of the high prevalence in the population (4.7% in one year with a lifetime prevalence of 11.3% (Statistics Canada Table 105-1101, 2013)) and to be consistent with other community surveys that focused on depression. This is the first survey to measure public expectations of stigma in the Canadian population.

## 2.4 Contact Theory

The contact hypothesis was introduced by Allport in 1954 to explain racial prejudice, noting that social contact reduces prejudice between groups. Groups in this case can be loosely defined by an individual as they fit in to their world. A person feels membership to their specific in-groups. In contrast, an out-group would be one that the individual does not feel a part. Prejudice can be created between groups simply because an individual does not know the members of the out-group; “The familiar is preferred.” One way to reduce this prejudice and expand whom we see in our in-group is through social contact.

It is important to consider separate types of contact when studying stigmatizing views (Mueller, et al., 2005). Allport (1954) describes four types of contact (from least to most intimate) and how this type of contact changes public attitudes. The least intimate form of contact Allport describes is casual contact. Casual contact involves seeing someone of the minority group with little exchange between parties. One recalls stereotypes and hearsay about the minority group and will perceive signs that confirm these rumors about the group. This type of contact is believed to reinforce negative attitudes toward the minority group. Acquaintances, on the other hand, lessen negative attitudes toward a minority group. This includes education about a minority group as well as contact (actual interaction, speaking to, etc.) for short periods of time. Residential contact was particularly well studied in the area of black and white relations in the United States as housing became more difficult for everyone to attain and neighbourhoods became integrated. Those who had closer contact and interaction with a minority group member in their neighbourhood perceived fewer differences between themselves and that minority group compared to those who lived farther apart. Occupational contact can also strengthen negative attitudes toward minority groups or promote more positive attitudes, but this depends on status. If a person of a minority group has a lower status job (lower paying, unskilled) negative attitudes and stereotypes are reinforced. When the member of a minority group has an equal or higher status job more positive attitudes are reinforced.  More intimate contact and contact in aid of a common goal also reduce prejudicial attitudes.

Allport stated that to effectively reduce negative public attitudes contact must encompass four elements. First, there must be equal status between groups. Neither of the two groups can have a higher status than the other and neither has charge over the other. Second, the two groups must have common goals. This may be as simple as completing a puzzle or a more difficult task such as completing a community project (Watson & Corrigan, 2001). Third, there can be no competition between the groups. Finally, there is an authority person or group that has sanctioned the contact. This authority group facilitates and monitors the contact.

## 2.5 Contact Theory and Mental Illnesses

Type of contact with people who have had a mental illness has been found to be important in reducing negative public attitudes (Corrigan et al., 2012). In a meta-analysis of outcome studies, having personal contact with a person with a mental illness decreased stigmatizing attitudes significantly more than if participants watched a video of people with a mental illness (Corrigan et al., 2012). However, both methods significantly reduced negative public attitudes (Corrigan et al., 2012; Anderson & Austin, 2012). This meta-analysis included 79 studies focused on stigma reduction programs. The authors began with 8700 studies but excluded the majority because they did not focus on mental illness stigma, stigma change, were review articles, or did not have sufficient data. The samples studied were not representative of the general population. Approximately 25% of the studies included focused on anti-stigma in each of the following groups: college students, adolescents, and adults. The remaining 25% focused on other specific target groups. The results of the studies pertain to generic “mental illness” or “mental disorders” so are difficult to interpret.

In a 2011 study of genetic counselors, Anderson and Austin found that showing the participants a documentary film of people with a mental illness who were training to become comedians decreased negative attitudes. In this study, a group of students in a genetic counselor certification class were given a pre-intervention questionnaire to determine their baseline attitudes toward people with a mental illness. They were then asked to watch a documentary film, which follows people with a mental illness training to do stand-up comedy. They were then given the same questionnaire immediately after watching the film and again one month later. The study found a significant decrease in negative public attitudes toward those with a mental illness immediately after watching the documentary. However, they found no difference in negative public attitudes between baseline and one-month measures. Their results differed from many previous studies in that they found people with previous experience with a mental illness did not have significantly lower negative public attitudes than those who had no previous experience (Corrigan et al., 2012; Link, 1987). Approximately one-third of the participants reported having had a mental illness at some time. These included depression, anxiety, obsessive-compulsive disorder, and eating disorders. There was no significant difference in desire for social distance from a person with a mental illness between those who had a mental illness at one time and those who had not. This may be due to the small selected sample.

In several studies globally, people with a mental illness (the most intimate contact) report different attitudes compared to the general public. In a study in Germany, for example, the general public had more negative attitudes compared to psychiatric patients (Freidl, Lang, & Scherer, 2002). Ninety patients with schizophrenia or affective disorders treated at the University of Vienna or an affiliated hospital were selected to participate. The general public sample was

Austrian citizens over age 14 who completed an anti-stigma survey (a modified version of Link's Devaluation-Discrimination measure). The survey consisted of the 5 items listed here:

1. Most people believe that a person who has been in a mental hospital is less intelligent than the average person ("less intelligent")
2. Most people believe that a former mental patient is less trustworthy than the average person ("less trustworthy")
3. Most people feel that entering a mental hospital is a sign of personal failure ("personal failure")
4. Most people think less of a person who has been in a mental hospital ("think less of")
5. Once they know a person was in a mental hospital, most people will take his or her opinions less seriously ("taken less seriously")

Patients indicated more positive attitudes for 3 of the 5 items: "less intelligent", "less trustworthy", and "taken less seriously". Only "less intelligent" was not statistically significant. They scored the same as the general public on one item ("think less of") and higher (expected more negative attitudes) than the general public on the last item ("personal failure"). In this study contact was separated into having a mental illness (Yes/No). No indication of intimacy of contact was included. The same result was found in a study in a Swiss population (Graf et al., 2004). A sample of 280 psychiatric inpatients (aged 20 to 50) was compared to a community sample collected from a representative population survey in Switzerland (aged 16 to 76). The devaluation-discrimination scale was used to assess the negative public attitudes toward people with mental illnesses in the two groups. The version used includes 7 stigmatizing statements and asks to what degree you believe most people agree with the statement presented. There was no difference between groups for 2 of the items. Patients expressed statistically significantly more positive public attitudes for 4 of the items. Patients had statistically significantly more negative public attitudes for only 1 item (Most employers will pass over the application of a former mental patient in favour of another applicant). When the scores for all 7 items were combined, there was no statistically significant difference between the patient group and the community sample. The results from these studies indicate that having the most intimate contact with mental illness (one's self having a mental illness) modifies expectations of negative public attitudes toward oneself. However, these studies only focused on mental illness in general, not specifically depression.

## 2.6 Contact Theory and Depression

The World Health Organization defines depression as, "[A] common mental disorder that presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration" (World Health Organization, 2014). It can come in recurring episodes or be a chronic condition and can have great negative impacts on the daily life of someone suffering with depression. According to the Global Disease Burden study completed by the World Health Organization, depression is ranked as number three worldwide in terms of disease burden (Wang et al., 2010). In Canada, the one-year prevalence of major depression is 4.7% with a lifetime prevalence of 11.3% (Statistics Canada Table 105-1101, 2013). Given its high prevalence and associated disability, depression has become an important public health issue worldwide. Depression was defined for this study by Statistics Canada as "a prolonged period of sadness or loss of interest in usual activities that interferes in daily life" (Statistics Canada, 2012). Based on this definition, the figures cited by Statistics Canada likely underestimate the true prevalence of depression in Canada because anyone who is undiagnosed is not captured in these figures. As well, these figures only capture those with major depressive episodes.

Even though depression is highly prevalent, few studies have examined negative public attitudes toward depression globally, and even fewer in Canada. One Canadian study that focused on public attitudes toward people with depression was completed using a random sample of the Alberta population (Cook & Wang, 2010). Random digit dialing was used to accrue a sample of the population encompassing adults age 18 to 74. There was no information on whether the participants had any mental illnesses or not. This study required participants to recognize depression symptoms based on a vignette. Overall, they found that those who could recognize depression had more positive public attitudes toward those with depression than those who were unable to recognize depression. Contact was not measured.

## 2.7 Possible Confounders and Effect Modifiers

Several potential confounders and effect modifiers have been identified in the literature that are associated with negative public attitudes so could function as confounders in this analysis. These potential confounders include demographic factors (age, sex, and ethnic background), socioeconomic factors (income, education, and urban/rural status), and illness factors (self-reported general health and mental health) (Link, 1987).

Sex:

The effect of sex has been studied in the area of public attitudes toward people with depression, but not in the area of contact with a person with a mental illness. The percentage of women with depression in Canada is higher than men (Statistics Canada Table 105-1101, 2013). The annual prevalence of major depressive episodes in males is 3.6% and a lifetime prevalence of 8.5%. The annual prevalence in females is 5.8% and a lifetime prevalence of 14.1%. These figures underestimate the total prevalence of depression in Canada, as this only accounts for major depressive episodes. Sex may be a confounder or effect modifier in the relationship between contact with a person with emotional or mental health issues and negative public attitudes toward people with depression. It is possible that it would be an effect modifier because females may be more likely to have contact with a person with a mental illness and therefore may be more educated on depression and the effects of negative public attitudes compared to males (Cook and Wang, 2010).

In a 2010 study in the general population of Alberta, Cook and Wang found that a higher proportion of men had negative public attitudes than women. This was a cross-sectional study of the general population of Alberta (n=3,047). Participants between 18 and 74 years of age were recruited using random-digit dialing. Participants were given a vignette depicting a person (John or Mary) with major depression. A 9-item personal depression stigma scale was then given to the participant. They found a statistically significant difference in percentages of males and females who agreed with the stigmatizing statements presented, with higher percentages of men agreeing with all of the statements except one. There was no significant difference between the percentage of males and females who agreed that "People with a problem like (John or Mary)'s are dangerous."

The opposite result was found in a study in Arkansas (Pyne et al., 2004). In this sample women had more negative public attitudes toward people with depression than men. This study was also cross-sectional, but was a convenience sample comprised of 54 depressed subjects and 50 never-depressed subjects from the waiting rooms or a mental health clinic and a primary care clinic. A 5-item stigma scale was given to each participant. Female subjects were more likely to agree with the stigmatizing statements presented than male subjects. However, a vast majority of the subjects were male (only 11 of the depressed subjects and 2 of the never depressed subjects were female), making the results imprecise and potentially misleading.

The literature is not clear as to how sex is related to contact with a person with emotional or mental health issues.

Age:

Age has not been as well studied in the area of public attitudes toward people with depression. The annual prevalence of depression in Canada decreases with age (Statistics Canada Table 105-1101, 2013). The highest annual prevalence of major depressive episodes is in 15 to 24 year olds at 7.1%. The annual prevalence drops to 1.6% in those over age 65. Cook and Wang in their cross-sectional study in the general population of Alberta (2010) found that for three of nine items measuring public attitudes toward people with depression, there were significant differences in results between age groups; however, there was no consistency in which age group had more negative public attitudes. For the remaining six of nine items there were no statistically significant differences in percentages of each age group that agreed with the stigmatizing statement. The age groups were 18-24, 25-54, 55-64, and 65-74. Pyne et al. in their convenience sample of depressed and never-depressed subjects (2004), found that there was no significant difference in public attitudes with changing age. This study did not separate subjects into age groups, but added age to the regression model as a continuous variable. There was a weak inverse association between age and perceived stigma, but this was not statistically significant.

Ethnic Background:

Ethnic background has also been found to be a factor in relation to negative public attitudes toward people with depression. Those born outside of Canada have been found to have more negative public attitudes than those born in Canada (Cook & Wang, 2010). In this cross-sectional study of the general population of Alberta, subjects were grouped by being born in

Canada versus being born outside of Canada (87% of the sample was born in Canada). On 5 of the 9 items in the personal stigma survey, significantly higher percentages of people born outside of Canada agreed with the stigmatizing statements presented compared to those born in Canada. There were no further calculations to determine if this relationship varied by country of birth, probably because the sample size was too small to support sub-group analyses. There is no literature to determine if ethnic background has any influence on intimacy of contact with mental illnesses.

Ethnic background may be an effect modifier. This is possible due to the differing attitudes of cultures historically and in modern times (Stuart, Arboldea-Florez & Sartorius, 2012). This is particularly evident when comparing the views of North Americans and some Western European countries to Islamic, Chinese and Indian cultures. What is particularly of note is what the etiology of mental illnesses are believed to be in different cultures. Some agree that mental illnesses have a biological or genetic cause (North American and Western European), some believe the individual has had a moral lapse, others believe that they have a supernatural cause (Islam), and others believe a combination of the three (Indian and Chinese). In cultures where the disorder is thought to be caused by moral, religious, or magical reasons, there is often an increased stigma associated with the disorder. The disorder is associated with religious or moral failure. The shame or embarrassment is also often extended to the sufferer's family members.

Socioeconomic Status:

Socioeconomic factors have been studied in the area of public attitudes toward people with depression. In this literature socioeconomic status is often measured by income, education, and employment status or a combination of the three. The three measures are generally viewed as correlated in sociological literature (Green, 1970).

It has been found that higher education is associated with more positive attitudes toward those with depression. In Cook & Wang's study of the general population of Alberta (2010), the population was divided into three education categories (high school or less, college or technical school attended, and university attended). Approximately one third of the sample was grouped into each of the categories. For 5 of the 9 items, there was a statistically significant difference in proportion of people who agreed with the stigmatizing statements across the three groups. Those with high school education or less had higher percentages of people who agreed, while those who had college or technical school attended or university attended education had similar percentages of people who agreed with the stigmatizing statements.

Pyne et al. in their convenience sample of depressed and never-depressed subjects (2004) found that there was no significant difference in public attitudes with different levels of education. However, the sample was dichotomized into those who had a high school education and those who did not. Over 90% of the depressed subjects and over 95% of the never-depressed subjects had a high school education. This means that only 6 people in the sample did not have a high school education, making it difficult to understand the role of education in relation to negative public attitudes.

In their sample of the general population of Alberta, Cook and Wang (2010) found that employment status (working or not working) was not significantly associated with negative attitudes toward people with depression. However, the opposite result was found by Pyne et al. (2004). In their convenience sample of depressed and never-depressed subjects Pyne et al. found that there was a significant difference in public attitudes with full-time employment. Those with full-time employment were more likely to have more positive attitudes toward people with depression. There was a significant difference between the depressed and never-depressed subjects in percentage who had full-time employment (14.8% vs 52% for depressed vs never-depressed subjects respectively).

Income has not been well studied in relation to negative public attitudes toward people with depression. In Cook & Wang's study (2010), people with an income greater than $80,000 were more likely to endorse 1 of the 9 stigmatizing statements presented (they would not vote for an individual with depression) compared to those with an income less than $30,000. There were no other significant differences found between the groups.

Urban/Rural Status:

Living in an urban area has been associated with more positive public attitudes (Jones, Cook & Wang, 2011). In this sample of the Alberta general population, urban was considered a city with a population of at least 100,000, or a census sub-division of at least 1000 individuals or a population density of at least 400 per square kilometer. Calgary and Edmonton were the only cities that fit these criteria. Approximately half the sample was considered urban and the other half rural. The study showed that men living in urban areas reported more positive attitudes toward people with depression, while there were no differences in attitudes between urban and rural residing women. This illustrates that there may be an interaction between urban/rural status and sex in relation to negative public attitudes. The Canadian Community Health Survey Annual Component does not include a question that would allow me to determine if the participant lives in an urban or rural setting. Thus, it will not be possible to assess the nature of this relationship in this analysis.

Marital Status:

Marital Status has also not been well studied in relation to negative public attitudes. In Cook & Wang's study (2010), those who were single or never married had more positive attitudes toward 1 of the 9 items (they would not vote for an individual with depression) compared to those who were married/common-law or those who were divorced/separated/widowed. There were no significant differences on any of the other items.

Illness Factors:

Illness factors are expected to be effect modifiers in this study. People with illnesses (both mental and physical) tend to have more contact with people who are more seriously ill due to increased time spent at clinics and hospitals. This may give them more negative attitudes toward people with depression. A study of primary care patients in the United States, all with depression, found that patients expected more stigma from the public if they had more chronic medical conditions (Roeloffs et al., 2003). In this study patients from 46 primary care clinics across the United States were enrolled as part of a study to improve care for people with depression. Consecutive patient records were analyzed giving almost 4000 eligible patients with depression, of which only 1400 consented. Patients ranged from 18 to 90 years and were mostly female. The authors used a modified version of Link's Devaluation-Discrimination measure to assess stigma in three aspects of life: employment, health insurance, and friendship. They found that those who had 3 or more chronic medical conditions in addition to their depression were statistically significantly more likely to report more health insurance and friendship stigma than people who had fewer than 3 chronic medical conditions. It is therefore important to consider both mental and physical health when assessing expectations of negative public attitudes. We used self-reported general and mental health to determine if in the Canadian general population, there is increased stigma with poorer health.

Health Professionals:

Health professionals are an important sub-group when looking at negative attitudes toward people with depression. Health care professionals, particularly those who work in mental health fields, tend to have a high amount of contact with people with serious mental illnesses. However, they have been found to have some of the most negative attitudes toward people with depression. According to Caldwell and Jorm (2001), 47% of the general population believes that people with depression will make a full recovery with no further problems. This is compared to 37% of psychiatrists, 42% of mental health nurses, 45% of clinical psychologists, and 24% of general practitioners who think people with depression will make a full recovery with no further problems. Mental health professionals tend to have more negative attitudes because they see mental health patients when they are the most ill (Stuart, Arboleda-Florez & Sartorius, 2012). They also often lose contact once the patient is improving and never get to see the recovered and healthy patient again. Unfortunately, the CCHS has no question to capture the occupation of the respondent. Therefore, occupation (health professional versus other occupations) was necessarily be excluded from this study. This is a limitation as it may cause some misclassification of exposure. One of the contact questions in the survey asked if the respondent had worked with anyone who had an emotional or mental health problem. This could be interpreted in a few ways. Some health care workers may answer yes if they had a colleague with a mental health issue, while others may answer yes if they had any contact with a person with a mental health issue at work, such as in a caregiving situation. There was no way to know if this question was answered in the same manner by all health care professionals who took part in this survey.

## 2.8 Summary

While there have been some studies that have examined public attitudes toward mental illnesses none have focused on public stigma in the general population of Canada (Cook and Wang, 2010). The rapid response portion of the Canadian Community Health Survey is the first study with this focus. This is also the first national study examining public stigma toward people with depression—one of the most prevalent of all mental illnesses—and the first time that a modified version of Link's Devaluation-Discrimination measure has been used in Canada. This was the first study in the Canadian general population to determine if there are differences in expectations of public attitudes toward people with depression based on intimacy of contact. This was also the first study in the Canadian general population to determine if there is a difference in the relationship if you strictly look at intimacy or if you look at the number of contacts a person has.

## 2.9 Implications for Anti-Stigma Programs

Based on contact theory, anti-stigma programs have largely focused on three types of stigma reduction methods: protest, education, and contact (Corrigan, et al., 2012). Protest strategies focus on pointing out how people are being stigmatizing and asserting that the stereotypes that exist are wrong. Education is used to teach specific groups factual information regarding mental illnesses with the aim of replacing negative stereotypes. Contact is any intervention where a group interacted with a person with a mental illness with the aim of decreasing negative attitudes toward members of the stigmatized group.

In a meta-analysis of outcome studies using these approaches, protest had no effect on outcome (Corrigan, et al., 2012). In all studies analyzed, both education and contact significantly decreased negative attitudes and the difference between the two methods was non-significant.

Contact in this meta-analysis was separated into video contact and in-person contact and it is not known whether people with a mental illness were included. As well, within these two types of contact, there can be many variations, including age, sex, and diagnosis of the contact person. When only randomized controlled trials were taken into account, contact was significantly better at decreasing negative attitudes than education even though both methods decreased negative public attitudes. This may be because people who have more positive attitudes toward people with mental illnesses have very little improvement in attitude with interventions (no matter what type of intervention it is). If the RCTs included targeted people with negative attitudes toward people with depression, it would be more likely that attitudes would improve with intervention (Holmes et al., 1999).

It is important when designing anti-stigma programs to target specific groups. Anti-stigma programs that are aimed at the broad population are often ineffective because although they may address negative attitudes and stereotypes, it is unclear whom the message is for, and what any particular individual can change to have more positive attitudes or behaviour towards people with a mental illness (Corrigan, 2005). One way to make the message clearer is to target the most stigmatizing groups or those that have the greatest impact on the daily life of a person with a mental illness. This has included programs aimed at employers, landlords, and people in the criminal justice system. With these groups, a specific message about hiring practices or funding for mental health services can be presented, which is more effective than giving a broad or generic message. It is also important to address different cultures when designing anti-stigma programs (Stuart, 2008). Even different communities may require different messages to be most effective.

There seem to be limits (or ceiling effects) as to how effective an anti-stigma program can be. In a study by Holmes et al. (1999), they found that those with more intimate contact had lesser improvement in attitudes than those who had had less previous contact with people with mental illnesses. In this study, approximately 100 students taking a general psychology course or a severe mental illness and psychiatric rehabilitation course at a community college in Chicago were selected. The severe mental illness course involved two lectures from a mental health services user as well as a family member of someone with a severe mental illness (hereafter referred to as in-class contact). Participants were asked to complete a level of contact report developed by the authors. This report was the basis of the categories of contact created for this thesis. The contact report treats contact with a person with a mental illness as a continuous variable with 12 levels of contact ranging from least intimate (1: I have never observed a person that I was aware had a severe mental illness) to most intimate (12: I have a severe mental illness). The participants also completed the Opinions About Mental Illness Questionnaire (OMI) before and after completion of their course. The OMI consists of 70 statements regarding facts and attitudes toward people with a mental illness and participants indicate to what degree they agree with the statements. They found that participants who had less contact with a person with a mental illness before the in-class contact showed the greatest improvement in attitude. Those who had high levels of contact before the class did not show improvement in attitudes after the in-class contact. The authors state that this is likely because, “Persons with knowledge of or contact with severe mental illnesses are sensitized to issues regarding stigma and may have already perceived the error of a manifestly stigmatizing attitude like social restrictiveness.” Based on these results, we may expect those with the most intimate contact to have the most positive attitudes toward people with mental illnesses and therefore, target those with the least intimate contact for potential anti-stigma programs.

## References


Allport, G.W. (1954). The Nature of Prejudice. Reading, MA: Addison-Wesley.

Anderson, K. & Austin, J.C. (2012). Effects of a Documentary Film on Public Stigma Related to Mental Illness Among Genetic Counselors. Journal of Genetic Counseling, 21, 573-581.

Caldwell, T. & Jorm, A. (2001). Mental Health Nurses' Beliefs About Likely Outcomes for People with Schizophrenia or Depression: A Comparison with the Public and Other Healthcare Professionals. Australia and New Zealand Journal of Mental Health Nursing, 10, 42-54.

Cook, T.M. & Wang, J.L. (2010). Descriptive epidemiology of stigma against depression in a general population sample in Alberta. BioMed Central Psychiatry, 10, 29.

Corrigan, P.W. (2005). On the Stigma of Mental Illness: Practical Strategies for Research and Social Change. Washington, DC: American Psychological Association.

Corrigan, P.W., Morris, S.B., Michaels, P.J., Rafacz, J.D., and Rusch, N. (2012). Challenging the public stigma of mental illness: A meta-analysis of outcome studies. Psychiatric Services, 63(10), 963-973.

Freidl, M., Lang, T. & Scherer, M. (2003). How Psychiatric Patients Perceive The Public's Stereotype of Mental Illness. Social Psychiatry and Psychiatric Epidemiology, 38, 269-275.

Goetz, E.G. (1996). The US war on drugs as urban policy. Events and Debates, 20(3), 539-549.

Graf, J., Lauber, C., Nordt, C., Ruesch, P., Meyer, P.C. & Rossler, W. (2004). Perceived Stigmatization of Mentally Ill People and Its Consequences for the Quality of Life in a Swiss Population. The Journal of Nervous and Mental Disease, 192(8), 542-547.

Green, L.W. (1970). Manual for Scoring Socioeconomic Status for Research on Health Behavior. Public Health Reports, 85(9), 815-827.

Holmes, E.P., Corrigan, P.W., Williams, P., Canar, J. & Kubiak, M.A. (1999). Changing Attitudes About Schizophrenia. Schizophrenia Bulletin, 25(3), 447-456.

Jensen, E.L., Gerber, J. & Mosher, C. (2004). Social Consequences of the War on Drugs: The Legacy of Failed Policy. Criminal Justice Policy Review, 15, 100-121.

Jones, A.R., Cook, T.M. & Wang, J.L. (2011). Rural-Urban Differences in Stigma Against Depression and Agreement With Health Professionals About Treatment. Journal of Affective Disorders, 134, 145-150.

Link, B.G. (1987). Understanding Labeling Effects in the Area of Mental Disorders: An Assessment of Expectations of Rejection. American Sociological Review, 52(1), 96-112.

Link, B.G. & Phelan, J.C. (2001). Conceptualizing Stigma. Annual Review of Sociology, 27, 363-385.

Link, B.G. & Phelan, J.C. (2006). Stigma and its public health implications. Lancet, 367, 528-529.

Link, B.G., Phelan, J.C., Brenahan, M., Stueve, A. & Pescolido, B.A. (1999). Public Conceptions of Mental Illness: Labels, Causes, Dangerousness, and Social Distance. American Journal of Public Health, 89(9), 1328-1333.

Mann, C.E. & Himelein, M.J. (2004). Factors Associated With Stigmatization of Persons With Mental Illness. Psychiatric Services, 55(2), 185-187.

Mueller, B., Nordt, C., Lauber, C., Rueesch, P., Meyer, P.C. & Roessler, W. (2006). Social Support Modifies Perceived Stigmatization In The First Years of Mental Illness: A Longitudinal Approach. Social Science and Medicine, 62, 39-49.

Pyne, J.M., Kuc, E.J., Schroeder, P.J., Fortney, J.C., Edlund, M. & Sullivan, G. (2004). Relationship Between Perceived Stigma and Depression Severity. The Journal of Nervous and Mental Disease, 192(4), 278-283.

Roeloffs, C., Sherbourne, C., Unutzer, J., Fink, A., Tang, L. & Wells, K.B. (2003). Stigma and Depression Among Primary Care Patients. General Hospital Psychiatry, 25, 311-315.

Statistics Canada. Canadian Community Health Survey – Annual Component (CCHS) [Internet]. Ottawa: Statistics Canada; 2012 November 27 [cited 2013 January 14]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226&lang=en&db=imdb&adm=8&dis=2.

Statistics Canada. Table 105-1101 - Mental Health Profile, Canadian Community Health Survey - Mental Health (CCHS), CANSIM (database) [Internet]. Ottawa: Statistics Canada; 2013 September 17 [cited 2014 February 19]. Available from: http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1051101&paSer=&pattern=&stByVal=1&p1=1&p2=31&tabMode=dataTable&csid=

Stuart, H. (2008). Fighting the Stigma Caused by Mental Disorders: Past Perspectives, Present Activities, and Future Directions. World Psychiatry, 7, 185-188.

Stuart, H. (2004). Stigma and Work. Healthcare Papers, 5(2), 100-111.

Stuart, H., Arboleda-Florez, J., & Sartorius, N. (2012). Paradigms Lost. New York, NY: Oxford University Press.

Thompson, A.H., Stuart, H., Bland, R.C., Arboleda-Florez, J., Warner, R., & Disckson, R.A. (2002). Attitudes about schizophrenia from the pilot site of the WPA worldwide campaign against the stigma of schizophrenia. Social Psychiatry and Psychiatric Epidemiology, 37, 475-482.

Wahl, O.F. & Harman, C.R. (1989). Family Views of Stigma. Schizophrenia Bulletin, 15(1), 131-139.

Wang, J.L., Williams, J., Lavorato, D., Schmitz, N, Dewa, C., & Patten, S.B. (2010). The incidence of major depression in Canada: The National Population Health Survey. Journal of Affective Disorders, 123, 158-163.

Watson, A.C. & Corrigan, P.W. The Impact of Stigma on Service Access and Participation: A guideline developed for the Behavioral Health Recovery Management Project [Internet]. Chicago: Fayette Companies and Chestnut Health Systems; 2001 [cited 2013 January 14]. Available from: http://www.bhrm.org/guidelines/stigma.pdf.

World Health Organization. Depression [Internet]. Geneva: WHO; 2014 [cited 2014 March 13]. Available from: http://www.who.int/topics/depression/en/.

World Health Organization. Mental Health Policy and Service Guidance Package The Mental Health Context [Internet]. Geneva: WHO; 2003 [cited 2013 May 29]. Available from: http://www.who.int/mental_health/policy/services/3_context_WEB_07.pdf.

# Chapter 3

# Methods

## 3.1 Study Design

The data for this study came from a rapid response survey conducted by Statistics Canada and funded by the Mental Health Commission of Canada (MHCC) (Statistics Canada, 2012). The rapid response survey piggybacks special content on the annual portion of the Canadian Community Health Survey (CCHS) for a period of two months (May and June 2010). The rapid response survey allows organizations to investigate new and emergent health issues in the population. The purpose of this rapid response survey was to collect data on public stigma related to depression in a sample of the Canadian general population (n=10,389). Ethics approval for this secondary analysis was obtained from the Queen's University Health Sciences Research Ethics Board.

The target population for the CCHS was Canadians age 12 and over living in Canada (Statistics Canada, 2010). The same exclusions as the annual component of the CCHS applied to the rapid response portion. It did not include residents in the three territories, residents of crown lands or Indian Reserves, residents of institutions, full-time Canadian Forces members, and residents of some remote areas. In the provinces included in the rapid response portion of the survey (only the territories were excluded), less than 3% of the population over age 12 was excluded (Statistics Canada, 2012).

The CCHS is a voluntary survey conducted annually by Statistics Canada (Statistics Canada, 2012). It took approximately 40-45 minutes to complete the entire CCHS survey (30 minutes for the common content, 10 minutes for the optional content, and 2 minutes for the rapid response content). The CCHS is conducted via computer-assisted telephone interview or in-person interview.

The response rate of the rapid response portion of the CCHS was high (Statistics Canada, 2010). There were 14,129 households selected across Canada, of which 11,646 agreed to participate (82.4%). Once a household agreed to participate, one member of the household was selected. A total of 10,389 individuals completed the survey (89.2%). This gave an overall response rate of 73.5% at the Canada level. Participation rates varied by province.

The sampling method for this survey used the frame designed for the Labour Force Survey (LFS) (Statistics Canada – Labour Force Survey, 2013). The LFS used a stratified multi-stage design. Geographical regions were selected based on population, then clusters were selected from within these regions. For the CCHS, the sampling unit was the dwelling. Each dwelling was sampled systematically from the clusters. Individuals were then selected from the household based on age and household composition. Each member of the household was given a probability of being selected (younger people were given higher probabilities of being selected so that young people were over-sampled). If a family dwelling was home to 5 or more people, the probability of any family member being selected was equal (Statistics Canada, 2010).

## 3.2 Measures

Figure 1 shows a model of the association between intimacy of contact with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression. All of the potential effect modifiers and confounders that were explored are shown.

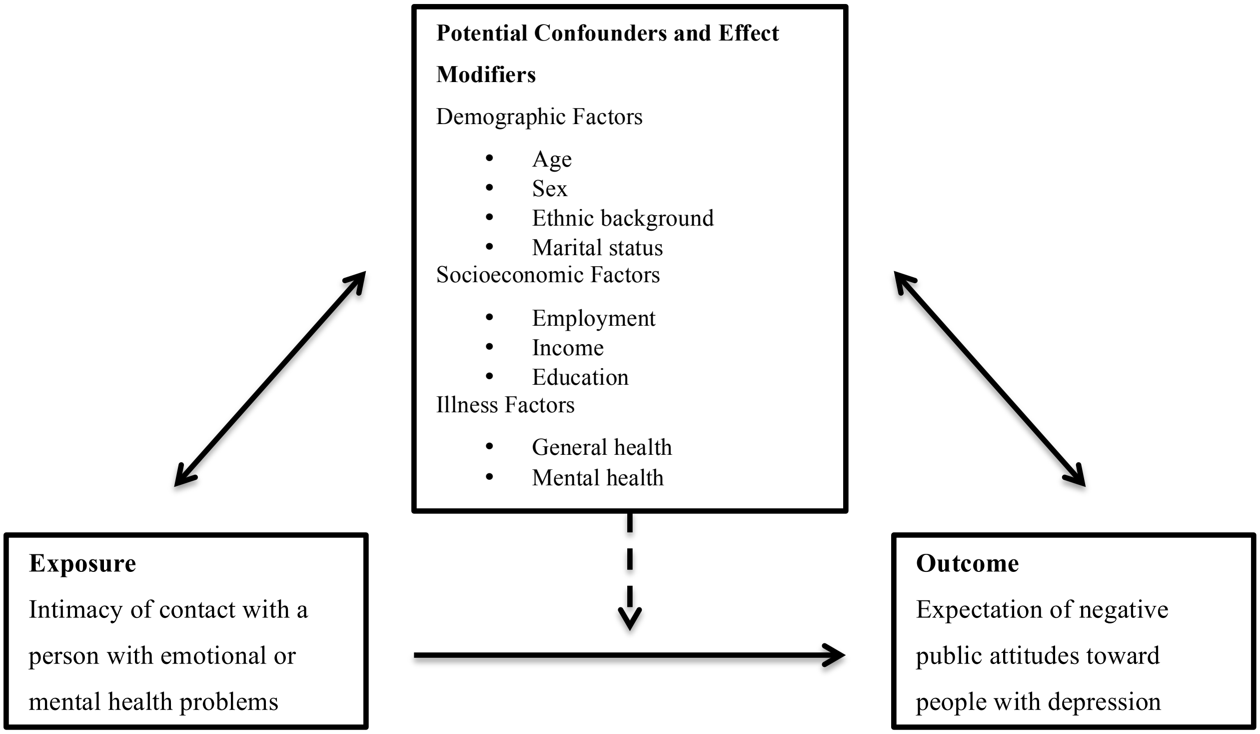


**Figure 1**. Model of the association between intimacy of contact with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression with all potential confounders and effect modifiers.

Exposure:

In this study, intimacy of contact with someone with an emotional or mental health issue was divided into five categories: no contact, a coworker/co-volunteer, a friend, a family member, oneself. The variables measuring intimacy of contact were asked as four separate questions. These questions were part of the Mental Health Experiences portion of the CCHS. The four specific questions asked are as follows:

| | |
|---|---|
| MHE_Q02A | **To your knowledge, have you ever worked with someone who has been treated for an emotional or mental health problem?** |

| | |
|---|---|
| MHE_Q03A | **Has a close member of your family, such as a spouse, a parent, a child, a brother or a sister, ever received treatment for an emotional or mental health problem?** |
| MHE_Q04A | **Have any of your close friends ever been treated for an emotional or mental health problem?** |
| MHE_Q05A | **Have you ever received treatment for an emotional or mental health problem?** |

Response choices were Yes, No, Do Not Know, or Refuse for each of the four questions.

Categories for intimacy of contact were based on those created by Holmes et al. (1999). The categories ranged from the least intimate, “I have never observed a person that I was aware had a mental illness”, to the most intimate, “I have a mental illness.” They were ranked as follows (least to most intimate):

1. No contact
2. A co-worker
3. A friend
4. A family member
5. Self

In the case where a subject answered yes to more than one form of contact, I considered two different options for analysis. First, they were grouped by their most intimate form of contact and, second, the total number of types of contact specified (0 to 4). If a person answered that they didn’t know or refused to answer, they were excluded. Approximately 7% of the sample was excluded for this reason. Figure 1 of Appendix B shows the total and final sample sizes with the exclusion criteria.

Outcome:

A modified version of the Devaluation-Discrimination Scale constructed by Link (1987) was used to measure public attitudes toward people with depression. The scale was 6 items scored on a 5-point agreement scale ranging from strongly agree to strongly disagree. Each item presented a stigmatizing statement and asked respondents to indicate to what degree they thought that most people would agree. The original scale included 12 items. The reduced scale was used due to time constraints imposed by Statistics Canada for the survey content (H. Stuart, personal communication, 2014).

One of the limitations to studying the general public's opinions about mental health stigma is social desirability bias, when people answer surveys in a way that makes others view them more favourably (Thompson et al., 2002). According to Link and Cullen (1983), due to the efforts in educating the population that the mentally ill should not be looked upon unfavourably, people who still hold a negative attitude toward those with a mental illness may not report their actual opinion, as they are aware it may be inappropriate. Therefore, people will often give an ideal answer. Link's scale aimed to decrease this bias by asking to what degree respondents believe *most people* agree with the statement presented, thereby providing a group level measure of stigma (Link & Cullen, 1983).

Currently, Link's scale is one of the two most commonly used scales for measuring public attitudes toward mental health stigma (Boyd, Otilingam & Grajales, 2003). Link's scale has been found to have internal reliability between 0.82 and 0.86 when used in samples of users of mental health services (Link, Yang, Phelan & Collins, 2004).

Each item in the scale was scored from 1 to 5. If a person did not know or refused to answer, they were excluded. Approximately 6% of the sample was excluded for this reason. One indicated strongly agree and five indicates strongly disagree. The stigma score was reverse coded so that a higher score indicated a more negative public attitude. The stigma score was then aggregated across the five items into a scale. Only subjects who had answered at least five of the six stigma questions were included. An additional 5% of the sample was excluded because they only answered one to four questions. An average score for the questions answered was determined. The average scores were between 1 and 5. This average score was multiplied by 6 (because there were six questions) and rounded to the nearest whole number. The stigma score now ranged between 6 and 30.

The six questions included in the survey were:

| | |
|---|---|
| STG_Q01 | **Most people you know would not willingly accept someone who has had depression as a close friend.** |
| STG_Q02 | **Most people you know believe that someone who has had depression is not trust-worthy.** |
| STG_Q03 | **Most people you know think less of a person who has had depression.** |
| STG_Q04 | **Most employers would not consider an application from someone who has had depression.** |
| STG_Q05 | **Most people you know would be reluctant to date someone who has had depression.** |

| | |
|---|---|
| STG_Q06 | **Once they know a person has had depression, most people you know would take their opinions less seriously.** |

Respondents answered Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree, Do Not Know, or they could refuse to answer.

## 3.3 Potential Confounders and Effect Modifiers

All information on potential confounders and effect modifiers came from the annual component of the CCHS. The exact wording of each question is included in Table 1 (Appendix B). I included the following variables as potential confounders or effect modifiers because the literature has indicated that they are associated with public attitudes: sex, age, ethnic background, marital status, socioeconomic status, and self-reported general and mental health.

## 3.4 Data Management

The characteristics of the study population were reviewed using weighted estimates and their coefficients of variation. The total sample (n=10,389) was used to describe the characteristics of the sample. Variables with sparse data in one or more categories were recoded. They were also recoded if the coefficient of variation was greater than the threshold for a reliable estimate (>16.5) (Statistics Canada, 2014). Age was divided into 10-year categories with everyone aged 70 or over grouped together. Marital status was originally grouped into six categories (now married, common-law, separated, divorced, widowed, and single). Marital status was collapsed into three categories: married or common-law; separated, divorced, or widowed; and single. Based on previous stigma literature, education was divided into four categories using the highest level of education the person completed: less than high school, high school, college (any diploma or certificate higher than a high school diploma but not a bachelor's degree), and university (bachelor's degree or higher) (Cook & Wang, 2010; Thompson et al., 2002). Income was determined using annual household income. Respondents were asked to indicate in which income group they belonged. Income was originally asked in $5,000 to $10,000 increments. For the purpose of this analysis, income was divided into 5 categories (comparable with previous stigma literature) (Patten et al., 2006; Cook & Wang, 2010). The categories created were: less than $30,000; $30,000 or more but less than $50,000; $50,000 or more but less than $70,000; $70,000 or more but less than $100,000; $100,000 or more. Employment status was based on whether the respondent had had a job in the previous 12 months (yes or no). The question was not applicable for those who were under 16 years or over 65 years. Originally I divided ethnic background into four categories: Aboriginal Cultures, Asian Cultures, White, and Other. Due to small sample sizes in some categories, ethnic background was collapsed into white and other (Holmes et al., 1999). To determine self-perceived general health, respondents were asked, "In general would you say your health is: excellent, very good, good, fair, or poor?" To determine self-perceived mental health, respondents were asked, "In general would you say your mental health is: excellent, very good, good, fair, or poor?" The coefficient of variation for two of the self-perceived mental health questions were over the threshold for a reliable estimate (>16.5), so the 5 categories were collapsed into 3: Excellent/Very Good, Good, and Fair/Poor. For consistency, the self-perceived general health categories were collapsed in the same way. If a person answered yes to any of the contact questions they were grouped as having any contact. Total contacts were determined by adding the total number of the contact questions that a respondent said yes to (multiple responses were allowed). Total number of contacts was reduced to 4 categories instead of 5 due to small sample sizes (0, 1, 2, 3/4). Most intimate contact was created by grouping individuals by the contact they answered yes to, based on the intimacy scale created by Holmes et al. (1999).

Because this was the first time the reduced (6-item) version of Link's scale has been used (H. Stuart, personal communication, 2014), I assessed internal consistency using Cronbach's alpha. Past research has demonstrated that the 12-item devaluation-discrimination measure is unidimensional so factor analysis was not conducted (Brohan et al., 2010). Cronbach's alpha was 0.82, indicating that the internal consistency of the measure in this sample was high but not too high to suggest redundancy amongst the items (Tavakol & Dennick, 2011). This is approximately the same value that has been found for the 12-item Devaluation-Discrimination Measure (Brohan, et al., 2010).

Due to the complex sampling nature of the CCHS, Statistics Canada required that weights be used and these were provided in the dataset (Statistics Canada, 2012). The variance could not be calculated directly and was estimated using bootstrapping (n=500). Therefore, each individual variable was described using weighted proportions.

## 3.5 Data Analysis

The stratified analyses and ordinal regressions had sample sizes of 7,458. The stigma score was not normally distributed, evident from the normal curve overlay in Figure 2 and the qq plot in Figure 3. Figure 2 is a histogram illustrating the distribution of the weighted proportions of the stigma score with an overlay of the normal curve. There were higher proportions for scores of 12 to 18 compared to what was predicted by the normal distribution. Figure 3 is a quantile-quantile plot comparing the quantiles of the weighted proportions of stigma score and those predicted by the normal distribution. A straight line is expected if the data are normally distributed.

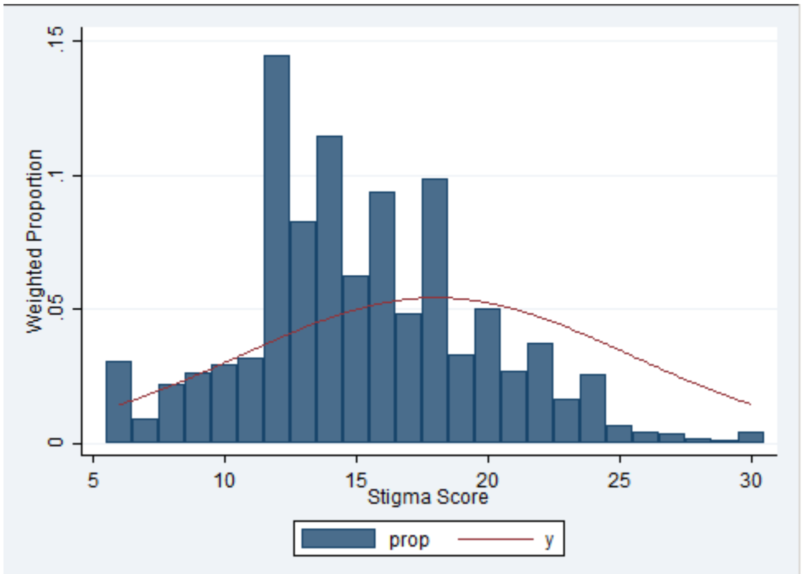


**Figure 2.** Histogram of stigma score and weighted proportion with a normal curve overlaid.

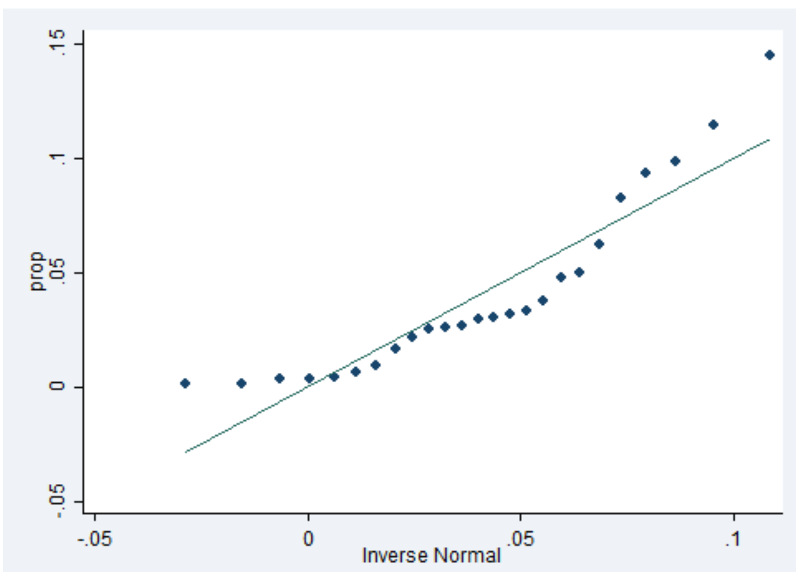


**Figure 3.** Q-Q plot of weighted proportion and normal quantiles.

Several options for handling the data were considered. The final model used ordinal regression to describe the relationship being tested, as there appeared to be three distinct groups (see Figure 2). The groups created were: low expectation of negative public attitudes (score of 6-12), moderate expectation of negative public attitudes (score of 13-17), and those who had high expectation of negative public attitudes (score of 18-30). Ordinal regression was chosen to assess whether the relationship between any contact with a person with emotional or mental health problems was associated with expectation of negative public attitudes toward people with depression. Ordinal regression was chosen because the outcome had three categories: low expectation of negative public attitudes (group 1), some expectation of negative public attitudes (group 2), high expectation of negative public attitudes (group 3). One of the assumptions of ordinal regression was proportional odds, meaning the odds of scoring in group 1 versus groups 2 or 3 are the same as the odds of scoring in groups 1 or 2 versus group 3 (Williams, 2007). This is tested using the Brant test in Stata. However, the Brant test was not compatible with weighted or survey data. As I could not determine if the proportional odds assumption held true, I chose to do a generalized ordered logistic regression analysis. This analysis estimated separate odds ratios for each of the outcome categories, so the odds of scoring in group 1 versus group 2 & 3 and the odds of scoring in groups 1 & 2 versus group 3 were estimated. The odds of scoring in group 1 versus groups 2 or 3 was not necessarily the same as the odds of scoring in groups 1 or 2 versus group 3 because generalized ordered logistic regression was used. This analysis had the advantage of keeping the ordered nature of the outcome without restricting the odds to make them proportional. This analysis also has the advantage over logistic regression in maintaining the ordered nature of the outcome. This method has the advantage of comparing all groups below a cutoff point to all groups above it. This is advantageous because the groups were chosen somewhat arbitrarily. There may not be a difference in people who score in groups 1 or 2, and there may not be a difference between people who score in groups 2 or 3.

One limitation of the gologit2 command in Stata is that negative fitted values can be estimated. Stata gives a warning when this occurs. If this occurs in a limited number of cases, it can be ignored; however, if it occurs in many cases, the model is likely overly complex or has small sample sizes for some categories and needs to be addressed (Williams, 2007). This occurred in 3 cases for the total number of contacts analysis and in 4 cases for the most intimate contact analysis. This was a limited number of cases and was therefore ignored.

To test the first hypothesis that Canadians would be less likely to hold negative attitudes if they had prior personal contact with someone who has had a mental illness I conducted a stratified analysis with each contact item separately against the total aggregated stigma score. The stratified analysis was repeated, grouping individuals by their most intimate form of contact and again grouping individuals by their total number of contacts. The differences in proportions of individuals falling into each stigma group were determined using logistic regression.

Generalized ordered logistic regression was used to determine if any contact was associated with stigma towards people with depression after controlling for several potential confounders and effect modifiers.

The variance inflation factor and tolerance for each of the variables was examined in order to determine if collinearity existed between any of the variables. If collinearity exists, variables are too similar at predicting the outcome and one must be removed. All of the covariates and interactions were entered into a linear regression model. The VIF and tolerance can only be examined using the unweighted data; however, the estimates for the odds ratios between the weighted and unweighted models differed only slightly.

Initially, all covariates were entered into the model including all interactions with the any contact variable and all covariates. All interactions were initially added based on the definition of effect modification from Webb and Bain (2011); "Effect modification – when the association between an exposure and outcome differs across levels of a third variable". Backwards elimination was used to retain effect modifiers and confounders that were significant. A cutoff of 0.10 was used to retain variables in the model. For categorical variables, the variable was maintained if at least one of the categories was significant. The literature has been mixed as to what variables are indeed confounders in the relationship between contact with people with emotional and mental health issues and expectation of negative public attitudes toward people with depression. I wanted to include all variables that may be associated with expectation of negative public attitudes. Because backwards elimination was used, no test to determine if a variable was associated with the exposure was done. Therefore, all confounders were potential confounders.

To determine if intimacy of contact and total contacts were associated with perceived stigma, the generalized ordered logistic regression was repeated using the intimacy and total contacts variables instead of any contact. All final models were appropriately bootstrapped. I chose to treat total number of contacts as a categorical variable because I wanted to be consistent with the intimacy of contact analysis. As well, there were very few people who had 4 types of contact so I felt it was more appropriate to group 3 and 4 contacts together.

### 3.6 Power

As the sample size was large, a post hoc power analysis was conducted to determine the power I had to detect varying odds ratios. As the final models used generalized ordered logistic regression and therefore odds ratios were calculated, the formula for power for a case-control study was used (Brant, 2014). The goal of the regressions was not to be so concerned with the magnitude of the associations, but simply to determine if associations existed. Therefore, it was not of great concern if the odds ratios could be interpreted as relative risks (and the rare disease assumption was not met).

The odds ratio comparing those who perceived high stigma to those who perceived low stigma were varied and the corresponding power to detect that odds ratio are included in

Appendix C. Alpha was held at 0.05. Odds ratios were varied from 0.5 to 1.5. The power calculations were repeated for the analysis using total contacts and again for most intimate contact.

These were very rough estimations of power as confounders and effect modifiers were not taken into account. If the true odds ratio differed from the crude odds ratio, these powers would be incorrect. Simulations would be needed to take into account all of the variables that were controlled for and these were beyond the scope of this thesis.

Sample sizes were estimated based on the weighted proportions for each 2x2 table and the knowledge that the final sample size for the ordinal regressions was 7458. New 2x2 tables with estimated samples are presented in Appendix C.

## References

Boyd, J.E., Otilingam, P.G. & Grajales, M. (2003). Internalized Stigma of Mental Illness: Psychometric Properties of A New Measure. Psychiarty Research, 121, 31-49.

Brant, R. Unmatched Case/Control Studies [Internet]. Vancouver: University of British Columbia; 2014 [cited 2014 August 22]. Available from: http://www.stat.ubc.ca/~rollin/stats/ssize/caco.html.

Brohan, E., Elgie, R., Sartorius, N. & Thornicroft, G. (2010). Self-stigma, empowerment and perceived discrimination among people with schizophrenia in 14 European countries: The GAMIAN-Europe study. Schizophrenia Research, 122, 232-238.

Cook, T.M. & Wang, J.L. (2010). Descriptive epidemiology of stigma against depression in a general population sample in Alberta. BioMed Central Psychiatry, 10, 29.

Holmes, E.P., Corrigan, P.W., Williams, P., Canar, J. & Kubiak, M.A. (1999). Changing Attitudes About Schizophrenia. Schizophrenia Bulletin, 25(3), 447-456.

Link, B.G. (1987). Understanding Labeling Effects in the Area of Mental Disorders: An Assessment of Expectations of Rejection. American Sociological Review, 52(1), 96-112.

Link, B.G. & Cullen, F.T. (1983). Reconsidering the Social Rejection of Ex-Mental Patients: Levels of Attitudinal Response. American Journal of Community Psychology, 11(3), 261-273.

Link, B.G., Yang, L.H., Phelan, J.C., & Collins, P.Y. (2004). Measuring Mental Illness Stigma. Schizophrenia Bulletin, 30(3), 511-541.

Patten, S.B., Wang, J.L., Williams, J.A., Currie, S., Beck, C.A., Maxwell, C.J., & el-Guebaly, N. (2006). Descriptive Epidemiology of Major Depression in Canada. Canadian Journal of Psychiatry, 51(2), 84-90.

Statistics Canada. Canadian Community Health Survey – Annual Component (CCHS) [Internet]. Ottawa: Statistics Canada; 2012 November 27 [cited 2013 January 14]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226&lang=en&db=imdb&adm=8&dis=2.

Statistics Canada. Canadian Community Health Survey (CCHS) Rapid response on Stigma and Mental Health complement to the user guide. Ottawa: Statistics Canada; 2010 October.

Statistics Canada. Health Profile – Confidence intervals and statistical significance flags available in download options [Internet]. Ottawa: Statistics Canada; 2014 April 15 [cited 2014 August 22]. Available from: http://www12.statcan.gc.ca/health-sante/82-228/help-aide/DQ-QD01.cfm?Lang=E.

Statistics Canada. Labour Force Survey [Internet]. Ottawa: Statistics Canada; 2013 August 8 [cited 2013 August 24]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3701&Item_Id=103716&lang=en#b3.

Thompson, A.H., Stuart, H., Bland, R.C., Arboleda-Florez, J., Warner, R., & Disckson, R.A. (2002). Attitudes about schizophrenia from the pilot site of the WPA worldwide campaign against the stigma of schizophrenia. Social Psychiatry and Psychiatric Epidemiology, 37, 475-482.

Tavakol, M. & Dennick, R. (2011). Making Sense of Cronbach's Alpha. International Journal of Medical Education, 2, 53-55.

Webb, P. & Bain, C. (2011). Essential Epidemiology: An Introduction for Students and Health Professionals, Second Edition. Cambridge, UK: Cambridge.

Williams, R.A. (2007). Generalized Ordered Logit/Probit Proportional Odds Models for Ordinal Dependent Variables. The Stata Journal, 6(1), 58-82.

# Chapter 4

# Results

Table 1 shows the descriptive characteristics of the sample. Weighted percentages are shown with the corresponding coefficients of variation. Coefficients of variation in all tables are under the cut point for an acceptable estimate (<16.5) unless indicated with a * or **. A * indicates a marginal estimate with high sampling variability. A ** indicates that these estimates do not meet Statistics Canada's quality standards and conclusions based on these data will be unreliable, and most likely invalid. The table shows characteristics by sex. This was consistent with previous stigma literature (Cook & Wang, 2010; Jones, Cook & Wang, 2011).

The sample contained approximately 50% males and 50% females. Age was somewhat equally distributed between the seven groups. There was 10%-18% of the sample in each group. The majority of the sample (58%) was married or common-law. There were more single males than females and more separated, divorced or widowed females than males. The distribution of ethnic background was similar for both males and females, with approximately 80% of the sample being white. Income was distributed approximately equally across the 5 groups over all. However, there were more females in the lowest income group and more males in the highest income group. Education was also approximately equally distributed across the four groups. The majority of the sample was employed in the last 12 months (69%). Only 21% of the sample was not employed in the last 12 months, leaving 10% of the sample that were ineligible for employment. There were more males employed in the last year than females (73% and 63%, respectively). There were approximately equal males and females who were ineligible for employment. The majority of the sample rated their general health and mental health as excellent or very good (60% and 74%, respectively). A high percentage of the sample had some contact with someone with emotional or mental health issues (64%), more females than males (69% vs. 58%, respectively). The percent of females who reported that they had personally experienced emotional or mental health issues was higher than males (21% and 11%, respectively) and this was expected (Statistics Canada Table 105-1101, 2013). About 35% of the sample stated they had a family member with emotional or mental health issues. As well, 35% of the sample stated they had a friend with emotional or mental health issues. There was also 35% of the sample that stated they had a co-worker with emotional or mental health issues. Each individual could state that they had multiple types of contact so these percents will not add to 100%. Overall, 65% of the sample had at least one type of contact with someone with emotional or mental health issues (36% did not).

**Table 1.** Characteristics of the sample. Weighted percentages (with coefficients of variation) are shown.

| | Variable | Males | Females | Total |
|---|---|---|---|---|
| Sex | Males | | | 49.2% (0.1) |
| | Females | | | 50.8% (0.5) |
| Age | <20 | 12.0% (0.2) | 11.1% (0.2) | 11.5% (2.8e-06) |
| | 20-29 | 16.2% (0.6) | 15.6% (0.6) | 15.9% (2.6e-06) |
| | 30-39 | 15.4% (3.9) | 15.1% (3.8) | 15.2% (2.7) |
| | 40-49 | 18.2% (5.3) | 18.3% (5.0) | 18.3% (3.5) |
| | 50-59 | 16.5% (4.6) | 16.8% (3.9) | 16.6% (3.0) |
| | 60-69 | 12.0% (5.2) | 11.8% (4.7) | 11.9% (3.6) |
| | 70+ | 9.7% (3.1) | 11.4% (2.5) | 10.5% (1.9) |
| Marital Status | Married or Common-Law | 59.9% (1.4) | 56.4% (1.5) | 58.1% (1.0) |
| | Separated, Divorced, or Widowed | 8.8% (6.7) | 15.8% (4.1) | 12.4% (3.6) |
| | Single | 31.4% (2.1) | 27.7% (2.3) | 29.5% (1.4) |
| Ethnic | White | 79.4% (1.4) | 78.7% (1.3) | 79.0% (1.0) |

| | | | | |
|---|---|---|---|---|
| Background | Other | 20.6% (5.2) | 21.3% (4.8) | 21.0% (3.7) |
| Income | <30k | 13.5% (5.9) | 20.1% (5.0) | 16.7% (3.9) |
| | 30k to 50k | 16.8% (5.0) | 18.4% (4.3) | 17.6% (3.2) |
| | 50k to 70k | 18.8% (5.4) | 17.0% (5.7) | 17.9% (3.9) |
| | 70k to 100k | 18.4% (5.4) | 19.6% (5.1) | 19.0% (3.7) |
| | 100k+ | 32.6% (3.8) | 25.0% (4.4) | 28.9% (3.0) |
| Education | < High school | 30.0% (3.2) | 26.0% (3.2) | 28.0% (2.3) |
| | High school | 22.4% (4.4) | 23.5% (4.0) | 22.9% (3.0) |
| | College | 26.8% (3.9) | 30.4% (3.3) | 28.6% (2.6) |
| | University | 20.9% (4.7) | 20.1% (4.4) | 20.5% (3.3) |
| Employment in the Last 12 Months | Yes | 73.8% (1.0) | 63.7% (1.3) | 68.7% (0.8) |
| | No | 16.8% (4.5) | 24.6% (3.5) | 20.8% (2.8) |
| | Not Applicable | 9.4% (4.3) | 11.7% (3.6) | 10.6% (2.8) |
| Self-Reported General Health | Excellent/Very Good | 59.2% (1.9) | 59.8% (1.7) | 59.5% (1.3) |
| | Good | 29.2% (3.5) | 26.9% (3.5) | 28.1% (2.5) |
| | Fair/Poor | 11.6% (5.8) | 13.3% (4.8) | 12.5% (3.8) |
| Self-Reported Mental Health | Excellent/Very Good | 74.8% (1.4) | 72.3% (1.4) | 73.5% (1.0) |
| | Good | 19.8% (4.6) | 21.5% (4.4) | 20.7% (3.1) |
| | Fair/Poor | 5.5% (9.5) | 6.2% (8.7) | 5.8% (5.9) |
| Type of Contact | **Co-worker** | | | |
| | Yes | 36.2% (3.2) | 41.4% (2.7) | 38.8% (2.1) |
| | No | 63.8% (1.8) | 58.6% (1.9) | 61.2% (1.3) |
| | **Friend** | | | |
| | Yes | 28.7% (3.5) | 40.0% (2.7) | 34.5% (2.2) |
| | No | 71.3% (1.4) | 60.0% (1.8) | 65.6% (1.1) |
| | **Family Member** | | | |
| | Yes | 33.6% (3.5) | 39.9% (2.6) | 36.8% (2.2) |
| | No | 66.4% (1.8) | 60.1% (1.7) | 63.2% (1.3) |
| | **Self** | | | |
| | Yes | 11.2% (6.2) | 21.6% (4.2) | 16.5% (3.4) |
| | No | 88.8% (0.8) | 78.4% (1.1) | 83.5% (0.7) |
| Any Contact | Yes | 58.3% (2.1) | 68.6% (1.6) | 63.5% (1.3) |
| | No | 41.7% (2.9) | 31.4% (3.5) | 36.5% (2.3) |
| Total Contacts | 0 | 41.7% (2.9) | 31.4% (3.5) | 36.5% (2.3) |

| | | | | |
|---|---|---|---|---|
| | 1 | 25.2% (4.5) | 23.6% (3.9) | 24.4% (2.9) |
| | 2 | 18.4% (4.5) | 23.5% (3.8) | 21.0% (3.0) |
| | 3 or 4 | 14.7% (5.8) | 21.5% (4.1) | 18.2% (3.4) |
| Most Intimate Contact | Self | 11.1% (6.3) | 21.6% (4.2) | 16.4% (3.4) |
| | Family Member | 26.2% (4.0) | 25.9% (3.4) | 26.0% (2.7) |
| | Friend | 11.6% (6.1) | 14.3% (5.3) | 12.9% (3.9) |
| | Co-worker | 9.5% (7.7) | 6.8% (6.9) | 8.1% (5.6) |
| | No Contact | 41.7% (2.9) | 31.4% (3.5) | 36.5% (2.3) |
| Stigma Towards People with Depression | **Most people you know would willingly accept someone who has depression as a close friend.** | | | |
| | Strongly Agree | 2.6% (15.1) | 2.9% (13.3) | 2.8% (10.3) |
| | Agree | 17.2% (5.3) | 1.7% (5.2) | 17.2% (3.8) |
| | Neither Agree nor Disagree | 16.9% (5.4) | 13.2% (5.4) | 15.0% (3.8) |
| | Disagree | 48.8% (2.6) | 49.8% (2.2) | 49.3% (1.7) |
| | Strongly Disagree | 14.5% (5.4) | 16.9% (4.8) | 15.7% (3.7) |
| | **Most people you know believe that someone who has had depression is not trustworthy.** | | | |
| | Strongly Agree | 1.0% (26.2*) | 1.0% (21.1*) | 1.0% (17.8*) |
| | Agree | 10.8% (7.2) | 8.3% (7.9) | 9.5% (5.1) |
| | Neither Agree nor Disagree | 11.4% (6.9) | 10.3% (7.5) | 10.8% (5.3) |
| | Disagree | 59.6% (2.0) | 59.0% (1.8) | 59.3% (1.4) |
| | Strongly Disagree | 17.2% (5.1) | 21.5% (4.4) | 19.3% (3.5) |
| | **Most people you know think less of a person who has had depression.** | | | |

| | | | | |
|---|---|---|---|---|
| | Strongly Agree | 1.5% (20.7*) | 2.3% (14.4) | 1.9% (11.9) |
| | Agree | 18.1% (4.8) | 17.5% (4.9) | 17.8% (3.5) |
| | Neither Agree nor Disagree | 13.3% (6.8) | 9.9% (6.7) | 11.6% (4.9) |
| | Disagree | 54.1% (2.2) | 54.2% (2.0) | 54.2% (1.6) |
| | Strongly Disagree | 13.0% (6.3) | 16.1% (5.3) | 14.6% (4.1) |
| | **Most employers would not consider an application from someone who has had depression.** | | | |
| | Strongly Agree | 4.9% (11.9) | 4.8% (10.8) | 4.8% (8.1) |
| | Agree | 33.8% (3.1) | 32.9% (3.3) | 33.4% (2.3) |
| | Neither Agree nor Disagree | 21.3% (4.5) | 23.8% (4.1) | 22.5% (2.4) |
| | Disagree | 33.3% (3.3) | 32.0% (3.4) | 32.7% (2.4) |
| | Strongly Disagree | 6.7% (9.6) | 6.6% (8.6) | 6.6% (6.8) |
| | **Most people you know would be reluctant to date someone who has had depression.** | | | |
| | Strongly Agree | 3.4% (13.5) | 3.5% (12.5) | 3.4% (9.3) |
| | Agree | 30.9% (3.5) | 29.7% (3.1) | 30.3% (2.3) |
| | Neither Agree nor Disagree | 19.9% (5.0) | 20.3% (4.9) | 20.1% (3.4) |
| | Disagree | 39.1% (3.1) | 38.6% (2.8) | 38.9% (2.1) |
| | Strongly Disagree | 6.8% (8.4) | 7.9% (8.2) | 7.3% (6.1) |
| | **Once they know a person has had depression, most people would take their opinions less seriously.** | | | |
| | Strongly Agree | 1.8% (18.9*) | 2.1% (15.9) | 2.0% (12.9) |

| | | | | |
|---|---|---|---|---|
| | Agree | 24.5% (4.1) | 21.0% (4.3) | 22.7% (3.0) |
| | Neither Agree nor Disagree | 14.6% (5.8) | 13.3% (5.9) | 14.0% (4.2) |
| | Disagree | 51.4% (2.3) | 50.7% (2.4) | 51.1% (1.7) |
| | Strongly Disagree | 7.7% (7.7) | 12.9% (6.6) | 10.3% (5.5) |

* Indicates a marginal estimate. There is high sampling variability associated with the estimates.

Tables 2, 3 and 4 show the results from the stratified analyses. The results are shown for stigma groups 1 (with groups 2 & 3 as the reference) and 3 (with groups 1 & 2 as the reference). Results for stigma group 2 are not shown because combining groups 1 & 3 for a reference did not seem appropriate as these groups were likely quite different. For ease of presentation, only covariates with statistically significant results in at least one stigma group are included in this chapter. The complete tables with all covariates can be found in Appendix B. The percentages do not add to 100% across the rows because the results for stigma group 2 were removed. The tables were too large to fit on the page in any other format. Test statistics and p-values are shown for each stigma group for each covariate. The test statistic and p-value for stigma group 1 is the result of a logistic regression comparing those who scored in stigma group 1 to those in stigma group 2 & 3 with the only independent variable being any contact (Table 2, below and in Appendix B), total number of types of contact (Table 3, below and in Appendix B), or most intimate form of contact (Table 4, below and in Appendix B). Similarly, the test statistic and p-value for stigma group 3 is the result of a logistic regression comparing those who scored in stigma group 3 to those in stigma group 1 & 2 with the only independent variable being any contact (Table 2), total number of types of contact (Table 3), or most intimate form of contact (Table 4).

Table 2 (below) shows the significant results from the stratified analysis looking at the relationship between any contact with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression.

**Table 2**. Results from the stratified analysis comparing weighted percentage of people (with coefficient of variation) who had any contact versus no contact. Test-statistics and p-values are the results of a logistic regression with the dependent variable as scoring in stigma group 1 (with stigma groups 2 and 3 as the reference) or 3 (with stigma groups 1 and 2 as the reference), and the only independent variable as any contact.

| | Any Contact | Stigma Group 1 (Low Expectation of Negative Public Attitudes) | Stigma 3 (High Expectation of Negative Public Attitudes) |
|---|---|---|---|
| Unstratified | No | 26.7% (4.9) | 34.4% (4.5) |
| | Yes | 30.8% (3.1) | 28.9% (3.3) |
| | T-Statistic | 2.50 | -3.09 |
| | P-value | **0.01** | **<0.01** |
| Female | No | 26.9% (7.3) | 33.4% (6.6) |
| | Yes | 32.6% (3.9) | 33.4% (6.6) |
| | T-Statistic | 2.45 | -2.62 |
| | P-value | **0.02** | **0.01** |
| Age <20 | No | 29.8% (8.7) | 31.1% (9.0) |
| | Yes | 33.2% (8.5) | 22.0% (12.2) |
| | T-Statistic | 0.88 | -2.28 |
| | P-value | 0.38 | **0.02** |
| Age 20-29 | No | 26.6% (10.9) | 36.2% (9.7) |
| | Yes | 33.6% (6.4) | 18.4% (10.3) |
| | T-Statistic | 1.90 | -4.45 |
| | P-value | 0.06 | **<0.01** |
| Age 40-49 | No | 20.9% (15.3) | 32.0% (12.9) |
| | Yes | 29.1% (8.4) | 37.5% (6.9) |
| | T-Statistic | 1.91 | 1.09 |
| | P-value | 0.06 | 0.28 |
| Age 60-69 | No | 21.4% (15.9) | 37.1% (12.1) |
| | Yes | 33.4% (6.4) | 28.1% (7.1) |
| | T-Statistic | 2.78 | -1.89 |

| | | | |
|---|---|---|---|
| | P-value | **0.01** | 0.06 |
| Marital Status - Single | No | 27.0% (7.1) | 36.0% (6.8) |
| | Yes | 28.3% (5.5) | 22.9% (6.7) |
| | T-Statistic | 0.51 | -4.67 |
| | P-value | 0.61 | **<0.01** |
| Annual Household Income of 30 to 50k | No | 22.0% (12.4) | 39.8% (8.8) |
| | Yes | 33.4% (7.1) | 28.1% (7.6) |
| | T-Statistic | 3.03 | -2.94 |
| | P-value | **<0.01** | **<0.01** |
| <High School Education | No | 30.6% (7.0) | 36.9% (6.4) |
| | Yes | 27.6% (6.3) | 30.2% (6.5) |
| | T-Statistic | -1.12 | -2.23 |
| | P-value | 0.26 | **0.03** |
| College Education | No | 24.0% (10.2) | 31.4% (9.5) |
| | Yes | 33.4% (5.2) | 29.5% (5.9) |
| | T-Statistic | 2.93 | -0.57 |
| | P-value | **<0.01** | 0.57 |
| University Education | No | 23.8% (13.7) | 40.5% (8.7) |
| | Yes | 30.6% (6.2) | 31.1% (6.8) |
| | T-Statistic | 1.72 | -2.25 |
| | P-value | 0.09 | **0.03** |
| Not Employed in Last 12 Months | No | 26.5% (10.0) | 36.8% (7.3) |
| | Yes | 31.9% (6.0) | 28.8% (6.4) |
| | T-Statistic | 1.52 | -2.50 |
| | P-value | 0.13 | **0.01** |
| Self-Rated General Health Excellent or Very Good | No | 28.4% (6.1) | 33.8% (5.5) |
| | Yes | 33.3% (3.7) | 26.4% (4.5) |
| | T-Statistic | 2.36 | -3.42 |
| | P-value | **0.02** | **<0.01** |
| Self-Rated General Health Good | No | 21.6% (10.2) | 33.3% (8.4) |
| | Yes | 28.2% (5.4) | 32.0% (5.8) |
| | T-Statistic | 2.30 | -0.37 |
| | P-value | **0.02** | 0.72 |
| Self-Rated General | No | 30.8% (13.5) | 40.6% (10.0) |

| | | | |
|---|---|---|---|
| Health Fair or Poor | Yes | 23.4% (9.7) | 35.3% (7.5) |
| | T-Statistic | -1.56 | -1.13 |
| | P-value | 0.12 | 0.26 |
| Self-Rated Mental Health Excellent or Very Good | No | 27.0% (5.6) | 33.1% (5.6) |
| | Yes | 32.0% (3.5) | 27.2% (4.1) |
| | T-Statistic | 2.65 | -2.82 |
| | P-value | **0.01** | **0.01** |
| Self-Rated Mental Health Good | No | 24.4% (12.0) | 39.7% (7.7) |
| | Yes | 27.2% (7.1) | 30.6% (6.3) |
| | T-Statistic | 0.78 | -2.49 |
| | P-value | 0.44 | **0.01** |

Looking at those who scored in stigma group 1 (score of 6 to 12, low expectation of negative public attitudes toward people with depression), there was a significant difference between the percentage of people in group 1 who had any contact versus no contact (31% versus 27% respectively) overall. People were significantly more likely to report having prior contact with someone with a mental illness if they were aged 60-69, had an income of 30-50k, had a college education, rated their general health as excellent or very good or good, and rated their mental health as excellent.

Looking at those who scored in stigma group 3 (score of 18 to 30, high expectation of negative public attitudes toward people with depression), overall there were significantly more people with no contact with a person with emotional or mental health issues than people with contact. Significant results were found if respondents were: female, under 20 or 20-29 years of age, single, had an income of 30 to 50k, had less than a high school or a university education, those in excellent or very good general health, and those in excellent, very good, or good mental health.

Table 3 shows the results from the stratified analysis looking at the relationship between total number of types of contact with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression.

**Table 3**. Results from the stratified analysis comparing weighted percentage of people (with coefficient of variation) who had differing number of types of contact. Test-statistics and p-values are the results of a logistic regression with the dependent variable as scoring in stigma group 1 (with stigma groups 2 and 3 as the reference) or 3 (with stigma groups 1 and 2 as the reference), and the only independent variable as total contacts.

| | Total Number of Types of Contact | Stigma Group 1 (Low Expectation of Negative Public Attitudes) | Stigma 3 (High Expectation of Negative Public Attitudes) |
|---|---|---|---|
| Unstratified | 0 | 26.7% (4.9) | 34.4% (4.5) |
| | 1 | 29.5% (5.3) | 30.0% (2.3) |
| | 2 | 30.2% (5.5) | 27.0% (2.3) |
| | 3/4 | 33.4% (5.3) | 29.6% (2.3) |
| | T-Statistic | 3.12 | -2.82 |
| | P-value | **<0.01** | **0.01** |
| Female | 0 | 26.9% (7.3) | 33.4% (6.6) |
| | 1 | 31.4% (6.5) | 27.3% (7.8) |
| | 2 | 31.0% (7.3) | 23.5% (8.5) |
| | 3/4 | 35.6% (5.8) | 31.3% (6.6) |
| | T-Statistic | 2.98 | -1.42 |
| | P-value | **<0.01** | 0.16 |
| Age 20-29 | 0 | 26.6% (10.9) | 36.2% (9.7) |
| | 1 | 30.7% (10.8) | 17.8% (18.3*) |
| | 2 | 36.5% (10.0) | 14.7% (17.8*) |
| | 3/4 | 34.1% (11.2) | 23.6% (15.7) |
| | T-Statistic | 2.10 | -3.15 |
| | P-value | **0.04** | **<0.01** |
| Age 40-49 | 0 | 20.9% (15.3) | 32.0% (12.9) |

| | | | |
|---|---|---|---|
| | 1 | 28.7% (15.6) | 41.5% (12.2) |
| | 2 | 25.8% (14.9) | 35.2% (11.7) |
| | 3/4 | 33.5% (12.0) | 35.7% (10.8) |
| | T-Statistic | 2.13 | 0.28 |
| | P-value | **0.03** | 0.78 |
| Age 60-69 | 0 | 21.4% (15.9) | 37.1% (12.1) |
| | 1 | 30.8% (12.3) | 28.2% (12.1) |
| | 2 | 34.9% (10.7) | 26.5% (13.3) |
| | 3/4 | 35.3% (10.1) | 29.6% (11.8) |
| | T-Statistic | 2.95 | -1.50 |
| | P-value | **<0.01** | 0.13 |
| Marital Status – Married or Common-Law | 0 | 26.8% (7.5) | 33.1% (6.3) |
| | 1 | 31.2% (7.3) | 32.1% (7.3) |
| | 2 | 30.7% (6.8) | 31.2% (7.2) |
| | 3/4 | 33.8% (7.2) | 29.6% (7.2) |
| | T-Statistic | 2.18 | -1.18 |
| | P-value | **0.03** | 0.24 |
| Marital Status – Separated, Divorced or Widowed | 0 | 24.5% (12.4) | 35.1% (9.7) |
| | 1 | 25.7% (12.6) | 33.5% (10.4) |
| | 2 | 29.4% (14.2) | 25.6% (17.1) |
| | 3/4 | 39.6% (12.7) | 33.3% (13.2) |
| | T-Statistic | 2.74 | -0.75 |
| | P-value | **0.01** | 0.45 |
| Marital Status - Single | 0 | 27.0% (7.1) | 36.0% (6.8) |
| | 1 | 27.5% (8.6) | 24.4% (10.0) |
| | 2 | 29.3% (9.3) | 17.9% (13.8) |
| | 3/4 | 28.1% (9.3) | 27.0% (11.2) |
| | T-Statistic | 0.59 | -3.62 |
| | P-value | 0.55 | **<0.01** |
| Ethnic Background - White | 0 | 29.7% (5.1) | 29.4% (5.4) |
| | 1 | 29.2% (5.5) | 28.1% (5.7) |
| | 2 | 32.0% (5.6) | 25.6% (6.8) |
| | 3/4 | 34.2% (5.3) | 27.3% (5.7) |
| | T-Statistic | 2.18 | -1.36 |

| | | | |
|---|---|---|---|
| | P-value | **0.03** | 0.18 |
| Annual Household Income of 30 to 50k | 0 | 22.0% (12.4) | 39.8% (8.8) |
| | 1 | 29.5% (12.3) | 30.4% (12.9) |
| | 2 | 35.9% (12.2) | 23.2% (15.4) |
| | 3/4 | 34.6% (13.0) | 31.0% (11.7) |
| | T-Statistic | 2.95 | -2.44 |
| | P-value | **<0.01** | **0.02** |
| Annual Household Income of 50 to 70k | 0 | 27.9% (14.1) | 33.0% (13.5) |
| | 1 | 25.1% (16.3) | 32.8% (15.3) |
| | 2 | 30.1% (12.5) | 27.6% (14.2) |
| | 3/4 | 39.5% (13.6) | 21.0% (15.4) |
| | T-Statistic | 1.62 | -2.09 |
| | P-value | 0.11 | **0.04** |
| <High School Education | 0 | 30.6% (7.0) | 36.9% (6.4) |
| | 1 | 28.8% (9.4) | 33.1% (8.6) |
| | 2 | 24.7% (12.2) | 24.2% (12.0) |
| | 3/4 | 29.0% (13.6) | 32.3% (13.0) |
| | T-Statistic | -1.06 | -2.37 |
| | P-value | 0.29 | **0.02** |
| High School Education | 0 | 25.0% (9.8) | 29.9% (9.2) |
| | 1 | 26.3% (11.1) | 27.7% (11.7) |
| | 2 | 33.6% (9.7) | 20.2% (13.2) |
| | 3/4 | 33.0% (13.4) | 25.4% (13.9) |
| | T-Statistic | 2.14 | -1.66 |
| | P-value | **0.03** | 0.10 |
| College Education | 0 | 24.0% (10.2) | 31.4% (9.5) |
| | 1 | 34.8% (9.1) | 26.6% (11.2) |
| | 2 | 31.9% (9.9) | 31.1% (9.8) |
| | 3/4 | 33.5% (8.6) | 30.8% (9.0) |
| | T-Statistic | 2.27 | 0.15 |
| | P-value | **0.02** | 0.88 |
| University Education | 0 | 23.84% (13.7) | 40.5% (8.7) |
| | 1 | 26.14% (12.2) | 33.6% (11.6) |
| | 2 | 28.95% (9.7) | 29.8% (12.2) |

| | | | |
|---|---|---|---|
| | 3/4 | 36.09% (9.7) | 30.1% (10.0) |
| | T-Statistic | 2.64 | -2.35 |
| | P-value | **0.01** | **0.02** |
| Employed in Last 12 Months | 0 | 27.1% (6.2) | 33.1% (5.8) |
| | 1 | 29.3% (6.7) | 29.9% (7.1) |
| | 2 | 29.6% (6.5) | 28.0% (7.2) |
| | 3/4 | 34.4% (6.0) | 27.9% (6.4) |
| | T-Statistic | 2.70 | -2.20 |
| | P-value | **0.01** | **0.03** |
| Self-Rated General Health Excellent or Very Good | 0 | 28.4% (6.1) | 33.8% (5.5) |
| | 1 | 30.7% (6.4) | 27.6% (6.9) |
| | 2 | 32.9% (6.5) | 25.5% (7.8) |
| | 3/4 | 37.4% (6.5) | 25.8% (8.2) |
| | T-Statistic | 3.29 | -3.21 |
| | P-value | **<0.01** | **<0.01** |
| Self-Rated Mental Health Excellent or Very Good | 0 | 27.0% (5.6) | 33.1% (5.6) |
| | 1 | 29.2% (6.0) | 29.1% (6.3) |
| | 2 | 32.8% (6.0) | 26.3% (7.4) |
| | 3/4 | 35.3% (6.4) | 25.4% (7.5) |
| | T-Statistic | 3.57 | -3.22 |
| | P-value | **<0.01** | **<0.01** |

* Indicates a marginal estimate. There is high sampling variability associated with the estimates.

Looking at those who scored in stigma group 1 (score of 6 to 12, low expectation of negative public attitudes toward people with depression), there was a significant difference in percentage of people who fell into each category of total number of contacts overall. The proportion of people in each contact group grew incrementally (in a dose-response pattern) from lowest (in the lowest contact group) to the highest (in the group with 3/4 contacts). A similar pattern was found amongst the following groups: females, people who were aged 40-49 and 60-69, married or common-law, separated, divorced, or widowed, had a university education, were employed in the last year, and had excellent or very good general and mental health. Significant results were also found in the following groups, but the ranking of percentages of people in each of the total contact categories varied: people who were aged 20-29, white, had an annual household income of 30 to 50k, had a high school or college education.

Looking at those who scored in stigma group 3 (score of 18 to 30, high expectation of negative public attitudes toward people with depression), overall there were significantly more people with no contact with a person with emotional or mental health issues than people with contact (1, 2, or 3/4 contacts). Of the 10 significant relationships identified, all but one indicated that there were higher percentages of people in the no contact category than any of the other contact categories. This was found for the following variables: people who were aged 20-29, single, had an annual household income of 30 to 50k or 50-70k, had less than a high school education or a university education, were employed in the last 12 months, had excellent or very good general or mental health. There was a significant difference in the percentage of males who were in each of the total contact categories; however, the highest percentage of men had 1 contact.

Table 4 shows the results from the stratified analysis looking at the relationship between most intimate form of contact with a person with emotional or mental health problems and an expectation of negative public attitudes toward people with depression.

**Table 4**. Results from the stratified analysis comparing weighted percentage of people (with coefficient of variation) who had differing most intimate types of contact. Test-statistics and p-values are the results of a logistic regression with the dependent variable as scoring in stigma group 1 (with stigma groups 2 and 3 as the reference) or 3 (with stigma groups 1 and 2 as the reference), and the only independent variable as most intimate contact.

| | Most Intimate Form of Contact | Stigma Group 1 (Low Expectation of Negative Public | Stigma 3 (High Expectation of Negative Public |
|---|---|---|---|

| | | Attitudes) | Attitudes) |
|---|---|---|---|
| Unstratified | Self | 32.6% (5.7) | 31.5% (5.7) |
| | Family Member | 30.2% (5.2) | 28.1% (5.4) |
| | Friend | 31.1% (6.4) | 25.4% (7.8) |
| | Co-worker | 28.9% (9.8) | 31.5% (8.9) |
| | No Contact | 26.7% (4.9) | 34.4% (4.5) |
| | T-Statistic | -2.69 | 2.39 |
| | P-value | **0.01** | **0.02** |
| Female | Self | 32.9% (6.8) | 31.0% (7.0) |
| | Family Member | 32.5% (6.6) | 24.8% (8.0) |
| | Friend | 33.1% (8.2) | 24.5% (10.6) |
| | Co-worker | 30.7% (12.3) | 30.6% (12.7) |
| | No Contact | 26.9% (7.3) | 33.4% (6.6) |
| | T-Statistic | -2.36 | 1.87 |
| | P-value | **0.02** | 0.06 |
| Age <20 | Self | 48.2% (15.7) | 16.0% (29.8*) |
| | Family Member | 30.6% (15.0) | 21.3% (20.6*) |
| | Friend | 35.3% (12.3) | 24.5% (19.1*) |
| | Co-worker | 18.0% (37.7**) | 22.6% (26.5*) |
| | No Contact | 29.8% (8.7) | 31.1% (9.0) |
| | T-Statistic | -1.74 | 2.42 |
| | P-value | 0.08 | **0.02** |
| Age 20-29 | Self | 41.1% (10.6) | 21.3% (17.5*) |
| | Family Member | 29.4% (11.4) | 17.5% (17.1*) |
| | Friend | 31.9% (13.5) | 12.8% (24.0*) |
| | Co-worker | 34.6% (16.2) | 27.5% (26.5*) |
| | No Contact | 26.6% (10.9) | 36.2% (9.7) |
| | T-Statistic | -2.16 | 3.94 |
| | P-value | **0.03** | **<0.01** |
| Age 40-49 | Self | 23.1% (14.0) | 44.6% (9.3) |
| | Family Member | 30.3% (13.2) | 37.1% (11.4) |
| | Friend | 24.7% (19.2*) | 37.0% (16.2) |
| | Co-worker | 44.7% (17.7*) | 23.5% (23.4*) |
| | No Contact | 20.9% (15.3) | 32.0% (12.9) |

| | | | |
|---|---|---|---|
| | T-Statistic | -0.26 | -2.33 |
| | P-value | 0.79 | **0.02** |
| Age 60-69 | Self | 37.7% (11.4) | 29.3% (12.8) |
| | Family Member | 32.6% (9.7) | 27.6% (11.6) |
| | Friend | 39.3% (14.8) | 21.1% (18.3*) |
| | Co-worker | 22.2% (22.8*) | 35.1% (19.1*) |
| | No Contact | 21.4% (15.9) | 37.1% (12.1) |
| | T-Statistic | -3.22 | 1.77 |
| | P-value | **<0.01** | 0.08 |
| Age 70+ | Self | 35.5% (16.0) | 30.0% (15.3) |
| | Family Member | 28.3% (12.8) | 31.0% (11.1) |
| | Friend | 18.6% (22.0*) | 34.5% (14.0) |
| | Co-worker | 24.8% (23.9*) | 38.4% (18.4*) |
| | No Contact | 24.2% (10.1) | 39.6% (7.5) |
| | T-Statistic | -1.61 | 2.18 |
| | P-value | 0.11 | **0.03** |
| Marital Status - Separated, Divorced or Widowed | Self | 38.5% (11.0) | 32.1% (11.4) |
| | Family Member | 29.8% (13.9) | 28.3% (15.1) |
| | Friend | 28.3% (21.1*) | 26.9% (17.8*) |
| | Co-worker | 22.1% (24.3*) | 42.0% (17.5*) |
| | No Contact | 24.5% (12.4) | 35.1% (9.7) |
| | T-stat | -2.69 | 1.21 |
| | P-value | **0.01** | 0.23 |
| Marital Status - Single | Self | 32.2% (9.5) | 27.0% (11.9) |
| | Family Member | 27.7% (10.0) | 19.6% (12.6) |
| | Friend | 28.5% (9.9) | 20.9% (12.9) |
| | Co-worker | 21.1% (19.6*) | 29.0% (16.4) |
| | No Contact | 27.0% (7.1) | 36.0% (6.8) |
| | T-Statistic | -1.30 | 4.02 |
| | P-value | 0.19 | **<0.01** |
| Annual Household Income of 30 to 50k | Self | 33.6% (11.9) | 36.7% (11.6) |
| | Family Member | 35.2% (11.0) | 21.8% (14.0) |
| | Friend | 36.5% (16.5*) | 22.8% (20.1*) |
| | Co-worker | 19.5% (25.2*) | 37.6% (18.4*) |

| | | | |
|---|---|---|---|
| | No Contact | 22.0% (12.4) | 39.8% (8.8) |
| | T-Statistic | -3.33 | 2.24 |
| | P-value | **<0.01** | **0.03** |
| <High School Education | Self | 29.8% (12.8) | 28.4% (12.2) |
| | Family Member | 25.4% (10.4) | 31.9% (11.3) |
| | Friend | 32.7% (11.7) | 25.6% (12.9) |
| | Co-worker | 20.7% (21.4*) | 36.4% (14.5) |
| | No Contact | 30.6% (7.0) | 36.9% (6.4) |
| | T-Statistic | 0.71 | 2.17 |
| | P-value | 0.48 | **0.03** |
| High School Education | Self | 34.0% (12.8) | 24.3% (13.4) |
| | Family Member | 29.2% (10.4) | 24.5% (13.0) |
| | Friend | 33.5% (13.2) | 20.5% (17.3*) |
| | Co-worker | 22.6% (25.5*) | 32.3% (19.3*) |
| | No Contact | 25.0% (9.8) | 29.9% (9.2) |
| | T-Statistic | -2.04 | 1.75 |
| | P-value | **0.04** | 0.08 |
| College Education | Self | 31.5% (9.1) | 35.4% (9.5) |
| | Family Member | 34.4% (8.9) | 27.2% (9.5) |
| | Friend | 33.0% (11.2) | 25.5% (14.1) |
| | Co-worker | 34.8% (15.5) | 29.5% (18.5*) |
| | No Contact | 24.0% (10.2) | 31.4% (9.5) |
| | T-Statistic | -2.26 | -0.27 |
| | P-value | **0.02** | 0.79 |
| University Education | Self | 36.1% (10.9) | 35.7% (10.9) |
| | Family Member | 29.6% (11.0) | 29.7% (11.0) |
| | Friend | 25.5% (12.9) | 29.6% (16.8*) |
| | Co-worker | 32.4% (16.2) | 29.7% (17.7*) |
| | No Contact | 23.8% (13.7) | 40.5% (8.7) |
| | T-Statistic | -2.11 | 1.47 |
| | P-value | **0.04** | 0.14 |
| Self-Rated General Health Excellent or Very Good | Self | 36.0% (7.5) | 27.1% (9.2) |
| | Family Member | 33.6% (6.0) | 26.3% (6.8) |
| | Friend | 31.4% (8.2) | 22.6% (10.8) |

| | | | |
|---|---|---|---|
| | Co-worker | 31.2% (11.1) | 31.5% (11.0) |
| | No Contact | 28.4% (6.1) | 33.8% (5.5) |
| | T-Statistic | -2.78 | 3.15 |
| | P-value | **0.01** | **<0.01** |
| Self-Rated General Health Good | Self | 33.4% (8.5) | 33.0% (8.5) |
| | Family Member | 21.2% (10.1) | 32.5% (10.1) |
| | Friend | 34.8% (10.9) | 29.9% (13.2) |
| | Co-worker | 27.2% (19.9*) | 31.0% (15.1) |
| | No Contact | 21.6% (10.2) | 33.3% (8.4) |
| | T-Statistic | -2.23 | 0.11 |
| | P-value | **0.03** | 0.92 |
| Self-Rated Mental Health Excellent or Very Good | Self | 36.7% (7.0) | 24.4% (9.3) |
| | Family Member | 31.4% (5.6) | 28.3% (6.2) |
| | Friend | 31.2% (7.2) | 24.3% (9.2) |
| | Co-worker | 29.2% (10.5) | 31.5% (9.5) |
| | No Contact | 27.0% (5.6) | 33.1% (5.6) |
| | T-Statistic | -3.30 | 3.04 |
| | P-value | **<0.01** | **<0.01** |

* Indicates a marginal estimate. There is high sampling variability associated with the estimates.

Looking at those who scored in stigma group 1 (score of 6 to 12, low expectation of negative public attitudes toward people with depression), there was a significant difference in percentage of people by intimacy of contact overall. The highest percentage of people reported that they had a mental illness, while the lowest percentage was in the no contact category. There were 11 additional significant results. For the following groups the lowest percentage of people had no contact: females, people who were aged 20-29, or 60-69, had a college or university education, had excellent or very good general or mental health. In the following categories there were also significant differences in percentages of people in each intimacy category; however, the category with the highest or lowest percentage varied: people who were separated, divorced or widowed, had an annual household income of 30 to 50k, had a high school education, rated their general health as good.

Looking at those who scored in stigma group 3 (score of 18 to 30, high expectation of negative public attitudes toward people with depression), overall there was a significant difference in percentage of people who were in each of the intimacy categories. The highest percentage of people had no contact. An additional 9 significant results were found. The highest percentage of people had no contact in the following groups: people who were aged under 20, 20-29, 70 or over, single, had an annual household income of 30 to 50k, had less than a high school education, had excellent or very good general health, and had excellent, very good or good mental health. A significant result was also found for people aged 40-49, but ranking of intimacy groups was different.

The results from the stratified analysis showed that contact with a person with emotional and mental health problems varied depending on the covariate and the stigma group. The variation in results suggested that there were many potential effect modifiers in the relationship between contact and expectation of negative public attitudes toward people with depression and all of these potential effect modifiers were explored.

Variance inflation factors (VIF) and tolerance for all variables were estimated. All VIFs were under the threshold of 10 (and all tolerances greater than 0.1) and there was no concern for collinearity.

Table 5 presents the results of the ordinal regression examining the association between any contact with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression. Reference groups for all three generalized ordered logistic regressions are found in Table 5 of Appendix B. The first part of this table (1) shows the odds of scoring in groups 2 or 3 with group 1 as the reference. In other words, it shows the odds of expecting moderate or high negative public attitudes toward people with depression compared to low. An odds ratio of greater than 1.0 indicates the respondent will be more likely to expect moderate or highly negative public attitudes given the level of contact shown. Conversely, an odds ratio of less than 1.0 increases the likelihood of expecting low negative public attitudes.

The second part of the table (2) shows the odds of scoring in group 3 with groups 1 & 2 as the reference. An odds ratio of greater than 1.0 indicates that the respondent will be more likely to expect highly negative public attitudes compared to those in the low or moderate groups combined. Similarly, an odds ratio of less than 1.0 indicates that the respondent will be more likely to expect low or moderate negative public attitudes.

The overall model is significant (p-value <0.001). This means that this model is significantly different from the null model.

**Table 5.** Results from the generalized ordered logistic regression examining the association between any prior personal contact with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression.

Number of observations = 7458

Population size = 20945729

Design degrees of freedom = 7457

$F(86, 7372) = 2.85$

Prob > F = <0.001

| | Odds Ratio | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|
| 1 | | | | |
| **Any contact** | **0.56** | **0.19** | **0.24** | **1.33** |
| Female | 0.84 | 0.05 | 0.71 | 1.00 |
| Age 20-29 | 0.89 | 0.71 | 0.48 | 1.64 |
| Age 30-39 | 0.90 | 0.76 | 0.44 | 1.83 |
| Age 40-49 | 1.37 | 0.41 | 0.65 | 2.88 |
| Age 50-59 | 0.90 | 0.80 | 0.38 | 2.10 |

| | | | | |
|---|---|---|---|---|
| Age 60-69 | 1.59 | 0.24 | 0.74 | 3.40 |
| Age 70+ | 1.29 | 0.47 | 0.65 | 2.53 |
| Any contact * Age 20-29 | 1.69 | 0.18 | 0.79 | 3.60 |
| Any contact * Age 30-39 | 2.39 | 0.05 | 1.01 | 5.63 |
| Any contact * Age 40-49 | 1.60 | 0.30 | 0.66 | 3.90 |
| Any contact * Age 50-59 | 2.01 | 0.16 | 0.76 | 5.31 |
| Any contact * Age 60-69 | 1.00 | 0.99 | 0.41 | 2.46 |
| Any contact * Age 70+ | 1.53 | 0.33 | 0.66 | 3.56 |
| Widowed, divorced or separated | 1.00 | 0.99 | 0.62 | 1.61 |
| Single | 1.05 | 0.82 | 0.69 | 1.61 |
| Any contact * Widowed, divorced or separated | 0.94 | 0.84 | 0.53 | 1.67 |
| Any contact * Single | 1.41 | 0.18 | 0.85 | 2.33 |
| Non-white | 1.41 | 0.02 | 1.07 | 1.87 |
| Income = 30 to 50k | 0.91 | 0.68 | 0.57 | 1.45 |
| Income = 50 to 70k | 0.62 | 0.08 | 0.36 | 1.06 |
| Income = 70-100k | 0.49 | 0.02 | 0.27 | 0.87 |
| Income = 100k+ | 0.66 | 0.10 | 0.40 | 1.08 |
| Any contact * Income = 30 to 50k | 0.97 | 0.93 | 0.55 | 1.73 |
| Any contact * Income = 50 to 70k | 1.61 | 0.15 | 0.84 | 3.08 |
| Any contact * Income = 70-100k | 2.30 | 0.02 | 1.17 | 4.51 |
| Any contact * Income = 100k+ | 1.60 | 0.13 | 0.88 | 2.92 |
| High school education | 1.59 | 0.08 | 0.95 | 2.65 |
| College education | 1.88 | 0.02 | 1.10 | 3.20 |
| University education | 1.90 | 0.04 | 1.02 | 3.57 |
| Any contact * High school education | 0.57 | 0.06 | 0.31 | 1.03 |
| Any contact * College education | 0.40 | $<0.01$ | 0.22 | 0.74 |
| Any contact * University education | 0.44 | 0.02 | 0.21 | 0.89 |
| Not employed in last 12 months | 0.96 | 0.74 | 0.76 | 1.21 |
| Employment not applicable | 1.40 | 0.06 | 0.99 | 1.98 |
| General health good | 1.55 | 0.03 | 1.04 | 2.29 |
| General health fair or poor | 0.75 | 0.30 | 0.43 | 1.30 |
| Any contact * General health good | 0.78 | 0.28 | 0.49 | 1.23 |
| Any contact * General health fair or poor | 2.33 | 0.01 | 1.20 | 4.53 |
| Mental health good | 1.15 | 0.51 | 0.76 | 1.72 |

| | | | | |
|---|---|---|---|---|
| Mental health fair or poor | 0.63 | 0.20 | 0.32 | 1.27 |
| Any contact * Mental health good | 1.06 | 0.83 | 0.65 | 1.73 |
| Any contact * Mental health fair or poor | 1.40 | 0.41 | 0.63 | 3.14 |
| Constant | 2.17 | 0.04 | 1.05 | 4.48 |
| 2 | | | | |
| **Any contact** | **1.48** | **0.41** | **0.58** | **3.76** |
| Female | 0.80 | 0.01 | 0.67 | 0.95 |
| Age 20-29 | 1.87 | 0.05 | 1.00 | 3.48 |
| Age 30-39 | 1.68 | 0.19 | 0.78 | 3.63 |
| Age 40-49 | 1.97 | 0.07 | 0.95 | 4.08 |
| Age 50-59 | 1.99 | 0.09 | 0.91 | 4.37 |
| Age 60-69 | 3.38 | <0.01 | 1.54 | 7.41 |
| Age 70+ | 2.94 | <0.01 | 1.44 | 6.01 |
| Any contact * Age 20-29 | 0.41 | 0.04 | 0.18 | 0.94 |
| Any contact * Age 30-39 | 0.73 | 0.52 | 0.29 | 1.87 |
| Any contact * Age 40-49 | 0.92 | 0.86 | 0.37 | 2.29 |
| Any contact * Age 50-59 | 0.67 | 0.42 | 0.26 | 1.76 |
| Any contact * Age 60-69 | 0.37 | 0.04 | 0.14 | 0.95 |
| Any contact * Age 70+ | 0.50 | 0.14 | 0.21 | 1.24 |
| Widowed, divorced or separated | 0.99 | 0.98 | 0.64 | 1.54 |
| Single | 1.58 | 0.04 | 1.01 | 2.48 |
| Any contact * Widowed, divorced or separated | 0.92 | 0.77 | 0.54 | 1.57 |
| Any contact * Single | 0.50 | 0.01 | 0.29 | 0.85 |
| Non-white | 2.07 | <0.01 | 1.62 | 2.63 |
| Income = 30 to 50k | 1.24 | 0.35 | 0.79 | 1.95 |
| Income = 50 to 70k | 0.93 | 0.77 | 0.55 | 1.56 |
| Income = 70-100k | 0.93 | 0.81 | 0.54 | 1.62 |
| Income = 100k+ | 1.09 | 0.76 | 0.64 | 1.83 |
| Any contact * Income = 30 to 50k | 0.72 | 0.24 | 0.41 | 1.25 |
| Any contact * Income = 50 to 70k | 0.90 | 0.74 | 0.48 | 1.70 |
| Any contact * Income = 70-100k | 1.05 | 0.87 | 0.55 | 2.03 |
| Any contact * Income = 100k+ | 0.83 | 0.57 | 0.44 | 1.56 |
| High school education | 0.68 | 0.13 | 0.42 | 1.11 |
| College education | 0.72 | 0.22 | 0.43 | 1.21 |

| | | | | |
|---|---|---|---|---|
| University education | 0.95 | 0.86 | 0.55 | 1.64 |
| Any contact * High school education | 1.05 | 0.87 | 0.58 | 1.92 |
| Any contact * College education | 1.29 | 0.41 | 0.71 | 2.37 |
| Any contact * University education | 1.08 | 0.81 | 0.57 | 2.07 |
| Not employed in last 12 months | 0.91 | 0.44 | 0.72 | 1.15 |
| Employment not applicable | 1.13 | 0.51 | 0.79 | 1.62 |
| General health good | 0.82 | 0.28 | 0.57 | 1.18 |
| General health fair or poor | 0.89 | 0.65 | 0.53 | 1.48 |
| Any contact * General health good | 1.56 | 0.05 | 1.01 | 2.43 |
| Any contact * General health fair or poor | 1.34 | 0.36 | 0.71 | 2.52 |
| Mental health good | 1.30 | 0.17 | 0.90 | 1.89 |
| Mental health fair or poor | 0.72 | 0.41 | 0.32 | 1.58 |
| Any contact * Mental health good | 0.84 | 0.44 | 0.53 | 1.32 |
| Any contact * Mental health fair or poor | 2.33 | 0.06 | 0.96 | 5.62 |
| Constant | 0.24 | <0.01 | 0.11 | 0.52 |

There was no statistically significant difference in the odds of expecting stigmatizing public attitudes among those with prior contact compared to those without. The significant effect modifiers retained in the model were age, marital status, income, education, self-reported general health and self-reported mental health. Sex, ethnic background, and employment were retained as confounders.

Females were less likely to have expected moderate or high negative public attitudes than males (0.84, 95% CI: 0.71, 1.00). As well, females were less likely to have had high expectations of negative public attitudes than males (OR=0.80, 95% CI: 0.67, 0.95). Both of these results were statistically significant. Therefore, females expect more positive public attitudes toward people with depression.

Age was both an effect modifier and a confounder. Compared to people under age 20 with any contact, people age 30-39 with any contact had significantly higher odds of expecting moderate or high negative public attitudes (OR= 2.39, 95% CI: 1.01, 5.63). Compared to people under age 20 with any contact, people age 20-29 (OR= 0.41, 95% CI: 0.18, 0.94) and 60-69 (OR= 0.37, 95% CI: 0.14, 0.95) with contact were less likely to have had high expectation of negative public attitudes. As well, compared to people under age 20, people aged 20-29 (OR= 1.87, 95% CI: 1.00, 3.48), 60-69 (OR=3.38, 95% CI: 1.54, 7.41) and over 70 (OR= 2.94, 95% CI: 1.44, 6.01) had higher odds of expecting negative public attitudes. Because the confidence intervals overlap, amongst people aged 20-29, 60-69 and over 70 there was no significant difference in expectation of negative public attitudes between these groups; however, they were significantly different from those under age 20.

Marital status was a confounder and effect modifier only when comparing those with the highest expectations of stigma (group 3) to those with moderate or low expectations (groups 1 and 2). Compared to people who were married or common-law, people who were single were more likely to expect negative public attitudes (OR=1.58, 95% CI: 1.01, 2.48). However, compared to people who were married and had any contact, people who were single and had any contact were less likely to expect highly negative public attitudes (OR=0.5, 95% CI: 0.29, 0.85).

Ethnic background was a confounder. Non-white people had significantly higher odds of expecting moderate or high stigma than white people (OR=1.41, 95% CI: 1.07, 1.87). As well, non-white people had significantly higher odds of expecting highly negative public attitudes than white people (OR=2.07, 95% CI: 1.62, 2.63). Therefore, non-white people expected more negative public attitudes toward people with depression than white people.

Income was an effect modifier. Compared to people with an annual household income of less than 30k who had any contact, those who had an annual household income of 70 to 100k and any contact had higher odds of expecting moderate to high negative public attitudes (OR= 2.30, 95% CI: 1.17, 4.51). As well, compared to people with an annual household income of less than

30k, those who had an annual household income of 70 to 100k were less likely to have expected moderate or high negative public attitudes (OR= 0.49, 95% CI: 0.27, 0.87).

Education was an effect modifier. Compared to people who had less than a high school education and any contact, people with a college (OR=0.40, 95% CI: 0.22, 0.74) or university education (OR= 0.44, 95% CI: 0.21, 0.89) and any contact were significantly less likely to expect moderate or high negative public attitudes. As well, compared to people with less than a high school education, people with a college (OR= 1.88, 95% CI: 1.10, 3.20) or university education (OR= 1.90, 95% CI: 1.02, 3.57) had significantly higher odds of moderate or high expectation of negative public attitudes (ORs = 1.88 and 1.90, respectively). This suggested that contact amongst people with higher education decreased expectations of negative public attitudes.

Employment was not significantly associated with an expectation of negative public attitudes, but was included in the analysis because it met the cut point for backwards elimination (p-value <0.1).

General health was an effect modifier. Compared to those who rated their general health as excellent or very good and had any contact, those who rated their general health as fair or poor and had any contact had significantly higher odds of expecting moderate or high negative public attitudes (OR= 2.33, 95% CI: 1.20, 4.53). Similarly, compared to those who rated their general health as excellent or very good and had any contact, those who rated their general health as good and had any contact had significantly higher odds of expecting highly negative public attitudes (OR= 1.56, 05% CI: 1.01, 2.43). This suggested that those who have worse general health and contact with people with emotional or mental health problems expect more negative public attitudes toward people with depression.

Mental health was a not a significant effect modifier in this model, but was maintained in the model as it met the cut point for backwards elimination (p-value <0.1).

Table 6 presents the results of the ordinal regression examining the association between total number of contacts with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression. As in the previous analysis, the first part of the table (1) shows the odds of scoring in groups 2 or 3 with group 1 as the reference. The second part of the table (2) shows the odds of scoring in group 3 with groups 1 & 2 combined as the reference.

The overall model is significant (p-value <0.001). This means that this model is significantly different from the null model.

**Table 6.** Results from the generalized ordered logistic regression examining the association between total number of types of previous personal contact with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression.

Number of observations = 7458
Population size = 202945729
Design degrees of freedom = 7457
F (160, 7298) = 2.54
Prob > F = <0.001

| | Odds Ratio | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|
| 1 | | | | |
| **Total contacts = 1** | **0.73** | **0.58** | **0.24** | **2.21** |
| **Total contacts = 2** | **0.56** | **0.32** | **0.18** | **1.74** |
| **Total contacts = 3 or 4** | **0.76** | **0.69** | **0.19** | **3.00** |
| Female | 0.81 | 0.01 | 0.68 | 0.95 |
| Age 20-29 | 0.87 | 0.66 | 0.47 | 1.62 |
| Age 30-39 | 0.90 | 0.78 | 0.44 | 1.85 |
| Age 40-49 | 1.42 | 0.37 | 0.67 | 3.00 |
| Age 50-59 | 0.91 | 0.83 | 0.39 | 2.10 |
| Age 60-69 | 1.77 | 0.15 | 0.82 | 3.82 |

| | | | | |
|---|---|---|---|---|
| Age 70+ | 1.41 | 0.33 | 0.71 | 2.83 |
| Total contact = 1 * Age 20-29 | 1.35 | 0.52 | 0.54 | 3.37 |
| Total contact = 1 * Age 30-39 | 1.36 | 0.57 | 0.47 | 3.89 |
| Total contact = 1 * Age 40-49 | 1.10 | 0.86 | 0.36 | 3.37 |
| Total contact = 1 * Age 50-59 | 1.44 | 0.55 | 0.44 | 4.66 |
| Total contact = 1 * Age 60-69 | 0.58 | 0.33 | 0.19 | 1.74 |
| Total contact = 1 * Age 70+ | 0.67 | 0.46 | 0.23 | 1.94 |
| Total contact = 2 * Age 20-29 | 2.47 | 0.07 | 0.95 | 6.44 |
| Total contact = 2 * Age 30-39 | 3.84 | 0.02 | 1.29 | 11.39 |
| Total contact = 2 * Age 40-49 | 3.02 | 0.06 | 0.98 | 9.37 |
| Total contact = 2 * Age 50-59 | 3.34 | 0.04 | 1.07 | 10.40 |
| Total contact = 2 * Age 60-69 | 1.33 | 0.62 | 0.44 | 4.03 |
| Total contact = 2 * Age 70+ | 2.63 | 0.09 | 0.85 | 8.13 |
| Total contact = 3 or 4 * Age 20-29 | 1.73 | 0.40 | 0.49 | 6.11 |
| Total contact = 3 or 4 * Age 30-39 | 2.95 | 0.11 | 0.78 | 11.11 |
| Total contact = 3 or 4 * Age 40-49 | 1.29 | 0.71 | 0.33 | 4.98 |
| Total contact = 3 or 4 * Age 50-59 | 1.91 | 0.37 | 0.47 | 7.75 |
| Total contact = 3 or 4 * Age 60-69 | 1.01 | 0.99 | 0.26 | 3.99 |
| Total contact = 3 or 4 * Age 70+ | 1.55 | 0.54 | 0.38 | 6.31 |
| Non-white | 1.74 | 0.01 | 1.17 | 2.60 |
| Total contact = 1 * Non-white | 0.41 | 0.01 | 0.21 | 0.82 |
| Total contact = 2 * Non-white | 1.75 | 0.16 | 0.80 | 3.84 |
| Total contact = 3 or 4 * Non-white | 0.70 | 0.39 | 0.32 | 1.55 |
| Widowed, divorced or separated | 1.02 | 0.94 | 0.63 | 1.65 |
| Single | 1.10 | 0.66 | 0.72 | 1.68 |
| Total contact = 1 * Widowed, divorced or separated | 1.53 | 0.22 | 0.77 | 3.03 |
| Total contact = 1 * Single | 1.33 | 0.38 | 0.70 | 2.54 |
| Total contact = 2 * Widowed, divorced or separated | 1.09 | 0.82 | 0.52 | 2.28 |
| Total contact = 2 * Single | 1.35 | 0.35 | 0.72 | 2.56 |
| Total contact = 3 or 4 * Widowed, divorced or separated | 0.61 | 0.16 | 0.30 | 1.23 |
| Total contact = 3 or 4 * Single | 1.18 | 0.59 | 0.64 | 2.18 |
| Income = 30 to 50k | 0.90 | 0.68 | 0.56 | 1.45 |
| Income = 50 to 70k | 0.63 | 0.10 | 0.36 | 1.09 |
| Income = 70-100k | 0.51 | 0.02 | 0.28 | 0.91 |

| | | | | |
|---|---|---|---|---|
| Income = 100k+ | 0.69 | 0.15 | 0.41 | 1.14 |
| Total contact = 1 * Income = 30 to 50k | 1.42 | 0.34 | 0.69 | 2.91 |
| Total contact = 1 * Income = 50 to 70k | 2.47 | 0.04 | 1.05 | 5.80 |
| Total contact = 1 * Income = 70 to 100k | 2.79 | 0.01 | 1.23 | 6.35 |
| Total contact = 1 * Income = 100k+ | 1.58 | 0.27 | 0.70 | 3.57 |
| Total contact = 2 * Income = 30 to 50k | 0.81 | 0.57 | 0.39 | 1.67 |
| Total contact = 2 * Income = 50 to 70k | 1.60 | 0.26 | 0.71 | 3.62 |
| Total contact = 2 * Income = 70 to 100k | 2.44 | 0.03 | 1.08 | 5.48 |
| Total contact = 2 * Income = 100k+ | 1.70 | 0.17 | 0.80 | 3.63 |
| Total contact = 3 or 4 * Income = 30 to 50k | 0.76 | 0.45 | 0.37 | 1.56 |
| Total contact = 3 or 4 * Income = 50 to 70k | 0.83 | 0.65 | 0.36 | 1.90 |
| Total contact = 3 or 4 * Income = 70 to 100k | 1.30 | 0.54 | 0.56 | 3.02 |
| Total contact = 3 or 4 * Income = 100k+ | 1.02 | 0.95 | 0.46 | 2.27 |
| High school education | 1.57 | 0.08 | 0.94 | 2.62 |
| College education | 1.87 | 0.02 | 1.10 | 3.18 |
| University education | 1.83 | 0.06 | 0.97 | 3.45 |
| Total contact = 1 * High school education | 0.81 | 0.56 | 0.40 | 1.63 |
| Total contact = 1 * College education | 0.43 | 0.02 | 0.21 | 0.87 |
| Total contact = 1 * University education | 0.71 | 0.42 | 0.30 | 1.64 |
| Total contact = 2 * High school education | 0.31 | <0.01 | 0.15 | 0.64 |
| Total contact = 2 * College education | 0.27 | <0.01 | 0.13 | 0.56 |
| Total contact = 2 * University education | 0.30 | <0.01 | 0.13 | 0.68 |
| Total contact = 3 or 4 * High school education | 0.59 | 0.19 | 0.27 | 1.31 |
| Total contact = 3 or 4 * College education | 0.51 | 0.09 | 0.24 | 1.10 |
| Total contact = 3 or 4 * University education | 0.46 | 0.08 | 0.19 | 1.10 |
| Not employed in last 12 months | 0.96 | 0.76 | 0.76 | 1.22 |
| Employment not applicable | 1.38 | 0.06 | 0.98 | 1.95 |
| General health good | 1.50 | 0.03 | 1.03 | 2.18 |
| General health fair or poor | 0.69 | 0.21 | 0.39 | 1.24 |
| Total contact = 1 * General health good | 0.62 | 0.08 | 0.36 | 1.06 |
| Total contact = 1 * General health fair or poor | 3.24 | 0.01 | 1.39 | 7.55 |
| Total contact = 2 * General health good | 0.86 | 0.58 | 0.51 | 1.46 |
| Total contact = 2 * General health fair or poor | 1.75 | 0.17 | 0.78 | 3.93 |
| Total contact = 3 or 4 * General health good | 0.99 | 0.98 | 0.59 | 1.66 |

| | | | | |
|---|---|---|---|---|
| Total contact = 3 or 4 * General health fair or poor | 2.95 | 0.01 | 1.36 | 6.41 |
| Mental health good | 1.24 | 0.05 | 1.00 | 1.54 |
| Mental health fair or poor | 0.87 | 0.44 | 0.61 | 1.24 |
| Constant | 1.97 | 0.07 | 0.94 | 4.11 |
| 2 | | | | |
| **Total contacts = 1** | **0.84** | **0.76** | **0.26** | **2.69** |
| **Total contacts = 2** | **1.41** | **0.58** | **0.42** | **4.79** |
| **Total contacts = 3 or 4** | **1.34** | **0.73** | **0.25** | **7.27** |
| Female | 0.81 | 0.02 | 0.68 | 0.97 |
| Age 20-29 | 1.79 | 0.07 | 0.96 | 3.33 |
| Age 30-39 | 1.61 | 0.22 | 0.75 | 3.44 |
| Age 40-49 | 1.85 | 0.10 | 0.90 | 3.83 |
| Age 50-59 | 1.89 | 0.11 | 0.87 | 4.13 |
| Age 60-69 | 3.18 | <0.01 | 1.44 | 7.00 |
| Age 70+ | 2.91 | <0.01 | 1.41 | 6.03 |
| Total contact = 1 * Age 20-29 | 0.65 | 0.41 | 0.23 | 1.81 |
| Total contact = 1 * Age 30-39 | 1.17 | 0.78 | 0.38 | 3.55 |
| Total contact = 1 * Age 40-49 | 1.80 | 0.30 | 0.60 | 5.40 |
| Total contact = 1 * Age 50-59 | 1.19 | 0.76 | 0.39 | 3.66 |
| Total contact = 1 * Age 60-69 | 0.63 | 0.42 | 0.20 | 1.96 |
| Total contact = 1 * Age 70+ | 0.76 | 0.63 | 0.25 | 2.30 |
| Total contact = 2 * Age 20-29 | 0.28 | 0.05 | 0.08 | 0.97 |
| Total contact = 2 * Age 30-39 | 0.57 | 0.42 | 0.15 | 2.19 |
| Total contact = 2 * Age 40-49 | 0.74 | 0.66 | 0.19 | 2.85 |
| Total contact = 2 * Age 50-59 | 0.58 | 0.43 | 0.15 | 2.26 |
| Total contact = 2 * Age 60-69 | 0.32 | 0.10 | 0.08 | 1.24 |
| Total contact = 2 * Age 70+ | 0.50 | 0.30 | 0.14 | 1.84 |
| Total contact = 3 or 4 * Age 20-29 | 0.61 | 0.53 | 0.13 | 2.86 |
| Total contact = 3 or 4 * Age 30-39 | 0.96 | 0.96 | 0.19 | 4.75 |
| Total contact = 3 or 4 * Age 40-49 | 0.99 | 0.99 | 0.20 | 4.88 |
| Total contact = 3 or 4 * Age 50-59 | 0.79 | 0.78 | 0.15 | 4.05 |
| Total contact = 3 or 4 * Age 60-69 | 0.44 | 0.34 | 0.08 | 2.34 |
| Total contact = 3 or 4 * Age 70+ | 0.66 | 0.62 | 0.13 | 3.42 |
| Non-white | 2.14 | <0.01 | 1.50 | 3.06 |

| | | | | |
|---|---|---|---|---|
| Total contact = 1 * Non-white | 0.75 | 0.37 | 0.41 | 1.40 |
| Total contact = 2 * Non-white | 0.97 | 0.94 | 0.51 | 1.87 |
| Total contact = 3 or 4 * Non-white | 1.08 | 0.83 | 0.54 | 2.18 |
| Widowed, divorced or separated | 1.00 | 0.99 | 0.64 | 1.56 |
| Single | 1.57 | 0.05 | 1.00 | 2.46 |
| Total contact = 1 * Widowed, divorced or separated | 1.16 | 0.65 | 0.62 | 2.19 |
| Total contact = 1 * Single | 0.80 | 0.50 | 0.41 | 1.55 |
| Total contact = 2 * Widowed, divorced or separated | 0.79 | 0.55 | 0.37 | 1.71 |
| Total contact = 2 * Single | 0.38 | 0.01 | 0.19 | 0.76 |
| Total contact = 3 or 4 * Widowed, divorced or separated | 0.82 | 0.56 | 0.43 | 1.58 |
| Total contact = 3 or 4 * Single | 0.47 | 0.02 | 0.25 | 0.87 |
| Income = 30 to 50k | 1.24 | 0.36 | 0.79 | 1.95 |
| Income = 50 to 70k | 0.94 | 0.81 | 0.55 | 1.59 |
| Income = 70-100k | 0.95 | 0.87 | 0.55 | 1.66 |
| Income = 100k+ | 1.11 | 0.71 | 0.65 | 1.88 |
| Total contact = 1 * Income = 30 to 50k | 0.89 | 0.75 | 0.44 | 1.80 |
| Total contact = 1 * Income = 50 to 70k | 1.41 | 0.42 | 0.62 | 3.19 |
| Total contact = 1 * Income = 70 to 100k | 1.36 | 0.45 | 0.61 | 2.99 |
| Total contact = 1 * Income = 100k+ | 1.19 | 0.67 | 0.53 | 2.69 |
| Total contact = 2 * Income = 30 to 50k | 0.69 | 0.33 | 0.33 | 1.45 |
| Total contact = 2 * Income = 50 to 70k | 1.04 | 0.93 | 0.46 | 2.33 |
| Total contact = 2 * Income = 70 to 100k | 1.34 | 0.50 | 0.57 | 3.17 |
| Total contact = 2 * Income = 100k+ | 0.96 | 0.93 | 0.41 | 2.24 |
| Total contact = 3 or 4 * Income = 30 to 50k | 0.57 | 0.11 | 0.29 | 1.13 |
| Total contact = 3 or 4 * Income = 50 to 70k | 0.46 | 0.05 | 0.22 | 1.00 |
| Total contact = 3 or 4 * Income = 70 to 100k | 0.55 | 0.14 | 0.25 | 1.22 |
| Total contact = 3 or 4 * Income = 100k+ | 0.48 | 0.07 | 0.22 | 1.05 |
| High school education | 0.68 | 0.12 | 0.42 | 1.11 |
| College education | 0.73 | 0.22 | 0.44 | 1.21 |
| University education | 0.93 | 0.80 | 0.54 | 1.61 |
| Total contact = 1 * High school education | 0.97 | 0.95 | 0.48 | 1.99 |
| Total contact = 1 * College education | 0.79 | 0.53 | 0.38 | 1.65 |
| Total contact = 1 * University education | 0.79 | 0.56 | 0.35 | 1.77 |
| Total contact = 2 * High school education | 1.02 | 0.96 | 0.45 | 2.29 |

| | | | | |
|---|---|---|---|---|
| Total contact = 2 * College education | 1.76 | 0.14 | 0.83 | 3.75 |
| Total contact = 2 * University education | 1.34 | 0.49 | 0.58 | 3.09 |
| Total contact = 3 or 4 * High school education | 1.29 | 0.50 | 0.62 | 2.73 |
| Total contact = 3 or 4 * College education | 1.77 | 0.13 | 0.85 | 3.68 |
| Total contact = 3 or 4 * University education | 1.51 | 0.30 | 0.69 | 3.28 |
| Not employed in last 12 months | 0.90 | 0.38 | 0.71 | 1.14 |
| Employment not applicable | 1.07 | 0.71 | 0.75 | 1.53 |
| General health good | 0.82 | 0.27 | 0.58 | 1.17 |
| General health fair or poor | 0.85 | 0.52 | 0.51 | 1.41 |
| Total contact = 1 * General health good | 1.48 | 0.13 | 0.89 | 2.48 |
| Total contact = 1 * General health fair or poor | 1.69 | 0.17 | 0.80 | 3.58 |
| Total contact = 2 * General health good | 1.54 | 0.13 | 0.89 | 2.67 |
| Total contact = 2 * General health fair or poor | 1.07 | 0.86 | 0.48 | 2.38 |
| Total contact = 3 or 4 * General health good | 1.72 | 0.03 | 1.04 | 2.85 |
| Total contact = 3 or 4 * General health fair or poor | 1.71 | 0.13 | 0.86 | 3.43 |
| Mental health good | 1.17 | 0.13 | 0.95 | 1.44 |
| Mental health fair or poor | 1.47 | 0.03 | 1.04 | 2.08 |
| Constant | 0.25 | <0.01 | 0.11 | 0.55 |

WARNING! 3 in-sample cases have an outcome with a predicted probability that is less than 0.

Overall, there were no significant findings in the relationship between total number of types of contact and expectation of negative public attitudes toward people with depression.

Females were less likely to expect moderate or highly negative public attitudes compared to males (OR=0.81, 95% CI: 0.68, 0.95). As well, females were less likely to have had high expectation of negative public attitudes than males (OR=0.81, 95% CI: 0.68, 0.97). As in the previous analysis, these results suggest that females expect more positive public attitudes toward people with depression.

Age was an effect modifier in the relationship between total contacts with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression. Age alone was also a confounder. Compared to people under age 20 with 2 contacts, those aged 30-39 (OR= 3.84, 95% CI: 1.29, 11.39) and 50-59 (OR= 3.34, 95% CI: 1.07, 10.40) with 2 contacts had higher odds of expecting moderate or highly negative public attitudes. Similarly, compared to people under age 20 with 2 contacts, those aged 20-29 with 2 contacts were less likely to have had a high expectation of negative public attitudes (OR= 0.28, 95% CI: 0.08, 0.97). As well, people aged 60-69 (OR= 3.18, 95% CI: 1.44, 7.00) and over 70 (OR= 2.91, 95% CI: 1.41, 6.03) had higher odds of expecting highly negative public attitudes (ORs=3.18, 2.91, respectively) compared to people under age 20.

Ethnic background was also an effect modifier and confounder. Compared to white people with 1 contact, non-white people with 1 contact were significantly less likely to expect moderate or high negative public attitudes (OR= 0.41, 95% CI: 0.21, 0.82). As well, people who were non-white had significantly higher odds of expecting moderate or highly negative public attitudes (OR=1.74, 95% CI: 1.17, 2.60) and high expectation of negative public attitudes (OR=2.14, 95% CI: 1.50, 3.06) compared to white people. This was the same result as the previous analysis.

Marital status was an effect modifier and confounder, but only when comparing those in the highest stigma group (group 3) to those in the moderate and low groups (groups 1 and 2). Compared to married or common-law people, single people had higher odds of expecting highly negative public attitudes (OR=1.57, 95% CI: 1.00, 2.46). However, people who were single and had 2 (OR= 0.38, 95% CI: 0.19, 0.76) or 3/4 contacts (OR= 0.47, 95% CI: 0.25, 0.87) were significantly less likely to have had high expectations of negative public attitudes compared to married or common-law people with the same number of contacts.

Income was an effect modifier and confounder. Compared to people who had an annual household income of less than 30k and had one type of contact, people who had an annual household income of 50 to 70k (OR= 2.47, 95% CI: 1.05, 5.80) or 70 to 100k (OR= 2.79, 95%

CI: 1.23, 6.35) and one type of contact had significantly higher odds of moderate or high expectations of negative public attitudes. Similarly, people with an annual household income of 70 to 100k and had 2 types of contacts had significantly higher odds of moderate or high expectations of negative public attitudes (OR= 2.44, 95% CI: 1.08, 5.48). However, compared to people who had an annual household income of less than 30k and had 3/4 types of contact, people with an annual household income of 50-70k and 3/4 types of contact were significantly less likely to have had high expectations of negative public attitudes (OR= 0.46, 95% CI: 0.22, 1.00). Therefore, high amounts of contact amongst higher income people promoted expectation of more positive public attitudes toward people with depression. This is consistent with the previous analysis. As well, compared to people with an annual household income of less than 30k, people with an annual household income of 70 to 100k were less likely to have had moderate or high expectations of negative public attitudes (OR= 0.51, 95% CI: 0.28, 0.91).

Education was both an effect modifier and a confounder only when comparing those with low expectations of stigma (group 1) to the remaining groups (groups 2 and 3). Compared to those who had less than a high school education and 1 contact, those with a college education and 1 contact were less likely to have had moderate or high expectations of negative public attitudes (OR= 0.43, 95% CI: 0.21, 0.87). Similarly, compared to those who had less than a high school education and 2 contacts, those with a high school (OR= 0.31, 95% CI: 0.15, 0.64), college (OR= 0.27, 95% CI: 0.13, 0.56) or university education (OR= 0.30, 95% CI: 0.13, 0.68) and 2 contacts were less likely to have had moderate or high expectations of negative public attitudes. As well, compared to those with less than a high school education, those with a college education had higher odds of moderate or high expectations of negative public attitudes (OR= 1.87, 95% CI: 1.10, 3.18).

Employment was not associated with an expectation of negative public attitudes, but was maintained in the model as it met the cut point for backwards elimination (p-value <0.1).

General health was both an effect modifier and confounder. Compared to those who rated their general health as excellent or very good and had 1 or 3/4 contacts, those who rated their general health as fair or poor and had the same number of contacts had higher odds of moderate or high expectations of negative public attitudes (ORs= 3.24, 95% CI: 1.39, 7.55 and OR= 2.95, 95% CI: 1.36, 6.41, respectively). Similarly, compared to those who rated their general health as excellent or very good and had 3/4 contacts, those who rated their general health as good and had the same number of contacts had higher odds of expecting highly negative public attitudes (OR= 1.72, 95% CI: 1.04, 2.85). As well, compared to people who rated their general health as excellent or very good, those who rated their general health as good had significantly higher odds of moderate or high expectations of negative public attitudes (OR= 1.50, 95% CI: 1.03, 2.18).

Compared to those who rated their mental health as excellent or very good, people who rated their mental health as good had significantly higher odds of moderate or high expectations of negative public attitudes (OR=1.24, 95% CI: 1.00, 1.54). Compared to those who rated their own mental health as excellent or very good, those who rated their mental health as fair or poor had significantly higher odds of expecting highly negative public attitudes (OR=1.47, 95% CI: 1.04, 2.08). Therefore, people who rate their mental health as poorer, expect more negative public attitudes toward people with depression.

Table 7 presents the results of the ordinal regression examining the association between most intimate contact with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression. The first part of the table (1) shows the odds of scoring in groups 2 or 3 with group 1 as the reference. The second part of the table (2) shows the odds of scoring in group 3 with groups 1 & 2 combined as the reference.

The overall model is significant (p-value <0.001). This means that this model is significantly different from the null model.

**Table 7.** Results from the generalized ordered logistic regression examining the association between intimacy of prior personal contact with a person with emotional or mental health problems and expectation of negative public attitudes toward people with depression.

Number observations = 7458

Population size = 20945729

Design degrees of freedom = 7457

F (202, 7256) = 1.95

Prob > F = <0.001

| | Odds Ratio | P >\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|
| 1 | | | | |
| **Family member** | **1.89** | **0.34** | **0.51** | **6.96** |
| **Friend** | **1.02** | **0.98** | **0.24** | **4.23** |
| **Co-worker** | **10.61** | **0.02** | **1.41** | **79.70** |
| **No contact** | **3.00** | **0.07** | **0.91** | **9.92** |
| Female | 0.87 | 0.09 | 0.73 | 1.02 |
| Age 20-29 | 2.10 | 0.14 | 0.78 | 5.63 |
| Age 30-39 | 3.99 | 0.01 | 1.47 | 10.87 |
| Age 40-49 | 4.97 | <0.01 | 1.81 | 13.70 |
| Age 50-59 | 3.12 | 0.03 | 1.14 | 8.57 |
| Age 60-69 | 2.40 | 0.10 | 0.84 | 6.84 |
| Age 70+ | 2.77 | 0.07 | 0.93 | 8.21 |
| Family member * Age 20-29 | 0.61 | 0.44 | 0.17 | 2.14 |
| Family member * Age 30-39 | 0.40 | 0.17 | 0.11 | 1.47 |
| Family member * Age 40-49 | 0.29 | 0.06 | 0.08 | 1.05 |
| Family member * Age 50-59 | 0.35 | 0.11 | 0.10 | 1.27 |
| Family member * Age 60-69 | 0.47 | 0.27 | 0.13 | 1.78 |
| Family member * Age 70+ | 0.60 | 0.46 | 0.15 | 2.34 |
| Friend * Age 20-29 | 0.92 | 0.90 | 0.25 | 3.36 |
| Friend * Age 30-39 | 0.49 | 0.32 | 0.12 | 1.98 |

| | | | | |
|---|---|---|---|---|
| Friend * Age 40-49 | 0.59 | 0.47 | 0.14 | 2.42 |
| Friend * Age 50-59 | 0.69 | 0.59 | 0.18 | 2.66 |
| Friend * Age 60-69 | 0.69 | 0.61 | 0.17 | 2.87 |
| Friend * Age 70+ | 1.44 | 0.63 | 0.32 | 6.47 |
| Co-worker * Age 20-29 | 0.14 | 0.04 | 0.02 | 0.94 |
| Co-worker * Age 30-39 | 0.15 | 0.06 | 0.02 | 1.10 |
| Co-worker * Age 40-49 | 0.06 | 0.01 | 0.01 | 0.46 |
| Co-worker * Age 50-59 | 0.21 | 0.13 | 0.03 | 1.54 |
| Co-worker * Age 60-69 | 0.17 | 0.08 | 0.02 | 1.28 |
| Co-worker * Age 70+ | 0.14 | 0.07 | 0.02 | 1.14 |
| No contact * Age 20-29 | 0.37 | 0.09 | 0.12 | 1.16 |
| No contact * Age 30-39 | 0.19 | 0.01 | 0.06 | 0.66 |
| No contact * Age 40-49 | 0.24 | 0.02 | 0.07 | 0.82 |
| No contact * Age 50-59 | 0.24 | 0.04 | 0.07 | 0.90 |
| No contact * Age 60-69 | 0.55 | 0.36 | 0.15 | 1.97 |
| No contact * Age 70+ | 0.47 | 0.24 | 0.13 | 1.67 |
| Non-white | 1.40 | 0.01 | 1.07 | 1.84 |
| Widowed, divorced or separated | 0.73 | 0.21 | 0.45 | 1.19 |
| Single | 1.33 | 0.23 | 0.83 | 2.11 |
| Family member * Widowed, divorced or separated | 1.32 | 0.42 | 0.67 | 2.64 |
| Family member * Single | 0.87 | 0.66 | 0.45 | 1.65 |
| Friend * Widowed, divorced or separated | 1.63 | 0.33 | 0.61 | 4.37 |
| Friend * Single | 1.48 | 0.29 | 0.72 | 3.04 |
| Co-worker * Widowed, divorced or separated | 2.08 | 0.15 | 0.78 | 5.58 |
| Co-worker * Single | 1.10 | 0.84 | 0.43 | 2.85 |
| No contact * Widowed, divorced or separated | 1.39 | 0.34 | 0.70 | 2.76 |
| No contact * Single | 0.79 | 0.46 | 0.42 | 1.48 |
| Income = 30 to 50k | 0.87 | 0.60 | 0.53 | 1.45 |
| Income = 50 to 70k | 0.75 | 0.35 | 0.40 | 1.39 |
| Income = 70-100k | 0.82 | 0.49 | 0.47 | 1.43 |
| Income = 100k+ | 0.88 | 0.66 | 0.51 | 1.53 |
| Family member * Income = 30 to 50k | 1.04 | 0.92 | 0.49 | 2.22 |
| Family member * Income = 50 to 70k | 1.51 | 0.37 | 0.61 | 3.73 |
| Family member * Income = 70 to 100k | 1.85 | 0.15 | 0.81 | 4.25 |

| | | | | |
|---|---|---|---|---|
| Family member * Income = 100k+ | 1.42 | 0.41 | 0.61 | 3.30 |
| Friend * Income = 30 to 50k | 0.90 | 0.83 | 0.36 | 2.24 |
| Friend * Income = 50 to 70k | 1.62 | 0.34 | 0.60 | 4.37 |
| Friend * Income = 70 to 100k | 1.25 | 0.64 | 0.49 | 3.19 |
| Friend * Income = 100k+ | 1.25 | 0.63 | 0.51 | 3.07 |
| Co-worker * Income = 30 to 50k | 1.29 | 0.66 | 0.42 | 4.00 |
| Co-worker * Income = 50 to 70k | 1.21 | 0.76 | 0.35 | 4.19 |
| Co-worker * Income = 70 to 100k | 0.84 | 0.76 | 0.27 | 2.60 |
| Co-worker * Income = 100k+ | 0.56 | 0.36 | 0.16 | 1.95 |
| No contact * Income = 30 to 50k | 1.02 | 0.95 | 0.51 | 2.03 |
| No contact * Income = 50 to 70k | 0.83 | 0.66 | 0.37 | 1.89 |
| No contact * Income = 70 to 100k | 0.59 | 0.20 | 0.27 | 1.32 |
| No contact * Income = 100k+ | 0.75 | 0.44 | 0.36 | 1.57 |
| High school education | 0.75 | 0.33 | 0.42 | 1.34 |
| College education | 0.84 | 0.51 | 0.51 | 1.40 |
| University education | 0.70 | 0.22 | 0.40 | 1.23 |
| Family member * High school education | 1.11 | 0.79 | 0.52 | 2.36 |
| Family member * College education | 0.78 | 0.49 | 0.39 | 1.57 |
| Family member * University education | 1.03 | 0.94 | 0.47 | 2.25 |
| Friend * High school education | 1.42 | 0.42 | 0.61 | 3.32 |
| Friend * College education | 1.01 | 0.97 | 0.45 | 2.30 |
| Friend * University education | 1.63 | 0.29 | 0.66 | 4.04 |
| Co-worker * High school education | 1.58 | 0.45 | 0.49 | 5.10 |
| Co-worker * College education | 0.85 | 0.76 | 0.31 | 2.36 |
| Co-worker * University education | 1.57 | 0.48 | 0.45 | 5.42 |
| No contact * High school education | 2.08 | 0.07 | 0.95 | 4.55 |
| No contact * College education | 2.20 | 0.04 | 1.05 | 4.58 |
| No contact * University education | 2.68 | 0.02 | 1.15 | 6.23 |
| General health good | 0.97 | 0.87 | 0.65 | 1.43 |
| General health fair or poor | 1.58 | 0.11 | 0.90 | 2.77 |
| Family member * General health good | 1.81 | 0.04 | 1.04 | 3.14 |
| Family member * General health fair or poor | 0.81 | 0.60 | 0.37 | 1.79 |
| Friend * General health good | 0.94 | 0.85 | 0.50 | 1.75 |
| Friend * General health fair or poor | 1.79 | 0.21 | 0.72 | 4.45 |

| | | | | |
|---|---|---|---|---|
| Co-worker * General health good | 1.05 | 0.90 | 0.46 | 2.39 |
| Co-worker * General health fair or poor | 1.42 | 0.59 | 0.40 | 5.05 |
| No contact * General health good | 1.61 | 0.09 | 0.92 | 2.81 |
| No contact * General health fair or poor | 0.48 | 0.07 | 0.22 | 1.06 |
| Mental health good | 1.28 | 0.22 | 0.86 | 1.89 |
| Mental health fair or poor | 1.28 | 0.38 | 0.74 | 2.20 |
| Family member * Mental health good | 1.20 | 0.59 | 0.61 | 2.36 |
| Family member * Mental health fair or poor | 0.44 | 0.12 | 0.15 | 1.24 |
| Friend * Mental health good | 0.83 | 0.58 | 0.42 | 1.63 |
| Friend * Mental health fair or poor | 0.65 | 0.50 | 0.18 | 2.29 |
| Co-worker * Mental health good | 0.44 | 0.11 | 0.16 | 1.21 |
| Co-worker * Mental health fair or poor | 0.17 | 0.02 | 0.04 | 0.71 |
| No contact * Mental health good | 0.90 | 0.71 | 0.51 | 1.58 |
| No contact * Mental health fair or poor | 0.50 | 0.12 | 0.21 | 1.21 |
| Constant | 0.84 | 0.73 | 0.31 | 2.27 |
| 2 | | | | |
| **Family member** | **2.06** | **0.33** | **0.47** | **8.95** |
| **Friend** | **1.52** | **0.58** | **0.35** | **6.61** |
| **Co-worker** | **1.67** | **0.61** | **0.23** | **12.01** |
| **No contact** | **1.19** | **0.79** | **0.32** | **4.41** |
| Female | 0.82 | 0.02 | 0.69 | 0.97 |
| Age 20-29 | 1.30 | 0.62 | 0.45 | 3.77 |
| Age 30-39 | 2.02 | 0.19 | 0.71 | 5.74 |
| Age 40-49 | 2.89 | 0.06 | 0.98 | 8.54 |
| Age 50-59 | 1.93 | 0.23 | 0.66 | 5.67 |
| Age 60-69 | 1.85 | 0.28 | 0.61 | 5.60 |
| Age 70+ | 2.11 | 0.20 | 0.67 | 6.63 |
| Family member * Age 20-29 | 0.42 | 0.22 | 0.10 | 1.70 |
| Family member * Age 30-39 | 0.54 | 0.39 | 0.13 | 2.19 |
| Family member * Age 40-49 | 0.54 | 0.41 | 0.13 | 2.27 |
| Family member * Age 50-59 | 0.46 | 0.29 | 0.11 | 1.93 |
| Family member * Age 60-69 | 0.52 | 0.37 | 0.12 | 2.20 |
| Family member * Age 70+ | 0.57 | 0.46 | 0.13 | 2.57 |
| Friend * Age 20-29 | 0.43 | 0.28 | 0.09 | 1.99 |

| | | | | |
|---|---|---|---|---|
| Friend * Age 30-39 | 0.32 | 0.15 | 0.07 | 1.49 |
| Friend * Age 40-49 | 0.53 | 0.43 | 0.11 | 2.59 |
| Friend * Age 50-59 | 0.81 | 0.79 | 0.18 | 3.66 |
| Friend * Age 60-69 | 0.49 | 0.37 | 0.10 | 2.37 |
| Friend * Age 70+ | 0.92 | 0.92 | 0.19 | 4.47 |
| Co-worker * Age 20-29 | 1.52 | 0.65 | 0.25 | 9.42 |
| Co-worker * Age 30-39 | 0.96 | 0.96 | 0.16 | 5.80 |
| Co-worker * Age 40-49 | 0.52 | 0.48 | 0.08 | 3.24 |
| Co-worker * Age 50-59 | 1.59 | 0.61 | 0.27 | 9.33 |
| Co-worker * Age 60-69 | 1.26 | 0.81 | 0.19 | 8.28 |
| Co-worker * Age 70+ | 1.08 | 0.93 | 0.16 | 7.15 |
| No contact * Age 20-29 | 1.36 | 0.62 | 0.40 | 4.62 |
| No contact * Age 30-39 | 0.79 | 0.72 | 0.22 | 2.86 |
| No contact * Age 40-49 | 0.65 | 0.51 | 0.18 | 2.37 |
| No contact * Age 50-59 | 0.98 | 0.98 | 0.26 | 3.66 |
| No contact * Age 60-69 | 1.67 | 0.46 | 0.43 | 6.38 |
| No contact * Age 70+ | 1.37 | 0.64 | 0.36 | 5.21 |
| Non-white | 2.05 | <0.01 | 1.62 | 2.59 |
| Widowed, divorced or separated | 0.76 | 0.23 | 0.48 | 1.19 |
| Single | 0.88 | 0.60 | 0.55 | 1.41 |
| Family member * Widowed, divorced or separated | 1.21 | 0.60 | 0.59 | 2.49 |
| Family member * Single | 0.62 | 0.20 | 0.30 | 1.28 |
| Friend * Widowed, divorced or separated | 1.03 | 0.95 | 0.45 | 2.32 |
| Friend * Single | 1.10 | 0.79 | 0.54 | 2.26 |
| Co-worker * Widowed, divorced or separated | 2.26 | 0.08 | 0.91 | 5.62 |
| Co-worker * Single | 1.54 | 0.41 | 0.55 | 4.26 |
| No contact * Widowed, divorced or separated | 1.33 | 0.38 | 0.71 | 2.49 |
| No contact * Single | 1.79 | 0.08 | 0.94 | 3.42 |
| Income = 30 to 50k | 1.01 | 0.97 | 0.61 | 1.69 |
| Income = 50 to 70k | 0.48 | 0.02 | 0.26 | 0.87 |
| Income = 70-100k | 0.72 | 0.24 | 0.41 | 1.25 |
| Income = 100k+ | 0.57 | 0.05 | 0.32 | 1.01 |
| Family member * Income = 30 to 50k | 0.83 | 0.64 | 0.39 | 1.78 |
| Family member * Income = 50 to 70k | 2.61 | 0.03 | 1.12 | 6.07 |

| | | | | |
|---|---|---|---|---|
| Family member * Income = 70 to 100k | 2.00 | 0.10 | 0.88 | 4.56 |
| Family member * Income = 100k+ | 2.63 | 0.02 | 1.14 | 6.06 |
| Friend * Income = 30 to 50k | 0.76 | 0.51 | 0.33 | 1.74 |
| Friend * Income = 50 to 70k | 1.76 | 0.22 | 0.72 | 4.31 |
| Friend * Income = 70 to 100k | 1.38 | 0.51 | 0.53 | 3.60 |
| Friend * Income = 100k+ | 1.34 | 0.53 | 0.54 | 3.34 |
| Co-worker * Income = 30 to 50k | 0.93 | 0.90 | 0.31 | 2.77 |
| Co-worker * Income = 50 to 70k | 1.23 | 0.74 | 0.36 | 4.12 |
| Co-worker * Income = 70 to 100k | 0.97 | 0.96 | 0.31 | 3.00 |
| Co-worker * Income = 100k+ | 1.39 | 0.61 | 0.40 | 4.84 |
| No contact * Income = 30 to 50k | 1.23 | 0.56 | 0.62 | 2.43 |
| No contact * Income = 50 to 70k | 1.97 | 0.09 | 0.90 | 4.35 |
| No contact * Income = 70 to 100k | 1.32 | 0.48 | 0.60 | 2.90 |
| No contact * Income = 100k+ | 1.93 | 0.10 | 0.89 | 4.17 |
| High school education | 0.76 | 0.33 | 0.45 | 1.31 |
| College education | 1.40 | 0.18 | 0.85 | 2.31 |
| University education | 1.56 | 0.10 | 0.92 | 2.65 |
| Family member * High school education | 0.83 | 0.62 | 0.39 | 1.77 |
| Family member * College education | 0.47 | 0.04 | 0.23 | 0.97 |
| Family member * University education | 0.45 | 0.05 | 0.21 | 0.99 |
| Friend * High school education | 1.16 | 0.77 | 0.44 | 3.08 |
| Friend * College education | 0.85 | 0.75 | 0.33 | 2.24 |
| Friend * University education | 0.90 | 0.84 | 0.32 | 2.52 |
| Co-worker * High school education | 0.73 | 0.55 | 0.26 | 2.05 |
| Co-worker * College education | 0.51 | 0.17 | 0.19 | 1.35 |
| Co-worker * University education | 0.47 | 0.16 | 0.16 | 1.36 |
| No contact * High school education | 0.89 | 0.74 | 0.43 | 1.83 |
| No contact * College education | 0.52 | 0.07 | 0.25 | 1.05 |
| No contact * University education | 0.61 | 0.20 | 0.29 | 1.30 |
| General health good | 1.07 | 0.74 | 0.72 | 1.60 |
| General health fair or poor | 1.02 | 0.96 | 0.58 | 1.78 |
| Family member * General health good | 1.52 | 0.15 | 0.86 | 2.67 |
| Family member * General health fair or poor | 1.19 | 0.68 | 0.52 | 2.72 |
| Friend * General health good | 1.17 | 0.65 | 0.60 | 2.29 |

| | | | | |
|---|---|---|---|---|
| Friend * General health fair or poor | 1.52 | 0.42 | 0.56 | 4.14 |
| Co-worker * General health good | 0.72 | 0.38 | 0.34 | 1.50 |
| Co-worker * General health fair or poor | 0.80 | 0.70 | 0.25 | 2.57 |
| No contact * General health good | 0.77 | 0.33 | 0.45 | 1.32 |
| No contact * General health fair or poor | 0.88 | 0.75 | 0.41 | 1.89 |
| Mental health good | 1.54 | 0.03 | 1.04 | 2.29 |
| Mental health fair or poor | 2.59 | <0.01 | 1.52 | 4.41 |
| Family member * Mental health good | 0.57 | 0.07 | 0.31 | 1.05 |
| Family member * Mental health fair or poor | 0.21 | <0.01 | 0.08 | 0.59 |
| Friend * Mental health good | 0.73 | 0.36 | 0.37 | 1.43 |
| Friend * Mental health fair or poor | 0.90 | 0.89 | 0.21 | 3.92 |
| Co-worker * Mental health good | 0.50 | 0.12 | 0.21 | 1.19 |
| Co-worker * Mental health fair or poor | 0.55 | 0.43 | 0.12 | 2.41 |
| No contact * Mental health good | 0.84 | 0.53 | 0.49 | 1.44 |
| No contact * Mental health fair or poor | 0.27 | 0.01 | 0.11 | 0.70 |
| Constant | 0.21 | 0.01 | 0.07 | 0.61 |

WARNING! 4 in-sample cases have an outcome with a predicted probability that is less than 0.

Only one significant result was found in the association between intimacy of contact and expectation of negative public attitudes toward people with depression. Compared to those who indicated that they had an emotional or mental health issue, those who had a co-worker as their most intimate contact had higher odds of expecting moderate or high negative public attitudes (OR=10.61, 95% CI: 1.41, 79.70). The confidence interval is wide indicating a small sample size and an imprecise estimate.

Females were less likely to have had high expectation of negative public attitudes (OR= 0.82, 95% CI: 0.69, 0.97) compared to males. This was consistent with the results from both previous analyses.

Age was both an effect modifier and confounder. Compared to people under age 20 with no contact, people aged 30-39 (OR= 0.19, 95% CI: 0.06, 0.66), 40-49 (OR= 0.24, 95% CI: 0.07, 0.82) and 50-59 (OR= 0.24, 95% CI: 0.07, 0.90) with no contact were less likely to have expected moderate or high negative public attitudes. Similarly, compared to people under age 20 with a co-worker as their most intimate contact, people aged 20-29 (OR= 0.14, 95% CI: 0.02, 0.94) and 40-49 (OR= 0.06, 95% CI: 0.01, 0.46) with a co-worker as their most intimate contact were less likely to have expected moderate or high negative public attitudes. As well, compared to people under age 20, people over aged 30-39 (OR= 3.99, 95% CI: 1.47, 10.87), 40-49 (OR= 4.97, 95% CI: 1.481, 13.70), and 50-59 (OR= 3.12, 95% CI: 1.14, 8.57) had higher odds of expecting moderate or high negative public attitudes.

Compared to white people, non-white people had higher odds of expecting moderate or high negative public attitudes (OR=1.4, 95% CI: 1.07, 1.84), and had higher odds of high expectation of negative public attitudes (OR=2.05, 95% CI: 1.62, 2.59). This was consistent with the previous two analyses.

Marital status was not significant as an effect modifier or confounder in this model.

Income was both an effect modifier and a confounder. Compared to those who had an annual household income of less than 30k and had a family member as their most intimate contact, those who had an income of 50-70k (OR= 2.61, 95% CI: 1.12, 6.07) or 100k+ (OR= 2.63, 95% CI: 1.14, 6.06) and a family member as their most intimate contact had higher odds of expecting highly negative public attitudes. As well, compared to those who had an annual household income of less than 30k, those with an annual income of 50-70k were less likely to have had high expectations of negative public attitudes (OR= 0.48, 95% CI: 0.26, 0.87).

Education was an effect modifier. Compared to people with less than a high school education and no contact, those with a college (OR= 2.20, 95% CI: 1.05, 4.58) or university education (OR= 2.68, 95% CI: 1.15, 6.23) had significantly higher odds of expecting moderate or high negative public attitudes. Similarly, compared to people who had less than a high school education and had a family member as their most intimate contact, people with a college (OR=

0.47, 95% CI: 0.23, 0.97) or university (OR= 0.45, 95% CI: 0.21, 0.99) education and the same intimate contact were less likely to have had high expectations of negative public attitudes.

Employment was not a significant effect modifier or confounder in this analysis.

General health was an effect modifier. Compared to those who rated their general health as excellent or very good and had a family member as their most intimate contact, those who rated their general health as good and had a family member as their most intimate contact had significantly higher odds of expecting moderate or high negative public attitudes (OR= 1.81, 95% CI: 1.04, 3.14).

Mental health was an effect modifier and confounder. Compared to people who rated their mental health as excellent or very good and had a co-worker as their most intimate contact, those who rated their mental health as fair or poor and had the same most intimate contact were significantly less likely to have expected moderate or high negative public attitudes (OR= 0.17, 95% CI: 0.04, 0.71). Similarly, compared to people who rated their mental health as excellent or very good and had a family member as their most intimate contact, those who rated their mental health as fair or poor and had the same most intimate contact were less likely to have had high expectations of negative public attitudes (OR= 0.21, 95% CI: 0.08, 0.59). Compared to people who rated their mental health as excellent or very good and had no contact, those who rated their mental health as fair or poor and had no contact were significantly less likely to have had high expectations of negative public attitudes (OR= 0.27, 95% CI: 0.11, 0.70). As well, compared to people who rated their mental health as excellent or very good, people who rated their mental health as good (OR= 1.54, 95% CI: 1.04, 2.29), fair or poor (OR= 2.59, 95% CI: 1.52, 4.41) had significantly higher odds of high expectations of negative public. Therefore, people with worse mental health expected more negative public attitudes toward people with depression.

## 4.1 Summary of Key Findings

In summary, the hypotheses of this thesis were not supported by the data. The first hypothesis was that Canadians would be less likely to expect negative public attitudes if they had prior personal contact with someone who has had an emotional or mental health problem. The stratified analysis showed there were significantly more people who had prior contact amongst people who scored in the lowest stigma category and significantly more people without prior contact that scored in the highest stigma category. However, the results of the ordinal regression indicated that there was no significant main effect in the odds of expecting moderate or high stigma versus low stigma between people with and without prior personal contact. There were several statistically significant effect modifiers: people who were aged 20-29, 30-39, or 60-69, single, had an average annual household income of 70-100k, had a college or university education, and rated the general health as good, fair or poor. This suggested that contact was important for these specific sub-groups, even if it wasn't important in all groups.

The second hypothesis was that expectation of negative public attitudes would be inversely associated with intimacy of contact. The ordinal regression showed that, compared to someone with personal experience, a person whose most intimate contact was a co-worker had significantly higher odds of having moderate or high expectation of negative public attitudes. There were no other significant differences in expectations of negative public attitudes between someone who had an emotional or mental health problem and someone with any other form of contact. No inverse relationship was found. However, there were once again several effect modifiers, indicating that contact was important for these specific sub-groups. These groups were: people who were aged 20-29, 30-39, 40-49, or 50-59, had an annual household income of 50-70k or 100k+, had a college or university education, rated their general health as good, and rated their mental health as fair or poor. The analysis was repeated to determine if the number of types of contact was associated with expectation of negative public attitudes. There was no significant difference in expectation of negative public attitudes between someone who had no contact and someone with 1, 2, or 3/4 types of contact. Expectations of negative public attitudes did not decrease with more types of contact. Again, there were several effect modifiers that suggested that contact was important for certain sub-groups. These groups were: people who were aged 20-29, 30-39, or 50-59, single, non-white, had an annual household income of 50-70k or 70-100k, had a high school, college or university education, and rated their general health as good, fair, or poor. Five of these sub-groups were significant in all three analyses: people who were 20-29 or 30-39, had a college or university education, and had good general health. Expectations of negative public attitudes in these groups were consistently impacted by contact.

## References


Brohan, E., Elgie, R., Sartorius, N. & Thornicroft, G. (2010). Self-stigma, empowerment and perceived discrimination among people with schizophrenia in 14 European countries: The GAMIAN-Europe study. Schizophrenia Research, 122, 232-238.

Cook, T.M. & Wang, J.L. (2010). Descriptive epidemiology of stigma against depression in a general population sample in Alberta. BioMed Central Psychiatry, 10, 29.

Jones, A.R., Cook, T.M. & Wang, J.L. (2011). Rural-Urban Differences in Stigma Against Depression and Agreement With Health Professionals About Treatment. Journal of Affective Disorders, 134, 145-150.

Statistics Canada. Table 105-1101 - Mental Health Profile, Canadian Community Health Survey - Mental Health (CCHS), CANSIM (database) [Internet]. Ottawa: Statistics Canada; 2013 September 17 [cited 2014 February 19]. Available from: http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1051101&paSer=&pattern=&stByVal=1&p1=1&p2=31&tabMode=dataTable&csid=

# Chapter 5

# General Discussion

## 5.1 Summary of Findings

Expectations of negative public attitudes are an extra burden that is associated with mental illnesses. Previous studies have found that prior personal contact with a person with a mental illness is associated with reduced expectations of negative public attitudes. In this study, I described Canadians' expectations of negative attitudes toward people with depression and examined the association between intimacy of prior contact with a person with emotional or mental health problems and the expectation of negative public attitudes towards those with depression. I hypothesized that (a) Canadians would be less likely to hold negative attitudes if they had prior personal contact with someone who had a mental illness and (b) negative attitudes would be inversely associated with intimacy of contact.

Contact was measured using four questions from the rapid response module of the Annual Component of the Canadian Community Health Survey (N=10,389). Contact was analyzed in three ways: (1) any contact versus no contact, (2) intimacy of contact (self, family member, friend, co-worker, no contact), and (3) total number of types of contact (0, 1, 2, 3 or 4). Expectations of negative public attitudes toward people with depression were measured using a reduced version of Link's Devaluation-Discrimination Scale. It consisted of six stigmatizing statements and asked respondents to what degree they thought 'most people' would agree with the statement.

There was only one statistically significant direct effect. Compared to those who had personally experienced a mental illness, those who identified knowing a co-worker with a mental illness had higher odds of expecting negative public attitudes (OR= 10.61, 95% CI: 1.41, 79.70), however, the estimate was imprecise and may have been a spurious association owing to the large number of comparisons made in this analysis. With this one possible exception, I was unable to confirm the general hypotheses that previous personal contact with a person with emotional or mental health problems was associated with expectations of negative public attitudes toward people with depression. Although I was unable to confirm that contact was directly associated with expectation of negative public attitudes, I was able to determine that contact was important for several sub-groups (people who were aged 20-29, 30-39, 40-49, or 50-59, single, non-white, had an annual household income of 50-70k, 70-100k, or 100k+, had a high school, college or university education, rated their general health as good, fair, or poor, and rated their mental health as fair or poor). This indicates that contact has a different effect depending on social circumstances. Contact based anti-stigma interventions rely on having a specific audience for whom to target their message. These specific groups exhibited a different relationship between contact and expectation of negative public attitudes than others. This is important when designing interventions for targeting various groups.

One possible reason for the lack of a direct result may be that Link's Devaluation-Discrimination Scale measures cultural expressions of stigma rather than personal stigma. There are benefits to this because it reduces the social desirability bias that is associated with measurement of sensitive issues (Thompson et al., 2002). Link's scale aims to decrease this bias by asking to what degree respondents believe *most people* would agree with the statement presented and this may not reflect a person's own attitudes. If a person is not answering with their own opinion, their previous personal contact with a person with a mental illness may not change how they assess *most people's* attitudes because they have a common view of the cultural stereotypes. At the end of the survey, participants were asked if they shared the opinions of most people they know regarding people with depression. Approximately 26% of the sample stated that they did not agree with most people so their attitude differed from what they thought the public felt.

Sample size also may have been a factor. Although the sample was large to begin with, after stratifying for the covariates, many of the cell sizes were quite small. As well, with a sensitive topic like mental illness stigma, there were many people who chose not to answer all of the stigma questions (11% of the sample, approximately 1,100 people answered less than 5 of the stigma questions). This greatly reduced the sample size. As a result, the confidence intervals for the odds ratio estimates were wide and most included 1.0. Therefore, it is possible that an association exists and sample size was too small to detect it once the many confounders were considered. If the odds ratio estimates are accurate (and a bigger study found them to be statistically significant), the associations could be meaningful. For example, if a person whose most intimate contact is their co-worker and they have 10 times the odds of expecting any negative public attitudes compared to a person who themselves have an emotional or mental health problem, this suggests the need for workplace anti-stigma programs. However, based on my results, no definitive recommendations can be made at this time.

Measurement of the exposure was of some concern in this study, which also may have contributed to the lack of direct effects. I tried to approximate the contact question scale created by Holmes et al. (1999) but items were not worded in the same manner and some were open to interpretation. For example, the question about working with someone with an emotional or mental health problem could be interpreted in more ways than one. A person may only answer yes if they had a co-worker with an issue, or they may answer yes if they had worked in any capacity with someone with an issue such as in a caregiving situation. This may have been an issue because the quality of contact may have been different in these two situations. Quality of contact refers to the positive or negative feeling a person gets when they meet or interact with a person they know has a mental illness (Couture & Penn, 2003). Quality of contact is an important issue in the relationship explored in this thesis but could not be measured because it was not part of the original rapid response survey. Based on contact theory, in order to have positive contact with a person in the stigmatized group, the encounter should be one of equal status, intimate (one-on-one or a small group setting), cooperative (working toward a common goal), and should dispel the stereotype surrounding the group without going so far as to make the person seem to be the "exception to the rule" (Allport, 1954). Physicians and other health care providers have more negative public attitudes and it may be because the contact they have with patients does not dissipate stereotypes because the patients are often at their worst (Couture & Penn, 2003). Health care providers do not often get to see a patient's full recovery. Therefore, quality of contact should be included in all future studies of previous contact and mental illness stigma, as it has been found to be more important than quantity of contact (Couture & Penn, 2003). Similarly, this illustrated residual confounding that may have also contributed to the lack of direct effects. Health care providers are known to be an important subgroup when studying mental illness stigma and were not included in this thesis.

It is possible that my hypotheses were not confirmed because depression was chosen as the focus. Depression is a prevalent disorder in Canada (4.7% in one year with a lifetime prevalence of 11.3% (Statistics Canada Table 105-1101, 2013)) so perhaps the population is more positive toward people with depression whether they know someone with emotional or mental health problems or not (Crisp et al., 2005). If a more severe mental illness was chosen as the focus, such as schizophrenia, people may have had more extreme attitudes. Contact may have more of an influence (particularly if it was positive or negative) on public attitudes if a person is thinking only about experiences with a person with a more severe illness.

Finally, it is possible that no direct effects were found because there was some non-differential misclassification. Many of the predictors had to be re-grouped (including the outcome). There was no reason to believe that respondents were systematically classified in a higher or lower group for any of the variables, therefore the misclassification was non-differential. This would bias the estimates toward the null. Since only one significant result was found, this may have been a contributing factor.

A further limitation was that odds ratios were calculated and the rare disease assumption was not met. The percentage of people who had a stigmatizing attitude was over 20%. This made the odds ratio more difficult to interpret as it could not be interpreted as a relative risk. As well, odds ratios can exaggerate effect sizes compared to relative risks (Grimes & Schulz, 2008). As we did not see many significant results, this may not be a huge concern, but is a limitation.

Another limitation was that many effect modifiers (or sub-group analyses) were explored. Some were found to be highly significant when no other category of that variable was significant. For example, in the any contact analysis (Table 5, part 1), a person being aged 30-39 was a significant effect modifier, while a person being aged 20-29 was not significant. This is likely because the sample sizes were so small. There may have been fewer people with any contact in the 20-29 years group. We must be cautious when interpreting these results.

A final limitation was that backwards elimination was used to retain variables in the model. This method relies on p-values to retain variables unlike a change in estimate approach that can determine the effect of a variable on the estimate. It is possible because this approach was chosen that variables may have been eliminated from the model because they had too small of a sample size to be associated with the outcome. However, I retained more variables in the models than I was expecting so this may not have had an effect on the results.

## 5.2 Study Strengths

Despite these problems and uncertainties, the study had several strengths. This was the first study to describe public attitudes toward people with depression in a representative sample of the Canadian general population. Previous international studies have been completed on this subject, but none in Canada. In addition, Canadian studies have looked at stigma toward people with mental illnesses in general, but none have focused on the previous personal contact with a person with a mental illness.

Secondly, this was one of few studies in the literature to examine intimacy of contact and stigma using Link's Devaluation Discrimination Scale.

Thirdly, this was the first study to use the reduced Devaluation-Discrimination Scale. Cronbach's alpha for the 6-item Devaluation-Discrimination Scale was 0.82. This was the same as the 12-item Measure used in a sample of users of mental health services (Brohan et al., 2010). This suggested that the reduced measure could be used in place of the full measure if time or monetary constraints were an issue such as in a large national survey.

## 5.3 Future Directions

As previously discussed, the survey data used for this analysis did not include a quality of contact variable. In future research, the quality of contact could be manipulated as a key study variable, such as in the prospective study completed by Reinke et al. (2004). They had a man with schizoaffective disorder speak to students at a local university. There were five groups each of which had a different quality of contact assigned to them. 1. In-person talk that moderately disconfirmed stereotypes. 2. Videotaped talk that moderately disconfirmed stereotypes (the exact same as the in-person talk just taped). 3. Videotaped talk that highly disconfirmed stereotypes. 4. Videotaped talk that had little or no disconfirmation of stereotypes. 5. Control group (video with no relation to mental illness). This study used a social distance scale to measure attitudes. This scale asks questions about willingness to be near someone with a mental illness (example: How would you feel about renting a room in your home to a person with severe mental illness?). Higher scores indicate more social distance, or an unwillingness to interact with a person with severe mental illness. The study found that after the intervention, social distance scores for both the in-person and video groups changed significantly compared to the control and the change was greater for the in-person group. When only looking at the three video groups, there was no change in the social distance score after participants watched the video with little or no disconfirmation of stereotypes. There were significant changes in the social distance score after the participants saw the videos with moderate or high disconfirmation of stereotypes, and there was no difference between these two groups. Overall, controlling the quality of contact had an effect on the changing of attitudes toward people with mental illness.

Contact questions in future studies should follow the scale of Holmes et al. (1999). The wording of those questions is clear and leaves little to the respondent's interpretation. However, the scale is longer and more time consuming so may not be appropriate for large national surveys that must cover multiple topics.

A next step for this research would be to compare personal and perceived stigma in the Canadian general population. Personal stigma refers to the public attitudes that a person holds (Griffiths, Christensen & Jorm, 2008). Perceived stigma refers to the public stigma that a person perceives (or expects) (Griffiths, Christensen & Jorm, 2008). This study focused solely on perceived stigma. A study comparing personal and perceived attitudes was completed in the Australian general population (Griffiths, Christensen & Jorm, 2008). They found that prior personal contact with a person with depression decreased their personal stigma, but increased their perceived stigma.

Because, as this study has demonstrated, Link's Devaluation Discrimination Measure can be reduced to 6 items without loss of internal consistency, there is the potential to track changes in expectation of negative public attitudes toward people with depression over time in population samples. Unfortunately, Statistics Canada removed this measure from the current CCHS focusing on mental health because the survey was too lengthy (H. Stuart, personal communication, 2014), making the rapid response survey reported in this thesis the only national data available to this point in time.

## 5.4 Conclusion

Using a shortened version of Link's Devaluation and Discrimination Scale, I was unable to confirm a direct relationship between contact with someone who has had a mental illness and the expectation that individuals with depression would be devalued in a representative national sample of Canadians. However, I did find some effect modification so it would appear that the effect of contact differs depending on one's social circumstances. Future research is needed in order to provide greater clarity to the social variables that may impede or promote the effectiveness of contact as a stigma reduction strategy.

## References


Allport, G.W. (1954). The Nature of Prejudice. Reading, MA: Addison-Wesley.

Brohan, E., Elgie, R., Sartorius, N. & Thornicroft, G. (2010). Self-stigma, empowerment and perceived discrimination among people with schizophrenia in 14 European countries: The GAMIAN-Europe study. Schizophrenia Research, 122, 232-238.

Cook, T.M. & Wang, J.L. (2010). Descriptive epidemiology of stigma against depression in a general population sample in Alberta. BioMed Central Psychiatry, 10, 29.

Couture, S.M. & Penn, D.L. (2003). Interpersonal Contact and the Stigma of Mental Illness: A Review of the Literature. Journal of Mental Health, 12(3), 291-305.

Crisp, A., Gelder, M., Goddard, E. & Meltzer, H. (2005). Stigmatization of People with Mental Illnesses: A Follow-up Study within the Changing Minds Campaign of the Royal College of Psychiatrists. World Psychiatry, 4(2), 106-113.

Griffiths, K.M., Christensen, H. & Jorm, A.F. (2008). Predictors of Depression Stigma. BioMed Central Psychiatry, 8, 25-37.

Grimes, D.A. & Schulz, K.F. (2008). Making Sense of Odds and Odds Ratios. Obstetrics and Gynecology, 111(2), 423-426.

Holmes, E.P., Corrigan, P.W., Williams, P., Canar, J. & Kubiak, M.A. (1999). Changing Attitudes About Schizophrenia. Schizophrenia Bulletin, 25(3), 447-456.

Link, B.G. (1987). Understanding Labeling Effects in the Area of Mental Disorders: An Assessment of Expectations of Rejection. American Sociological Review, 52(1), 96-112.

Reinke, R.R., Corrigan, P.W., Leonhard, C., Lundin, R.K. & Kubiak, M.A. (2004). Examining Two Aspects of Contact on the Stigma of Mental Illness. Journal of Social and Clinical Psychology, 23(3), 377-389.

Statistics Canada. Canadian Community Health Survey (CCHS) Rapid response on Stigma and Mental Health complement to the user guide. Ottawa: Statistics Canada; 2010 October.

Thompson, A.H., Stuart, H., Bland, R.C., Arboleda-Florez, J., Warner, R., & Disckson, R.A. (2002). Attitudes about schizophrenia from the pilot site of the WPA worldwide campaign against the stigma of schizophrenia. Social Psychiatry and Psychiatric Epidemiology, 37, 475-482.

# Appendix A

# Ethics Approval

**QUEEN'S UNIVERSITY HEALTH SCIENCES & AFFILIATED TEACHING HOSPITALS RESEARCH ETHICS BOARD-DELEGATED REVIEW**January 31, 2014

Miss Alex Phillips Department of Public Health Sciences Queen's University

Dear Miss Phillips

**Study Title: EPID-462-14 Intimacy of Contact with People with Emotional and Mental Health Issues and Expectation of Negative Public Attitudes Toward People with DepressionFile # 6011757Co-Investigators: Dr. H. Stuart**

I am writing to acknowledge receipt of your recent ethics submission. We have examined the protocol for your project (as stated above) and consider it to be ethically acceptable. This approval is valid for one year from the date of the Chair's signature below. This approval will be reported to the Research Ethics Board. Please attend carefully to the following listing of ethics requirements you must fulfill over the course of your study:

**Reporting of Amendments**: If there are any changes to your study (e.g. consent, protocol, study procedures, etc.), you must submit an amendment to the Research Ethics Board for approval. Please use event form: HSREB Multi- Use Amendment/Full Board Renewal Form associated with your post review file # **6011757** in your Researcher Portal (https://eservices.queensu.ca/romeo_researcher/)

**Reporting of Serious Adverse Events**: Any unexpected serious adverse event occurring locally must be reported within 2 working days or earlier if required by the study sponsor. All other serious adverse events must be reported within 15 days after becoming aware of the information. Serious Adverse Event forms are located with your post- review file **6011757** in your Researcher Portal (https://eservices.queensu.ca/romeo_researcher/)

**Reporting of Complaints**: Any complaints made by participants or persons acting on behalf of participants must be reported to the Research Ethics Board within 7 days of becoming aware of the complaint. Note: All documents supplied to participants must have the contact information for the Research Ethics Board.

**Annual Renewal**: Prior to the expiration of your approval (which is one year from the date of the Chair's signature below), you will be reminded to submit your renewal form along with any new changes or amendments you wish to make to your study. If there have been no major changes to your protocol, your approval may be renewed for another year.

Yours sincerely,

Albert F. Clark.

Chair, Health Sciences Research Ethics Board January 31, 2014

**Investigators please note that if your trial is registered by the sponsor, you must take responsibility to ensure that the registration information is accurate and complete**

# Appendix B

## Tables

**Figure 1**. Starting and final sample size with exclusion criteria.

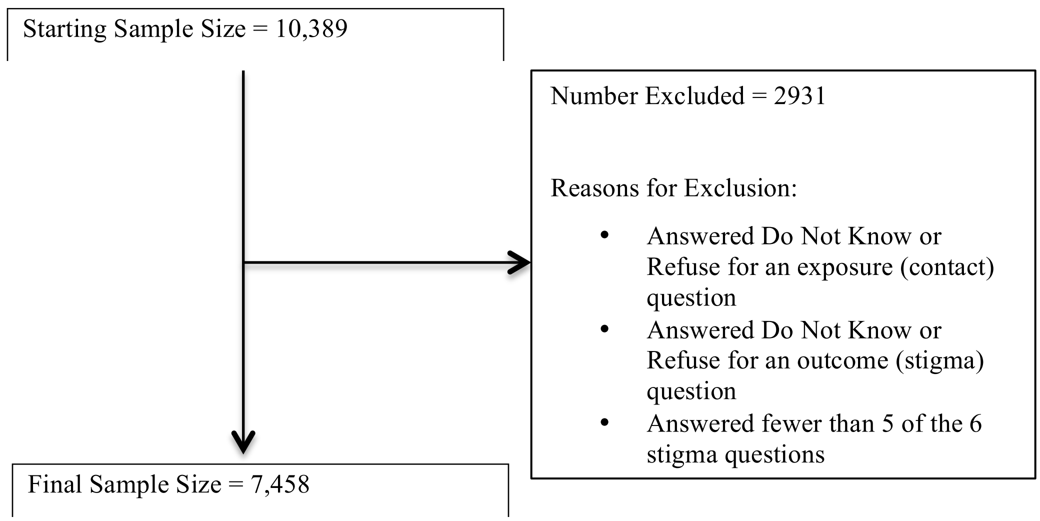

**Table 1.** Specific questions used to determine covariates.

| | |
|---|---|
| ANDB_Q01 | What is the respondent's age?<br>\|_\|_\|_\| Age in years |
| DHH_Sex | What is the respondent's sex?<br>• Male<br>• Female |
| MSNC_Q01 | What is your marital status?<br>• Married<br>• Living common-law<br>• Widowed<br>• Separated<br>• Divorced<br>• Single, never married |
| SDC_Q4_3 | People living in Canada come from many different cultural and racial backgrounds. Are you:<br>• White<br>• All other responses |
| INC_8C & 8D | Please stop me when I have read the category which applies to you:<br>• Less than $5,000<br>• $5,000 or more but less than $10,000<br>• $10,000 or more but less than $15,000<br>• $15,000 or more but less than $20,000<br>• $20,000 or more but less than $25,000<br>• $25,000 or more but less than $30,000<br>• $30,000 or more but less than $40,000<br>• $40,000 or more but less than $50,000<br>• $50,000 or more but less than $60,000<br>• $60,000 or more but less than $70,000<br>• $70,000 or more but less than $80,000<br>• $80,000 or more but less than $90,000<br>• $90,000 or more but less than $100,000<br>• $100,000 and over |
| EDU_1 | What is the highest grade of elementary or high school you have ever completed?<br>• Grade 8 or lower (Quebec: Secondary II or lower)<br>• Grade 9-10 (Quebec: Secondary III or IV, Newfoundland and Labrador: 1st year of secondary)<br>• Grade 11-13 (Quebec: Secondary V, Newfoundland and Labrador: 2nd to 4th year of secondary) |

| | |
|---|---|
| EDU_2<br><br><br><br>EDU_3<br><br><br><br><br>EDU_4 | Did you graduate from high school (secondary school)?<br>• Yes<br>• No<br><br>Have you received any other education that could be counted towards a degree, certificate or diploma from an education institution?<br>• Yes<br>• No<br><br>What is the highest degree, certificate or diploma you have obtained?<br>• No post-secondary degree, certificate or diploma<br>• Trade certificate or diploma from a vocational school or apprenticeship training<br>• Non-university certificate or diploma from a community college, CEGEP, school of nursing, etc.<br>• University certificate below bachelor's level<br>• Bachelor's degree<br>• University degree or certificate above bachelor's degree |
| GEN_08 | Have you worked at a job or business at any time in the past 12 months?<br>• Yes<br>• No |
| GEN_01 | In general, would you say your health is:<br>• Excellent<br>• Very Good<br>• Good<br>• Fair<br>• Poor |
| GEN_02B | In general, would you say your mental health is:<br>• Excellent<br>• Very Good<br>• Good<br>• Fair<br>• Poor |

Tables 2, 3 and 4 show the full results from the stratified analyses. Each table is divided into 2 parts (a and b) corresponding to stigma groups 1 and 3. Test statistics and p-values are shown for each stigma group for each covariate. The test statistic and p-value for stigma group 1 is the result of a logistic regression comparing those who scored in stigma group 1 to those in stigma group 2 & 3 with the only independent variable being any contact (Table 2), total number of types of contact (Table 3), or most intimate form of contact (Table 4). The test statistic and p-value for stigma group 3 is the result of a logistic regression comparing those who scored in stigma group 3 to those in stigma group 1 & 2 with the only independent variable being any contact (table 2), total number of types of contact (table 3), or most intimate form of contact (table 4).

Tables 2a and 2b show the results of the stratified analysis looking at any contact with a person with emotional or mental health problems. The table was separated into two parts (a and b) and column totals span both tables. Weighted percentages represent the percentage of people within each of the stigma groups that fall into each of the total contacts categories. Logistic regression was used with any contacts as the only variable in the model to determine if there were significant differences in the percentage of people in each of the four total contact categories.

Table 2a compares those with any contact versus no contact for those who scored in the lowest tertile on the stigma score (group 1, stigma score of 6 to 12) indicating that they had the lowest expectation that most people would devalue or discriminate against someone with depression. T-statistics and p-values were estimated using logistic regression. Any contact was the only variable added with stigma group 1 (yes/no) as the outcome. This was done for each separate covariate.

**Table 2a.** Results from the stratified analysis comparing weighted percentage of people (with coefficient of variation) who had any contact versus no contact amongst those who scored in the lowest stigma group (expected no negative public attitudes toward people with depression). Test-statistics and p-values are the results of a logistic regression with the dependent variable as scoring in stigma group 1 (with stigma groups 2 and 3 as the reference) and the only independent variable as any contact.

| Any Previous Contact | | No | Yes | T-statistic Gr1 v Gr2/3 | p-value |
|---|---|---|---|---|---|
| Unstratified | | 26.7% (4.9) | 30.8% (3.1) | 2.50 | **0.01** |
| Sex | Male | 26.6% (6.8) | 28.7% (5.0) | 0.91 | 0.37 |
| | Female | 26.9% (7.3) | 32.6% (3.9) | 2.45 | **0.02** |
| Age | <20 | 29.8% (8.7) | 33.2% (8.5) | 0.88 | 0.38 |
| | 20-29 | 26.6% (10.9) | 33.6% (6.4) | 1.90 | 0.06 |
| | 30-39 | 29.3% (13.2) | 28.9% (8.4) | -0.09 | 0.93 |
| | 40-49 | 20.9% (15.3) | 29.1% (8.4) | 1.91 | 0.06 |
| | 50-59 | 31.9% (14.4) | 30.6% (7.7) | -0.23 | 0.82 |
| | 60-69 | 21.4% (15.9) | 33.4% (6.4) | 2.78 | **0.01** |
| | 70+ | 24.2% (10.1) | 27.5% (8.3) | 0.98 | 0.33 |
| Marital Status | Married or Common-Law | 26.8% (7.5) | 31.8% (4.2) | 1.98 | 0.05 |
| | Separated, Divorced, or Widowed | 24.5% (12.4) | 31.9% (8.1) | 1.84 | 0.07 |
| | Single | 27.0% (7.1) | 28.3% (5.5) | 0.51 | 0.61 |
| Ethnic Background | White | 29.7% (5.1) | 31.7% (3.2) | 1.11 | 0.27 |
| | Other | 21.1% (11.7) | 24.9% (12.3) | 0.96 | 0.34 |
| Income | <30k | 22.0% (11.5) | 27.5% (8.7) | 1.58 | 0.12 |
| | 30k to 50k | 22.0% (12.4) | 33.4% (7.1) | 3.03 | **<0.01** |
| | 50k to 70k | 27.9% (14.1) | 31.1% (8.5) | 0.65 | 0.52 |
| | 70k to 100k | 31.9% (13.1) | 29.9% (6.8) | -0.45 | 0.65 |
| | 100k+ | 27.1% (11.0) | 31.9% (6.1) | 1.30 | 0.20 |
| Education | < High school | 30.6% (7.0) | 27.6% (6.3) | -1.12 | 0.26 |
| | High school | 25.0% (9.8) | 30.6% (6.4) | 1.74 | 0.08 |
| | College | 24.0% (10.2) | 33.4% (5.2) | 2.93 | **<0.01** |
| | University | 23.8% (13.7) | 30.6% (6.2) | 1.72 | 0.09 |

| | | | | | |
|---|---|---|---|---|---|
| Employment in the Last 12 Months | Yes | 27.1% (6.2) | 30.9% (3.7) | 1.89 | 0.06 |
| | No | 26.5% (10.0) | 31.9% (6.0) | 1.52 | 0.13 |
| | Not Applicable | 25.3% (9.2) | 25.4% (9.8) | 0.04 | 0.97 |
| Self-Rated General Health | Excellent/Very Good | 28.4% (6.1) | 33.3% (3.7) | 2.36 | **0.02** |
| | Good | 21.6% (10.2) | 28.2% (5.4) | 2.30 | **0.02** |
| | Fair/Poor | 30.8% (13.5) | 23.4% (9.7) | -1.56 | 0.12 |
| Self-Rated Mental Health | Excellent/Very Good | 27.0% (5.6) | 32.0% (3.5) | 2.65 | **0.01** |
| | Good | 24.4% (12.0) | 27.2% (7.1) | 0.78 | 0.44 |
| | Fair/Poor | 34.8% (21.6*) | 29.2% (11.9) | -0.70 | 0.49 |

* Indicates a marginal estimate. There is high sampling variability associated with the estimates.

Table 2b compares those with any contact versus no contact for those who scored in the highest tertile on the stigma score (group 3, stigma score of 18 to 30) indicating that they had the highest expectation that most people would devalue or discriminate against someone with depression. They had high expectations of negative public attitudes toward people with depression.

**Table 2b.** Results from the stratified analysis comparing weighted percentage (with coefficient of variation) of people who had any contact versus no contact amongst those who scored in the highest stigma group (high expectation of negative public attitudes toward people with depression). Test-statistics and p-values are the results of a logistic regression with the dependent variable as scoring in stigma group 3 (with stigma groups 1 and 2 as the reference) and the only independent variable as any contact.

| Any Previous Contact | | No | Yes | T-statistic Gr3 v Gr1/2 | p-value |
|---|---|---|---|---|---|
| Unstratified | | 34.4% (4.5) | 28.9% (3.3) | -3.09 | **<0.01** |
| Sex | Male | 35.1% (5.7) | 30.8% (4.9) | -1.69 | 0.09 |
| | Female | 33.4% (6.6) | 27.3% (4.4) | -2.62 | **0.01** |
| Age | <20 | 31.1% (9.0) | 22.0% (12.2) | -2.28 | **0.02** |

| | | | | | |
|---|---|---|---|---|---|
| | 20-29 | 36.2% (9.7) | 18.4% (10.3) | -4.45 | **<0.01** |
| | 30-39 | 32.7% (12.2) | 27.7% (8.8) | -1.05 | 0.29 |
| | 40-49 | 32.0% (12.9) | 37.5% (6.9) | 1.09 | 0.28 |
| | 50-59 | 33.8% (13.2) | 31.5% (8.0) | -0.43 | 0.67 |
| | 60-69 | 37.1% (12.1) | 28.1% (7.1) | -1.89 | 0.06 |
| | 70+ | 39.6% (7.5) | 32.5% (6.9) | -1.89 | 0.06 |
| Marital Status | Married or Common-Law | 33.1% (6.3) | 31.1% (4.3) | -0.80 | 0.43 |
| | Separated, Divorced, or Widowed | 35.1% (9.7) | 30.9% (7.4) | -1.11 | 0.27 |
| | Single | 36.0% (6.8) | 22.9% (6.7) | -4.67 | **<0.01** |
| Ethnic Background | White | 29.4% (5.4) | 27.0% (3.6) | -1.32 | 0.19 |
| | Other | 43.8% (7.3) | 41.0% (7.7) | -0.64 | 0.53 |
| Income | <30k | 39.6% (9.2) | 31.2% (7.6) | -1.96 | 0.05 |
| | 30k to 50k | 39.8% (8.8) | 28.1% (7.6) | -2.94 | **<0.01** |
| | 50k to 70k | 33.0% (13.5) | 27.5% (9.8) | -1.05 | 0.29 |
| | 70k to 100k | 30.4% (12.5) | 30.0% (7.8) | -0.09 | 0.93 |
| | 100k+ | 34.1% (10.3) | 28.5% (6.5) | -1.40 | 0.16 |
| Education | < High school | 36.9% (6.4) | 30.2% (6.5) | -2.23 | **0.03** |
| | High school | 29.9% (9.2) | 24.5% (7.4) | -1.64 | 0.10 |
| | College | 31.4% (9.5) | 29.5% (5.9) | -0.57 | 0.57 |
| | University | 40.5% (8.7) | 31.1% (6.8) | -2.25 | **0.03** |
| Employment in the Last 12 Months | Yes | 33.1% (5.8) | 28.6% (4.0) | -2.01 | 0.05 |
| | No | 36.8% (7.3) | 28.8% (6.4) | -2.50 | **0.01** |
| | Not Applicable | 36.3% (8.1) | 32.7% (8.5) | -0.86 | 0.39 |
| Self-Rated General Health | Excellent/Very Good | 33.8% (5.5) | 26.4% (4.5) | -3.42 | **<0.01** |
| | Good | 33.3% (8.4) | 32.0% (5.8) | -0.37 | 0.72 |
| | Fair/Poor | 40.6% (10.0) | 35.3% (7.5) | -1.13 | 0.26 |
| Self-Rated Mental Health | Excellent/Very Good | 33.1% (5.6) | 27.2% (4.1) | -2.82 | **0.01** |
| | Good | 39.7% (7.7) | 30.6% (6.3) | -2.49 | **0.01** |
| | Fair/Poor | 31.2% (21.8*) | 41.7% (8.4) | 1.17 | 0.24 |

* Indicates a marginal estimate. There is high sampling variability associated with the estimates.

Tables 3a and 3b show the results of the stratified analysis looking at total number of types of contact with a person with emotional or mental health problems. As with the previous tables, the table was separated into two parts (a and b) and column totals span both tables. Weighted percentages represent the percentage of people within each of the stigma groups that fall into each of the total contacts categories. Logistic regression was used with total contacts as the only variable in the model to determine if there were significant differences in the percentage of people in each of the four total contact categories.

Table 3a compares those with differing numbers of total contacts for those who scored in the lowest tertile on the stigma score (group 1, stigma score of 6 to 12 indicating that they had the lowest expectation that most people would devalue or discriminate against someone with depression) by number of contacts.

**Table 3a.** Results from the stratified analysis comparing weighted percentage of people (with coefficient of variation) who had differing total number of types of contact amongst those who scored in the lowest stigma group (expected no negative public attitudes toward people with depression). Test-statistics and p-values are the results of a logistic regression with the dependent variable as scoring in stigma group 1 (with stigma groups 2 and 3 as the reference) and the only independent variable as total number of types of contact.

| Total Number of Types of Contact | | 0 | 1 | 2 | 3 or 4 | T-statistic Gr1 v Gr2/3 | p-value |
|---|---|---|---|---|---|---|---|
| Unstratified | | 26.7% (4.9) | 29.5% (5.3) | 30.2% (5.5) | 33.4% (5.3) | 3.12 | **<0.01** |
| Sex | Male | 26.6% (6.8) | 27.6% (8.9) | 29.0% (7.8) | 30.1% (10.0) | 1.15 | 0.25 |
| | Female | 26.9% (7.3) | 31.4% (6.5) | 31.0% (7.3) | 35.6% (5.8) | 2.98 | **<0.01** |
| Age | <20 | 29.8% | 29.2% | 37.5% | 40.4% | 1.59 | 0.11 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | (8.7) | (12.1) | (13.9) | (20.4*) | | |
| | 20-29 | 26.6% (10.9) | 30.7% (10.8) | 36.5% (10.0) | 34.1% (11.2) | 2.10 | **0.04** |
| | 30-39 | 29.3% (13.2) | 33.5% (13.0) | 25.6% (14.2) | 28.4% (14.3) | -0.50 | 0.61 |
| | 40-49 | 20.9% (15.3) | 28.7% (15.6) | 25.8% (14.9) | 33.5% (12.0) | 2.13 | **0.03** |
| | 50-59 | 31.9% (14.4) | 25.1% (17.4) | 30.1% (12.8) | 36.5% (11.3) | 0.85 | 0.40 |
| | 60-69 | 21.4% (15.9) | 30.8% (12.3) | 34.9% (10.7) | 35.3% (10.1) | 2.95 | **<0.01** |
| | 70+ | 24.2% (10.1) | 29.5% (10.9) | 23.5% (15.9) | 28.3% (19.0*) | 0.55 | 0.59 |
| Marital Status | Married or Common-Law | 26.8% (7.5) | 31.2% (7.3) | 30.7% (6.8) | 33.8% (7.2) | 2.18 | **0.03** |
| | Separated, Divorced, or Widowed | 24.5% (12.4) | 25.7% (12.6) | 29.4% (14.2) | 39.6% (12.7) | 2.74 | **0.01** |
| | Single | 27.0% (7.1) | 27.5% (8.6) | 29.3% (9.3) | 28.1% (9.3) | 0.59 | 0.55 |
| Ethnic Background | White | 29.7% (5.1) | 29.2% (5.5) | 32.0% (5.6) | 34.2% (5.3) | 2.18 | **0.03** |
| | Other | 21.1% (11.7) | 29.3% (15.8) | 15.3% (24.7*) | 27.1% (25.5*) | 0.47 | 0.64 |
| Income | <30k | 22.0% (11.5) | 31.6% (11.9) | 23.2% (14.9) | 26.8% (16.4) | 0.66 | 0.51 |
| | 30k to 50k | 22.0% (12.4) | 29.5% (12.3) | 35.9% (12.2) | 34.6% (13.0) | 2.95 | **<0.01** |
| | 50k to 70k | 27.9% (14.1) | 25.1% (16.3) | 30.1% (12.5) | 39.5% (13.6) | 1.62 | 0.11 |
| | 70k to 100k | 31.9% (13.1) | 36.6% (12.0) | 28.6% (11.7) | 35.9% (11.7) | 0.49 | 0.62 |
| | 100k+ | 27.1% (11.0) | 32.4% (11.5) | 30.2% (10.0) | 33.5% (10.3) | 1.19 | 0.24 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Education | < High school | 30.6% (7.0) | 28.8% (9.4) | 24.7% (12.2) | 29.0% (13.6) | -1.06 | 0.29 |
| | High school | 25.0% (9.8) | 26.3% (11.1) | 33.6% (9.7) | 33.0% (13.4) | 2.14 | **0.03** |
| | College | 24.0% (10.2) | 34.8% (9.1) | 31.9% (9.9) | 33.5% (8.6) | 2.27 | **0.02** |
| | University | 23.84% (13.7) | 26.14% (12.2) | 28.95% (9.7) | 36.09% (9.7) | 2.64 | **0.01** |
| Employment in the Last 12 Months | Yes | 27.1% (6.2) | 29.3% (6.7) | 29.6% (6.5) | 34.4% (6.0) | 2.70 | **0.01** |
| | No | 26.5% (10.0) | 31.9% (10.1) | 33.8% (10.1) | 30.0% (10.7) | 1.17 | 0.24 |
| | Not Applicable | 25.3% (9.2) | 24.8% (13.0) | 27.2% (18.4*) | 24.2% (28.9*) | 0.12 | 0.90 |
| Self-Rated General Health | Excellent/ Very Good | 28.4% (6.1) | 30.7% (6.4) | 32.9% (6.5) | 37.4% (6.5) | 3.29 | **<0.01** |
| | Good | 21.6% (10.2) | 30.2% (9.5) | 25.5% (9.7) | 29.2% (9.1) | 1.92 | 0.06 |
| | Fair/Poor | 30.8% (13.5) | 21.0% (19.9*) | 25.6% (17.0*) | 24.4% (14.8) | -1.00 | 0.32 |
| Self-Rated Mental Health | Excellent/ Very Good | 27.0% (5.6) | 29.2% (6.0) | 32.8% (6.0) | 35.3% (6.4) | 3.57 | **<0.01** |
| | Good | 24.4% (12.0) | 29.9% (14.1) | 20.3% (13.5) | 21.5% (9.7) | 0.86 | 0.39 |
| | Fair/Poor | 34.8% (21.6*) | 31.8% (23.1*) | 30.1% (19.4*) | 27.5% (17.2*) | -0.85 | 0.40 |

* Indicates a marginal estimate. There is high sampling variability associated with the estimates.

Table 3b compares those with differing numbers of total contacts for those who scored in the highest tertile on the stigma score (group 3, stigma score of 18 to 30) indicating that they had the highest expectation that most people would devalue or discriminate against someone with depression. The table shows of all people with no contacts, the percentage in each category that fall into stigma group 3. Similarly, it shows of all people who had 1 contact, 2 contacts, and 3/4 contacts, the percentage in each category that fall into stigma group 3.

**Table 3b.** Results from the stratified analysis comparing weighted percentage (with coefficient of variation) of people who had differing number of types of contact amongst those who scored in the highest stigma group (high expectation of negative public attitudes toward people with depression). Test-statistics and p-values are the results of a logistic regression with the dependent variable as scoring in stigma group 3 (with stigma groups 1 and 2 as the reference) and the only independent variable as total number of types of contact.

| Total Number of Types of Contact | | 0 | 1 | 2 | 3 or 4 | T-statistic Gr3 v Gr1/2 | p-value |
|---|---|---|---|---|---|---|---|
| Unstratified | | 34.4% (4.5) | 30.0% (2.3) | 27.0% (2.3) | 29.6% (2.3) | -2.82 | **0.01** |
| Sex | Male | 35.1% (5.7) | 32.5% (7.5) | 31.5% (8.7) | 27.2% (9.3) | -2.26 | **0.02** |
| | Female | 33.4% (6.6) | 27.3% (7.8) | 23.5% (8.5) | 31.3% (6.6) | -1.42 | 0.16 |
| Age | <20 | 31.1% (9.0) | 24.0% (15.2) | 16.3% (25.9*) | 27.6% (31.1*) | -1.93 | 0.05 |
| | 20-29 | 36.2% (9.7) | 17.8% (18.3*) | 14.7% (17.8*) | 23.6% (15.7) | -3.15 | **<0.01** |
| | 30-39 | 32.7% (12.2) | 25.0% (14.2) | 30.6% (15.3) | 27.2% (13.7) | -0.73 | 0.47 |
| | 40-49 | 32.0% (12.9) | 41.5% (12.2) | 35.2% (11.7) | 35.7% (10.8) | 0.28 | 0.78 |
| | 50-59 | 33.8% (13.2) | 36.4% (13.1) | 27.6% (16.2) | 30.4% (12.2) | -0.95 | 0.34 |
| | 60-69 | 37.1% (12.1) | 28.2% (12.1) | 26.5% (13.3) | 29.6% (11.8) | -1.50 | 0.13 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 70+ | 39.6% (7.5) | 32.5% (8.9) | 33.3% (12.8) | 31.2% (18.7*) | -1.74 | 0.08 |
| Marital Status | Married or Common-Law | 33.1% (6.3) | 32.1% (7.3) | 31.2% (7.2) | 29.6% (7.2) | -1.18 | 0.24 |
| | Separated, Divorced, or Widowed | 35.1% (9.7) | 33.5% (10.4) | 25.6% (17.1) | 33.3% (13.2) | -0.75 | 0.45 |
| | Single | 36.0% (6.8) | 24.4% (10.0) | 17.9% (13.8) | 27.0% (11.2) | -3.62 | **<0.01** |
| Ethnic Background | White | 29.4% (5.4) | 28.1% (5.7) | 25.6% (6.8) | 27.3% (5.7) | -1.36 | 0.18 |
| | Other | 43.8% (7.3) | 39.2% (12.4) | 37.6% (15.2) | 49.0% (14.2) | -0.02 | 0.98 |
| Income | <30k | 39.6% (9.2) | 30.5% (12.3) | 23.9% (16.7*) | 39.0% (11.6) | -0.83 | 0.41 |
| | 30k to 50k | 39.8% (8.8) | 30.4% (12.9) | 23.2% (15.4) | 31.0% (11.7) | -2.44 | **0.02** |
| | 50k to 70k | 33.0% (13.5) | 32.8% (15.3) | 27.6% (14.2) | 21.0% (15.4) | -2.09 | **0.04** |
| | 70k to 100k | 30.4% (12.5) | 30.2% (12.1) | 31.4% (14.1) | 27.8% (13.7) | -0.30 | 0.77 |
| | 100k+ | 34.1% (10.3) | 29.3% (11.2) | 28.2% (11.4) | 28.0% (11.4) | -1.35 | 0.18 |
| Education | < High school | 36.9% (6.4) | 33.1% (8.6) | 24.2% (12.0) | 32.3% (13.0) | -2.37 | **0.02** |
| | High school | 29.9% (9.2) | 27.7% (11.7) | 20.2% (13.2) | 25.4% (13.9) | -1.66 | 0.10 |
| | College | 31.4% (9.5) | 26.6% (11.2) | 31.1% (9.8) | 30.8% (9.0) | 0.15 | 0.88 |
| | University | 40.5% (8.7) | 33.6% (11.6) | 29.8% (12.2) | 30.1% (10.0) | -2.35 | **0.02** |
| Employment in the Last 12 | Yes | 33.1% (5.8) | 29.9% (7.1) | 28.0% (7.2) | 27.9% (6.4) | -2.20 | **0.03** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | No | 36.8% (7.3) | 28.3% (10.5) | 21.5% (13.3) | 37.0% (10.0) | -1.07 | 0.28 |
| | Not Applicable | 36.3% (8.1) | 34.6% (10.8) | 30.1% (16.4) | 27.4% (26.2*) | -1.26 | 0.21 |
| Self-Rated General Health | Excellent/ Very Good | 33.8% (5.5) | 27.6% (6.9) | 25.5% (7.8) | 25.8% (8.2) | -3.21 | **<0.01** |
| | Good | 33.3% (8.4) | 33.0% (9.9) | 30.3% (10.9) | 32.8% (9.0) | -0.35 | 0.73 |
| | Fair/Poor | 40.6% (10.0) | 36.9% (14.5) | 26.8% (14.6) | 39.9% (10.6) | -0.65 | 0.51 |
| Self-Rated Mental Health | Excellent/ Very Good | 33.1% (5.6) | 29.1% (6.3) | 26.3% (7.4) | 25.4% (7.5) | -3.22 | **<0.01** |
| | Good | 39.7% (7.7) | 30.8% (12.7) | 28.3% (12.8) | 32.8% (9.7) | -1.92 | 0.06 |
| | Fair/Poor | 31.2% (21.8*) | 40.0% (19.6*) | 35.0% (17.8*) | 44.6% (10.9) | 1.35 | 0.18 |

* Indicates a marginal estimate. There is high sampling variability associated with the estimates.

Tables 4a and 4b show the results of the stratified analysis looking at intimacy of contact with a person with emotional or mental health issues. The table was separated into two parts (a and b) and column totals span both tables. Weighted percentages represent the percentage of people within each of the stigma groups that fall into each of the intimacy categories. Logistic regression was used with intimacy of contact as the only variable in the model to determine if there were significant differences in the percentage of people in each of the five contact categories.

Table 4a compares those with differing most intimate contacts for those who scored in the lowest tertile on the stigma score (group 1, stigma score of 6 to 12) indicating that they had the lowest expectation that most people would devalue or discriminate against someone with depression. The table shows of all people with self as their most intimate contact, the percentage in each category that fall into stigma group 1. Similarly, it shows of all people who had any other most intimate contact, the percentage in each category that fall into stigma group 1.

**Table 4a.** Results from the stratified analysis comparing weighted percentage of people (with coefficient of variation) who had differing intimacies of contact amongst those who scored in the lowest stigma group (expected no negative public attitudes toward people with depression). Test-statistics and p-values are the results of a logistic regression with the dependent variable as scoring in stigma group 1 (with stigma groups 2 and 3 as the reference) and the only independent variable as most intimate form of contact.

| Most Intimate Type of Contact | | Self | Family Member | Friend | Co-Worker | No Contact | T-statistic Gr1 v Gr2/3 | p-value |
|---|---|---|---|---|---|---|---|---|
| Unstratified | | 32.57% (5.7) | 30.18% (5.2) | 31.09% (6.4) | 28.92% (9.8) | 26.68% (4.9) | -2.69 | **0.01** |
| Sex | Male | 31.88% (9.3) | 27.79% (7.9) | 28.51% (10.1) | 27.56% (15.7) | 26.55% (6.8) | -1.17 | 0.24 |
| | Female | 32.91% (6.8) | 32.53% (6.6) | 33.11% (8.2) | 30.66% (12.3) | 26.85% (7.3) | -2.36 | **0.02** |
| Age | <20 | 48.17% (15.7) | 30.62% (15.0) | 35.25% (12.3) | 17.99% (37.66**) | 29.84% (8.7) | -1.74 | 0.08 |
| | 20-29 | 41.13% (10.6) | 29.44% (11.4) | 31.94% (13.5) | 34.57% (16.2) | 26.58% (10.9) | -2.16 | **0.03** |
| | 30-39 | 28.95% (16.1) | 27.47% (11.6) | 33.34% (16.1) | 26.27% (29.7*) | 29.30% (13.2) | 0.14 | 0.89 |
| | 40-49 | 23.10% (14.0) | 30.30% (13.2) | 24.70% (19.2*) | 44.66% (17.7*) | 20.90% (15.3) | -0.26 | 0.79 |
| | 50-59 | 33.89% (11.8) | 32.22% (13.1) | 30.45% (17.6*) | 19.03% (23.9*) | 31.85% (14.4) | -0.59 | 0.56 |
| | 60-69 | 37.69% (11.4) | 32.61% (9.7) | 39.33% (14.8) | 22.17% (22.8*) | 21.43% (15.9) | -3.22 | **<0.01** |
| | 70+ | 35.45% | 28.27% | 18.62% | 24.79% | 24.24% | -1.61 | 0.11 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | (16.0) | (12.8) | (22.0*) | (23.9*) | (10.1) | | |
| Marital Status | Married or Common-Law | 30.86% (8.1) | 31.13% (6.5) | 33.56% (8.7) | 33.07% (11.5) | 26.79% (7.5) | -1.42 | 0.16 |
| | Separated, Divorced, or Widowed | 38.46% (11.0) | 29.75% (13.9) | 28.26% (21.1*) | 22.12% (24.3*) | 24.52% (12.4) | -2.69 | **0.01** |
| | Single | 32.24% (9.5) | 27.72% (10.0) | 28.48% (9.9) | 21.12% (19.6*) | 27.03% (7.1) | -1.30 | 0.19 |
| Ethnic Background | White | 33.37% (5.5) | 30.41% (5.3) | 33.33% (6.7) | 29.31% (10.3) | 29.70% (5.1) | -1.35 | 0.18 |
| | Other | 26.90% (25.2*) | 27.90% (19.6*) | 19.51% (25.8*) | 23.60% (28.8*) | 21.09% (11.7) | -1.15 | 0.25 |
| Income | <30k | 27.88% (13.8) | 30.18% (15.6) | 25.99% (18.2*) | 18.09% (28.7*) | 22.00% (11.5) | -1.82 | 0.07 |
| | 30k to 50k | 33.62% (11.9) | 35.16% (11.0) | 36.51% (16.5*) | 19.54% (25.2*) | 22.00% (12.4) | -3.33 | **<0.01** |
| | 50k to 70k | 36.92% (16.4) | 31.33% (13.7) | 27.72% (16.3) | 24.04% (22.0*) | 27.90% (14.1) | -1.14 | 0.26 |
| | 70k to 100k | 33.96% (12.4) | 26.98% (11.5) | 32.29% (14.1) | 26.78% (19.1*) | 31.90% (13.1) | 0.06 | 0.95 |
| | 100k+ | 31.27% (12.9) | 30.81% (9.6) | 30.81% (11.6) | 38.04% (16.8*) | 27.08% (11.0) | -0.61 | 0.54 |
| Education | < High school | 29.82% (12.8) | 25.42% (10.4) | 32.66% (11.7) | 20.72% (21.4*) | 30.56% (7.0) | 0.71 | 0.48 |
| | High school | 34.02% (12.8) | 29.17% (10.4) | 33.49% (13.2) | 22.63% (25.5*) | 25.01% (9.8) | -2.04 | **0.04** |
| | College | 31.52% (9.1) | 34.41% (8.9) | 32.99% (11.2) | 34.75% (15.5) | 24.02% (10.2) | -2.26 | **0.02** |
| | University | 36.10% (10.9) | 29.56% (11.0) | 25.47% (12.9) | 32.36% (16.2) | 23.84% (13.7) | -2.11 | **0.04** |
| Employment in the Last 12 | Yes | 33.0% (6.8) | 29.6% (6.4) | 30.7% (7.4) | 31.8% (11.1) | 27.1% (6.2) | -1.81 | 0.07 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Months | No | 30.2% (10.3) | 34.3% (9.3) | 36.5% (13.1) | 20.3% (21.4*) | 26.5% (10.0) | -1.65 | 0.10 |
| | Not Applicable | 40.1% (20.4*) | 26.1% (14.7) | 20.7% (22.2*) | 17.4% (33.3**) | 25.3% (9.2) | -1.04 | 0.30 |
| Self-Rated General Health | Excellent/ Very Good | 36.0% (7.5) | 33.6% (6.0) | 31.4% (8.2) | 31.2% (11.1) | 28.4% (6.1) | -2.78 | **0.01** |
| | Good | 33.4% (8.5) | 21.2% (10.1) | 34.8% (10.9) | 27.2% (19.9*) | 21.6% (10.2) | -2.23 | **0.03** |
| | Fair/Poor | 21.2% (14.8) | 31.0% (14.4) | 18.4% (33.8**) | 14.5% (36.7**) | 30.8% (13.5) | 1.16 | 0.25 |
| Self-Rated Mental Health | Excellent/ Very Good | 36.7% (7.0) | 31.4% (5.6) | 31.2% (7.2) | 29.2% (10.5) | 27.0% (5.6) | -3.30 | **<0.01** |
| | Good | 29.8% (9.8) | 22.9% (15.9) | 30.1% (14.1) | 26.9% (27.8*) | 24.4% (12.0) | -0.83 | 0.41 |
| | Fair/Poor | 26.1% (14.3) | 39.4% (21.5*) | 32.4% (43.2**) | 31.9% (46.2**) | 34.8% (21.6*) | 1.15 | 0.25 |

* Indicates a marginal estimate. There is high sampling variability associated with the estimates.

** Please be warned that these estimates do not meet Statistics Canada's quality standards. Conclusions based on these data will be unreliable, and most likely invalid.

Table 4b compares those with differing most intimate contacts for those who scored in the highest tertile on the stigma score (group 3, stigma score of 18 to 30) indicating that they had the highest expectation that most people would devalue or discriminate against someone with depression. The table shows of all people with self as their most intimate contact, the percentage in each category that fall into stigma group 3. Similarly, it shows of all people who had any other most intimate contact, the percentage in each category that fall into stigma group 3.

**Table 4b.** Results from the stratified analysis comparing weighted percentage (with coefficient of variation) of people who had differing intimacies of contact amongst those who scored in the highest stigma group (high expectation of negative public attitudes toward people with depression). Test-statistics and p-values are the results of a logistic regression with the dependent variable as scoring in stigma group 2 (with stigma groups 1 and 2 as the reference) and the only independent variable as most intimate form of contact.

| Most Intimate Type of Contact | | Self | Family Member | Friend | Co-Worker | No Contact | T-statistic Gr3 v Gr1/2 | p-value |
|---|---|---|---|---|---|---|---|---|
| Unstratified | | 31.5% (5.7) | 28.1% (5.4) | 25.4% (7.8) | 31.5% (8.9) | 34.4% (4.5) | 2.39 | **0.02** |
| Sex | Male | 32.6% (9.1) | 31.5% (7.8) | 26.7% (11.7) | 32.2% (12.0) | 35.1% (5.7) | 1.24 | 0.21 |
| | Female | 31.0% (7.0) | 24.8% (8.0) | 24.5% (10.6) | 30.6% (12.7) | 33.4% (6.6) | 1.87 | 0.06 |
| Age | <20 | 16.0% (29.8*) | 21.3% (20.6*) | 24.5% (19.1*) | 22.6% (26.5*) | 31.1% (9.0) | 2.42 | **0.02** |
| | 20-29 | 21.3% (17.5*) | 17.5% (17.1*) | 12.8% (24.0*) | 27.5% (26.5*) | 36.2% (9.7) | 3.94 | **<0.01** |
| | 30-39 | 31.1% (14.6) | 29.4% (13.5) | 19.8% (22.0*) | 26.2% (23.8*) | 32.7% (12.2) | 0.35 | 0.73 |
| | 40-49 | 44.6% (9.3) | 37.1% (11.4) | 37.0% (16.2) | 23.5% (23.4*) | 32.0% (12.9) | -2.33 | **0.02** |
| | 50-59 | 29.0% (13.6) | 26.8% (13.3) | 34.8% (20.7*) | 46.7% (16.3) | 33.8% (13.2) | 1.56 | 0.12 |
| | 60-69 | 29.3% (12.8) | 27.6% (11.6) | 21.1% (18.3*) | 35.1% (19.1*) | 37.1% (12.1) | 1.77 | 0.08 |
| | 70+ | 30.0% (15.3) | 31.0% (11.1) | 34.5% (14.0) | 38.4% (18.4*) | 39.6% (7.5) | 2.18 | **0.03** |
| Marital Status | Married or Common-Law | 33.2% (7.8) | 31.1% (6.6) | 28.5% (10.7) | 30.7% (11.4) | 33.1% (6.3) | 0.28 | 0.78 |
| | Separated, Divorced, or Widowed | 32.1% (11.4) | 28.3% (15.1) | 26.9% (17.8*) | 42.0% (17.5*) | 35.1% (9.7) | 1.21 | 0.23 |
| | Single | 27.0% | 19.6% | 20.9% | 29.0% | 36.0% | 4.02 | **<0.01** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | (11.9) | (12.6) | (12.9) | (16.4) | (6.8) | | |
| Ethnic Background | White | 29.4% (5.8) | 26.4% (5.9) | 24.1% (8.8) | 29.1% (9.2) | 29.4% (5.4) | 0.71 | 0.48 |
| | Other | 47.1% (16.5*) | 41.4% (14.2) | 32.7% (19.2*) | 43.4% (18.8*) | 43.8% (7.3) | 0.23 | 0.81 |
| Income | <30k | 38.4% (10.5) | 22.7% (16.0) | 28.6% (14.9) | 39.0% (23.3*) | 39.6% (9.2) | 1.39 | 0.17 |
| | 30k to 50k | 36.7% (11.6) | 21.8% (14.0) | 22.8% (20.1*) | 37.6% (18.4*) | 39.8% (8.8) | 2.24 | **0.03** |
| | 50k to 70k | 20.9% (18.5) | 29.9% (15.0) | 31.1% (17.8*) | 25.0% (22.0*) | 33.0% (13.5) | 1.32 | 0.19 |
| | 70k to 100k | 32.2% (14.3) | 30.3% (11.7) | 29.0% (19.9*) | 26.1% (21.4*) | 30.4% (12.5) | -0.33 | 0.74 |
| | 100k+ | 28.9% (11.4) | 32.3% (9.7) | 21.7% (15.0) | 26.5% (18.4*) | 34.1% (10.3) | 0.62 | 0.54 |
| Education | < High school | 28.4% (12.2) | 31.9% (11.3) | 25.6% (12.9) | 36.4% (14.5) | 36.9% (6.4) | 2.17 | **0.03** |
| | High school | 24.3% (13.4) | 24.5% (13.0) | 20.5% (17.3*) | 32.3% (19.3*) | 29.9% (9.2) | 1.75 | 0.08 |
| | College | 35.4% (9.5) | 27.2% (9.5) | 25.5% (14.1) | 29.5% (18.5*) | 31.4% (9.5) | -0.27 | 0.79 |
| | University | 35.7% (10.9) | 29.7% (11.0) | 29.6% (16.8*) | 29.7% (17.7*) | 40.5% (8.7) | 1.47 | 0.14 |
| Employment in the Last 12 Months | Yes | 30.4% (7.0) | 28.5% (6.3) | 26.0% (9.5) | 29.6% (11.3) | 33.1% (5.8) | 1.46 | 0.15 |
| | No | 35.2% (8.9) | 25.6% (10.9) | 19.5% (19.7*) | 38.5% (17.7*) | 36.8% (7.3) | 1.75 | 0.08 |
| | Not Applicable | 28.6% (22.0*) | 31.1% (14.2) | 35.8% (18.0*) | 35.2% (23.6*) | 36.3% (8.1) | 1.14 | 0.26 |
| Self-Rated General Health | Excellent/ Very Good | 27.1% (9.2) | 26.3% (6.8) | 22.6% (10.8) | 31.5% (11.0) | 33.8% (5.5) | 3.15 | **<0.01** |
| | Good | 33.0% (8.5) | 32.5% (10.1) | 29.9% (13.2) | 31.0% (15.1) | 33.3% (8.4) | 0.11 | 0.92 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Fair/Poor | 41.6% (9.1) | 28.8% (16.3) | 34.1% (20.5*) | 32.8% (26.8*) | 40.6% (10.0) | 0.40 | 0.69 |
| Self-Rated Mental Health | Excellent/ Very Good | 24.4% (9.3) | 28.3% (6.2) | 24.3% (9.2) | 31.5% (9.5) | 33.1% (5.6) | 3.04 | **<0.01** |
| | Good | 34.3% (9.2) | 27.5% (12.6) | 27.2% (18.8*) | 32.8% (21.1*) | 39.7% (7.7) | 1.92 | 0.06 |
| | Fair/Poor | 45.9% (9.2) | 27.2% (23.6*) | 42.9% (32.9*) | 22.8% (42.4**) | 31.2% (21.8*) | -1.88 | 0.06 |

* Indicates a marginal estimate. There is high sampling variability associated with the estimates.

** Please be warned that these estimates do not meet Statistics Canada's quality standards. Conclusions based on these data will be unreliable, and most likely invalid.

**Table 5.** Reference groups for the generalized ordered logistic regression analyses.

| Variable | Reference Category |
|---|---|
| Any Contact | No Contact |
| Total Number of Types of Contact | 0 Contacts |
| Most Intimate Type of Contact | Self |
| Sex | Male |
| Age | <20 |
| Marital Status | Married or Common-Law |
| Ethnic Background | White |
| Income | <30k |
| Education | <High School |
| Employment | Employed in the Last 12 Months |
| Self-Rated General Health | Excellent or Very Good |
| Self-Rated Mental Health | Excellent or Very Good |