Anxiety information: What do people want and what is out there?

by

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Abstract

Anxiety disorders are the most common class of mental disorders and negatively impact the lives of those experiencing them. Persons with anxiety may face important decisions regarding treatment options, with a range of possible choices. The problem is that they often lack knowledge about the choices available. The present research involved two studies with the aim of evaluating information needs and currently available anxiety information. Using a quantitative web-based survey, Study 1 evaluated the information that persons with and without anxiety consider to be most important when making treatment decisions. Samples were recruited from psychology ($N = 113$) and psychiatry ($N = 64$) clinics and a self-help association website ($N = 288$). Multiple linear regression analyses were employed to explore the relationship between personal characteristics and the outcome variables of information importance and information received when making treatment decisions. Overall, respondents expressed interest in information on a wide range of topics, but they seldom reported receiving "the right amount" of information. Females rated fewer treatment information topics as very important, compared to males. Study 2 evaluated the quality of existing websites containing anxiety information to consider whether they adequately provide the information judged to be important by the public. Twenty websites were evaluated on the following characteristics: quality, readability, usability, content, and visual design. Results indicated that existing anxiety websites are of variable quality and often do not provide descriptions of multiple treatment options. Taken together, findings of these two studies suggest that there is a discrepancy between the public's information needs and existing anxiety information. These studies provide valuable information that may contribute to improving resources to meet the information needs of persons with anxiety disorders, potentially enhancing the shared-decision making process.

Keywords: anxiety, anxiety treatment, anxiety websites, information needs

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Dedication

I would like to dedicate this dissertation to the late Dr. John Walker. He was always a beacon of light and wisdom and a man I truly aspire to be. I simply would not be the person I am today without his mentorship and encouragement over the years.

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Contribution of Authors

Chapter 2 – Anxiety Information Needs and Preferences

Matthew Bernstein designed and executed the study, analyzed and interpreted the data and wrote the manuscript. **Patricia Furer** and **Kristin Reynolds** collaborated with the design and interpretation of the data, writing the manuscript, and edited the final manuscript.

Chapter 3 – Evaluation of Existing Anxiety Websites

Matthew Bernstein designed and executed the study, analyzed and interpreted the data and wrote the manuscript. **Patricia Furer** and **Kristin Reynolds** collaborated with the design and interpretation of the data, writing the manuscript, and edited the final manuscript.

Chapter 1: General Introduction

Preface

In any given year, about 10% of adults will experience an anxiety disorder and almost 20% will experience one in their lifetime, making it one of the most common mental health problems in the community (Remes, Brayne, van der Linde, & Lafortune, 2016; see also Somers, Goldner, Waraich, & Hsu, 2006 for a Canadian-specific review). Anxiety disorders can have adverse effects on people's lives. In a meta-analysis, Olatunji, Cisler, and Tolin (2007) found that people with anxiety disorders have lower quality of life (using a variety of measures, but primarily the SF-36, Short Form health survey (Ware & Sherbourne, 1992), which assesses health-related quality of life) compared to people without anxiety disorders. In a more recent systematic review, Combs and Markman (2014) found those with anxiety disorders reported greater disability and increased suicide risk compared to those without anxiety disorders.

Individuals with anxiety disorders may face important choices regarding treatment, as there are several options available including psychological, pharmacological, self-help, and alternative (e.g., exercise, herbal remedies) approaches. Decisions can be complex because these treatments differ in their cost, duration, availability, side effect profile, and long-term outcome. Therefore, it is important to understand how persons with anxiety comprehend and utilize information materials regarding treatment options for anxiety. Previous research suggests that currently available information does not address many of the important questions that patients have about managing health (Promislow et al., 2010) and mental health problems (Griffiths & Crisp, 2013; Reynolds et al., 2015). The currently available online information often focuses on a description of the health issue with little evaluative information based on research evidence (Raynor et al., 2007). This is an important limitation because a lack of knowledge about mental

health problems has been associated with a reduced likelihood of seeking help (Jorm et al., 2006).

Given that anxiety is a widely prevalent problem and that there are many treatment choices available to individuals struggling with anxiety, it is important to better understand what people want to know about anxiety treatment and what anxiety information is currently available. Knowledge translation is a key approach to achieving these goals. Therefore, the overarching theme of this dissertation is to enhance our understanding of anxiety information needs and preferences and to determine whether or not these needs have been addressed through online materials. This paves the way for the development of improved information materials concerning anxiety disorders and their treatment, which ultimately allows for enhanced anxiety treatment decision-making.

Knowledge Translation

Knowledge translation is defined as translating evidence-based research through synthesis, dissemination, and exchange into a format that is understandable and usable by the general public (CIHR, 2016). Moreover, it provides a potential pathway for persons of varying levels of health literacy to obtain and understand high-quality information on health issues and use this information in their healthcare decision-making. Knowledge translation is relatively novel in the mental health field and the research in this area has increased substantially in the past 20 years (Goldner et al., 2011). Knowledge translation processes play an important role in improving mental health treatment delivery. This has become an especially important issue for researchers in Canada, as it has become part of the mandate of the Canadian Institutes of Health Research (CIHR; Straus, Tetroe, & Graham, 2009), who have supported this dissertation work. One model that has been adopted by CIHR to describe the process of knowledge translation is

the *knowledge-to-action framework* (Graham et al., 2006). This model describes knowledge translation as a dynamic and cyclical process that involves both the creation and application of knowledge. When using this model, researchers consider end users and how they will be able to take action from the information created. Barriers to knowledge translation include how well it fits into current health service, clinician and patient expectations, and the societal context in which care is delivered (Harvey, Marshall, Jordan, & Kitson, 2015). Conversely, one critical advantage of knowledge translation is that it allows consumers to engage in shared decision-making along with their healthcare provider because it provides them with a better grasp of their health problem and the efficacy of treatment options. When developing content, it is important to consider that consumers possess varying levels of understanding of health information. It is much more challenging to put this information into practice if the content is not well understood by the consumer.

Health Literacy

Health literacy is defined as one's ability to "acquire, understand, and use information about health and health services" (Batterham, Hawkins, Collins, Buchbinder, & Osborne, 2016, p. 1), so that they can make appropriate health decisions. McCaffery and colleagues (2013) conducted a systematic review and found that low levels of health literacy led to less patient-centered communication (i.e., less focus on their needs), which can have a negative impact on decision-making outcomes, such as decisional uncertainty. In a cross-sectional U.S. sample, Aboumatar, Carson, Beach, Roter, and Cooper (2013) found that low levels of health literacy led to patients being less likely to want to participate in decision-making. Recently, in a national sample of German adults, Altin and Stock (2015) found that primary care patients were more satisfied with the care that they received if they reported sufficient health literacy. A large

European study reported that health literacy is lowest among those with less education, in racial/ethnic minorities, and in older adults (Sorensen et al., 2015; see also Chaudhry et al., 2011 and Howard, Sentell, & Gazmararian, 2006). Inadequate health literacy has also been found to be associated with increased emergency department attendance and hospitalization (Ishikawa & Yano, 2008; Vandenbosch et al., 2016). Taken together, these findings demonstrate the importance of making health information accessible to individuals at varying levels of health literacy and demographic backgrounds.

Mental Health Literacy and Help-seeking

Mental health literacy refers to "knowledge and beliefs about mental disorders which aid in their recognition, management, and prevention" (Jorm et al., 2003, p. 1071). Jorm argues that people's management of mental health problems depends on their level of mental health literacy (Jorm et al., 1997). Additionally, those who are better able to recognize the signs and symptoms of a mental disorder, and who know about what treatments are available, will be more likely to seek help (Jorm, 2012; Rusch, Evans-Lacko, Henderson, Flach, & Thornicroft, 2011). In a population-based study of members of the public aged 12-25 years, Wright and colleagues (2007) found recognition and accurate labelling of depression or psychosis to be most frequently associated with the recommendation of appropriate help and treatment for those disorders. Similarly, in a study with university students, Smith and Shochet (2011) confirmed their hypothesis that higher levels of mental health literacy would predict greater intentions to seek help from professional sources. Knowledge about interventions was the strongest predictor of help-seeking intentions out of the different mental health literacy components that these authors studied. In a recent systematic review, Xu and colleagues (2018) found that interventions such as increasing mental health literacy improved formal help-seeking behaviours for individuals

with or at risk of mental health problems. Similarly, a population-based longitudinal study of the general public found higher mental health literacy to predict use of psychotherapy and psychiatric medication six months after the baseline assessment (Bonabi et al., 2016). Another advantage of providing information is that it reduces stigma (e.g., Griffiths et al., 2014), and stigma has been found to be a barrier in seeking help (Salaheddin & Mason, 2016). This provides support for the positive impact of knowledge on seeking help.

Other research has suggested that increasing mental health literacy may also have a therapeutic benefit. In a randomized controlled trial (RCT) comparing the effects of a website with depression information that aimed to increase literacy and a website providing cognitive behavioural therapy to persons with depression, findings indicated that users of both the information and treatment websites reported similar reductions in depressive symptoms (Christensen, Griffiths, & Jorm, 2004). One might speculate that the depression-related information on these sites may have reminded users of strategies they had already learned to help improve depressive symptoms, as 64% had previously sought help for depression. Another interpretation of this finding is that acquiring knowledge about strategies for behaviour change was as effective as an active intervention.

There are certain segments of the population who have low mental health literacy and therefore may be less likely to seek help. In a study from the WHO World Mental Health surveys, authors reported that being female, younger or middle-aged, and having moderate to severe mental health issues was associated with greater perceived need for treatment (Andrade et al., 2014). Men have consistently been found to have lower mental health literacy and reduced help-seeking rates, compared to women (Swami, 2012; Tomczyk et al., 2018). Older adults are another group who have been shown to have less knowledge about mental health problems and

are less likely to seek help (Tomczyk et al., 2018; van Zoonen et al., 2015). For instance, in a German, general population sample with untreated mental health problems, men and older adults had lower levels of depression literacy according to the *Depression Literacy Scale* (Tomczyk et al., 2018). Depression literacy was also found to be negatively related to help-seeking. Similarly, in a British general population sample, using depression vignettes, women were more likely than men to indicate that the male vignette suffered from a mental health disorder (Swami, 2012). Individuals with a lower (vs. higher) education level have also been found to be less likely to contact a mental health care provider (ten Have et al., 2003). Cultural or ethnic background is another factor that impacts the likelihood of seeking help. Previous research has found that minority students underutilize mental health services when it is needed (utilization was less than that of non-minority students; Hunt, Eisenberg, Lu, & Gathright, 2015). One reason for this underutilization by minority groups may be that they feel stigmatized by both their mental illness and membership in a group that may also be the target of discrimination (Nadeem et al., 2007; Wong et al., 2017). These multiple discriminations may make the person even more reluctant to seek help. Therefore, increasing knowledge, particularly among targeted segments of the population, could be a key component of increasing help-seeking among those who experience problems, given that knowledge is strong predictor of seeking help (Rusch et al., 2011).

Information Use and Needs

One approach to enhance help-seeking and information acquisition is to examine what people want to know when considering treatment for anxiety disorders. A recent systematic review of 12 studies on information and decision-making needs for mental health problems such as depression and schizophrenia discovered “basic facts,” “treatment,” and “coping” to be the

three most frequently cited information needs (Tlach et al., 2015). This study suggested the importance of discussing these topics with one's healthcare provider as a way to gather information and make informed decisions. One study summarized in the review asked patients what they wanted to learn from their mental healthcare provider (Llewellyn-Jones, Jones, & Donnelly, 2001). The authors simply asked "do you have any questions you would like to ask?" at the end of an outpatient mental health appointment. Each question was assigned to a particular theme group, and a "top ten" of most frequently asked questions was compiled. Results indicated that the 179 participants were interested in a variety of topics including "when will I recover," "am I normal," "is this common," "what is my diagnosis," "length of time needing medication," "are medications the answer," "what are the medications' side effects," "can you help," "is there another treatment to be had," and "what do psychologists do."

Liebherz, Harter, Dirmaier, and Tlach (2015) conducted an online study of a German sample with anxiety disorders that examined patients' information and decision-making needs as a prerequisite for developing patient decision aids. The authors found that individuals with anxiety disorders reported receiving insufficient information from their healthcare providers. Previous research by our research group has explored information needs and preferences concerning treatment options for depression, anxiety, and stress (Bernstein et al., 2017; Cunningham et al., 2014; Stewart et al., 2014). These studies found that people dealing with these problems want information on a broad range of topics that are important in making decisions about treatment. Findings from these studies differ when looking at the amount of information the public wish to receive concerning treatment options, and how they prefer to receive such information (Cunningham et al., 2014). Specifically, Bernstein and colleagues (2017) found that individuals who are more distressed (compared to less distressed) and those

with more psychological (compared to pharmacological) treatment experience provided higher ratings of importance of information related to both psychological and pharmacological treatments for depression (see also Griffiths & Crisp, 2013). Using the Annenberg National Health Communication Survey (U.S. data), Kim (2015) found that inactive health information seekers (i.e., people less interested in obtaining health information) were more likely to be younger and male. Elsewhere, it has been reported that older adults, females (Bigsby & Hovick, 2017), and those with more education (Chien et al., 2001; Kelly et al., 2010) reported higher ratings of unmet information needs and increased health information seeking (Rooks et al., 2012). On the other hand, Cunningham and his colleagues (2014) argue that demographic factors are not as crucial and that the best way to consider information preferences is that there are clusters of persons in the community who have different preferences. One cluster, which the authors labeled as "virtual", preferred web-based information, were more intent on using information they acquired, chose to acquire information alone, and were interested in information options recommended by individuals with a history of depression or anxiety. A second cluster, labeled as "conventional", preferred more traditional brochure-based information provided by a health professional. The virtual and conventional groups were similarly interested in information about active self-help skills (Cunningham et al., 2014). Findings of this research highlighted that it is important to have resources available that fit the needs of different clusters or segments of the population.

Furthermore, information about many health treatment information topics is seldom addressed and difficult to access in currently available resources. Currently available information on the Internet tends to focus on a description of the health problem and on treatment options, but provides little evaluation of the treatment options based on existing

research (Raynor et al., 2007). Professionals commonly produce resources for the public with limited knowledge of what information is of interest to consumers (Liebherz et al., 2015). Further, much of this information has focused on medication treatments (Raynor et al., 2007). Indeed, the current resources often focus on a narrow range of options (one or two) while leaving out others (Raynor et al., 2007). Having a wide range of kinds of information available that is flexible for those with differing information needs and preferences is an important step for those seeking treatment for a health problem.

Recent research has reported that determining patients' needs and preferences can be an important first step in the development of online materials (Ammerlaan et al., 2017). The Ammerlaan group investigated patient needs and preferences regarding information about rheumatic disease. They used online focus groups and consensus meetings with patient representatives to determine these needs, and whether they fit with the content of an online self-management support program. By determining information preferences, healthcare providers can gain an understanding of how to deliver information in a way that will be useful to consumers.

Shared Decision-Making

Mental health information resources are an important way to facilitate shared decision-making. The shared decision-making model outlined by Charles and colleagues (1997) involves: (a) the healthcare provider and patient (or client); (b) sharing information bidirectionally; (c) both parties participating in the decision-making process; and (d) making the treatment decision together. Shared decision-making may increase treatment adherence, and as a result, improve clinical outcomes (Raue, Schulberg, Heo, Klimstra, & Bruce, 2009). Existing research has demonstrated that most individuals want to be involved in some aspect of the treatment decision

making process (Chewning et al., 2012). Furthermore, Solberg and colleagues (2014) reported that younger adults (18-34 years) are more likely to be involved (based on their self-reported experiences) in shared decision-making compared to older adults (65 years and older). It was suggested that a possible reason for this limited involvement by older adults is that older adults are more likely to accept the physician's dominant role in treatment and take a more passive role when discussing a severe illness (Raue et al., 2010).

Recently, McCormack and colleagues (2017) outlined a social ecological approach to patient engagement. They proposed that context plays a central role in improving health literacy and patient involvement in treatment decisions. This context is made up of five levels: individual (health-related knowledge), interpersonal (includes communication skills and social support), organizational (includes infrastructure planning and implementation), community (integrating public health and health care systems), and a macro level (composed of public policy and regulations). Essentially, in order to improve patient engagement and health literacy, each of these levels should be considered.

Evaluating Information

In order to be better equipped to engage in the shared decision-making process, consumers must first obtain knowledge on mental health problems, and then screen information resources of variable quality. The Elaboration Likelihood Model (ELM) is a widely-used model that describes a continuum by which consumers evaluate information (Petty & Cacioppo, 1986). It comes from social psychological research on persuasion. On one end of the continuum is the central route (used when the elaboration likelihood is high), which involves making a conscious, cognitive effort to evaluate information (i.e., facilitating attention). On the other end is the peripheral route (used when the elaboration likelihood is low), where individuals make simple

judgments without doing much evaluation. As a result, they make decisions based on external features such as the design of a website, for instance, or pictorial information marketing a product. Consumers are more likely to use the central route when they are motivated and knowledgeable about the topic, the information has personal relevance, and they are able to process the message. In contrast, consumers are more likely to use the peripheral route when they feel overwhelmed by the information, which often occurs when reviewing health information.

Recently, O'Keefe (2013) discussed the influences on persuasive outcomes in the central and peripheral routes. There are two primary factors that impact the overall evaluative direction when taking the central route. The first factor is whether the information is pro-attitudinal, where the consumer perceives the information favourably as it is in line with their thoughts, or counter-attitudinal, where it is not in line with their thoughts. Second, the strength of the argument outlined in the information will impact whether the information has been successful in its persuasion. When the peripheral route is being used, heuristics (or simple cognitive strategies) are employed. Credibility, liking, and consensus are some of the heuristics commonly utilized with the peripheral route. In line with this, Lucassen and colleagues (2013) found that consumers are more likely to focus on the meaning of the information when they are familiar with the topic, but more likely to focus on the surface features of the information when they are not familiar with the topic. Therefore, familiarity plays a large role when evaluating online information. While this model has been applied to the evaluation of online health information (see Freeman & Spyridakis, 2004 for a review) its application has been very limited, especially on the topic of mental health problems.

Online Mental Health Resources

The increased use of the Internet in the last 20 years has not only led to increased availability of health information, but also to the availability of materials designed to assist the public in making health care decisions (Schwitzer, 2002). In a review of the effects of online depression information, Griffiths and Christensen (2007) found that viewers who interacted with their depression website led to an increase in depression literacy and a decrease in personal stigma related to depression.

These findings suggest that there are clear benefits to utilizing a web-based health information resource, especially when consumers can select the topics of interest to them to review. However, the existing literature suggests that there are limited high quality, evidence-based resources available to meet the needs of consumers of mental health information. This is a problem because it leaves the public with unanswered questions and may limit their participation in the treatment decision-making process. As stated above, younger adults have been found to be more interested in the shared decision-making process (Solberg et al., 2014). As younger demographics age, there will likely be a shift in mindset towards more people being interested in engaging in collaborative treatment decision-making with their healthcare provider (LeRouge et al., 2014). Therefore, enhancing our understanding of what people want to know about anxiety treatment and what information exists is essential. The two studies outlined below aimed to address these gaps in the literature and take initial steps towards meeting this need.

Dissertation Overview

The objectives of the current research were 1) to evaluate the information needs and preferences of persons seeking treatment for anxiety disorders and examine the predictors of information preferences; and 2) to evaluate existing web-based resources on anxiety and its treatment. I aimed to accomplish these objectives with two studies.

Study 1 was designed to answer several important questions regarding individuals seeking help for anxiety who were recruited from clinical and non-clinical settings: (a) What information do consumers view as important when considering help for problems with anxiety? (b) Among those who had received psychotherapy or counseling for anxiety, how much information did they receive on a variety of topics? (c) Among those who had received medication for anxiety, how much information did they receive on a variety of topics? (d) How much information did consumers receive from different possible sources of help? Existing research has aimed to answer some of these questions using samples of university students (Stewart et al., 2014), parents of children with anxiety (Mak et al., 2017), and adults seeking depression information (Bernstein et al., 2017). However, little research has been done concerning information needs on anxiety with clinical samples (Liebherz et al., 2015). This study extended the existing research in this area by using two clinical samples (from psychology and psychiatry hospital outpatient services), as well as a sample of participants recruited from an anxiety-specific peer-support website who may or may not have been previously diagnosed with an anxiety disorder.

Study 2 had four primary goals: (a) What is the quality of existing web-based information resources concerning anxiety and its treatment? (b) How readable and usable are the existing anxiety resources? (c) How is the information presented (both in terms of formatting and visual design)? (d) Is the information that consumers view as important in considering anxiety treatment, in fact, covered by existing anxiety resources?

To summarize, this dissertation makes novel contributions by examining information needs in clinical and self-help samples, and by comparing the information people with anxiety have received to what they view as important. Additionally, this is one of the first studies to

examine existing anxiety websites, to determine how well they cover the information topics viewed as important by the public (in Study 1). The outcomes of the current dissertation have implications for both researchers and the general public. By expanding our understanding of the information needs of the public, this research provides the opportunity to enhance information materials to narrow the gap between what people want to know and what information they have received in the past. By evaluating the quality of current web-based anxiety information, it gives researchers and the general public better knowledge of the resources available for people seeking information and treatment for anxiety. Ultimately, this work will allow for the development of strong, evidence-based anxiety resources delivered in a format that is understandable for consumers of varying levels of health literacy.

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Chapter 2: Anxiety Information Needs and Preferences

As discussed in Chapter 1, there is a limited understanding of what people want to know when considering help for anxiety disorders. This is a problem because many people have unanswered questions that are not covered by currently available materials (Bernstein et al., 2017; Cunningham et al., 2013; Stewart et al., 2014). Many people access health and mental health information online (McCarthy et al., 2017); however, these resources may be of variable quality (Promislow et al., 2010). This study aimed to enhance our understanding of these needs, with the ultimate goal of developing materials that would help the public to participate in the decision-making process.

Hoffman and colleagues (2013) suggest that an essential early step in developing web-based materials with a focus on facilitating shared decision-making is to conduct a needs assessment outlining what a group of people need to make better decisions and what healthcare providers can do to improve decision support (Jacobsen, O'Connor, & Stacey, 2013). The goals for conducting needs assessments include identifying whether existing programs or interventions are meeting the needs of those who are supposed to benefit, examining the target groups who need such services, and determining the best alternatives for meeting those needs.

The present study addresses a gap in the literature: there is a limited understanding of what persons with anxiety want to know about anxiety treatment. Furthermore, needs assessments often focus on means (processes) and ends (product to provide to consumers) (Watkins, Leigh, Platt, & Kaufman, 1998). Regardless of the focus of the assessment, it is essential to have both aspects in mind and they should be highly connected. This study takes the form of a needs assessment process with the end goal of delivering enhanced anxiety treatment information to consumers. A seminal paper by Watkins, Leigh, Platt, and Kaufman (1998)

outlines several needs assessment questions, one of which relates to a main objective of the present study: *How do current results compare to desired results?* Other questions concerning needs assessments, which helped to provide direction in the present study but were not directly assessed, include: *What results should be accomplished at societal, organizational, and individual levels? How should we think about diverse needs in terms of importance? Which alternative solutions can reduce gaps in results? What criteria can be used to evaluate the alternatives?* (Watkins et al., 1998).

Much of the existing needs assessment literature has focused on workplace training programs (Cekada, 2011) and government policy research (Ahari et al., 2012). In considering health treatment, patients often have important decisions to make around treatment options. Therefore, it is worthwhile to conduct needs assessments to gain a better understanding of what persons seeking health treatment want to know to enhance their knowledge. Previous research by our group found that participants recruited in a university health service or counselling centre were interested in a wide range of information about treatment options for stress, anxiety, and depression if they were having difficulties in these areas (Stewart et al., 2014). More recently, a study by our group recruiting participants who were (a) patients attending family physician clinics for general health concerns and (b) persons visiting self-help association websites found that respondents indicated that they would have a high degree of interest in information about treatment options for depression if they were experiencing the symptoms of depression described in a brief vignette (Bernstein et al., 2017).

The present study built on earlier research by exploring information needs and preferences concerning consultation and/or treatment of anxiety problems. Participants were recruited from individuals seeking treatment for problems with anxiety in clinical settings and

from those seeking information from an anxiety self-help association website. Many of these people had received treatment in the past, and the information they had received at that time when making treatment decisions was considered. The two methods of recruitment (clinic vs. self-help) allowed for respondent characteristics and opinions of the two samples to be compared.

It is challenging to obtain the opinions of individuals interested in specific types of health information using survey research methods. When conducting survey research, it is ideal to clearly establish the survey population (Dillman, Smyth, & Christian, 2014). In the present study, the population of interest was individuals seeking information and/or treatment for problems with anxiety. The ideal situation would be to gather a representative sample of the population of interest (e.g., residents of a certain region). Surveys of representative samples are very costly and time consuming. It is often necessary for researchers to consider convenience samples that may not be clearly representative of a larger population, but still provide helpful information about their research questions. Two such approaches include surveys (sampling from psychology and psychiatry clinics as an example) and web-based self-help surveys (for example, sampling from self-help association websites).

With the increased use of the Internet in the last 20 years, web-based survey research has become widespread. Internet survey recruitment and administration is advantageous in that it is convenient; it can reach a broader audience (people who differ demographically and geographically) and can be completed at low cost (Reips, 2002). There are very few restrictions on the time and place respondents can access the survey, particularly with the growing prevalence of smart phones. Internet surveys can also be constructed to minimize the number of missed questions and easily branch into different questions based on earlier answers. Research

has found that the public is increasingly using the Internet to access health information (Fox & Duggan, 2013) and, therefore, posting the link to a web-based survey on health information websites can be quite helpful for recruiting survey participants. Generally, the research comparing paper- and web-based questions and structured measures has found that responses are reasonably similar, especially when demographic factors are considered (Dykema, Jones, Piche, & Stevenson, 2013; de Bernardo & Curtis, 2012). For instance, one study examined the effects of a health and well-being survey method in adults aged 50 years and over (de Bernardo & Curtis, 2012). The results suggested that the survey method used did not affect survey responses when variables such as employment and income were included as covariates.

Study 1 Objectives

Study 1 involved a needs assessment with the aim of exploring (a) what information people consider to be important when they are considering treatment options for anxiety disorders; (b) are there any differences in information needs between demographic groups (c) what information they received in the past on medication and psychological treatment; and (d) how they received this information in the past. The existing research discussed above suggested that preferences vary based on age, gender, education, mental health symptoms, and treatment experience. Specifically, the extant research suggested that certain groups would be more interested in seeking information, have higher levels of mental health literacy, and be more likely to seek help for mental health problems than others. In line with this, this study tested the hypotheses that higher ratings of importance of information topics would be provided by:

1. older people (compared to younger);
2. females (compared to males);
3. people with higher education (compared to lower);

4. people with higher levels of anxiety symptoms (compared to lower); and
5. people with psychological treatment experience (compared to pharmacological treatment experience).

Method

Sample and Procedure

Clinic recruitment. A sample of adults (aged 18 years and older) were recruited from the Winnipeg Regional Health Authority (WRHA) Anxiety Disorders Clinic waitlist at St. Boniface Hospital, which provides consultation and cognitive behaviour therapy services to individuals referred by family physicians, psychiatrists, and other healthcare providers. Another sample was recruited from the waitlist of those referred (by their primary care provider) to the WRHA Centralized Psychiatric Consultation Service, which provides psychiatric consultation regarding diagnosis and treatment options. Participants recruited from each clinic were mailed a notice explaining the procedures of the study and a URL address for the online survey. The consent form (see Appendix A) described the study's purpose and highlighted that the choice to participate would in no way impact upon the care received from either treatment setting. Participants who completed the survey had the choice to be compensated with either a $10 Amazon gift card (via e-mail) or a $10 Tim Horton's gift card (via paper mail). An advantage of traditional paper-based survey research is that it is possible to determine the response rate; however, I was able to determine the response rate of these two samples based on the number of invitation letters mailed out and the number of people who responded. Regardless of survey approach, respondent characteristics can be compared to the general population.

Website recruitment. A "self-help" sample was recruited online from the Anxiety Disorders Association of Manitoba (ADAM) website (a local peer-support association). This

website is widely visited by members of the public searching for information concerning anxiety disorders and treatment or peer-support services provided by ADAM. A link to the survey was posted on this website, inviting interested people to click on a link to the survey. This sample provided a comparison to those seeking treatment for anxiety in the clinic samples described above. There are typically more than 2000 visitors to the ADAM website per month.

The survey that the samples were invited to complete was available through Survey Gizmo (an online survey software program). Survey Gizmo is able to track the time spent by participants on the individual survey pages. Respondents who moved through the survey so quickly that it appeared that they were not reading the questions carefully enough were excluded from the survey (see below for missing data procedures). Consent was provided by the participant clicking an "I agree" button at the bottom of the online consent form. The survey package took $M = 15.2$ ($SD = 11.54$) minutes to complete. This study was approved by the University of Manitoba Psychology/Sociology Research Ethics Board.

Measures

Information needs questions. Many of the questions in this section were adapted from previous research by our group on information needs and preferences concerning mental health issues (Bernstein et al., 2017; Stewart et al., 2014), allowing for comparisons with previous research (see Appendix B). Participants were first asked "Many people experience anxiety problems. If YOU were having anxiety problems and considering getting help, what information would be important to YOU in considering the kinds of help available?" They were presented with a list of 20 information topics including treatment options (e.g., medication, psychological treatments) and information related to treatment such as cost, side effects, the advantages and disadvantages of a treatment approach, and others that they might consider important in making

treatment decisions. These questions were rated on a scale from 0 (*not at all important*) to 8 (*very important*). Following these questions, participants were asked if they had previously received psychological treatment for anxiety problems. If they answered yes, they were presented with 12 information topics and asked what information they had received in the past regarding psychological treatment, including a question about the amount of medication information received. If they answered no, they skipped to the next set of questions, which addressed whether participants had previously received medication treatment for anxiety problems. If they answered yes, they were presented with 13 information topics and asked what information they had received in the past regarding medication treatment (e.g., serious side effects), including a question about the amount of counseling/therapy information received. If they answered no, they skipped to the next set of questions. Questions relating to medication were rated on a scale of how much information they had received (ranging from 1 (*none*) to 8 (*just right amount*)) on each topic. In the final section, they were asked "when you have been considering treatment options for anxiety in the PAST, how much information did you receive from each of following sources?" The 10 items in this section were rated on a scale from 0 (*none*) to 8 (*a lot*).

Sample characteristics. Participants were asked to provide information concerning their gender, age, marital status, education level (sum of years of education in high school, college, university, and apprenticeship categories), main activity in the past 12 months (i.e., work, school, etc.), and country of birth. In addition, they were asked if they had previously received psychological or medication treatment or if there was a time when they would have benefitted from either treatment but did not receive it. They were also asked whether or not they had tried any other treatment for anxiety on their own (e.g., exercise, meditation).

Anxiety symptoms. Participants' current level of anxiety symptoms was assessed using the Patient-Reported Outcomes Measurement Information System (PROMIS) Anxiety Scale (short form), which is a validated measure of anxiety symptoms (Pilkonis et al., 2011). The survey uses the following introductory statement "In the past 7 days…". This is followed by eight items: "…I felt fearful; …I found it hard to focus on anything other than my anxiety; …My worries overwhelmed me; …I felt uneasy; …I felt nervous; …I felt like I need help for my anxiety; …I felt anxious; and …I felt tense." Items were rated on a 5-point rating scale ranging from 1 (*never*) to 5 (*always*). The possible values on the sum score of this scale range from 8 to 40. This scale has good internal consistency with a Cronbach's alpha of .93 reported in earlier work (Pilkonis et al., 2011); this is similar to the internal consistency found for these items in the present study (Cronbach's alpha = .92).

Missing Data

The data obtained from several respondents were removed from the final analysis due to *speeding*. *Speeding* has been found to be an indicator of providing adequate but not accurate responses in order to minimize effort (Zhang & Conrad, 2013). Through pilot testing of the survey, it was determined that four minutes was the least amount of time required to achieve accurate responses. Only respondents in the self-help group appeared to be at risk for *speeding*. All respondents who completed the survey in four minutes or less were removed from analysis (n = 115). Completion times between four and five minutes (n = 25) were examined in detail to see if there was a possibility of speeding. The pattern of responses was further examined to ensure that there was not consistent responding (i.e., lack of range of responses to different items) and that there were not a significant number of *prefer not to respond* options selected. Most of these responses were deemed valid. However, there were some participants (n = 3) who selected many

prefer not to respond options or had several missing data points and data from these individuals were excluded. There were no apparent outliers who took an excessively long time to complete the survey. This led to final sample sizes of $N = 288$ for the self-help sample, $N = 113$ for the psychology sample, and $N = 64$ for the psychiatry sample. Tabachnick and Fidell (2013) recommend conducting a missing data analysis on variables that have more than 5% of their values missing. All variables had few (less than 5%) or no missing values.

Analysis

IBM SPSS Statistics Version 25.0 was used to conduct the data analysis. Descriptive statistics (including means and proportions) summarized sociodemographic information and the responses to questions about information experiences and preferences. These values were compared using one-way ANOVA for means and chi-square statistic for proportions. Confidence intervals were reported, as they are typically used in survey research, and they allow for convenient comparisons within and across different survey questions and groups of respondents. These confidence intervals allowed for comparisons between the clinic and self-help samples. Confidence intervals have been recommended rather than pairwise significance tests for this type of comparison because they help the reader to understand the magnitude of differences rather than simply concluding whether or not a difference is statistically significant (Cummings & Koepsell, 2010; Gardner & Altman, 1986). When making comparisons between means (i.e., between groups and across different question items), it should be noted that in approximately 1 case out of 20, the 95% confidence intervals will be non-overlapping even in the absence of a difference in that measure within the underlying populations.

In addition to presenting descriptive statistics, I evaluated the extent to which participants considered information to be important and received information on a range of topics by

calculating mean composite information importance and information received scores for both psychological and pharmacological treatments in all samples. These composite scores were used as outcome variables in forced entry (i.e., all variables were entered in the same step) multiple linear regression analyses with the following variables used as predictors: gender, age, birth place, marital status, education level, anxiety symptoms, anxiety diagnosis, and treatment experience. I ran separate regressions for the self-help and clinic samples, as the self-help group seemed to be the one that differed from the clinic samples, as the results describe below.

Power. Prior to data collection, I conducted an apriori power analysis to determine the sample size required for a power of .80, a significance level of .05, and an effect size of $d = .50$. The analysis yielded an intended sample size of 102. The medium effect size was selected based on the Cochrane Collaboration review of the effects of decision aids for treatment of health issues (Stacey et al., 2014). In the present study, the goal was to enrol a sample of 100 from each clinical group, and for comparison, enrol 200 non-clinical participants. Given that there was some difficulty enrolling participants from the psychiatry sample, I conducted a sensitivity power analysis after data collection. These analyses were on the ANOVAs used to compare the demographic characteristics and on the regressions used to predict information importance sum scores, in order to determine the effect detectable given the sample sizes that were included in the study analyses. For the ANOVA, using a power of .80, a significance level of .05, and a total sample size of 465, this led to a detectable effect size of $d = .14$. For the self-help regression analyses, using a power of .80, a significance level of .05, and a self-help sample size of 283, this led to a detectable effect size of $d = .06$. For the clinic regression, analyses using a power of .80, a significance level of .05, and a clinic sample size of 170, this led to a detectable effect size of $d = .10$.

Results

Sample Characteristics

There were several differences between the samples, particularly between the self-help sample compared to the two clinic samples (see Table 1). The mean age (in years) of the self-help sample (M = 32.2, SD = 9.01, range=18-77) was significantly lower than that of the clinic samples ($M_{psychology}$ = 38.2, SD = 13.94, range=18-80 and $M_{psychiatry}$ = 37.6, SD = 14.89, range=18-65), $F(2,458) = 14.8$, $p < .001$, $\eta_p^2 = .06$. More than half of each sample was composed of females; however, the self-help sample had the highest proportion of males (48%), and the differences in gender distributions was significant between the samples, $\chi^2 = 14.4$, $p < .05$. The self-help sample had significantly more individuals who reported being married, $\chi^2 = 22.6$, $p < .001$, and this sample reported more years of education compared to the clinic samples (an average of five years after high school compared to two years after), $F(2,458) = 32.1$, $p < .001$, $\eta_p^2 = .13$. Almost two-thirds of the self-help sample was working full-time in the year prior to completing the survey, compared to less than one-third in the clinic samples, $\chi^2 = 55.0$, $p < .001$. The self-help and psychology samples reported significantly more anxiety (a PROMIS T score above 50) than the psychiatry sample, $\chi^2 = 8.3$, $p < .05$. Most participants in all samples had previously been diagnosed with an anxiety disorder. A higher proportion of the self-help sample indicated that there was a time when they felt that medication for anxiety would have been helpful but they did not receive it, compared to the clinic samples, $\chi^2 = 24.9$, $p < .001$. Finally, a higher proportion of the psychology sample also reported that they had previously received counseling or therapy and medication for anxiety in the past, compared to the self-help or psychiatry samples, $\chi^2 = 10.9$, $p < .01$ and $\chi^2 = 10.7$, $p < .01$, respectively. The response rate

for the psychology sample was 23.2% (113/487), and the response rate for the psychiatry sample was 21.3% (64/300).

Information Importance

Table 2 provides the results of ratings of the importance of 20 information topics concerning anxiety treatment for those considering anxiety treatment in the future. The overall impression of findings is that all three samples viewed many information topics as *very important*. All groups placed a high level of importance on information about the effectiveness of treatment, how treatment works, the goal or outcome of treatment, how long it takes for treatment to produce results, what happens when the treatment stops, common side effects, and the advantages and disadvantages of a treatment approach. Overall, mean ratings of importance as well as the proportions rating a topic as *very important* were both slightly greater in the clinic samples, compared to the self-help sample. Goal or outcome, common side effects, serious side effects, and advantages and disadvantages were all rated more highly by individuals in the clinic samples compared to the self-help sample.

Table 1.

Sociodemographic Characteristics of Survey Respondents

	Self-help Sample (N = 288)	Psychology Sample (N = 113)	Psychiatry Sample (N = 64)
Mean age (SD)	32.2 (9.01)***	38.2 (13.94)	37.6 (14.89)
Proportion female	52%*	70%	61%
Proportion born in Canada	93%	92%	94%
Proportion married or living with someone in a marital-like relationship	62%***	39%	41%
Mean years of education (*SD*)	17.1 (3.97)***	14.3 (3.04)	14.2 (2.95)
Proportion working full-time in last year	64%***	30%	25%
Proportion with PROMIS T score greater than 50	60%	66%	44%*
Previously received a diagnosis of an anxiety disorder	76%	78%	66%

Have received counseling or therapy from a professional for anxiety (% yes)	68%	84%**	67%
Was there a time when counseling or therapy from a professional for anxiety would have been helpful but you did not receive it? (% yes)	79%	75%	77%
Have received medication from a doctor for anxiety (% yes)	72%	86%**	70%
Was there a time when medication from a doctor for anxiety would have been helpful but you did not receive it? (% yes)	59%***	36%	34%

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.
Where asterisk is located indicates which group is different from the other two.

Information Received Among Those with Counseling/Therapy Experience

Table 3 provides ratings of the amount of information that respondents had received in the past when making decisions to start a psychological treatment for anxiety. Overall, findings highlight that all three samples received a moderate amount of information on the different topics. All groups reported receiving the greatest amount of information on available medication treatments, what the consumer has to do as part of the treatment, how the treatment works, the goal or outcome of treatment, and how long it takes for treatment to produce results. Interestingly, no topic received ratings that were in the "just right" category, suggesting that participants would have desired more or less information on all topics. Respondents in the self-help sample provided higher ratings on the amount of information received on nine of 13 topics (see Table 3 for a list of topics), compared to the clinic samples.

Table 2

What Information Would be Important to You in Considering the Kinds of Help Available for Anxiety Problems?

Information type	Self-help Sample (*N* = 288)		Psychology Sample (*N* = 113)		Psychiatry Sample (*N* = 64)	
	Very important (%)	Mean rating (95% CI)	Very important (%)	Mean rating (95% CI)	Very important (%)	Mean rating (95% CI)
Effectiveness of treatment	76%	6.4 (6.2, 6.7)	84%	6.9 (6.6, 7.2)	84%	6.8 (6.4, 7.3)
How treatment works	79%	***6.3 (6.1, 6.5)***[a]	86%	7.0 (6.7, 7.3)[a]	84%	6.9 (6.5, 7.3)
Advantages and disadvantages of treatment	75%	**6.3 (6.1, 6.5)**	83%	7.0 (6.7, 7.3)	83%	6.9 (6.6, 6.3)
What happens when treatment stops	74%	6.3 (6.1, 6.5)	80%	6.8 (6.5, 7.1)	83%	6.9 (6.4, 7.3)
How long treatment continues	71%	6.1 (5.9, 6.3)	77%	6.6 (6.2, 6.9)	80%	6.6 (6.2, 7.1)
All available treatments	70%	6.1 (5.9, 6.4)	75%	6.7 (6.4, 7.1)	70%	6.4 (6.0, 6.9)
Common side effects of treatment	67%	**6.1 (5.9, 6.3)**	87%	7.0 (6.7, 7.3)	86%	7.1 (6.7, 7.5)
Goal or outcome of treatment	63%	**6.1 (5.9, 6.3)**	89%	7.1 (6.8, 7.3)	83%	6.8 (6.4, 7.2)
How long it takes for treatment to produce results	77%	***6.0 (5.8, 6.3)***[ab]	75%	6.4 (6.0, 6.7)	80%	6.7 (6.3, 7.1)[a]
Uncommon but serious side effects of treatment	75%	**6.0 (5.7, 6.2)**	77%	6.6 (6.3, 7.0)	81%	6.8 (6.3, 7.2)
What you have to do as part of the treatment	71%	6.0 (5.8, 6.3)	77%	6.5 (6.1, 6.9)	78%	6.5 (6.0, 7.0)
Cost of treatment to you	63%	6.0 (5.7, 6.2)	75%	6.6 (6.2, 7.0)	75%	6.4 (5.8, 7.0)
Available counseling or psychological treatments	64%	***5.8 (5.6, 6.0)***[a]	74%	6.6 (6.2, 6.9)[a]	70%	6.5 (6.0, 7.0)
Self-help treatment	57%	5.7 (5.5, 5.9)	56%	5.6 (5.1, 6.0)	45%	5.2 (4.7, 5.8)
Available medication treatments	62%	5.6 (5.4, 5.8)	60%	6.0 (5.6, 6.4)	55%	5.6 (5.0, 6.2)

Note. Each source was rated on a 9-point rating scale with the anchors 0-2 (*not important*), 3-5 (*moderately important*), and 6-8 (*very important*). Bolded values denote that confidence intervals do not overlap. Italicized values denote only 2 groups non-overlapping.

[a] denotes the group that is non-overlapping with italicized values.

[b] at 2 decimal places these values are significantly different.

Information Received Among Those with Medication Experience

Table 4 provides ratings of the amount of information that respondents had received in the past when making decisions to start a medication treatment for anxiety. All three samples had received a moderate amount of information on the different topics related to medication treatment. All groups reported receiving the greatest amount of information on available counseling or psychological treatments, cost, effectiveness, what the consumer has to do as part of the treatment, goal or outcome of treatment, and how long it takes for treatment to produce results. Interestingly, no topic received ratings that were in the "just right" category, suggesting that participants would have desired more or less information on all of the topics included. Respondents in the self-help sample provided higher ratings on the amount of information received, compared to the clinic samples on the following topics: available counseling or psychological treatments, cost to the consumer and the health system, and effectiveness.

Amount of Information Received from Different Sources

Table 5 indicates how much information respondents received from different sources when considering anxiety treatment options. The Internet was the highest rated source by all three samples, followed by family doctors. In line with previously discussed findings, the self-help sample indicated receiving more information from 8 of 10 sources compared to the clinic samples. Respondents in all samples indicated receiving the least amount of information from a nurse.

Table 3

Amount of Information Received When Making Decisions About Starting Counseling or Therapy for an Anxiety Problem

Information type	Self-help Sample (*N* = 194)		Psychology Sample (*N* = 94)		Psychiatry Sample (*N* = 41)	
	Just right amount (%)	Mean rating (95% CI)	Just right amount (%)	Mean rating (95% CI)	Just right amount (%)	Mean rating (95% CI)
Available medication treatments	52%	**5.0 (4.7, 5.2)**	21%	3.4 (2.9, 3.8)	7%	3.7 (3.3, 4.2)
What you have to do as part of the treatment	41%	**4.7 (4.5, 5.0)**	27%	3.8 (3.3, 4.2)	17%	3.6 (3.0, 4.2)
Effectiveness of treatment	45%	**4.7 (4.4, 5.1)**	15%	2.9 (2.5, 3.3)	7%	3.2 (2.6, 3.9)
Goal or outcome of treatment	41%	***4.6 (4.3, 4.9)***[a]	25%	3.8 (3.4, 4.2)[a]	20%	4.0 (3.4, 4.6)
How treatment works	33%	***4.6 (4.3, 4.8)***[a]	20%	3.5 (3.1, 3.9)[a]	17%	3.8 (3.1, 4.5)
Cost of treatment to you	38%	**4.5 (4.2, 4.8)**	22%	3.1 (2.6, 3.6)	20%	3.2 (2.3, 4.0)
How long it takes for treatment to produce results	36%	***4.5 (4.2, 4.8)***[a]	14%	3.1 (2.7, 3.5)[a]	20%	3.8 (3.1, 4.4)
Advantages and disadvantages of treatment	29%	**4.4 (4.1, 4.7)**	10%	2.7 (2.3, 3.1)	17%	3.0 (2.3, 3.8)
Common side effects of treatment	48%	**4.3 (4.0, 4.6)**	16%	2.7 (2.3, 3.2)	12%	3.1 (2.4, 3.8)
How long treatment continues	22%	***4.3 (4.0, 4.6)***[a]	15%	3.0 (2.6, 3.4)[a]	15%	3.3 (2.6, 4.0)
What happens when treatment stops	36%	**4.2 (3.8, 4.5)**	8%	2.5 (2.1, 2.9)	10%	2.7 (1.9, 3.5)
Cost of treatment to healthcare system	43%	**3.8 (3.4, 4.2)**	10%	1.7 (1.3, 2.2)	2%	1.4 (.77, 2.0)

Note. Each information type was rated on a 9-point rating scale with the anchors 0-2 (*none*), 3-5 (*moderate amount*), and 6-8 (*just right*). Bolded values denote that confidence intervals do not overlap. Italicized values denote only 2 groups non-overlapping.
[a] denotes the group that is non-overlapping with italicized values.

Table 4

Amount of Information Received when Making Decisions about Starting a Medication for an Anxiety Problem

Information type	Self-help Sample (N = 204)		Psychology Sample (N = 94)		Psychiatry Sample (N = 43)	
	Just right amount (%)	Mean rating (95% CI)	Just right amount (%)	Mean rating (95% CI)	Just right amount (%)	Mean rating (95% CI)
How long it takes for treatment to produce results	50%	***4.8 (4.6, 5.1)***[a]	34%	4.1 (3.7, 4.5)[a]	30%	4.5 (3.8, 5.2)
Goal or outcome of treatment	42%	***4.8 (4.6, 5.1)***[a]	24%	3.8 (3.3, 4.2)[a]	19%	4.1 (3.5, 4.7)
Cost of treatment to you	39%	**4.7 (4.4, 5.0)**	10%	2.5 (2.0, 2.9)	14%	2.5 (1.7, 3.3)
Effectiveness of treatment	42%	**4.6 (4.3, 4.8)**[b]	17%	3.2 (2.8, 3.6)	16%	3.6 (2.8, 4.3)[b]
Advantages and disadvantages of treatment	40%	***4.6 (4.3, 4.9)***[a]	13%	2.8 (2.3, 3.2)[a]	25%	3.5 (2.8, 4.3)
Available counseling or psychological treatments	43%	**4.5 (4.2, 4.7)**	26%	3.3 (2.9, 3.8)	16%	3.3 (2.6, 3.9)
Common side effects of treatment	33%	***4.4 (4.2, 4.7)***[a]	25%	3.6 (3.2, 4.1)[a]	25%	3.7 (3.0, 4.4)
What you have to do as part of the treatment	26%	4.4 (4.2, 4.7)	26%	3.8 (3.4, 4.3)	25%	3.8 (3.2, 4.4)
How treatment works	30%	***4.4 (4.2, 4.7)***[a]	19%	3.5 (3.1, 3.9)	23%	4.1 (3.4, 4.8)
How long treatment continues	24%	***4.3 (4.0, 4.6)***[a]	19%	3.0 (2.6, 3.5)[a]	16%	3.7 (3.1, 4.3)
What happens when treatment stops	37%	**4.3 (4.0, 4.6)**	17%	2.6 (2.1, 3.1)	23%	3.1 (2.3, 3.8)
Uncommon but serious side effects of treatment	25%	***4.2 (3.9, 4.4)***[a]	18%	3.1 (2.6, 3.5)[a]	27%	3.4 (2.7, 4.1)
Cost of treatment to healthcare system	46%	**3.9 (3.6, 4.3)**	7%	1.5 (1.05, 1.94)	7%	1.5 (.81, 2.12)

Note. Each information type was rated on a 9-point rating scale with the anchors 0-2 (*none*), 3-5 (*moderate amount*), and 6-8 (*just right*). Bolded values denote that confidence intervals do not overlap. Italicized values denote only 2 groups non-overlapping.

[a] denotes the group that is non-overlapping with italicized values.

[b] at 2 decimal places these values are significantly different.

Table 5

Amount of Information Received from Different Sources

Information type	Self-help Sample (N = 286)		Psychology Sample (N = 113)		Psychiatry Sample (N = 64)	
	A lot (%)	Mean rating (95% CI)	A lot (%)	Mean rating (95% CI)	A lot (%)	Mean rating (95% CI)
Internet	36%	**4.7 (4.5, 5.0)**	28%	3.9 (3.4, 4.4)	18%	3.4 (2.9, 4.0)
Counselor or therapist	41%	**4.3 (4.0, 4.6)**	15%	2.5 (2.0, 2.9)	21%	2.7 (2.0, 3.4)
Psychiatrist	38%	**3.7 (3.4, 4.1)**	15%	2.3 (1.9, 2.8)	11%	2.1 (1.4, 2.7)
Psychologist	36%	**3.7 (3.3, 4.0)**	14%	2.1 (1.7, 2.6)	13%	2.1 (1.4, 2.8)
Family doctor	26%	3.6 (3.3, 3.8)	29%	3.8 (3.3, 4.3)	25%	3.6 (2.9, 4.2)
Friend	22%	**3.6 (3.3, 3.9)**	14%	2.5 (2.0, 3.0)	11%	2.1 (1.5, 2.6)
Book (e.g., self-help book)	30%	**3.6 (3.3, 3.9)**	11%	2.1 (1.7, 2.6)	8%	1.9 (1.3, 2.5)
Family member (who is not a partner/spouse)	17%	***2.9 (2.6, 3.1)***[a]	12%	2.3 (1.9, 2.8)	9%	1.9 (1.3, 2.5)[a]
Partner/spouse	17%	**2.8 (2.5, 3.1)**	7%	1.5 (1.1, 1.9)	8%	1.4 (.81, 1.9)
Nurse	11%	**2.1 (1.8, 2.3)**	6%	1.1 (.73, 1.5)	8%	1.3 (.71, 1.9)

Note. Each source was rated on a 9-point rating scale with the anchors 0-2 (*none*), 3-5 (*moderate amount*), and 6-8 (*A lot*). Bolded values denote that confidence intervals do not overlap. Italicized values denote only 2 groups non-overlapping.
[a] denotes the group that is non-overlapping with italicized values.

Predictors of Information Importance and Information Received

Table 6 describes the regression analysis examining predictors of the number of information topics considered to be *very important* by participants in the self-help sample. The partial correlation (*pr*) reported in the table, when squared, indicates the unique proportion of the variance in the outcome that is accounted for by each predictor variable when all other predictors and their shared variance have been accounted for in the model. Females were less likely than males, and people born in Canada (vs. not) and married participants (vs. not) were more likely to rate a higher number of information topics as important after accounting for age, years of education, anxiety symptoms, past diagnosis of anxiety, and history of anxiety treatment. Table 7 describes the regression analysis for predictors of the number of information topics considered to be *very important* by participants in the combined clinic samples. There were no significant predictors; however, higher education (vs. lower) had a trend towards significance, beta=.295, p=.05, pr=.15.

Table 8 describes the regression analysis for predictors of receiving the right amount of counseling or therapy information for the self-help sample. Females were less likely than males and married participants (vs. not) were more likely to rate that they received the right amount of information on a higher number of topics after accounting for age, birth place, years of education, anxiety symptoms, past diagnosis of anxiety, and history of anxiety treatment. Table 9 describes the regression analysis for predictors of receiving the right amount of counseling or therapy information for the combined clinic samples. Higher education (vs. lower) was the only

Table 6

Predictors of Composite Information Topic Importance Score for Topics Given a Very Important Rating for Self-help Sample (*N* = 283)

Predictor	*B*	SE *B*	*β*	*P* value	*pr*
Gender (0=male, 1=female)	**-1.42**	.68	-.12	.039	-.13
Birth place (0=not Canada, 1=Canada)	**4.28**	1.40	.18	.002	.18
Marital status (0=not married, 1=married)	**2.30**	.77	.19	.003	.18
Age	-.003	.04	-.01	.934	-.01
Years of education	-.07	.09	-.05	.420	-.05
Total PROMIS Anxiety score	-.02	.05	-.02	.767	-.02
Anxiety disorder diagnosis	.47	1.08	.03	.67	.03
Therapy received or needed[a]	1.86	1.15	.11	.106	.10
Medication received or needed[b]	-2.20	1.24	-.15	.08	-.11

Note. Outcome variable = **Information importance composite score,** which was calculated by summing the topics for which respondents provided a rating of 6-8 (*very important*). The range of scores on this variable is from 0 to 20. Bolded values are significant at the $p < .05$ level.

[a]Therapy received or needed includes individuals who indicated that they had previously received counseling or therapy for anxiety in the past and/or there was a time that they would have benefitted from counseling or therapy but did not receive it.

[b]Medication received or needed includes individuals who indicated that they had previously received medication for anxiety in the past and/or there was a time that they would have benefitted from medication but did not receive it.

Table 7

Predictors of Composite Information Topic Importance Score for Topics Given a Very Important Rating for Clinic Samples ($N = 170$)

Predictor	*B*	SE *B*	*β*	*P* value	*pr*
Sample (0=psychiatry, 1=psychology)	-.135	.91	-.01	.882	-.01
Gender (0=male, 1=female)	.187	.94	.02	.843	.02
Birth place (0=not Canada, 1=Canada)	3.14	1.73	.14	.071	.14
Marital status (0=not married, 1=married)	1.06	.92	.09	.251	.09
Age	.04	.03	.10	.210	.10
Years of education	.295	.15	.16	.05	.15
Total PROMIS Anxiety score	.05	.07	.06	.470	.06
Anxiety disorder diagnosis	-.402	1.13	-.03	.722	-.03
Therapy received or needed[a]	.035	1.65	.002	.983	.002
Medication received or needed[b]	2.65	1.40	.17	.06	.15

Note. Outcome variable = **Information importance composite score,** which was calculated by summing the topics for which respondents provided a rating of 6-8 (*very important*). The range of scores on this variable is from 0 to 20. Bolded values are significant at the $p < .05$ level.

[a]Therapy received or needed includes individuals who indicated that they had previously received counseling or therapy for anxiety in the past and/or there was a time that they would have benefitted from counseling or therapy but did not receive it.

[b]Medication received or needed includes individuals who indicated that they had previously received medication for anxiety in the past and/or there was a time that they would have benefitted from medication but did not receive it.

Table 8

Predictors of Receiving the Right Amount of Counseling/Therapy Information for Self-help Sample (*N* = 283)

Predictor	*B*	SE *B*	*β*	*P* value	*pr*
Gender (0=male, 1=female)	**-1.15**	.45	-.16	.011	-.18
Birth place (0=not Canada, 1=Canada)	1.11	.88	.09	.210	.09
Marital status (0=not married, 1=married)	**1.57**	.55	.22	.004	.20
Age	-.003	.04	-.01	.934	-.16
Years of education	-.07	.09	-.05	.420	.27
Total PROMIS Anxiety score	-.02	.05	-.02	.767	.18
Anxiety disorder diagnosis	1.49	.95	.11	.118	.11
Medication received or needed[a]	-.45	1.01	-.03	.657	-.03

Note. The dependent variable is an information amount composite score that was calculated by summing the topics that respondents provided a rating of 6-8 (*just right amount*). The range of scores on this variable is from 0 to 12. Bolded values are significant at the $p < .05$ level.

[a]Medication received or needed includes individuals who indicated that they had previously received medication for anxiety in the past and/or there was a time that they would have benefitted from medication but did not receive it.

Table 9

Predictors of Receiving the Right Amount of Counseling/Therapy Information for Clinic Samples (*N* = 131)

Predictor	*B*	SE *B*	*β*	*P* value	*pr*
Sample (0=psychiatry, 1=psychology)	.45	.47	.09	.339	.08
Gender (0=male, 1=female)	.02	.49	.003	.970	.003
Birth place (0=not Canada, 1=Canada)	-.35	.96	-.03	.718	-.03
Marital status (0=not married, 1=married)	.12	.47	.02	.795	.02
Age	-.01	.02	-.03	.711	-.03
Years of education	**.160**	.07	.20	.03	.19
Total PROMIS Anxiety score	.002	.04	.004	.966	.004
Anxiety disorder diagnosis	.45	.66	.07	.494	.06
Medication received or needed[a]	.27	.89	.03	.764	.03

Note. The dependent variable is an information amount composite score that was calculated by summing the topics that respondents provided a rating of 6-8 (*just right amount*). The range of scores on this variable is from 0 to 12. Bolded values are significant at the $p < .05$ level.

[a]Medication received or needed includes individuals who indicated that they had previously received medication for anxiety in the past and/or there was a time that they would have benefitted from medication but did not receive it.

Table 10

Predictors of Receiving the Right Amount of Medication Information for Self-help Sample (*N* = 283)

Predictor	*B*	SE *B*	*β*	*P* value	*pr*
Gender (0=male, 1=female)	**-2.11**	.60	-.22	<.001	-.24
Birth place (0=not Canada, 1=Canada)	2.18	1.23	.12	.078	.12
Marital status (0=not married, 1=married)	**2.03**	.72	.20	.005	.20
Age	**-.09**	.03	-.17	.007	-.02
Years of education	**.31**	.07	.267	<.001	-.05
Total PROMIS Anxiety score	.09	.06	.12	.086	.29
Anxiety disorder diagnosis	-.46	1.38	-.02	.737	-.02
Therapy received or needed[a]	1.38	1.29	.07	.284	.08

Note. The dependent variable is an information amount composite score that was calculated by summing the topics that respondents provided a rating of 6-8 (*just right amount*). The range of scores on this variable is from 0 to 13. Bolded values are significant at the $p < .05$ level.

[a]Therapy received or needed includes individuals who indicated that they had previously received counseling or therapy for anxiety in the past and/or there was a time that they would have benefitted from counseling or therapy but did not receive it.

Table 11

Predictors of Receiving the Right Amount of Medication Information for Clinic Samples (*N* = 136)

Predictor	*B*	SE *B*	*β*	*P* value	*pr*
Sample (0=psychiatry, 1=psychology)	-.117	.91	-.01	.898	-.01
Gender (0=male, 1=female)	**-2.26**	.95	-.20	.02	-.21
Birth place (0=not Canada, 1=Canada)	.36	1.82	.02	.20	.02
Marital status (0=not married, 1=married)	1.40	.92	.14	.129	.13
Age	-.06	.03	-.17	.06	-.17
Years of education	.249	.14	.15	.08	.15
Total PROMIS Anxiety score	-.02	.08	-.02	.814	-.02
Anxiety disorder diagnosis	1.81	1.19	.13	.132	.13
Therapy received or needed[a]	2.90	2.13	.12	.175	.12

Note. The dependent variable is an information amount composite score that was calculated by summing the topics that respondents provided a rating of 6-8 (*just right amount*). The range of scores on this variable is from 0 to 13. Bolded values are significant at the $p < .05$ level.

[a]Therapy received or needed includes individuals who indicated that they had previously received counseling or therapy for anxiety in the past and/or there was a time that they would have benefitted from counseling or therapy but did not receive it.

significant predictor of receiving the right amount of information on a higher number of topics after accounting for sample (psychology vs. psychiatry), age, birth place, marital status, anxiety symptoms, past diagnosis of anxiety, and history of anxiety treatment.

Table 10 describes the regression analysis for predictors of receiving the right amount of medication information for the self-help sample. Females were less likely than males and younger people less likely than older, and married participants (vs. not) and those with higher education (vs. lower) were more likely to rate that they received the right amount of information on a higher number of topics after accounting for birth place, anxiety symptoms, past diagnosis of anxiety, and history of anxiety treatment. Table 11 describes the regression analysis for predictors of receiving the right amount of medication information for the clinic samples. Females were less likely than males (the only significant predictor) to rate that they received the right amount of information on a higher of the number of topics after accounting for sample (psychology vs. psychiatry, age, birth place, marital status, anxiety symptoms, past diagnosis of anxiety, and history of anxiety treatment.

The following hypotheses were outlined above – that higher ratings of importance of information topics would be provided by:

1. older people (compared to younger);

2. females (compared to males);

3. people with higher education (compared to lower);

4. people with higher levels of anxiety symptoms (compared to lower); and

5. people with psychological treatment experience (compared to pharmacological experience.

The regression analyses demonstrated that older and younger people were similar in their information preferences, so Hypothesis 1 was not confirmed. Males reported a desire for more information than females so Hypothesis 2 was not confirmed. Hypothesis 3 was confirmed in that those with higher education did report a preference for more information. Hypothesis 4 and 5 were not confirmed – there were no differences in information preferences based on anxiety levels or treatment experience, respectively.

Discussion

This is one of the first studies to explore anxiety treatment information needs and preferences and one of the first to assess these preferences in samples enrolled via different routes (i.e., from clinics versus online). While individuals from both of these samples may be seeking treatment and/or information, I speculate that most within the clinic samples are seeking treatment and most within the self-help sample are seeking information. Specifically, individuals in the clinic samples are engaging or preparing to engage in treatment. While individuals in the self-help sample are seeking information, but may or may not be seeking treatment. Overall, the results suggested differences among individuals who were seeking treatment compared to those seeking information. Not surprisingly, the two clinic samples were composed of individuals with similar demographic characteristics. One noteworthy feature of the self-help sample is that it had the highest proportion of male participants, compared to the other samples. This is congruous with the idea that females are more likely than males to seek treatment for mental health problems (Cox, 2014), even if males similarly desire information. However, there were more differences when considering the characteristics between clinic and self-help samples. For instance, the clinic samples were significantly older than the self-help sample. One explanation for this could be that the survey link was posted on the ADAM website and younger people are

more regular users of the Internet (Olson, O'Brien, Rogers, & Charness, 2011), and therefore more likely to view the survey link. Another explanation is that younger people are more likely to participate in shared decision-making (Solberg et al., 2014) and therefore may be more interested in accessing information to learn more about anxiety and its treatment.

Another noteworthy difference between samples is that the self-help sample had a higher proportion of individuals who were married, compared to the clinic samples. It may be that individuals currently seeking treatment are less likely to be in a romantic relationship. This explanation is consistent with existing research (Walker & Druss, 2017). The self-help sample also had a higher mean education level and a higher proportion working full-time in the last year, compared to clinic samples. The clinic samples on average may have struggled to complete education beyond high school and may struggle to maintain full-time employment as a result of their anxiety challenges. It is crucial that information resources be made available for people of various education levels. Most of the self-help sample had previously received a diagnosis of an anxiety disorder, which suggests that they may have been interested in participating in the survey because of their own personal struggles with anxiety.

There were also differences in relation to anxiety treatment experience. Not surprisingly, the psychology sample (i.e., those seeking therapy) had the highest proportion of individuals who had previously received counseling or therapy, given that they had past therapy experience. The *theory of reasoned action* posits that people will behave in a way consistent with their past behaviours, attitudes, and intentions (Fishbein & Ajzen, 1975). In line with this, it is likely that persons who have previously received therapy will be more likely to seek future (or current) therapy. Interestingly, the psychology sample had the highest proportion of individuals who had previously received medication treatment for anxiety. One possible explanation for this is that

the Anxiety Clinic (where psychology sample was recruited) is often seen as a "last resort" by patients and even family physicians because of the long wait list; so many patients have already tried a medication or other source for therapy for their anxiety. Finally, the self-help sample had a larger proportion who felt they would have benefited from medication but did not receive it. The self-help sample may have been experiencing anxiety symptoms, but not be at the stage where they have initiated a new treatment, despite having previous treatment experience. Perhaps, upon reflection, this group wished they had tried medication to deal with their anxiety symptoms. These sample differences suggest that people who seek treatment may differ from those who seek information in terms of their information needs and preferences.

All three samples viewed information on a wide range of topics as being very important, which is consistent with our group's earlier work with depression (Bernstein et al., 2017) and stress, anxiety, and depression (Stewart et al., 2014). Ratings of importance of information topics in the present study and this earlier research were also similar. Mean ratings of importance as well as proportions rating a topic as very important were both slightly greater in the clinic samples, compared to the self-help sample. One plausible explanation for this is to consider the *Stages of Change* model outlined by Prochaska and DiClemente (2005). The stages include *Precontemplation* (more than 6 months until intended action), *Contemplation* (action in next 6 months), *Preparation* (action in next month), *Action* (now), *Maintenance* (at least 6 months of action) and *Termination* (will not return to old habits). It likely that the clinic samples are at the stage where they are either ready to make decisions (i.e., Preparation) about treatment or have already met with other healthcare providers (i.e., Action) such as family physicians (needed for referral to these clinics). They may have had discussions with care providers, which made them better able to reflect on the kind of information they would want concerning anxiety

treatment. In contrast, the self-help sample may be at a different stage in the process (Precontemplation or Contemplation), where they are just exploring or seeking information alone (not treatment), and the information may not even be for themselves (could be for friends or family). These possible differences in stage might have contributed to the different ratings between the samples.

New to this study, compared to earlier research by our group, was the examination of the amount of information previously received. Overall, the self-help sample provided higher ratings regarding the amount of information received when considering starting counseling or therapy and when considering starting a medication treatment for anxiety. It is likely that the clinic samples are coming from a perspective where they have a sense that anxiety is a problem, and have had more treatment experience and more opportunities to speak with healthcare providers about anxiety treatment. At the time of the survey, they likely had a better sense of whether or not they had received the right amount of information on the different topics to make an informed decision, which led to lower ratings. This suggests that despite seeing a mental health treatment provider, the public still feels inadequately informed about treatment options. On the other hand, the self-help sample was likely at an earlier stage of the information/treatment seeking process where they were less certain about how much information they were looking for, had less need for information, and sought information from fewer sources. Another noteworthy finding is that the clinic samples did not report feeling adequately informed about other treatments if they were seeking a therapy or medication treatment option. This suggests that people are not necessarily given a choice when starting a treatment, despite the efficacy of both therapy and medication for treating anxiety problems (Kaczkurkin & Foa, 2015; NICE, 2011; Ravindran & Stein, 2010). The clinical implications of these differences are that individuals who

are already engaged in ongoing psychological or pharmacological treatment for anxiety do not feel like they are getting the right amount of information and want information on a higher number of topics, compared to the self-help sample. Therefore, healthcare providers should have discussions with their patients about their desired amount and topics of information to facilitate ongoing discussions.

In considering the amount of information received from different sources, respondents in the self-help sample indicated that they had received more information from all sources except from their family doctor. The self-help and clinic samples both reported the family doctor being an important source of information. This is not surprising given that family doctors are most likely to be the first healthcare provider seen when individuals are struggling with a mental health problem such as anxiety. Again, the fact that the clinic samples provided lower ratings to this set of questions is not surprising. They are likely at a stage where they have a better idea of the type of information they want and from whom and what is lacking in their own knowledge. Conversely, the self-help sample is more interested in gathering a lot of information from a variety of sources so they are better able to make an informed decision regarding anxiety treatment.

In considering the characteristics of self-help respondents and how they relate to the number of information topics considered to be very important, males and those who were married or born in Canada viewed more topics as very important than others. The magnitude of these differences was modest however. The fact that males viewed more topics as very important underscores the importance of providing males with more information. It may be that females have had more treatment experience and therefore know what information they desire, whereas males may have had less experience and consequently want more information. Given

that being married was a significant predictor only within the self-help sample, perhaps married people are interested in information for their significant others. This suggests that significant others should be involved in the information gathering process such as including them with psychoeducation about anxiety and its treatment (perhaps in the first treatment session). These findings were similar to results reported by Cunningham and colleagues (2014) in a large survey with more than 1000 respondents from primary care clinics. Cunningham et al. found that there were larger differences based on patterns of information preferences and suggested that the best solution is to make information available in a variety of formats (paper and Web formats) in a variety of settings, allowing people to choose the type of information they prefer.

Limitations

Though this study addresses certain gaps in the literature including assessing what information people view as important in considering help for anxiety and what anxiety information people have received in the past, it is not without limitations. One limitation of this research is that it examined the objectives from a quantitative methods perspective, and participants were asked to select responses of best fit based on predetermined questions and scales. There may be other useful information provided by collecting open-ended responses in semi-structured interviews with a qualitative approach to data analysis. Another limitation is that participants in both the clinic and self-help samples were individuals in the process of seeking help. Therefore, the generalizability of the results is limited to those seeking help rather than all individuals with anxiety problems. Furthermore, the clinic participants who responded to the survey may not be a true reflection of all individuals seeking treatment within each clinic. Compared to those who did not participate, those who did are likely individuals who desire more information and aim to engage in various methods of obtaining information such as completing a

survey related to anxiety treatment. Finally, I was not able to determine the response rate for the self-help sample in Study 1. Some individuals may have clicked on the link to the survey, but decided not to complete it. This is an issue because while these results can be generalized to individuals seeking information or treatment for anxiety, it is not possible to determine how the sample of respondents compare to the total population of those visiting the website. However, web analysis indicated that almost 2500 people visited the ADAM website during the period of recruitment, leading to an estimated response rate of 11.5%.

Conclusions

Taken together, the results of this study suggest that persons with anxiety are interested in information developed to answer important questions concerning anxiety treatment. Information needs for other common mental health problems have been found to be similar (Bernstein et al., 2017; Reynolds et al., 2015; Stewart et al., 2014). These studies reported that people would be interested in a variety of information topics concerning treatment for depression, stress, anxiety/child anxiety, and depression. Of particular interest were treatment goals, effectiveness, and what happens when the treatment stops (Bernstein et al., 2017; Reynolds et al., 2015; Stewart et al., 2014). The wide range of topics judged to be important by individuals with anxiety suggest that it would be very difficult to address these information needs via oral communication during healthcare visits or using currently available materials. Therefore, it is imperative that high quality, evidence-based resources exist to assist individuals in making decisions about treatment for problems with anxiety.

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Chapter 3: Evaluation of Existing Anxiety Websites

As described in prior chapters of this dissertation, information about various mental health treatment options that is evidence-based and balanced is not available from many of the existing resources. Previous research by our group has found that individuals want information on a wide range of treatment topics (Bernstein et al., 2017; Stewart et al., 2014). Professionals commonly produce resources for the public with limited knowledge about what information is of interest to consumers. For instance, Mayo Clinic's information on various health issues is typically within the first page of Google search results in North America and therefore, is likely to be a commonly selected resource. In communicating with their depression information development team, I found that the information published on their website comes from experts in the field but is not based on patient-reported information needs (G. C. Turosak, personal communication, May 10, 2016). The objectives of Study 2 were to compare multiple web-based information sources of information pertaining to anxiety on several factors, including readability, usability, visual design, content, and facilitation of shared decision-making. The present study will add to our understanding of the quality of existing anxiety resources.

Comparing Online Information Sources

The aim of Study 2 was to compare multiple web-based sources of information pertaining to anxiety on several factors. When performing such an evaluation it is important to consider the social and cognitive principles that come into play when making judgments about multiple targets, whether that is information sources or people. When comparing multiple stimuli, a helpful framework to consider is *social comparison theory* (Festinger, 1954), which dictates how people will evaluate themselves based on how they relate to others. Furthermore, situational factors prime us and influence our future judgments. Schwarz and Bless (1992) expand on this

theory to discuss their *inclusion/exclusion model*. This model describes evaluative judgments as including two mental representations – one of the target and one to which the target is compared. Taken together, we learn that comparisons between things that are similar lead to assimilation effects, indicating a positive relationship between accessible information and new information, while comparisons between things that are different lead to contrast effects. Additionally, when previous information is included in one's judgement of current information it leads to assimilation, but when it is excluded it leads to contrast. Contrast effects can take one of two forms. If positive attributes are excluded (from previous information), then a less positive judgment occurs, but if negative attributes are excluded, then a less negative judgment occurs. For instance, when primed with friendliness (and excluding any primes that are not friendly), one is more likely to perceive others' behaviour as friendlier. On the other hand, if one is primed with being at work all day and find co-workers unfriendly, one is more likely to find one's significant other more friendly upon returning home due to contrast effects. Moreover, a second source of information viewed by the same person could be rated more positively or negatively due to contrast effects, depending on how that information is integrated with existing knowledge and beliefs.

The phenomenon of contrast effects has also been widely studied in romantic dating research. An evaluator's dating decision is often negatively correlated with the attractiveness of the prior target (Bhargava & Fisman, 2014), meaning that as prior target attractiveness increases, one is less likely to be interested in dating the next target and vice versa. Similarly, responsive target dates are rated more favourably following an interaction with an unresponsive target, regardless of level of attractiveness (Spielmann & MacDonald, 2016). These concepts are important to consider in the present study, as raters were asked to evaluate several anxiety

information resources. As discussed, certain cognitive factors such as contrast effects can impact one's evaluations of multiple targets of information.

The advantage of using the same raters is that this allows for clearer judgments as to whether the characteristics of one resource were evaluated more positively than the other. A useful analogy for the advantage of using the same raters for both evaluations is that of evaluating a new car. When viewing a new car, any new car seems impressive. However, when one person compares a lower-end car (Chevrolet) to a high-end car (Lexus) differences in evaluations begin to emerge (due to contrast effects discussed above). Conversely, if one person viewed the Chevrolet and a different person viewed the Lexus, they may make equally positive evaluations because both cars are new and are built to have features desired by consumers. In the present study, using the same raters was applied by having the same raters evaluate the screen shots of multiple anxiety websites, presented in the order one might explore the websites.

Information Processing among Persons with Anxiety

Given the amount of information present on many websites, it would be challenging for the public to understand and remember all of this information. One could imagine how difficult it would be to process information if someone was struggling with anxiety. Indeed, anxiety has been found to be associated with reduced attention (Bishop, 2009), and a meta-analysis demonstrated that self-reported anxiety is related to poorer working memory performance (Moran, 2016). For people with anxiety, their working memory capacity may be more limited than people without anxiety (Berggren, Koster, & Derakshan, 2012). This is consistent with *Cognitive Load Theory* that suggests that overloading someone with too much information will impair learning (Sweller, 1988). Working memory capacity has been found to mediate the relationship between anxiety and academic performance (including math and reading

comprehension; Moran, 2016). Reading comprehension is an example of a more complex task that uses greater working memory capacity and is more likely to be negatively impacted by anxiety (Tysinger, Tysinger, & Diamanduros, 2010). In a review, Derakshan and Eysenck (2009) found that anxiety impairs processing efficiency and that worry (i.e., difficulty focusing on something other than anxiety) is a major contributor to adverse effects of anxiety on task performance. This is due to the limited capacity of one's working memory needed to switch and inhibit information from different sources. More recently, Barbot and Carrasco (2018) examined the relationship between emotional visual stimuli, attention, and perception. Their findings suggested that both feelings of anxiety and the emotional content of visual information influences attention to alter how visual information is perceived (Barbot & Carrasco, 2018). Working memory and attention together, are a major component of reading comprehension and information processing. Therefore, anxiety clearly has a negative impact on one's ability to process both verbal and visual information.

Website Evaluation Characteristics

Website quality. Quality is a crucial aspect in the evaluation of any consumer product whether it is a new car or a tool for better understanding one's mental health problems. A review of mental health information websites including anxiety found most (23/30) websites to be of poor quality (Reavley & Jorm, 2011). In a more recent study evaluating the quality of 40 mental health websites using the DISCERN scale (of website quality), Grohol and colleagues (2014) found that websites scored highest on the following three DISCERN instrument items: clarity about the availability of more than one treatment option, the content achieved its aims, and the content provided additional sources of support. Additionally, total DISCERN scores were highest for websites containing information on dysthymia, bipolar disorder, and schizophrenia

(Grohol, Slimowicz, & Granda, 2014). In a review of the quality of websites on bipolar disorder, the authors reported that the website quality was variable (Barnes et al., 2009). They noted that websites with an affiliation to a professional organization such as the National Institute of Mental Health had higher quality information. It appears that while there may exist high quality websites on mental health issues, website quality is variable and it would be difficult for the public to discern which ones are of high quality.

Readability. People who search the web for health information possess varying levels of mental health literacy (Coles & Coleman, 2010). Therefore, readability is another very crucial characteristic to examine when evaluating health information websites. The U.S. National Institute of Health recommends a reading grade level of 6-7 for health information (Hutchinson, Baird, & Garg, 2016). However, the readability of many mental health information websites is often well above this level (Skierkowski, Florin, Harlow, & Machan, 2019). A review of six different readability assessment tools (when assessing depression information) found the Simple Measure of Gobbledygook (SMOG) to be best suited for healthcare applications (Wang, Miller, Schmitt, & Wen, 2013). In a recent review of 37 studies evaluating online health information, website writing and language received mostly negative evaluations by consumers, suggesting that the readability level of health information websites is poor (Sun, Zhang, Gwizdka, & Trace, 2019).

Understandability and actionability. When presenting the public with health information, it is important to consider how well the websites provide information that can be synthesized and applied. In an important review of approaches to evaluating online health information, Beaunoyer, Arsenault, Lomanowska, and Guitton (2017) underscore the importance of utilizing understandability and usability tools. According to a recent evaluation of the quality

of perinatal anxiety information websites, both understandability and actionability were variable across the websites (Kirby et al., 2018). Similarly, in an evaluation of a variety of health information topics, few resources utilized visual aids or had clear captions, and few described explicit steps the public could take (Mastroianni et al., 2019). Overall, the results of these studies suggest that the understandability and actionability of existing health information websites could be enhanced.

Content. Perhaps the most crucial aspect of websites is their content. This is especially important when it comes to presenting health information because of the impact it may have on the consumer's health. The public could be accessing information that is misleading or of poor quality (Reichow et al., 2012). There has been limited research examining the content of existing health and mental health websites. However, our research group has published a few studies in this area (e.g., Promislow et al., 2010; Reynolds et al., 2015). Most recently, Walsh and colleagues (2019) found that existing depression websites varied considerably in quality and most did not answer at least some questions viewed as important by the public. Most of these websites focused on a description of pharmacological treatment as opposed to other treatment options (Walsh et al., 2019). Research has demonstrated that the public is interested in information on a wide range of treatment topics (e.g., Bernstein et al., 2017).

Visual design. Web-designers are very interested in consumers' perceptions of the website they assemble and whether the presentation and layout of the website can in fact keep a consumer engaged and drawn-in to their website. In a widely-cited article published by Lindgaard, Fernandes, Dudek and Brown (2006), they found that it only takes about 50 milliseconds for a consumer to judge the visual appeal of a website and for web-designers to make a good first impression. Usability has long been recognized as important in human-

technology interactions (see Nielsen, 1993). More recently, Dillon (2001) has argued in favour of personal experience and aesthetics as playing a role in user experience. Tractinsky and colleagues (2000) demonstrated a significant relationship between perceived usability and visual aesthetics. Moreover, researchers have found that visual aesthetics can impact how one evaluates website content (Flavian, Gurrea, & Orus, 2009), credibility (Fogg et al., 2003; Lowry, Wilson, & Haig, 2014), and trustworthiness (Cyr, Head, & Larios, 2010). Moshagen and Thielsch (2010) examined the facets of visual aesthetics of websites. In seven studies, four facets of visual design emerged, including simplicity, diversity, colorfulness, and craftsmanship. These four facets are assessed in a scale called the *Visual Aesthetics of Website Inventory*, which was used in the present project (see below for a detailed description of this measure). Furthermore, Thuring and Mahlke (2007) published a widely-cited paper, where they outlined a model called the *Components of User Experience (CUE*). This model suggests that there are three components of user experience: (a) perception of instrumental product qualities (i.e., usefulness and usability); (b) perception of non-instrumental qualities (i.e., visual aesthetics); and (c) emotions. These components contribute to the overall evaluation, acceptance, intention to use, and choice of alternatives of a product (including a variety of electronic products including websites and apps). Much of this research has focused on websites that sell products rather than information-based websites (e.g., Lowry et al., 2014). Very little research has been conducted examining the visual aesthetics of health and/or mental health websites.

Google search. Google has a proprietary algorithm that is used to generate search results. This algorithm involves a huge index of keywords as well as *PageRank*, which they use to determine the relevancy of each web page. *PageRank* utilizes the following web page characteristics: key word frequency and location; page life-span; and other pages that link to the

web page (Strickland, 2006). They also have a synonym system that helps Google understand the consumer's intended meaning, even if the search word has several definitions (Rose, 2018). A study of search engine user behaviour found that 62% of search engine users click on a search result within the first page of results, and 90% of users click on a result within the first three pages (Chikita Insights, 2013; iProspect, 2006). Given that Google search results are typically influenced by previous search results, a private web browser was used in this dissertation by a research assistant so that the results were not influenced by the research assistant's previous search history.

The cited background information highlights that there has been limited research evaluating health and mental health information resources, especially on anxiety disorders. In this study, I sought to evaluate the quality of existing web-based information on anxiety disorders and their treatment that would be found by the public through an online search. This was accomplished by assessing whether online resources contain high quality, balanced information including psychological, pharmacological, and alternative treatment information that weighs the risks and benefits of different treatment options. Our research group has done similar work in evaluating information on the Web concerning child anxiety (Reynolds et al., 2015), perinatal anxiety (Kirby et al., 2018), late-life depression (Walsh et al., 2019), and inflammatory bowel disease (Promislow et al., 2010). Therefore, this study had five primary goals:

1. What is the quality of existing web-based information resources concerning anxiety and its treatment?
2. How readable and usable are the existing anxiety resources?
3. How is the information presented (both in terms of formatting and visual design)?

4. Is the information that consumers view as important in considering anxiety treatment, in fact, covered by existing anxiety resources?
5. How are website characteristics related to Google search results order?

Method

Procedure

The purpose of Study 2 was to evaluate websites that would be identified in a typical "Google" search by a member of the public rather than to identify every possible website with anxiety information. Google was used, as this is the most widely used search engine in North America and the world (ComScore, 2016; StatCounter, 2019). A research assistant was hired to conduct the website selection to reduce the bias associated with selecting and rating the websites. The search terms *anxiety information* and *anxiety disorders* were used to complete the search. The websites identified included those appearing in the first two pages of search results in Google, as well as websites that are widely known to provide anxiety treatment information. Examples of the latter group include Beyond Blue, Anxiety BC, Anxiety and Depression Association of America, Mayo Clinic, WebMD, and National Institute for Health and Care Excellence (NICE) in the UK. This led to the desired website sample (n = 20; see Appendix C for a list of the websites). It should be noted that Anxiety BC is now called Anxiety Canada, though it is referred to as Anxiety BC, as this is what it was called when the evaluation occurred. While the formatting/design of Anxiety Canada has slightly changed, the content and presentation of the material is largely the same. The desired number of websites was 20 for two reasons. First, the intent was to evaluate typical websites that would be found by the public using a Google search and most (75%) people do not search beyond the first results page (Lieberman, 2017). Second, 30 websites provided adequate power in the Promislow et al., 2010

study and 19 were used in the Pryor*, in preparation* study, where useful and reliable information was provided in both cases. Exclusion criteria included duplicate sites, excerpts from books and articles (i.e., non-websites), and websites containing too little information to be regarded as a comprehensive resource (defined as less than 500 words).

The research assistant took screen shots of all pages of each website. The number of pages per website ranged from 8 to 318. Screen shots were viewed to obtain ratings of the text and visual design of each of the websites selected, using measures outlined below. Ratings were performed by the author and another clinical psychology graduate student to allow for analysis of inter-rater reliability. Each rater was blinded to the identity of the particular website by having the website title covered or excluded from the screen shot.

Measures

DISCERN. Overall website quality was assessed using DISCERN (Charnock, Shepperd, Needham, & Gann, 1999). DISCERN is a 16-item instrument for assessing the quality of consumer health information concerning treatment options. Each question can be rated on a scale ranging from 1 (*no success*) to 5 (*complete fulfillment of question criteria*). The DISCERN scale is widely used and has good psychometric properties (Breckons, Jones, Morris, & Richardson, 2008; Charnock, Shepperd, Needham, & Gann, 1999). The internal consistency of DISCERN ratings (Cronbach's alpha) for the websites in the present study was .86.

Readability. The reading level of the text from each website was assessed using the Simple Measure of Gobbledygook (SMOG) developed by McLaughlin (1969) and is currently available through an online calculator (Readability Formulas, 2019). The formula for calculating SMOG is: $= 1.043 * \left(\sqrt{pw * \left(\frac{30}{sentences}\right)}\right) + 3.1291$, where *pw* represents the number of words with three or more syllables (Kandula & Zeng-Treitler, 2008). Basically, the SMOG

score analyzes the relative number of syllables, words, and sentences in a passage of text to calculate a readability score that indicates the grade level at which a person would be able to understand the text. The National Institute of Health recommends a reading grade level of 6-7 for health information (Hutchinson, Baird, & Garg, 2016).

PEMAT. The Patient Education Materials Assessment Tool (PEMAT) was developed by Shoemaker, Wolf, and Brach (2014) to assess the understandability and actionability of print and audiovisual materials. Its development came out of the U.S. Department of Health and Human Services' (2010) *National Action Plan to Improve Health Literacy*. The PEMAT consists of 17 items that measure understandability and 7 items that measure actionability. All items can be responded to using dichotomous disagree or agree options. An example of an item is "The material uses common, everyday language". The PEMAT has demonstrated good content and construct validity as well as moderate internal consistency (Cronbach's alpha = .71) and inter-rater reliability (.74; Shoemaker, Wolf, & Branch, 2014). These values are consistent with the Cronbach's alpha values for the data in the present study, which were .71 and .72 for the understandability and actionability subscales, respectively.

Content area evaluation. The information from each of the websites was assessed for the amount of information addressing each of the topic areas discussed in Study 1 (see Appendix D). The content areas were rated on a 5-point rating scale ranging from 1 (*no information*) to 3 (*adequate information with basic detail*) to 5 (*complete and comprehensive information with detailed discussion*). An overall information score for each website was calculated by summing all of the 19 topic area scores. This scale was developed by Hall, Howard, and McCaffery (2008) and was used in previous research by our group (e.g., Reynolds et al., 2015).

Visual design. A variety of questionnaires have been developed for assessing the visual aspects of user experience. One that is particularly strong is the *Visual Aesthetics of Websites Inventory (VisAWI;* Moshagen & Thielsch, 2010*)*. There are four underlying facets of this measure: simplicity, diversity, colourfulness, and craftsmanship. This scale has strong validity and good reliability. The internal consistency for each of these facets are good and range from .85-.89, and the total internal consistency is excellent at .94 (Moshagen & Thielsch, 2010). This scale contains 18-items, which can be rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). An example of an item is "the layout is easy to grasp". Again, the Cronbach's alpha for this measure in the current study was in the excellent range (.96) and consistent with existing research (Moshagen & Thielsch, 2010) in the area.

Analysis

For each website, the scores of the 15 DISCERN questions (not including the overall rating question) were averaged to produce an overall website score out of 5. The PEMAT understandability and actionability values were calculated by summing the items that were agreed with, dividing by total possible points, and then multiplying by 100 to get a percentage score. The mean (with 95% confidence interval) for each DISCERN and VisAWI measures was calculated for each website. The total number of topic areas covered and the overall information score were calculated for each of the 19 different information topic areas discussed in Study 1, for each website. Additionally, the percentage of websites that contained information on each of the 19 topic areas was calculated. The means (and 95% confidence intervals) of the information content area scores were calculated for each website. Inter-rater reliability was calculated by computing the Pearson correlation between the two raters' DISCERN, SMOG, PEMAT, VisAWI, and information content area scores. Pearson correlations were also calculated between

the measure total scores and Google search results order. Each measure was categorized into good, adequate, and poor to create a table that describes how the websites compare to one another on the different dimensions. The readability (SMOG) score was categorized into good (lower than 10), adequate (10 through 12), and poor (greater than 12). Overall quality (DISCERN) was categorized into good (greater than 4), adequate (3-4), and poor (less than 3). Usability (PEMAT) was categorized into good (greater than 80), adequate (70 through 80), and poor (less than 70). Visual design (VisAWI) was categorized into good (greater than 6), adequate (4-6), and poor (less than 4). Content area was categorized into good (greater than 12 topics), adequate (9-12 topics), and poor (less than 9 topics). An aggregate score was calculated to determine the top five anxiety websites. For this aggregate score, the readability (SMOG) score categories (described above) were used. The following process was used to calculate the aggregate score: a sum of the readability category score, mean DISCERN, understandability percentage, actionability percentage, number of topics, and mean VisAWI. The higher the aggregate score, the better the website, so the Top 5 websites had the five highest aggregate scores.

Results

Website Characteristics

Table 12 describes the websites ($N = 20$) evaluated in Study 2. Half of the websites evaluated were developed in the United States, while several others were from Australia ($n = 5$), and the rest were from Great Britain ($n = 3$) and Canada ($n = 2$). The types of websites included in the evaluation were from hospitals (e.g., Mayo Clinic), government organizations (National Institute of Mental Health), and self-help organizations (e.g., Canadian Mental Health Association).

Website Quality

Website quality was assessed by the mean rating of items on the DISCERN scale for each website, where items were rated on a 1-5 scale. An intraclass correlation was computed to determine the reliability of the raters on the DISCERN tool and it indicated an excellent level of agreement, $r(19) = .92$, $p < .001$. A Pearson correlation was used to determine if there was a relationship between Google search results order and website quality. This correlation was not significant, $r(19) = -.27$, $p = .259$. The correlation between website type and quality was small to moderate, eta = .36.

The websites in the evaluation had variable quality; they ranged from 2.5 (*Headspace*) to 4.3 for both *Helpguide.org* and *Sane.org* (see Table 12). A mean of each DISCERN item across websites was also computed to examine how the websites as a whole performed using the different criteria (see Table 13). In general, all websites were of reasonable quality with most ratings ranging from 3.4 to 4.9. Most websites provided relevant information (average score of 4.9), indicated when the information was produced (average score of 4.8), had clear aims (average score of 4.5), achieved their aims (average score of 4.6), and described more than one treatment choice (average score of 4.5). However, the websites demonstrated deficiencies in the following areas: *what would happen if no treatment was used, areas of uncertainty, sources used in compiling the publication, how treatment affects quality of life,* and *risks of each treatment*.

Usability

Usability, composed of understandability (how well the key messages are presented for persons of varying literacy levels) and actionability (how well persons can identify what they can do based on the information), was assessed using the 24-item PEMAT. An intraclass correlation was computed to determine the reliability of the raters on the understandability and actionability

subscales and it indicated excellent ($r(19) = .90$, $p < .001$) and moderate ($r(19) = .58$, $p < .05$) levels of agreement, respectively.

Understandability scores ranged from 35 (*NICE UK*) to 94 (*Medline Plus*). Only slightly more than half (11/20) of the websites met the cutoff of 70% to be considered understandable according to the developers' guidelines (Shoemaker, Wolf, & Branch, 2014). According to the PEMAT, most websites included their purpose, used active voice, and had numbers that were easy to understand, informative headers, and visual aids that reinforced the website content. However, the websites lacked summaries and visual aids used to make the content more easily understood. The websites that received particularly low understandability ratings not only lacked visual aids, but their purpose was not evident, they did not use plain language, and they did not break material into "chunks" of information.

Table 12

Anxiety Website Characteristics

Website	Search Engine Order	SMOG	Mean DISCERN score[a]	PEMAT[b]		Mean VisAWI score[c]
				Understandability Score (%)	Actionability Score (%)	
ADAA (USA)	1	12.8	4.1	76	86	6.2
NIMH (USA)	2	13.9	3.8	59	29	4.7
Anxiety UK (GBR)	3	12	2.9	71	43	5.6
Mind (GBR)	4	10.7	3.9	88	57	6.5
Anxiety BC[d] (CAN)	5	9.9	3.3	82	86	6.4
Mental Health America (USA)	6	12.9	4.1	76	71	5.9
Medline Plus (USA)	7	9.6	3.3	94	29	3.8
Web MD (USA)	8	10	4.1	71	29	4.3
CMHA (CAN)	9	10.5	2.6	59	29	4.4
American Psychiatric Association (USA)	10	12.9	3.4	65	14	4.0
Helpguide.org (USA)	11	12.2	4.3	71	43	4.4
Beyond Blue (AUS)	12	11.7	4.1	76	29	6.3
Head to Health (AUS)	13	8.8	2.8	88	43	6.8
Sane.org (AUS)	14	11.2	4.3	65	29	4.4
NAMI (USA)	15	10.7	3.9	59	14	4.2
Reach Out (AUS)	16	10	3.4	76	43	6.3

Healthy Place (USA)	17	11.8	4.1	53	29	3.9
Headspace (AUS)	19[e]	10.1	2.5	53	29	2.9
NICE UK[f] (GBR)	--	12	2.9	35	14	3.8
Mayo Clinic[f] (USA)	--	11	2.9	53	57	3.8

Note. SMOG = Simple Measure of Gobbledygook (readability score); PEMAT = Patient Education Materials Assessment Tool; VisAWI = Visual Aesthetics of Website Inventory.
[a]The mean DISCERN score is a 1-5 rating averaged across 16 items.
[b]To calculate scores, items that are agreed with are summed and divided by total possible points then multiplied by 100 to get a percentage score.
[c]The mean VisAWI score is a 1-7 rating averaged across 18 items.
[d]Anxiety BC is now called Anxiety Canada.
[e]The number 18 Google search result was a book on Anxiety and was therefore excluded.
[f]NICE UK and Mayo Clinic were not identified in the first three pages of the search but were identified prior to the search as possibly being strong resources.

Table 13

Mean Scores of DISCERN Items Across All Websites

DISCERN Item	Mean Score	95% Confidence Interval
3. Is it relevant?	4.9	[4.7, 5.1]
5. Is it clear when the information used or reported in the publication was produced?	4.8	[4.3, 5.2]
2. Does it achieve its aims?	4.6	[4.3, 4.9]
1. Are the aims clear?	4.5	[4.2, 4.8]
14. Is it clear that there may be more than one possible treatment choice?	4.5	[4.0, 4.9]
6. Is it balanced and unbiased?	4.3	[3.8, 4.8]
7. Does it provide details of additional sources support and information?	4.3	[3.8, 4.7]
9. Does it describe how each treatment works?	3.7	[3.0, 4.3]
16. Based on the answers to all of the above questions, rate the overall quality of the publication as a source of information about treatment choices.	3.6	[3.1, 4.0]
15. Does it provide support for shared decision making?	3.5	[2.8, 4.1]
10. Does it describe the benefits of each treatment?	3.4	[2.8, 4.0]
11. Does it describe the risks of each treatment?	2.5	[1.8, 3.2]
4. Is it clear what sources of information were used to compile the publication (other than the author or producer)?	2.5	[1.7, 3.3]
13. Does it describe how the treatment choices affect the overall quality of life?	2.4	[1.9, 2.8]
8. Does it refer to areas of uncertainty?	2.1	[1.6, 2.6]
12. Does it describe what would happen if no treatment was used?	1.3	[1.0, 1.5]

Note. Each DISCERN item is rated on a 5-point scale with the anchors 1 – did not meet criteria and 5 – did meet criteria. Number on left-hand side denotes item number in scale.

Actionability items were not as favourably rated; the subscale scores ranged from 14 (*American Psychiatric Association, NAMI, and NICE UK*) to 86 (*ADAA and Anxiety BC*). However, most websites did provide at least one action that the user could take (e.g., seeing a therapist or engaging in exercise). Most websites did not include visual aids to make it easier to act on the instructions or a tangible tool (e.g., checklists) to make it easier to act on instructions.

Pearson correlations were calculated to determine if there was a relationship between Google search results order and understandability or actionability. The correlations were significant: $r(19) = -.57$, $p < .01$ for understandability and $r(19) = -.47$, $p < .05$ for actionability. Correlations were also computed between the DISCERN scores and the understandability and actionability subscales to determine the relationship between website quality and usability. The correlations were not significant: $r(19) = -.22$, $p = .363$ for understandability and $r(19) = .01$, $p = .953$ for actionability.

Visual Design

Visual design was assessed using the 18 item VisAWI rated on a 1-7 rating scale. An intraclass correlation was computed to determine the reliability of the raters on the VisAWI tool and it indicated an excellent level of agreement, $r(19) = .94$, $p < .001$. The websites varied in terms of their design features with some designs being rated as aesthetically pleasing, and others being poorly rated on this dimension. The average of the VisAWI items per website ranged from 2.9 for *Headspace* to 6.8 for *Head to Health*, which were both Australian websites. Most websites were not "patchy" (lack of presentation cohesion; average score of 6.3), had a good "choice of colours" (average score of 6.2), and had layouts that were easy to grasp (average score of 6.2; see Table 14). The websites yielded lower scores in the following areas: having an "inventive layout" (average score of 3.3), having a varied layout (average score of 3.4), and

having an interesting design (average score of 4.1). There was a significant relationship between Google Search results order and visual design $r(19) = -.48$, $p = .05$, suggesting that a higher order result was associated with better website design.

Table 14

Mean Scores of VisAWI Items Across All Websites

VisAWI Item	Mean Score	95% Confidence Interval
4. The site appears patchy. (r)	6.3	[5.6, 6.9]
13. The choice of colours is botched. (r)	6.2	[5.6, 6.8]
2. The layout is easy to grasp.	6.2	[5.8, 6.5]
12. The colours do not match. (r)	6.1	[5.5, 6.7]
5. Everything goes together on this site.	6.0	[5.4, 6.5]
3. The layout appears well structured.	5.7	[5.0, 6.3]
18. The design of the site lacks a concept. (r)	5.6	[4.8, 6.4]
15. The layout appears professionally designed.	5.5	[4.7, 6.2]
16. The layout is not up-to-date. (r)	5.1	[4.3, 5.9]
17.The site is designed with care.	4.9	[4.2, 5.6]
1. The layout appears too dense. (r)	4.6	[3.7, 5.4]
8. The design appears uninspired. (r)	4.4	[3.4, 5.4]
11. The colour composition is attractive.	4.4	[3.5, 5.2]
14. The colours are appealing.	4.2	[3.4, 5.0]
6. The design is uninteresting. (r)	4.1	[3.1, 5.1]
9. The layout appears dynamic.	3.4	[2.4, 4.4]
10. The layout is pleasantly varied.	3.4	[2.4, 4.3]
7. The layout is inventive.	3.3	[2.3, 4.2]

Note. Each VisAWI item is rated on a 7-point scale with the anchors 1 (*strongly disagree*) and 7 (*strongly agree*). Number on left-hand side denotes item number in scale.
(r) denotes reverse scored item.

Readability

The readability of the websites was calculated using the SMOG readability formula, which produced a grade level score. Reading levels of the websites ranged from 8.8 to 13.9, with an average grade level of 11.2 across all websites (see Table 12). None of the websites met

the National Institute of Health's recommended grade level (grade 6-7; Hutchinson, Baird, & Garg, 2016). A Pearson correlation was computed between the DISCERN scores and the SMOG to determine if there was any relationship between website quality and readability. The results in the present study trended towards significance displaying a medium correlation, $r(19) = .42$, $p = .066$. There was not a significant relationship between Google Search results order and readability, $r(19) = -.31$, $p = .19$.

Content

The content of the websites was evaluated to determine what information topics are adequately addressed by existing anxiety website information (see Tables 15 and 16). A topic was considered to be adequately covered if it scored at least a 3 (*adequate information with basic detail*) on a scale ranging from 1 (*no information*) to 5 (*complete and comprehensive information with detailed discussion*). An intraclass correlation was computed to determine the reliability of the raters on the total content score and it indicated an excellent level of agreement, $r(19) = .93$, $p < .001$.

All of the websites included adequate information about how the treatment works. Most of the websites included information on psychological treatment, self-help treatment, and what the consumer has to do as part of treatment. Very few websites included information on herbal medicines or the cost of the treatment to the healthcare system, and no website included information on marijuana related to anxiety or its treatment. I think marijuana is worth mentioning here for two reasons. First, previous research by our group has used this item and it was included in the information needs questions in Study 1. Second, with the recent Canadian legalization and the move towards more legalization in other parts of the world, it seemed worth exploring whether or not there is any existing information on the relationship between marijuana

and anxiety. The number of topics covered on each website was also calculated. The websites that contained information on the greatest number (15) of topics were *Helpguide, Beyond Blue, Sane,* and *NAMI*. *Medline Plus, NICE UK*, and *Head to Health* only contained information on 1, 2, and 3 topics, respectively.

Table 15

Amount of Information on Each Anxiety Treatment Topic Across Websites Evaluated

Information topic	Percent of websites with information on each topic	Mean information score (95% CI) for each topic	Intraclass correlation coefficient comparing two raters
How treatment works	100%	3.7 (3.2, 4.3)	.82
Various counseling or psychological treatments	95%	3.7 (3.1, 4.2)	.87
What person has to do as part of treatment	95%	3.5 (2.9, 4.0)	.85
Self-help treatment	95%	3.3 (2.8, 3.8)	.84
Various medication treatments	85%	3.6 (2.8, 4.3)	.96
Meditation	85%	2.9 (2.3, 3.4)	.72
Exercise	85%	2.7 (2.1, 3.3)	.86
Goal or outcome of treatment	80%	3.4 (2.7, 4.0)	.84
How long treatment continues	80%	2.8 (2.2, 3.4)	.86
How long it takes for treatment to produce results	75%	2.6 (2.0, 3.1)	.83
Effectiveness of treatment	70%	2.7 (2.1, 3.3)	.81
Common side effects of treatment	55%	2.6 (1.8, 3.4)	.92
Uncommon but serious side effects of treatment	55%	2.4 (1.7, 3.0)	.94
Advantages and disadvantages of treatment	55%	2.0 (1.5, 2.4)	.74
What happens when treatment stops	50%	1.9 (1.4, 2.4)	.69
Cost of treatment to person	40%	1.8 (1.3, 2.3)	.85
Herbal medicines	15%	1.5 (.87, 2.0)	.99
Cost of treatment to healthcare system	15%	1.3 (.92, 1.6)	.72
Marijuana	0%	1.0 (0, 0)	--

Table 16

Total Number of Topic Areas with Adequate Information Coverage Per Website

Website	Number of topics covered
Helpguide.org (USA)	15
Beyond Blue (AUS)	15
Sane.org (AUS)	15
NAMI (USA)	15
ADAA (USA)	14
Healthy Place (USA)	14
Reach Out (AUS)	14
Web MD (USA)	14
Mind (GBR)	13
NIMH (USA)	12
Mental Health America (USA)	11
Anxiety BC (CAN)	9
Anxiety UK (GBR)	7
CMHA (CAN)	6
American Psychiatric Association (USA)	6
Mayo Clinic (USA)	4
Headspace (AUS)	4
Head to Health (AUS)	3
NICE UK (GBR)	2
Medline Plus (USA)	1

Note. A topic was considered to be covered adequately if it scored at least a 3 (*adequate information with basic detail*) on a scale ranging from 1 (*no information*) to 5 (*complete and comprehensive information with detailed discussion*). See Table 15 for a list of possible topics.

Website Dimension Comparison and Top 5 Websites

Table 17 displays the different dimensions and whether each website obtained good, adequate, or poor ratings on each. *Anxiety BC* was considered the best overall website when considering quality (*good*), usability (*good*), visual design (*good*), readability (*adequate*), and content (*adequate*). Despite *Head to Health* only having information on three topics, it received high ratings given its low reading level (*good*), presentation of information (*good*), and understandability (*good*). Table 17 also identifies the top five anxiety information websites based on an aggregate score of all the dimensions (described above). Of the top five, *ADAA*

Table 17

Website Dimension Comparison

Website	Search Engine Order	Readability	Overall Quality	Usability		Visual Design	Content	Overall Aggregate Score
				Understandability	Actionability			
ADAA (USA)	1	Poor	Good	Adequate	Good	Good	Good	187*
NIMH (USA)	2	Poor	Adequate	Poor	Poor	Adequate	Adequate	110
Anxiety UK (GBR)	3	Adequate	Poor	Adequate	Poor	Adequate	Poor	131
Mind (GBR)	4	Adequate	Adequate	Good	Poor	Good	Good	170*
Anxiety BC (CAN)	5	Good	Adequate	Good	Good	Good	Adequate	190*
Mental Health America (USA)	6	Poor	Good	Adequate	Adequate	Adequate	Adequate	169*
Medline Plus (USA)	7	Good	Adequate	Good	Poor	Poor	Poor	134
Web MD (USA)	8	Adequate	Good	Adequate	Poor	Adequate	Good	124
CMHA (CAN)	9	Adequate	Poor	Poor	Poor	Adequate	Poor	103
American Psychiatric Association (USA)	10	Poor	Adequate	Poor	Poor	Adequate	Poor	93
Helpguide.org (USA)	11	Poor	Good	Adequate	Poor	Adequate	Good	139
Beyond Blue (AUS)	12	Adequate	Good	Adequate	Poor	Good	Good	133
Head to Health (AUS)	13	Good	Poor	Good	Poor	Good	Poor	147*
Sane.org (AUS)	14	Adequate	Good	Poor	Poor	Adequate	Good	120
NAMI (USA)	15	Adequate	Adequate	Poor	Poor	Adequate	Good	98
Reach Out (AUS)	16	Adequate	Adequate	Adequate	Poor	Good	Good	145
Healthy Place (USA)	17	Adequate	Good	Poor	Poor	Poor	Good	106
Headspace (AUS)	19	Adequate	Poor	Poor	Poor	Poor	Poor	93
NICE UK[a] (GBR)	--	Adequate	Poor	Poor	Poor	Poor	Poor	60
Mayo Clinic[a] (USA)	--	Adequate	Poor	Poor	Poor	Poor	Poor	123

Note. Each website was rated on each dimension as Good (G), Adequate (A), or Poor (P) defined differently for each dimension.
Readability measured by the Simple Measure of Gobbledygook (SMOG) where G=<10, A=10-12, P=>12 (Grade Levels).
Overall Quality measured by the DISCERN where G=>4, A=3-4, P=<3 (mean 1-5 rating scale).
Usability measured by the Patient Education Materials Assessment Tool (PEMAT) where G=>80, A=70-80, P=<70 (% understandable/actionable).
Visual Design measured by the Visual Aesthetics of Website Inventory (VisAWI) where G=>6, A=4-6, P=<4 (mean 1-7 rating scale).
Content measured by content area scale where G=>12, A=9-12, P=<9 (Number of Topics at least adequately covered).
[a]NICE UK and Mayo Clinic were not identified in the first three pages of the search but were identified prior to search as possibly being strong resources.
* denotes one of the Top 5 websites.

contained the greatest number of information topics (i.e., a *good* rating on content). This table will be important to share with healthcare providers and the public.

Discussion

To the best of my knowledge, this is the first study to evaluate existing anxiety information websites based on website quality, usability, visual design, readability, and content. It is also one of the first to examine the relationship between these characteristics and Google Search results order. The websites were all developed in Canada, USA, Great Britain, and Australia—countries that value the importance of mental health treatment and are among world leaders in mental health research (Wooding & Pollitt, 2016). Different search results might have been obtained if the search was conducted in another country. Other developed countries such as Germany also strongly value the treatment of psychological problems such as anxiety (WHO, 2008).

There was no relationship demonstrated between Google results and website quality, suggesting that better quality websites do not appear to take action to ensure that they are more likely to appear in the first page of search results. The stronger websites based on quality were developed in the US and Australia, which is not surprising given that Australia and the US have made important contributions to mental health (including anxiety disorder) treatment practices (Wooding & Pollitt, 2016).

It could be argued that quality, as measured by the DISCERN, is most important in considering the different website characteristics examined in the present study. The DISCERN was developed with the aim of appraising information as well as laying out the benefits and risks of different treatment options (Charnock, 1999), which is a foundational aspect of shared decision-making (Charles et al., 1997). Given the aims of the present research and that these

findings can be translated to allow for enhanced shared decision making, website quality is the most important aspect of these websites.

Overall, the websites provided modest support (3.5/5) for shared decision-making (DISCERN item 15). This item is very important because these websites should, ideally, provide support for shared decision-making and allow consumers to make more informed decisions along with their care providers. Furthermore, a description of the benefits (item 10; 3.4/5) and risks (item 11; 2.5/5) of each treatment was less than ideal within these websites. A crucial component of shared decision-making is the ability to weigh the benefits and risks of different treatment options (Charles, Gafni, & Whelan, 1997). Clearly, these websites as a whole provide less than adequate support for shared decision-making. The websites were found to be balanced and unbiased as demonstrated by a high average score (4.3/5) on item 6 of the DISCERN. This is important as some mental health information websites may have a substantial focus on medication treatment (Raynor et al., 2007), which may include more medical jargon, and therefore be less likely to be understood by consumers (Graham & Brookley, 2008).

The finding that only about half (n = 11) of the websites were understandable according to the PEMAT (usability) scale is noteworthy. This essentially suggests that only about a page worth of Google search results' anxiety websites are laid out in a way that would be desirable to consumers. This is consistent with an evaluation of perinatal anxiety websites (Kirby et al., 2018). This result can be justified given that most (75%) people do not search beyond the first page (Lieberman, 2017). Indeed, order and understandability were correlated; 7 of 11 were within the first page of search results. Actionability was rated even less favourably. It is worth noting that the PEMAT is intended to be used for general health information, and was originally designed for use with colonoscopy and asthma information. However, the current results are

consistent with prior research that has found other health information websites to have (a) modest understandability and actionability scores and (b) lower actionability as compared to understandability scores (Cajita, Rodney, Xu, Hladek, & Han, 2017; Sarzynski et al., 2016; Zellmer, Zimdars, Parker, & Safdar, 2015). Perhaps the anxiety websites and other health information website developers are less interested in usability and suggesting that users take specific actions; instead, they may be more focused on layout or presentation of the information.

Furthermore, the readability scores observed were quite high. None of the websites met the National Institute of Health's recommended grade level (grade 6-7; Hutchinson, Baird, & Garg, 2016). Typically, health websites have an average readability level of Grade 10 and this has been found to be higher for depression websites (Hutchinson, Baird, & Garg, 2016), according to several readability indices including the SMOG. Education level of readers is not considered in calculating the readability score. Websites should perhaps incorporate glossaries to reduce complexity.

There was considerable variability in terms of the visual design of the websites. Interestingly, this was related to the order that the websites appeared in the Google Search results. It appeared that the better the visual design, the more likely the website was to be higher on the results list. Perhaps, website developers who invest more time into the visual aesthetics of their website are also more interested in ensuring that key words they want to be associated with their website such as "anxiety information" or "anxiety treatment" are readily presented throughout the website content in order to ensure a higher search result. However, these websites were not necessarily those with the greatest quality.

Regarding content, the websites were examined based on topics previously identified as important to consumers of mental health information (e.g., Bernstein et al., 2017, Reynolds et al.,

2015). All of the websites included adequate information about how particular treatments work. However, in evaluating this item, raters did not consider how many different treatments were discussed in each website, and all websites included at least one treatment option. Most of the websites included at least adequate information on psychological treatment, self-help treatment, and what the person has to do as part of treatment, which fortuitously is consistent with what consumers want to know about anxiety, depression, and stress information (Bernstein et al., 2017; Cunningham et al., 2014; Reynolds et al., 2015; Stewart et al., 2014). Very few websites included information on herbal medicines or the cost of the treatment to the healthcare system, and no websites included information on marijuana related to anxiety or its treatment. Provision of little information on cost to healthcare system is less surprising, given that this is typically rated lower by consumers (Bernstein et al., 2017). On the other hand, past research suggests that consumers are interested in information on herbal medicines and marijuana information (e.g., Bernstein et al., 2017). However, there is little available research that has examined the relationship between marijuana and anxiety, and marijuana is not legalized in most of the countries where these websites were developed. Thus, if it is not legally accessible to consumers, developers may not have considered including it. Given that it is now legal in Canada, a discussion around providing some level of information on the benefits and risks of marijuana use among persons with anxiety is warranted.

Overall, the reliability indicated by intraclass coefficients demonstrated strong agreement between raters on the different website characteristics, which reinforces the validity of this approach to evaluate websites. This study presents a novel methodology to evaluating existing health information websites that our research team has recently developed. Given its success in

this study and in the past (Reynolds et al., 2015), this could be applied to evaluating websites on other health and mental health issues.

Given the outcomes of this research, there are some important considerations that future researchers, knowledge translators, and web developers should consider. First, the homepage should make the purpose or mission of the website clear. This will allow consumers to better understand whether this website is worth exploring further and whether it will meet their information needs. Second, reduce the reading level of materials as close to the recommended grade level of 6-7 for health information as possible (Hutchinson, Baird, & Garg, 2016). Third, limit text and avoid writing in paragraphs. Fourth, incorporate images/graphics and videos, especially in replacement of text when possible. These last two points will assist in the usability and understandability of the material and will make users more likely to evaluate the website positively and continue to use it (Finn, Wang, & Frank, 2009).

Limitations

While this study used novel methodology to address the evaluation of anxiety website quality, it is not without its limitations. One limitation of Study 2 is that the search originated in Canada and therefore may have overemphasized Canadian specific websites (e.g., Anxiety BC). Some of these websites may not have appeared if the search had originated in another country. This issue was partially addressed by enriching the results of the search by adding some of the important information resources in English speaking countries that are not identified through Google. The search results may also have differed somewhat if different search terms, such as "OCD" or "panic disorder", were used. Finally, these resources were evaluated by graduate students (also whom were young adults) in clinical psychology who presumably have high levels

of mental health literacy. Results would likely have differed had persons with varying levels of mental health literacy (or age) examined the websites.

Conclusions

This study fills an important gap in the literature by examining how well current anxiety websites present information in a format that is usable and understandable to consumers and how well they facilitate shared decision-making. Future research should focus on actual consumer perceptions of these materials, particularly among those with varying levels of mental health literacy, rather than graduate student opinions. Another future direction could be studying the impact of providing feedback to organizations that run the websites. This study has laid the necessary groundwork for the development of usable and understandable anxiety information materials.

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Chapter 4: General Discussion

This research sought to gain an understanding of information needs and preferences concerning anxiety treatment in clinic and self-help samples, and to examine existing online anxiety information materials. The goal was to identify the gap between these information needs and preferences and whether or not these needs were addressed through online materials. The current results indicate that people are interested in a wide range of information topics on anxiety treatment; however, people often do not receive the amount of information that they desire. While there are many existing websites that contain anxiety information, few of them contain all of the information topics deemed to be important by consumers. Indeed, many of the websites evaluated do not appear to be designed to facilitate shared decision-making. This research makes a strong contribution to the literature by enhancing our understanding of anxiety information needs and by evaluating how well current online anxiety information meets those needs.

Information Needs and Preferences

It is important for healthcare providers to consider the information needs and preferences of persons with anxiety and their preferred role in the decision-making process. Very little research has been done exploring patient needs and what people want to know about mental health problems (e.g., Bernstein et al., 2017, Cunningham et al., 2014), and Study 1 aimed to add to the literature in this area. Study 1 provided a novel contribution to the literature by examining these information needs and preferences within both clinical and self-help samples. Sampling from both clinical and self-help groups provided insights on different clusters of consumers of anxiety information; some of whom are actively in the process of seeking or acquiring anxiety-related interventions and some of whom may have been simply accessing online resources. This

broadens the representativeness of the findings. Study 1 demonstrated that both the self-help and clinic samples were interested in information on a wide range of topics. Participants were especially interested in information about treatment goals and effectiveness, how treatment works, advantages and disadvantages of the different treatment approaches, and common side effects. The finding that people are interested in information on many topics is consistent with previous research on mental health information needs and preferences (Bernstein et al., 2017; Liebherz et al., 2015; Zermatten et al., 2010).

One can imagine how difficult it would be to review information on many topics in the typical primary care visit of 10-15 minutes or even in a specialist visit of 20-50 minutes. Healthcare providers are working with increasingly few resources and there is often not enough time to cover all of the information that one would need in a typical appointment. More importantly, from the patient's perspective, it would also be very challenging to process and remember this amount of information if it were presented orally, especially for those struggling with anxiety. In these situations, it is often helpful for the healthcare provider to deliver information in a form that can be reviewed over a longer period of time and be easily re-reviewed. This information could be provided in the form of patient-oriented brochures (Raynor et al., 2007) or web-based information (Liebherz et al., 2015). Even if presented in text format, it would take considerable space to address all of the topics identified as important in the present research, and to provide context regarding the quality of the available scientific evidence. Furthermore, research has shown increased information processing challenges among people struggling with anxiety (Derakshan & Eysenck, 2009). This underscores the importance of providing information in a way that is digestible for those struggling with anxiety. As mentioned above, such approaches include lowering the reading level, limiting text, and incorporating

images/graphics and videos. Finally, simply ensuring that information is concise and to the point, as not to overwhelm individuals who may already be feeling overwhelmed. Moreover, one way of dealing with differences in preference among individuals for more or less information is to produce information focused on each topic and allow consumers to choose the areas that are of interest to them. Websites are a useful way to attain this objective, for instance, by utilizing drop down menus to expand or shrink information that is more or less important to the consumer.

Recall that one of the major questions a needs assessment aims to address and an objective of the present study is: *How do current results compare to desired results?* The anticipated results for the present study were that people would be interested in a wide range of topics and that there would be differences in preferences between different samples. This is in fact what was found by the present research. However, most other hypotheses were not confirmed suggesting that demographic subgroups of participants do not necessarily differ in regards to their information needs. This suggests that there may be less need for tailoring information to targeted segments of the population than had been expected.

Online Health Information

The Internet is one of the first sources people explore when they are struggling with a health or mental health problem (McCarthy et al., 2017). Given this, Study 2 provided a novel contribution to the literature by being the first study to examine multiple sources of anxiety information to determine their overall quality. The results from Study 2 suggested that current web-based resources about anxiety are of moderate quality. These resources tend to describe the diagnosis and some of the treatments available but they provide limited evidence-based information to answer most of the questions identified as important in the Study 1 survey. This

shortcoming in web-based information is present in other mental health areas such as depression (Bernstein et al., 2017) and inflammatory bowel disease (Promislow et al., 2010). A challenge for those developing information resources is that there is a limited amount of evidence available to answer some of these questions and some of this information is difficult for professionals to access. Members of the public would have difficulty locating and evaluating the quality of this evidence. It would be valuable to take a knowledge synthesis approach (Pope, Mays, & Popay, 2007) to review the evidence available to answer these questions and to provide information in a form that is clear for the public and for health professionals.

Respondents in Study 1 reported receiving a lot of information from the Internet compared to other sources, and for many, the Internet (rather than physicians) is the first source of information (Hesse, Moser, & Rutten, 2010). This is not surprising given the prevalence of online searches for health information (Pew Research Center, 2011). The results of Study 2 demonstrate that the quality of existing web-based anxiety information resources is variable. It is therefore important to consider that individuals may not be fully informed when speaking with their healthcare providers. Consumers should continue to have in-person (bi-directional) discussions with healthcare providers, rather than relying on a healthcare provider to unilaterally recommend a treatment. Accessing online information prior to one's appointment is one way to stimulate and enrich these discussions. However, searching online can lead to problems if consumers are not able to sift through the many websites that exist to find one that is easy to navigate and understand. Current research suggests that most consumers are only likely to view the first page of search results (Lieberman, 2017). Unfortunately, it is clear (especially in light of Study 2 findings) that this does not always lead to discovery of high-quality websites. Perhaps those who develop anxiety information should consider the decision-making steps that

consumers might take based on the information that they publish. This ties into the second main issue that this dissertation aimed to address, which is that it is necessary to have a better understanding of what people with anxiety disorders actually want to know and how well websites can be navigated and understood before providers undergo the steps necessary to publish them. Clearly, this requires a great deal of work and is more challenging than just compiling health information from experts in the field.

The Study 1 findings suggest that persons seeking information and those seeking treatment for anxiety would be interested in information developed to answer important questions concerning anxiety treatment. The International Patient Decision Aids Standards (IPDAS) collaboration provides guidelines about the development and evaluation of health information for the public (Volk et al., 2013). The most recent *Cochrane Collaboration* review of information decision aids (IDAs) used this instrument (Stacey et al., 2017). An IDA is a tool to help patients make treatment decisions about a health issue by weighing the benefits and risks of the various options (Stacey et al., 2014). A variety of IDAs are available in general healthcare; however, there are few available that address mental health problems such as anxiety or that are available online (Stacey et al., 2017; Wills & Holmes-Rovner, 2006). In considering the IPDAS criteria, this dissertation research focuses on the development process, by asking individuals what they need to prepare them to discuss healthcare (specifically anxiety) decisions with their providers.

Another issue raised by the findings of Study 1 is that persons with anxiety may not be provided information on different treatment options when seeking treatment. This leads to the question of whether there are any barriers to having a discussion around different treatment options. One hypothesis is simply that the lack of high-quality, evidence-based information

discussed above, which can be used by consumers and even healthcare providers, is a barrier to the shared decision-making process and to helping consumers make informed decisions. Another hypothesis is that there is a lack of healthcare professional knowledge. For example, general healthcare providers may not have in-depth knowledge of mental health treatment options (Hodges, Inch, & Silver, 2001; Wakida et al., 2018), and specialists such as psychologists or a psychiatrist may be focused on delivering psychological or medication treatment information, respectively. Therefore, it is crucial to have resources available to meet the varied needs of both the public and healthcare providers.

As noted earlier, given the wide range of topics identified in Study 1 as important to consumers, it would be difficult to address this information via oral communication during the limited time available for healthcare visits. A web-based resource with downloadable fact sheets has the advantage that it can provide information in a format that can be accessed by the public (searching for information for themselves or family members) and by health professionals interested in information to use to supplement discussions with their patients. Our research team is in the process of developing such a supplement, which will incorporate the results from studies 1 and 2 to ensure that it meets the needs for consumers. In developing this information, it is important to ensure that the information being presented is both of high quality but also easily understood by individuals of varying levels of mental health literacy. Participants also had the opportunity to indicate if they wished to receive a summary of the findings when this research is completed, which will allow them to better understand consumers' information needs and preferences. The Study 2 findings has provided guidelines for how best to present client-focused materials; in a visually appealing way with limited text and including images, as well as following plain-language principles to lower the reading level.

Help-seeking

Barriers to help-seeking for mental health issues still remain, especially among young adults. These barriers include stigma, difficulty identifying symptoms (i.e., poor mental health literacy), and difficulty accessing help (Salaheddin & Mason, 2016). Existing research suggests that interventions can mitigate some of these barriers and increase the likelihood of seeking help (Clement et al., 2015; Mittal et al., 2012; Rusch et al., 2011). Moreover, a social ecological approach (McCormack et al. 2017) can assist in improving health literacy and patient engagement. The present study aimed to address the individual and interpersonal levels of that approach through understanding what people want to know about anxiety treatment and laying a foundation for enhanced communication with healthcare providers. Another approach that ties in with the present study is increasing mental health literacy through patient education materials, which can have a therapeutic benefit (Smith & Shochet, 2011). Furthermore, Jorm (2012) suggested that individuals who are better able to recognize the signs and symptoms of a mental disorder and what treatments are available will be more likely to seek help. These studies underscore the importance of information materials as a method of facilitating help-seeking.

There are several variables that impact on help-seeking attitudes and behaviour. In a study from the WHO World Mental Health surveys, authors reported that being female, younger or middle-aged was associated with perceived need for treatment (Andrade et al., 2014). The results from the Study 1 suggested that, while women may be more likely to seek help, men may be just as likely to seek information. This, along with prior research, suggests that there is still a gender discrepancy when it comes to seeking treatment (Fleury, Ngui, Bamvita, Grenier, & Caron, 2014). Perhaps lowering the stigma around mental health issues or providing information targeting men (and other underserved populations) about the benefits of mental health treatment

could enhance their treatment seeking behaviour. The more knowledge individuals have, the more involved they will be in the treatment decision process (Adams & Drake, 2006), and the more likely they will be to select an effective treatment option (Clever et al., 2006).

One way to address this discrepancy between demographic group help-seeking is through community outreach. More, specifically, in order to better meet the needs of specific groups, it is imperative that there is open dialogue within their communities. For instance, barbershops have been found to be an effective way of reducing the stigma around HIV among African American men (Wilson et al., 2014). Among other ethnic minorities, such as new immigrants to Canada, having local immigrant support organizations aware of high-quality resources available such as Anxiety BC (now Anxiety Canada) or our new IDA to give individuals a starting point if they are not yet prepared to seek professional help. Furthermore, given the high prevalence of mental health problems among youth (Merikangas et al., 2010), information about mental health and their treatment options should be incorporated into the high-school curriculum.

Outcome and Significance of the Research

There are several aspects of this research that make a significant contribution to the literature. First, there has been limited research on what people want to know when making treatment decisions about a health issue. Study 1 assesses this in persons with anxiety disorders, and determines how this compares to the information that they have already received from healthcare providers when making treatment decisions. Another strength of Study 1 is that it involves a comparison of treatment- and information-seeking samples and there has been very limited research in this area. Further, the findings from Study 1 can be used to ensure that both existing information decision aids (IDAs), and one that our group is currently developing, address the issues and information that patients with anxiety disorders consider to be most

important. Finally, Study 1 was undertaken in a Canadian population and hence, provides insight into the anxiety information needs of our local population. Study 2 adds to the literature on evaluating the quality of multiple websites containing health information by building on the existing research carried out by our group (Promislow et al., 2010; Reynolds et al., 2015).

Limited information about the characteristics and effectiveness of treatment may limit the involvement of persons with anxiety disorders in treatment seeking, treatment decision-making, and collaboration with treatment over time. Increasing public knowledge and the use of mental health information has resulted in more positive attitudes towards help seeking (Coles & Coleman, 2010), increased knowledge, and increased treatment adherence (Grime & Pollock, 2004). Developing better resources to meet the information needs of the public will improve such involvement, and perhaps assist in using healthcare resources more effectively. Therefore, establishing effective anxiety web-based resources will increase knowledge of anxiety disorders and their treatment, and allow patients to make more effective treatment choices.

Future Directions and Knowledge Translation Plan

The very nature of this research project reflects the definition of knowledge translation, which is to get the right people, the right information, delivered in the right way to inform their treatment decision-making. One approach to achieve this is to continue development of web-based anxiety resources by incorporating the results from the two studies in this project. The first step was to consider what persons with anxiety have identified as topics of interest. The other component was to consider what information is currently available. Researchers can use this information to refine existing materials and make them more broadly informative and more understandable for persons of varying backgrounds. Our research group is also in the process of developing a new IDA, which will consider the results from the present studies in its

development. It will be associated with a URL web address and will therefore be accessible from anywhere with an Internet connection. Some of the Top 5 websites included graphics and videos to facilitate consumer engagement. It will be important for this new IDA to incorporate such features to sustain engagement given that we are aiming to produce a high-quality resource. Furthermore, the new IDA will strive for a low reading level in order to ensure that people of varying levels of mental health literacy can understand and apply the information presented. Given that people with anxiety may be more likely to take the *peripheral route* to evaluate information according to the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986), perhaps the new IDA should include a video clip that briefly outlines different treatment options and their pros (e.g., effectiveness) and cons (side effects). This could supplement more detailed written information on each topic or section.

The next step for this research will be to refine this new IDA by evaluating it in a systematic way, comparing the content and presentation of each broad information topic to that of existing anxiety information materials. In Study 2, the Anxiety BC website was identified as high quality, and it would likely make for a strong comparison to the new IDA. Such a study would involve the head-to-head comparison of the new IDA compared with Anxiety BC, evaluated by the same group of participants. They will be randomized to viewing the new IDA or Anxiety BC first. This is significant, as it involves developing a novel approach to comparing consumers' judgments concerning different sources of information. Undertaking such a study would contribute to the methodology for evaluating newly developed information in comparison with existing sources of information. Another important contribution of such a methodology would be to evaluate order effects; how strongly people are influenced by primacy or recency effects when evaluating information. There has been very little previous research done outlining

methodology in this area and comparing order effects of health information (Bernstein et al., 2019). In regular use of health information, consumers may only read treatment information that is of interest to them (i.e., a particular treatment), which is consistent with the ELM. Such a study could also ask open-ended (i.e., qualitative) questions, such as on the likes, dislikes, and suggestions for improvement. This could further strengthen the IDA based on the feedback provided. Ideally, this comparison study will include evaluations by the general public or people with anxiety problems, as opposed to highly educated psychology graduate students.

Another important future direction would be to solicit information needs among broader samples of individuals such as adolescents or seniors, as their preferences may differ from the younger adults (on average) surveyed in the present research. Future research should also conduct experimental studies to test whether improving information provided would improve ratings of the amount of information received, or improve clinical outcomes. Early research has found web-based mental health information to be an important source of support for young people (Horgan & Sweeney, 2010).

Results from this research program will also be published in peer-review journals and presented at relevant national and international meetings, which will allow for further knowledge dissemination to the broader research community. Consistent with the theme of knowledge translation and dissemination, the broad lessons learned from this research will be distributed to those who participated in the research in the form of charts and bullet points (in line with plain language principles; Rudd et al., 2004) and potentially made available on the new IDA for general public viewing. This will allow people struggling with anxiety and those seeking information to gain an understanding of the steps being taken to further the shared decision-making process. Table 17 contains a table outlining the top five websites and the topics they

cover, which could be shared with both healthcare providers and those struggling with anxiety. The findings from these studies could also be shared with self-help organizations such as ADAM as well as the website developers in case they are interested in how their website compares to other anxiety websites.

If this knowledge translation approach of using a needs assessment to inform the development of information materials and then evaluating them proves to be successful, then this same approach could be taken to develop and refine IDAs on other mental health issues. For example, substance use disorders are also common in the community, affecting almost 5% of people annually (Kessler et al., 2005b). Another research program could be undertaken in a similar way with substance use disorder information. Furthermore, this is an evaluation approach that could also be used to evaluate graphic and/or audiovisual information of websites containing health information.

Conclusion

The goal of this research was to obtain a better understanding of the gap that exists between information needs and information resources. This was accomplished by exploring anxiety information needs and preferences to determine what people want to know and what information they have received in the past concerning anxiety. The existing web-based anxiety information resources were also evaluated to determine whether the needs identified by the public were addressed in currently available resources. Overall, the findings demonstrated that needs are not fully met through the existing resources. Moving forward, the results of these studies will inform the development of enhanced resources to better satisfy anxiety information needs among those seeking both anxiety information and assistance.

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Appendix A

Consent Form



UNIVERSITY OF MANITOBA

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Study 1 Information and Consent Form

Title of Research: Evaluation of anxiety information and materials

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Purpose of the Study:
The purpose of this study is to gather opinions and preferences concerning treatment information for problems with anxiety. Results of this study will enhance our understanding of what information people have received in the past and what they want to know about anxiety treatment. This study is part of Matthew Bernstein's Ph.D. dissertation research.

Study Procedures:
As a participant in this study you will complete a questionnaire that will take about 20 minutes to complete. You will complete the questionnaire in the location of your choice. Questions covered in the questionnaire include: questions about anxiety information preferences and opinions, background information (such as age, gender, education, marital status, and race/ethnicity); and history of treatment for problems with anxiety.

Potential Costs and Benefits of the Research:
It will take you about 20 minutes to complete the questionnaire. Benefits of this study include enhancing our understanding of peoples' preferences for information about treatment for anxiety.

Potential Risks of the Research:
There are no known risks associated with this study. However, reviewing information about treatments may cause discomfort for some people. A list of resources for help with problems with emotional distress will be provided.

Participant Compensation:
If you choose to participate in this study, you will be emailed or mailed a $10 gift card to Amazon or mailed a $10 gift card to Tim Horton's. These will only be provided to participants living in Canada.

Voluntary Participation:
Participation in this research is voluntary and your decision to participate or not participate will not influence your treatment at the clinic you are attending. You may withdraw at any time with no penalty. If you decide to withdraw from participation in this research, the information in your survey will be destroyed.

Confidentiality:
Information gathered in this research study may be published or presented in public forums, but your name and other identifying information will not be used or revealed. This survey will not ask you to provide your name, or any other identifying information. However, if you do wish to receive the results of this study, you may provide your email, or home address on the final page of the survey. This personal information will not be associated with your survey responses and will be a second survey at the end of this survey. The file with identifying information will be stored on a locked USB drive, and stored in Dr. Furer's locked office. The names and addresses will be stored for 12 months after the follow-up research is completed, and then it will be destroyed. The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way.

By clicking "I agree" below on this page, this indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate. In no way does this wave your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, withdraw without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way. This study has been approved by the Psychology/Sociology Research Ethics Board.

Questions or Concerns:
If you have any questions about this study, please do not hesitate to contact Mr. Matthew Bernstein at umbernsm@myumanitoba.ca, or his research supervisor, Dr. Patricia Furer at (204) 237-2055 or pfurer@sbgh.mb.ca.

For questions about your rights as a research participant, you may contact the University of Manitoba Human Ethics Office at (204) 474-7122 or by email at humanethics@umanitoba.ca.

Statement of Consent:

Completing the survey will indicate that you have given your consent to participate.
When you click to leave the survey, the window closes and it goes back to the web browser.
If you would like to print this page for your records, please CLICK HERE

By marking “I agree” below, you fully agree to the terms of the consent form above.

() I agree (proceed to survey)
() I do not agree (close browser and do not complete survey)

Appendix B

Study 1 Survey

SECTION A: Information Experiences

A1. a. DURING THE PAST 12 MONTHS, have you used the Internet to search for medical or health-related information?
O Yes O No

b. If yes, how often do you use the Internet to search for medical or health-related information? Please click the number that best fits.

O	1	2	3	4	5
Prefer not to respond	Not at all	A little	Moderately	Quite a lot	A great deal

A2. Please circle the number that best fits your rating from 0 to 8.

How familiar are you with the types of help available for anxiety problems?

O	0	1	2	3	4	5	6	7	8
Prefer not to respond	Not at all familiar			Moderately familiar					Very familiar

SECTION B: We are interested in your opinion about what information would be important if you were deciding on a treatment for a problem with anxiety. You may or may not be taking a treatment for anxiety now. You may or may not be considering a treatment for anxiety. We are interested in your opinions in any case.

What information would be important to you in considering the kinds of help available for anxiety problems? (Please circle the number that best fits).

B1. All of the types of treatment available for anxiety problems.

O	0	1	2	3	4	5	6	7	8
Prefer not to respond	Not at all important			Moderately important					Very important

B2. The various medication treatments for anxiety problems.

O	0	1	2	3	4	5	6	7	8
Prefer not to respond	Not at all important			Moderately important					Very important

B3. The various counseling or psychological treatments for anxiety problems.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B4. Self-help treatment for anxiety problems (self-help book or website).

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B5. Herbal medicines or natural medicines for anxiety problems (such as St. John's wort, or vitamin preparation).

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B6. Exercise as a treatment for anxiety problems.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B7. Meditation (such as mindfulness or yoga meditation) as a treatment for anxiety problems.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B8. Marijuana as a treatment for anxiety problems.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B9. What you have to do as part of the treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B10. The cost of the treatment to you (if any).

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B11. The cost of the treatment to the health care system.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B12. The effectiveness or success of the treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B13. How the treatment works.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B14. The goal or outcome of treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B15. How long it takes for the treatment to produce results.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B16. How long the treatment continues.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond — Not at all important — Moderately important — Very important

B17. What happens when the treatment stops.

O	0--------1--------2--------3--------4--------5--------6--------7--------8		
Prefer not to respond	Not at all important	Moderately important	Very important

B18. The common side effects of the treatment.

O	0--------1--------2--------3--------4--------5--------6--------7--------8		
Prefer not to respond	Not at all important	Moderately important	Very important

B19. The uncommon, but serious side effects of the treatment.

O	0--------1--------2--------3--------4--------5--------6--------7--------8		
Prefer not to respond	Not at all important	Moderately important	Very important

B20. The advantages (pros) and disadvantages (cons) of each type of treatment.

O	0--------1--------2--------3--------4--------5--------6--------7--------8		
Prefer not to respond	Not at all important	Moderately important	Very important

B21. Is there any other type of information about treatments for anxiety disorders that you think is important?

_____

_____

_____

SECTION C: We are interested in the amount of information you have received in the past regarding anxiety treatments. You may or may not have received information in some of these areas. We are interested in your responses in any case.

C1. Thinking about your past experiences, was there a time when you received counseling or therapy from a professional (such as a counselor, therapist, or doctor) for anxiety disorders?

☐ Yes (1) ☐ No (2) ☐ Not sure (3) ☐ Prefer not to respond (4)

If NO or NOT SURE, please SKIP to the next section (SECTION D, page 7).

If YES, please continue with the questions below.

How much information have you received in the past when you were making decisions about starting counselling or psychological therapy for an anxiety problem? (Please circle the number that best fits).

C2. The medication treatments for anxiety problems.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C3. What you have to do as part of the psychological treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C4. The cost of the psychological treatment to you (if any).

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C5. The cost of the psychological treatment to the health care system.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C6. The effectiveness or success of the psychological treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C7. How the psychological treatment works.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C8. The goal or outcome of the psychological treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C9. How long it takes for the psychological treatment to produce results.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C10. How long the psychological treatment continues.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C11. What happens when the psychological treatment stops.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C12. The common side effects of the psychological treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C13. The uncommon, but serious side effects of the psychological treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

C14. The advantages (pros) and disadvantages (cons) of each type of psychological treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

SECTION D

D1. Thinking about your past experiences, was there a time when you received medication prescribed by a doctor for anxiety disorders?

☐ Yes (1) ☐ No (2) ☐ Not sure (3) ☐ Prefer not to respond (4)

If NO or NOT SURE, please SKIP to the next section (SECTION E, page 9).

How much information have you received in the past when you were making decisions about starting a medication treatment for an anxiety problem? (Please circle the number that best fits).

D2. The counselling or psychological treatments for anxiety problems.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D3. What you have to do as part of the medication treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D4. The cost of the medication treatment to you (if any).

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D5. The cost of the medication treatment to the health care system.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D6. The effectiveness or success of the medication treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D7. How the medication treatment works.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D8. The goal or outcome of the medication treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D9. How long it takes for the medication treatment to produce results.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D10. How long the medication treatment continues.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D11. What happens when the medication treatment stops.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D12. The common side effects of the medication treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D13. The uncommon, but serious side effects of the medication treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

D14. The advantages (pros) and disadvantages (cons) of each type of medication treatment.

O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Too little Moderate amount Quite a bit Just right amount

SECTION E: When you have been considering treatment options for anxiety in the PAST, how much information did you receive from each of the following sources?

E1. family doctor
O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Moderate amount A lot

E2. psychiatrist
O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Moderate amount A lot

E3. psychologist
O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Moderate amount A lot

E4. counselor or therapist
O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Moderate amount A lot

E5. nurse
O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Moderate amount A lot

E6. Internet
O 0--------1--------2--------3--------4--------5--------6--------7--------8
Prefer not to respond None Moderate amount A lot

E7. book (e.g., self-help book)

O 0--------1--------2--------3--------4--------5--------6--------7--------8

Prefer not to respond | None | Moderate amount | A lot

E8. partner/spouse

O 0--------1--------2--------3--------4--------5--------6--------7--------8

Prefer not to respond | None | Moderate amount | A lot

E9. family member (who is not a partner/spouse)

O 0--------1--------2--------3--------4--------5--------6--------7--------8

Prefer not to respond | None | Moderate amount | A lot

E10. friend

O 0--------1--------2--------3--------4--------5--------6--------7--------8

Prefer not to respond | None | Moderate amount | A lot

SECTION F: About you

We are interested in gathering a bit of information about you. We will not be asking for your name, so your name will not be connected to your responses. By providing information about demographic characteristics it helps us to make comparisons with previous research in the area.

F2. Today's date: _____

F1. Your age: _____

F3. Gender:

☐ Male

☐ Female

F4. a) Were you born in Canada?

☐ Yes

☐ No

☐ Prefer not to respond

b) If you were not born in Canada, what region were you born in?

☐ United States

☐ Mexico

☐ South America, Central America, or the Caribbean

☐ Europe

☐ Africa

☐ Asia

c) How many years have you lived in Canada? _____

d) How many years of your education were primarily in English? _____

F5. Marital Status:

☐ Married or living with someone in marital-like relationship

☐ Never married & never lived with someone in a marital-like relationship

☐ Separated

☐ Divorced or formerly lived with someone in a marital-like relationship

☐ Widowed

F6. How many years of education have you completed in each of the following areas?

Grade school: ☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐10 ☐11 ☐12 ☐13

Apprenticeship program: ☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

College/Technical/Business/Vocational/Nursing (non-university):

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

University program: ☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐10 or more

F7. Please select which of the following best describes your employment status (select all that apply):

- ☐ Student full-time
- ☐ Student part-time
- ☐ Employed full-time
- ☐ Employed part-time
- ☐ Disabled
- ☐ Retired
- ☐ Homemaker
- ☐ Unemployed

F8. Have you ever been diagnosed as having an anxiety disorder by a healthcare professional?

- ☐ Yes
- ☐ No

F9. Have you ever been diagnosed as having panic disorder by a healthcare professional?

- ☐ Yes
- ☐ No

F10. Have you ever been diagnosed as having social anxiety disorder by a healthcare professional?

- ☐ Yes
- ☐ No

F12. Have you ever been diagnosed as having obsessive compulsive disorder (OCD) by a healthcare professional?

- ☐ Yes
- ☐ No

F13. Have you ever been diagnosed as having generalized anxiety disorder by a healthcare professional?

- ☐ Yes
- ☐ No

F14. Have you ever been diagnosed as having post-traumatic stress disorder (PTSD) by a healthcare professional?

☐ Yes
☐ No

F15. If yes, who did you receive this diagnosis from (select all that apply)?

☐ Family doctor

☐ Psychiatrist

☐ Psychologist

☐ Counselor

☐ Nurse practitioner

☐ Other (specify): _____

F16. Thinking about your past experiences, was there a time when it would have been helpful to receive counseling or therapy from a professional (such as a counselor, therapist, or doctor) for anxiety disorders, but you did not receive it?

☐ Yes (1) ☐ No (2) ☐ Not sure (3) ☐ Prefer not to respond (4)

F17. Thinking about your past experiences, was there a time when it would have been helpful to take medication prescribed by a doctor for anxiety disorders, but you did not receive it?

☐ Yes (1) ☐ No (2) ☐ Not sure (3) ☐ Prefer not to respond (4)

F18. Thinking about your past experiences, was there a time when you tried self-help (self-help book or website) approaches as a treatment for problems with anxiety?

☐ Yes (1) ☐ No (2) ☐ Not sure (3) ☐ Prefer not to respond (4)

F19. Thinking about your past experiences, was there a time when you tried exercise as a treatment for problems with anxiety?

☐ Yes (1) ☐ No (2) ☐ Not sure (3) ☐ Prefer not to respond (4)

F20. Thinking about your past experiences, was there a time when you tried herbal or natural medicines as a treatment for problems with anxiety?

☐ Yes (1) ☐ No (2) ☐ Not sure (3) ☐ Prefer not to respond (4)

F21. Thinking about your past experiences, was there a time when you tried meditation such as mindfulness or yoga meditation as a treatment for problems with anxiety?

☐ Yes (1) ☐ No (2) ☐ Not sure (3) ☐ Prefer not to respond (4)

F22. Thinking about your past experiences, was there a time when you tried marijuana as a treatment for problems with anxiety?

☐ Yes (1) ☐ No (2) ☐ Not sure (3) ☐ Prefer not to respond (4)

Appendix C

Website Names & Web Addresses

Page 1

1. Anxiety and Depression Association of America (ADAA)
- https://adaa.org/understanding-anxiety#

2. National Institute of Mental Health
   - https://www.nimh.nih.gov/health/topics/anxiety-disorders/index.shtml

3. Anxiety UK
- https://www.anxietyuk.org.uk/get-help/anxiety-information/

4. Mind (UK Organization)
- https://www.mind.org.uk/information-support/types-of-mental-health-problems/anxiety-and-panic-attacks/anxiety-disorders/#.WwsLjO4vyUk

5. Anxiety BC (now Anxiety Canada)
- https://www.anxietycanada.com/

6. Mental Health America
- http://www.mentalhealthamerica.net/conditions/anxiety-disorders

7. Medline Plus
- https://medlineplus.gov/anxiety.html

8. Web MD
- https://www.webmd.com/anxiety-panic/guide/anxiety-disorders#1

9. Canadian Mental Health Association (CMHA)
- https://cmha.ca/documents/anxiety-disorder

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10. America Psychiatric Association
- https://www.psychiatry.org/patients-families/anxiety-disorders/what-are-anxiety-disorders

11. Helpguide.org
- https://www.helpguide.org/articles/anxiety/anxiety-disorders-and-anxiety-attacks.htm

12. Beyond Blue
- https://www.beyondblue.org.au/the-facts/anxiety

13. Head to Health (Australian Government Organization)
- https://headtohealth.gov.au/mental-health-difficulties/mental-health-conditions/anxiety-disorders

14. Sane.org
- https://www.sane.org/mental-health-and-illness/facts-and-guides/anxiety-disorder

15. National Alliance on Mental Illness
- https://www.nami.org/learn-more/mental-health-conditions/anxiety-disorders

16. Reach Out (Australian Organization)
- https://au.reachout.com/articles/what-is-anxiety

17. Healthy Place
- https://www.healthyplace.com/anxiety-panic

18. Headspace
- https://headspace.org.au/young-people/understanding-anxiety-for-young-people/

NICE
- https://www.nice.org.uk/guidance/qs53

Mayo Clinic
- https://www.mayoclinic.org/diseases-conditions/anxiety/symptoms-causes/syc-20350961

Appendix D

Study 2 Content Area Questions

Content Area Evaluation Questions

1 (*no information*) to 3 (*adequate information with basic detail*) to 5 (*complete and comprehensive information with detailed discussion*

1. The various medication treatments for anxiety disorders.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

2. The various counseling or psychological treatments for anxiety disorders.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

3. Self-help treatment for anxiety disorders (self-help book or website).

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

4. Herbal medicines or natural medicines for anxiety disorders (such as St. John's wort, or a vitamin preparation).

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

5. Exercise as a treatment for anxiety disorders.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

6. Meditation as a treatment for anxiety disorders.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

7. Marijuana as a treatment for anxiety disorders.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

8. What the person has to do as part of the treatment.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

9. The cost of the treatment to the person (if any).

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

10. The cost of the treatment to the health care system.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

11. The effectiveness or success of the treatment.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

12. How the treatment works.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

13. The goal or outcome of treatment.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

14. How long it takes for the treatment to produce results.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

15. How long the treatment continues.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

16. What happens when the treatment stops.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

17. The common side effects of the treatment.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

18. The uncommon, but serious side effects of the treatment.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion

19. The advantages (pros) and disadvantages (cons) of each type of treatment.

1----------2----------3----------4----------5
No information Adequate information with basic detail Complete and comprehensive information with detailed discussion