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Therapeutic Benefits of Online Psychological Screening for Depressive Symptomology

By

Natalie Frost

A Dissertation  
Submitted to the Faculty of Graduate Studies  
through the Department of Psychology  
in Partial Fulfillment of the Requirements for  
the Degree of Doctor of Philosophy  
at the University of Windsor

Windsor, Ontario, Canada

2019

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Therapeutic Benefits of Online Psychological Screening for Depressive Symptomology

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## DECLARATION OF ORIGINALITY

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## ABSTRACT

Research has suggested that participating in in-person psychological testing is related to therapeutic benefits including: reduction in depressive symptomology, self-awareness, self-verification, self-esteem, and hope (Allen, 2001; Poston & Hanson, 2010). This study explored whether these findings applied with a more accessible asynchronous computerized format and examined the effects of computerized testing procedures (i.e., rapport-building video, self-disclosing personal information on questionnaires, receiving a feedback report) on therapeutic benefits (i.e., self-esteem, hope, self-awareness, self-verification, reduction in depressive symptomology). In addition, this study compared participants' experiences receiving a computerized feedback format and an in-person feedback format. Undergraduate students aged 17 to 45 years ( $N = 126$ ) participated in a two-part concurrent triangulation design study. In Part 1, participants watched a rapport-building video, completed online screening tools for depression, and measures of therapeutic benefits. For Part 2, participants came into the lab one week later and watched a second rapport-building video before receiving a feedback report (i.e., a summary of their reported symptomology on the screening tools). The test administrator showed 63 participants a paper copy of their feedback report and read it to them. The remaining participants ( $n = 63$ ) received a computerized feedback report and read through it independently. Participants then completed the measures of therapeutic benefits again in addition to qualitative questions about their experience answering the screening questions and receiving feedback. Quantitative analyses revealed that, after receiving the feedback report, participants reported significant gains in new self-awareness and reductions in depressive symptomology, anxiety, and stress. The feedback format did not contribute to

score differences for most measures administered. When specific groups of participants were examined, those with high feedback satisfaction reported less hopelessness than those with low feedback satisfaction. Participants with high self-verification reported greater gains in self-esteem and reductions in hopelessness in Part 2. Similarly, those with high new awareness and high rapport with the test administrator reported less hopelessness over time. Potential reasons for these changes in scores were examined using thematic analysis of qualitative responses. Participants reported on their self-disclosure tendencies; feelings and experiences participating in the current study; gains in new awareness; self-verification and perceived accuracy of the feedback; and perceptions of the test administrator. Findings suggest that completing online screening tools for depressive symptomology and receiving feedback has the potential to be a useful format for intervention. Additional practical applications and participant preferences regarding the use of online screening tools are discussed.

## DEDICATION

To my loving husband Eric,  
and my family and friends that have supported me through this journey.

## ACKNOWLEDGEMENTS

I would like to thank my research advisor Dr. Kimberley Babb for your support and knowledge every step of the way over these past few years. You have always challenged me to grow as a researcher and I am truly thankful for your contribution to my research interest in online psychological services. I am sincerely grateful for your kindness and understanding throughout this dissertation journey.

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## CHAPTER I

### INTRODUCTION

Therapeutic benefits can be broadly defined as “any dependent variable designed to demonstrate potential client improvement or enhanced therapy process” (Poston & Hanson, 2010, p. 2). They have primarily been a method of measuring client outcome from participation in therapy. It has not been until the past two decades that research has begun to explore benefits resulting from participation in psychological assessments (Finn & Tonsager, 1992; Finn, 1996; Fischer, 1994). Some research has found that participating in a psychological assessment (i.e., self-disclosing personal information on measures, receiving feedback) reduces symptomology and increases hope, self-esteem, and self-awareness (Poston & Hanson, 2010). Psychological assessments are a considerably shorter mental health service than therapy, which can span weeks to years. With the push to reduce waitlists for psychological services, turning to brief services similar to psychological assessments may be a first course of action.

One way to make assessments more accessible is to transform aspects of them into online formats (e.g., online screening tools). There has been a great demand for paper-and-pencil psychological measures to be transformed into computerized formats. However, many of the changes that occur when formats transform from paper-and-pencil to online are unknown. As such, it is important to extend studies of in-person screening tools to computerized formats in order to develop a more comprehensive understanding of the risks and benefits of making this transformation.

Raw scores and descriptive terms for interpretation (e.g., “Mild”, “Severe”) are some of the types of information that can be derived from responses on psychological

tests. When psychological tests are administered online, they provide test administrators with this same information, which can be incorporated into feedback for individuals. For example, Pearson's Q-Global, an online psychological test scoring and interpretation service, provides examiners with a generated feedback report from individuals' responses that includes raw scores, scale scores, normative data, and interpretive descriptions (Pearson Inc., 2014). Similarly, the Multi-Health Systems Online Assessment Center, enables examiners to create feedback reports with test scores, comparisons to normative scores, and highlights score elevations (Multi-Health Systems Assessments, 2018). Researchers have yet to examine what feedback from online tests may look like when this information is presented to individuals in a computerized format. To be consistent with in-person feedback, online feedback should incorporate both information regarding test scores and the interpretation of the scores (e.g., descriptive terms such as "Mild", "Moderate"). Descriptive terms were used in the feedback forms in the current study to reflect this.

### **Overview of the Present Study**

Few researchers have examined the therapeutic benefits of participating in in-person psychological testing and feedback. To the author's knowledge, there are no published studies examining the therapeutic benefits of computerized testing and feedback. Thus, the therapeutic benefits of online screening tools are unknown. We also do not yet fully understand the reasons why individuals participating in psychological testing and feedback may or may not experience benefits or find it to be valuable.

The purpose of the present study was to examine the therapeutic benefits of participating in an online screening for depressive symptomology and receiving



feedback. This study addressed gaps in the literature by asking the following questions:

(1) What are participants' experiences disclosing/withholding information from the examiner and do they find it to be positive? (2) Do participants gain new knowledge of themselves following feedback, and if so in what areas? (3) How congruent are participants' feedback results from online questionnaires and participants' self-perceptions of their symptomology and distress?

To address these questions, participants completed online measures at two time points (before and after receiving feedback) that assessed their depressive symptomology, hope, hopelessness, self-esteem, new awareness, self-verification, and rapport with the examiner. The relations among these variables were explored to understand if participants experienced therapeutic benefits after receiving feedback from a screening for depressive symptomology. The format in which participants received feedback (computerized or in-person) was also manipulated. This was done in order to examine if potential differences in therapeutic benefits was related to the method participants received their feedback. An additional goal of this study was to understand why these changes occurred; therefore, qualitative questions were asked to help interpret the findings and to better understand participants' experience receiving feedback.

## CHAPTER II

### LITERATURE REVIEW

With advances in technology over the years, more and more psychological services, including psychological measures are being transformed into computerized formats. There are a plethora of psychological testing instruments available for many symptomology presentations. This study specifically examined online screening tools for depressive symptomology. Depressive symptomology was selected in order to inform service providers that work with the thousands of individuals in Canada that experience a Major Depressive episode in their lifetime (Pearson, Janz, & Ali, 2013).

#### **Depression**

Depressive symptomology includes: depressed mood, lack of interest in pleasurable activities, insomnia/hypersomnia, weight gain or loss, psychomotor agitation or retardation, fatigue, poor concentration and difficulty making decisions, feelings of guilt or worthlessness, and suicidal ideation. Five or more of these symptoms must be present for at least two weeks and must cause either significant distress or functional impairment to the client to meet criteria for Major Depressive Disorder (MDD; American Psychiatric Association, 2013). It has a lifetime prevalence of approximately 11 to 15% (Ingram & Price, 2010; Pearson, Janz, & Ali, 2013).

Though originally conceptualized as a categorical construct, MDD is now viewed as more dimensional, with specifiers including mild, moderate, and severe. These specifiers are based on the number of symptoms present and the extent of functional impairment (e.g., impact on social relationships, academics, and occupation). Some symptoms of depression are considered normative in the general population. For

example, at some point most individuals experience feelings of sadness and difficulty sleeping, but they do not experience these symptoms with the same severity and impact on their daily functioning as those with MDD. It then becomes more difficult to differentiate between normative depressed mood and mild MDD. It is necessary for mental health professionals to be able to recognize MDD so that clients may obtain resources to reduce distress and improve daily functioning. Assessment and screening tools for depression have been developed to assist mental health professionals with this task.

**Assessment and screening services for depression.** Because depression is one of the most prevalent psychological disorders and it impacts numerous facets of daily living, there is a pressing need for depression screening. MDD is related to missed days at work/school (Glieb & Pine, 2002; Stewart, Ricci, Chee, Hahn, & Morganstein, 2003), poor academic performance (DeRoma, Leach, & Leverett, 2009), relationship dissatisfaction (Gotlib, Lewinsohn, & Seeley, 1998; Kessler, Walters, & Forthofer, 1998), and suicide completion (Bostwick & Pankratz, 2000). Early screening and detection of MDD may facilitate earlier treatment seeking to prevent these outcomes, as well as increase adaptive functioning.

In 2013, the Canadian Task Force on Preventative Health Care released guidelines on screening for depression in primary health care centres. They concluded that due to the paucity of research on screening for depression in adults, they could not recommend routine screenings at that time (Canadian Task Force on Preventative Health Care et al., 2013). In contrast, the United States Preventive Services Task Force examined the risks and benefits of screening for depression in adults age 18 years and older, and they

concluded that screening for depression in the general adult population should be implemented. Furthermore, the screenings should ensure accurate diagnosis, referrals for effective treatment, and follow-up as needed (United States Preventive Services Task Force, 2016). In addition, the American Academy of Family Physicians, American College of Preventive Medicine, Institute for Clinical Systems Improvement, and Community Preventive Services Task Force also recommend that MDD be screened for regularly with clients and the general population (American Academy of Family Physicians, 2016; Community Preventive Services Task Force, 2014; Mitchell et al., 2013; Nimalasuriya, Compton, & Guillory, 2009).

**Tools for assessing depression.** Major Depressive Disorder is typically assessed by psychologists and physicians using interviews and standardized measures based on the criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).

**Interviews.** Both structured and semi-structured interviews may be administered by a clinician to assess an individual's level of depression. Structured interviews, such as the Structured Interview Guide for the Hamilton Depression Scale (SIGH-D) and Inventory of Depressive Symptomatology (IDS-C), consist of a set protocol consisting of questions administered verbally. Semi-structured interviews, such as the Structured Clinical Interview for DSM-5 (SCID-5) and Cornell Scale for Depression in Dementia (CSDD), have some predetermined questions but the protocol allows the clinician some flexibility regarding follow-up questions and/or the order. The SIGH-D, IDS-C, and CSDD assess the presence and severity of depressive symptoms over the past week. For example, an item from the IDS-C is "How has your energy been this past week?" Clinicians rate clients' responses on a Likert scale, and sum each response to form a total

score. Total scores are interpreted by clinicians using descriptive score ranges. For example, the following score ranges have been suggested for interpretation of the IDS-C: *no depression* ( $\leq 11$ ), *mild* (12 to 23), *moderate* (24 to 36), *severe* (37 to 46), *very severe* ( $\geq 47$ ). The descriptive interpretation of scores help clinicians determine the probability that a client is experiencing symptoms of depression consistent with diagnostic criteria, as well as the severity of symptoms. In contrast to this descriptive interpretation used by the three interviews, the SCID-5 directly assesses the criterion necessary for the diagnosis of MDD according to the DSM-5. Information gathered from interviews, such as the SCID-5 and IDS-C, is used to assist clinicians in making diagnostic decisions.

***Standardized questionnaires.*** Multiple standardized questionnaires have been developed to assess for symptoms of depression. The most commonly used questionnaires are the Hamilton Depression Rating Scale (Hamilton, 1960), Beck Depression Inventory (Beck, Steer, & Brown, 1996), Patient Health Questionnaire (Kroenke, Spitzer, & Williams, 2001), Major Depression Inventory (Bech, Rasmussen, Olsen, Noerholm, & Abildgaard, 2011), Center for Epidemiological Studies Depression Scale (Radloff, 1977), and Zung Self-Rated Depression Scale (Zung, Magruder-Habib, Valez, & Alling, 1990). Total scores on these measures may be interpreted in many ways: from recommended cut-off scores, score ranges that form descriptive categories, norms, or a continuum from low scores to high scores. The scores that are produced by standardized questionnaires are objective measurements that can be compared across clients and have helped clinicians determine whether or a diagnosis is warranted and, if so, the degree of severity. For example, item responses on the Beck Depression Inventory are summed into a total score, which are then interpreted using descriptive categories

(i.e., minimal, mild, moderate, severe). Unlike interviews, questionnaires are ideal for use as screening tools for larger populations because they can quickly and easily be administered to individuals to provide objective measurements of the presence of symptoms of depression.

***Assessment feedback.*** One component of assessments considered to be a form of psychological intervention is *feedback*. Assessment feedback typically consists of a summary of the test results, diagnosis (if criteria are met), psychoeducation (i.e., empowering information provided to individuals so they may better understand their difficulties and/or diagnosis), and the provision of recommended resources (Carlat, 2005). It is the psychologist's duty to formulate, write up, and convey the information from the assessment feedback to the client in an understandable and useful way in accordance with the Canadian Psychological Association's Code of Ethics. Ethical Standard II.20 states that psychologists should:

Provide suitable information, unless declined or contraindicated (e.g., some critical inquiry studies, possibility of harm, legally disallowed), about the results of assessments, evaluations, or research findings to the individuals and groups (e.g., couples, families, organizations, communities, peoples) involved. This information would be communicated in ways that are developmentally, linguistically, and culturally appropriate, and that are meaningful and helpful (Canadian Psychological Association, 2017, p. 21).

This aligns with the American Psychological Association's (2017) Ethical Standard 9.10 that states "psychologists take reasonable steps to ensure that explanations of results are given to the individual or designated representative" (p. 14). This is typically done by

providing the information from the assessment feedback to the client in a meeting and providing the client with a written copy of the assessment results.

### **Observed Benefits of Assessment Feedback**

The informational value of the feedback is believed to make a meaningful difference in how individuals view themselves. Poston and Hanson (2010) conducted a meta-analysis that reviewed 17 studies that examined the effects of assessment tests with feedback on client improvement and enhanced therapeutic processes (e.g., session depth, working alliance) compared to controls (e.g., no assessment, no feedback, attention only). When comparing participants that partook in the assessment and feedback versus controls, they found an overall effect size of  $d = 0.423$  based on 1496 participants. The authors concluded that across 17 studies, 66% of the participants who received assessment and feedback as a psychological intervention had better outcomes (e.g., symptomology reduction, self-esteem, hope, self-understanding, feedback satisfaction, working alliance) than the mean control group outcome. Some of the studies included in the meta-analysis will be more thoroughly discussed below.

One of the studies included in the meta-analysis was a study by Allen and colleagues (2003). In this study, 83 adults completed a personality test and were subsequently provided with feedback information from the examiner. Half of the participants received personalized assessment feedback that included results from the Millon Index of Personality Styles Interpersonal Behaviour Scales (MIPS) and descriptions of the two most elevated scales from this measure for the individual. The other half received general information about the personality test that included descriptions of the MIPS as a testing instrument. Those who received the personalized

feedback reported a significantly greater positive relationship with the examiner, lower negative feelings about the assessment, greater positive accurate mirroring (also known as self-verification, refers to the pride and security felt when self-perceptions are confirmed), greater self-awareness, greater self-esteem, greater self-liking, and greater self-competence. Thus, participants reported therapeutic benefits obtained from assessment feedback.

Another study that was included in the meta-analysis was conducted by Newman and Greenway (1997). They compared the therapeutic outcome of university students who received feedback from a psychological test with those who did not at three time points (Time 1 = pre-feedback, Time 2 = post-feedback/control, and Time 3 = two-week follow-up). All participants completed one clinical test— the Minnesota Multiphasic Personality Inventory-2 (MMPI-2)—as well as outcome measures of self-esteem, psychological distress/symptoms (e.g., somatization, depression, anxiety, hostility), and self-consciousness at Time 1. Participants who received feedback met with the examiner to collaboratively discuss their MMPI-2 results and complete the previously mentioned outcome measures. In contrast, participants who did not receive feedback, completed outcome measures and met with the examiner to discuss potential questions that could be added to the study. The same outcome measures were given to all participants again two weeks later. Results indicated that participants who received test feedback reported a significantly greater increase in self-esteem and decrease in psychological symptoms/distress over time than those who did not receive feedback. It was suggested that receiving test feedback could be a form of therapeutic intervention, as it was found to be related to reports of improvements in symptomology and self-esteem.



The therapeutic benefits of test feedback have also been found with individuals seeking interventions for alcohol abuse (i.e., problem drinkers). Another study from Poston and Hanson's (2010) meta-analysis was conducted by Wild, Cunningham, and Roberts (2006). They conducted a randomized control trial comparing 678 problem drinkers receiving personalized assessment feedback by mail regarding their drinking behaviours, to 627 problem drinkers on a waitlist control. Feedback included normative information on consumption of alcohol in the general population, its comparison to the individual's consumption of alcohol, and low-risk drinking recommendations. Drinking behaviours (e.g., frequency, quantity) were assessed prior to feedback, as well as six months later. Individuals who received feedback showed a 10.1% decrease in binge drinking (drinks per-occasion) at six-month follow-up, whereas those in the waitlist group did not significantly change their drinking behaviours. Results from this study suggest that even when personalized feedback is administered remotely, it can have a significant influence on individuals' well-being.

In summary, multiple researchers have identified a relation between the administration of test feedback and therapeutic benefits. In the next section, potential reasons for why these benefits have been observed will be discussed.

### **Why does Test Feedback Have Benefits?**

Many have posited ideas of why participating in psychological assessments yield benefits. The acts of disclosing personal information and receiving assessment feedback may foster psychotherapeutic benefits, such as feelings of relief from self-disclosure, self-verification, self-awareness, self-esteem, and hope (Allen et al., 2003; Finn & Tonsager, 1997).

**Self-disclosure.** Self-disclosure is the revealing of personal information to another. The modern study of self-disclosure is attributed to Jourard who initially viewed it as a personality trait and measured it using the Jourard Self-Disclosure Questionnaire (Jourard & Lasacow, 1958). Jourard believed self-disclosure had an immense impact on individuals' lives. He suggested that self-disclosure was necessary in order to form satisfactory relationships with others and that its use, or lack of use, resulted in either mental health or illness, respectively (Jourard, 1971). Jourard saw self-disclosure as having two primary roles: to facilitate connections with others and to facilitate self-awareness. Both of these roles were examined in the present study.

Since Jourard's initial work, self-disclosure has become more frequently associated with social psychology concepts such as reciprocity (i.e., back-and-forth exchange of information) and increased liking (Derlega & Berg, 1987). Specifically, social penetration theory posits that closeness is obtained through increasingly intimate self-disclosure between people (Altman & Taylor, 1973). For example, individuals who relay personal information to each other may be more likely to form a close, trusting relationship.

Two terms that are commonly used to describe self-disclosed information are *breadth* and *depth*. Breadth refers to the disclosure of numerous facts about oneself in a variety of areas, whereas depth refers to the disclosure of intimate facts about oneself that are not commonly discussed with others. However, there are also times when individuals may be reluctant to self-disclose. Greene, Derlega, and Matthews (2006) proposed four types of reasons why individuals choose to disclose or conceal information: other-focus, relationship focus, situational-environmental focus, and self-focus. Other-focus reasons

are those that may influence the lives of others (e.g., duty to inform, protecting another from being hurt). Relationship focus reasons are those that impact a specific relationship (e.g., desire to increase intimacy, avoid losing the relationship). Situational-environmental focus are reasons that may not be in the individuals' control and are more circumstantial (e.g., availability and knowledge of target person). Finally, self-focus are benefits that directly influence the individual, such as catharsis, self-clarification, and psychological costs.

***Self-disclosure and depression.*** Multiple studies have examined the relation between self-disclosure and depression. A study by Garrison and colleagues (2012) required 121 college students to complete measures of depression symptomology and generalized disclosure tendencies (e.g., their tendency to disclose negative thoughts and emotions to others). They found a negative correlation between depressive symptomology and generalized disclosure tendency. Specifically, the greater participants' tendency to disclose negative thoughts and emotions to others, the less reported depressive symptomology.

This supports previous research conducted by Larson and Chastain (1990). They collected questionnaire data from 306 adults on their tendency to conceal personal information about themselves from others, as well as symptomology of depression and anxiety. They found that individuals who naturally withhold personal information from others (known as *high self-concealers*) reported greater depression and anxiety than individuals who concealed little information about themselves (known as *low self-concealers*). The authors proposed that this finding of greater internalizing symptoms in the high self-concealers may be due to internal stress from actively inhibiting disclosure

behaviours; greater use of self-control coping strategies (e.g., keeping feelings to oneself); or the deprivation of social support when experiences are not discussed with others.

Both of these studies echo Jourard's proposal that self-disclosure facilitates positive mental health. They highlight how the concealment and constraint of disclosing personal information to others is related to increased depression symptomology. Though previous research has found that rapport with a test administrator increases willingness to disclose information, research has yet to examine the relation between self-disclosure and feelings of rapport with a test administrator for individuals experiencing depressive symptoms (Frost, 2015). It is possible that when disclosure is facilitated by a test administrator perceived to be trusting, and if individuals are provided opportunities to discuss their experiences with another person (e.g., test administrator), it may be related to the reporting of fewer depressive symptoms.

The current study will expand what little is known about potential therapeutic benefits from self-disclosing personal information. Specifically, it will explore participants' experiences self-disclosing personal information on online screening tools to a test administrator.

**Thinking about the future: Hope.** Part of the feedback process is providing individuals with recommendations or "next steps" to take. Initially after receiving a diagnosis, individuals may feel unsure of what to do to improve their daily functioning and distress. The recommendations provided by psychologists empower individuals to take action towards positive change. This sense of empowerment may also be a source of hope for the future.

A popular theoretical definition of *hope* comes from the work of Snyder and his colleagues. They define hope as “goal-directed thinking” and believe it consists of three components: goals, agency, and pathways (Snyder, 1994; Snyder, Ritschel, Rand, & Berg, 2006). Goals are the targets individuals aim to achieve. Pathways are the perceived ability to create paths in order to achieve the goals. Agency is the internal drive to use the pathways, whether or not there are barriers. One example may be an individual with depression with the hope of learning more about depression. The goal is to gain new knowledge of their depression and how to reduce symptomology. Pathways are the extent to which the individual believes they can gain the information they seek (e.g., obtain an assessment, feedback, and recommendations from a mental health professional). Finally, agency is their motivation to find a qualified mental health professional and participate in the assessment and feedback process. When new knowledge is gained, it may help foster hope for change.

Some researchers have encouraged psychologists to take a strengths-based approach to writing psychodiagnostic reports (Jimerson, Sharkey, Nyborg, & Furlong, 2004; Rudolph & Epstein, 2000; Saleebey, 1996). By emphasizing a client’s strengths, psychologists can provide hope by emphasizing the assets that clients already have (e.g., available pathways to reach goals) to help improve their well-being. Furthermore, hope has been positively correlated to a strong therapeutic alliance, which in and of itself has been shown to strongly influence treatment outcome (Horvath & Greenberg, 1989; Magyar-Moe, Edwards, & Lopez, 2001). Specifically, results have shown that greater therapeutic alliance scores predicted reductions in depression symptomology (Barber, Connolly, Crits-Christoph, Gladis, & Siqueland, 2000; Klein et al., 2003; Krupnick et al.,

1996). It is possible that the amount of hope garnered from assessment feedback is related to positive psychological well-being (e.g., reduction in the distress experienced from depressive symptoms). Hope from assessment feedback may also be attributed to having a trusting relationship with the psychologist.

Snyder, Cheavens, and Michael (1999) summarized multiple studies that have shown evidence that hope is related to better physical health, greater self-esteem, perceived competence, positive affect and self-worth (Snyder et al., 1997; Snyder et al., 1996). For example, as part of the development of the State Hope Scale, Snyder and colleagues (1996) asked undergraduate students to complete multiple measures of hope, as well as a measure of self-esteem at two time points. Greater hope was correlated with higher self-esteem at both times. Furthermore, it has been found that having a more positive, hopeful disposition is related to less depression and greater life satisfaction (Bailey & Snyder, 2007; Chang, 2003; Chang & DeSimone, 2001; Gilman, Dooley & Florell, 2006). This suggests that those with depression may have less hope and may especially benefit from the future directions that feedback recommendations provide.

**Self-verification.** Another potential benefit of psychological assessments is the sense of comfort and satisfaction that self-verification may bring. *Self-verification* is defined as the “desire to receive feedback from others that is congruent with how they perceive themselves” (McNulty & Swann, 1991). It is possible that when psychologists acknowledge similarities between clients’ self-perception and the results found in the assessment feedback, they can foster self-verification. The more that clients feel that their view of themselves is shared by others, the more validated they can feel. For example, if a client were to believe that he had significant feelings of sadness and this finding was

also conveyed by test results and a test administrator, the client may feel that his sadness is validated, contributing to a consistent self perception.

Self-verification has been proposed by multiple researchers to be a motive for seeking answers from psychologists. Finn and Tonsager (1997) proposed that self-verification is a motive that some clients have going into an assessment in order to gain confirmation of their reality. In contrast, Kohut (1977) suggested that *disintegration anxiety*—an uncomfortable feeling that one’s reality is not true—is what may motivate clients to seek a psychological assessment. Both of these views suggest that it is through self-verification that clients may achieve a sense of psychological stability. Clients may directly seek self-verification if they have received opinions from others (e.g., friends, family members) about themselves that conflict with their own views of themselves. Receiving feedback from a perceived professional may help clients resolve these discrepant views.

Finally, it is possible that when psychologists help clients corroborate their self-concept, any benefits come from the formation of a trusting relationship. One study by Allen and colleagues (2003) examined the relation between positive feelings towards an examiner and self-verification (also known as *accurate mirroring*). After being given feedback on a personality assessment, participants were asked to answer questions regarding the degree of self-verification they felt about the feedback and how they felt towards the examiner providing the feedback. Results showed that greater self-verification (i.e., agreement with the accuracy of the report) was significantly correlated with greater positive feelings (e.g., trust, respect) that participants felt towards the examiners (Allen, Montgomery, Tubman, Frazier, & Escovar, 2003).

**Self-awareness.** The phrase “know thyself”, popularized by the philosopher Plato, has been passed down through generations. Humans have always sought knowledge, and this includes the pursuit of gaining knowledge about oneself. It is possible that obtaining new knowledge about oneself is another benefit of psychological assessments. The desire to learn about oneself and the subsequent accumulation of new information has been called different names by various researchers: *self-discovery* (Finn & Tonsager, 1997), *self-understanding* (Damon & Hart, 1982), and *self-awareness* (Allen, 2001). For the purpose of this study, these processes will be referred to as the latter: self-awareness.

The feedback portion of psychological assessments has been viewed as an intervention that increases self-awareness (Arkowitz, 1992). Specifically, it may provide clients with new insights regarding their symptoms, thoughts, feelings, and behaviours. In a study by Allen (2001), participants who received feedback about their personality based on psychological tests they completed reported greater self-awareness. They reported gaining new understanding, being more aware of their feelings and behaviours, rethinking the way they viewed themselves, and that it was a personally valuable experience. It is possible that receiving feedback from online questionnaires may also contribute to clients’ self-awareness.

Increasing clients’ self-awareness may be an important aspect of providing feedback. A study by Peat and Muehlenkamp (2011) examined the relationship between self-awareness (defined in the study as the ability to accurately recognize one’s physical and emotional internal states) and depressive symptomology. Female university students were asked to complete self-report measures on interoceptive awareness deficits and



symptoms of depression. Results indicated that the more deficits the women had in identifying their internal states, the greater depressive symptomology they reported. By providing meaningful feedback to clients about their internal states (e.g., mood), it is possible that this feedback may influence their self-awareness and reports of depression.

**Self-esteem.** Self-esteem has commonly been defined as an attitude one holds about oneself regarding perceived self-worth, capabilities, significance, and success (Baumeister, 1998; Coopersmith, 1967). Having greater, or “high” self-esteem is considered to be a predictor of, and protective factor for, less depression (Ames, Rawana, Gentile, & Morgan, 2015; Aro, 1994; Scott, Wallander, & Cameron, 2015; Sowislo & Orth, 2013). In other words, perceiving oneself to have high self-worth and competence reduces the risk of developing depression. An analysis of Canada’s National Longitudinal Survey of Children and Youth showed that in Aboriginal youth—a population considered to be at high risk for the development of depression—high self-esteem was a protective factor against symptoms of depression (Ames, Rawana, Gentile, & Morgan; 2015; Tjepkema, 2002). One way that self-esteem may be fostered is through feedback from self-report measures.

Feedback from psychological assessments often reveal insights into one’s performance, skills, personality, intelligence, and behaviours. Depending upon whether the feedback is perceived to be positive or negative by the examinee, it may subsequently impact self-esteem. For example, if feedback results suggest that one’s performance on tasks is above average then it may increase self-esteem. Though it is possible that finding out about the presence of problematic symptomology may decrease self-esteem, multiple studies have found that individuals that receive feedback from psychological measures

regarding psychopathology report higher self-esteem than those that do not receive feedback (Allen, Montgomery, Tubman, Frazier, & Escovar, 2003; Newman & Greenway, 1997). This finding may be due to the informational value of gaining specific details about oneself in the feedback whereby enhanced knowledge of their symptomology contributes to greater perceived efficacy in managing it. Researchers have yet to examine if online feedback also influences self-esteem.

**Rapport with a trusted test administrator.** When considering the processes related to positive therapeutic outcomes (e.g., self-disclosure, positive feelings, self-awareness, self-verification, self-esteem, hope), one possible facilitative factor is rapport established with a trusted test administrator. Rapport has been defined as the combination of mutual attentiveness (i.e., genuine interest), coordination (i.e., synchronous interaction), and positivity (i.e., friendliness and warmth; Tickle-Degnen & Rosenthal, 1990). It helps provide a comforting testing environment to foster a trusting relationship between a test administrator and the test taker. A study by Frost (2015) examined whether only two of Tickle-Degnen and Rosenthal's components—mutual attentiveness and positivity—could foster rapport online with a population of 156 undergraduate students age 18-53 ( $M = 22.25$ ). The combination of these two components was coined *asynchronous rapport*. It was found that the participants who received a warm, friendly introduction by the test administrator prior to completing questionnaires in person reported greater perceived asynchronous rapport with the test administrator. Though not statistically significant, trends were found that also suggested that this finding may replicate online.

The concept of rapport is similar to that of the therapeutic alliance—a collaborative relationship between a therapist and client (Horvath, 2001). For decades the therapeutic alliance has repeatedly demonstrated its effectiveness in bringing about therapeutic change (Norcross, 2001). Therapist self-disclosure about their personal thoughts, feelings, and experiences may have a role in facilitating this effect (Barrett & Berman, 2001; Frost, 2015). Barrett and Berman (2001) examined the therapeutic benefits, such as changes in symptom distress and how much the clients liked their therapist, of therapist self-disclosure in therapy sessions with clients. In the study, adults with depression, anxiety, relationship conflicts, and impulse control problems attended individual therapy sessions with a therapist that was instructed to either self-disclose personal information (e.g., similar struggles in interpersonal relationships, personal thoughts, reactions) or to refrain from disclosing personal information to their clients. Participants also completed measures of symptom distress before treatment began, as well as after every therapy session. In addition, they reported on how much they liked their therapist after every session. It was found that the clients with therapists that had self-disclosed reported significantly less symptom distress and liking their therapist more than clients to whom therapists had not self-disclosed. The authors concluded that there are some therapeutic benefits to therapist self-disclosure, including a decrease in symptom distress. These findings are consistent with Frost's (2015) research in which a test administrator self-disclosed personal information (e.g., career goals, family) in an online video to some participants and not others. The participants who watched the online video with test administrator self-disclosure reported greater perceived rapport with the test administrator than those who did not watch the video. Together, these studies suggest

that test administrator self-disclosure online may positively impact rapport with others and reduce symptom distress, though there is currently limited research on the latter.

### **Online Tools for Assessing Depression**

Many standardized measures have been, or are in the process of being, transformed into online formats. The Beck Depression Inventory, Symptom Checklist 90 Revised, Brief Symptom Inventory, Millon Clinical Multiaxial Inventory, and the Minnesota Multiphasic Personality Inventory, are some of the tests for depression that have been transformed into online formats. Online standardized measures enable clinicians to administer tests remotely and for clients to complete them online at a place and time that is most convenient for them.

For many, the Internet is one of the first places to look for health information. A recent survey of 1200 Canadian internet users found that 30% of respondents used the Internet to search for health-related information (Canadian Internet Registration Authority, 2016). This includes information about mental health. For this reason, the Internet provides an opportunity for clinicians to offer online screening tools to individuals seeking rapid answers to their presenting concerns.

In Australia, there are multiple online screening services available to the public. The e-PASS system made available by Mental Health Online provides a free online psychological screening for 21 disorders, including depression. It takes individuals approximately 10 to 60 minutes to complete, and then a comprehensive report is generated that shows the type and severity of presenting problems ([www.mentalhealthonline.org](http://www.mentalhealthonline.org)). MindSpot ([www.mindspot.org.au](http://www.mindspot.org.au)) is another online screening service in Australia. Over 50,000 Australians have completed the online

screening assessment. The assessment takes approximately 20 to 30 minutes and a feedback report outlining key symptoms is provided to clients in 1 to 2 days. Both Mental Health Online and MindSpot recommend that clients show the screening report to clinicians if concerns are listed so that they may discuss treatment options.

Like Australia, Canadian mental health professionals have seen the potential that providing online services may bring the general public (e.g., better accessibility to services). In 2014, the Mental Health Commission of Canada created a strategy to integrate the use of technology into the mental health system. It is believed that by providing more computerized treatments, online resources, telemedicine (i.e., format of providing health care information over a distance using technology), and support through social media, people in rural and remote areas and the First Nations communities may have better access to mental health services (Mental Health Commission of Canada, 2014). The Mental Health Commission of Canada recognizes that “...using technology to control, detect, screen, or treat an illness is seemingly common. But not for mental health problems or mental illness” (Mental Health Commission of Canada, 2014, p.1).

Despite the Canadian Task Force on Preventive Health Care’s hesitation to recommend routine screenings for depression in the general adult population, multiple online resources are available. In British Columbia, the Here to Help BC Partners for Mental Health and Addictions Information (a collaboration of seven non-profit agencies) provide a free online screening test for depressive symptomology ([www.heretohelp.bc.ca](http://www.heretohelp.bc.ca)). The online screening test requires individuals to complete the Patient Health Questionnaire-9 that provides a total score for depressive symptomology. Individuals are then provided a brief online feedback report. In Alberta, the Calgary

Counselling Centre offers an online screening test for depression (<http://depressionscreen.calgarycounselling.com/english>), and Baycrest Health Sciences in Toronto provides an online Geriatric Depression Scale ([www.baycrest.org](http://www.baycrest.org)). These are only some of the many online resources available to Canadians seeking screening tools for depression.

### **Benefits of Online Assessment**

It has been suggested that the inherent value of online tests is their ability to provide more anonymity, convenience, and accessibility than in-person tests. The proposed advantages of online testing formats will be discussed in more detail below.

**Convenience and accessibility.** Convenience and accessibility refer to the minimal effort required and feasibility to obtain psychological services, respectively. One of the reasons individuals seek online psychological services instead of in-person services is because they are more convenient (Chester & Glass, 2006; Haberstroh, Duffey, Evans, Gee, & Trepal, 2007; Young, 2005). Individuals can take online psychological tests from the comfort of their own home, which eliminates travel expenses. For individuals to benefit from psychological testing, they have to be able to access the tests. The Internet can be accessed by almost all Canadians at home or in designated publicly accessible areas at any time which allows for more flexible scheduling (Rochlen, Zack, & Speyer, 2004; Statistics Canada, 2013a). Individuals that may have the most difficulty accessing in-person psychological testing from licensed psychologists are those living in rural communities. Because most Canadians living in rural areas have access to the Internet (Canadian Radio-television and Telecommunications Commission, 2010), the Internet provides a means of participating in psychological testing from a distance. Finally, online

psychological testing can be more accessible than in-person testing for individuals with physical, mobility, hearing, and language disabilities (Barak & Sadovsky, 2008; Mallen, Vogel, Rochlen, & Day, 2005; Rochlen et al., 2004). By translating traditional paper-and-pencil tests into online formats, it maximizes the convenience and accessibility to those with varying abilities, schedules, and to those living in rural areas.

**Anonymity and the online disinhibition effect.** Individuals seeking psychological testing may wish to maintain as much anonymity as possible to minimize their fear of stigmatization (Corrigan, 2004). Online testing provides more anonymity because they cannot be identified by their appearance (e.g., gender, weight, age, ethnicity; Lapidot-Lefler & Barak, 2012). A similar concept, *invisibility*, may reduce the impact of reactivity and fear of judgment on the therapeutic alliance (Suler, 2004). Invisibility is the ability to conceal facial expressions, gestures, appearance, and vocal reactions from an online communication partner. Online testing allows both the client and examiner to be invisible during an interaction, which may foster a more trusting test administrator-client relationship. For the purpose of this research, invisibility will be incorporated as a part of the larger concept of anonymity.

Anonymity can also greatly affect how individuals choose to respond (i.e., in a socially desirable way or honestly). Social desirability can severely impact the internal validity of psychological testing because it forms a misrepresentation of participants' true responses (Hathaway & McKinley, 1989; Huang, Liao, & Chang, 1998; Nederhof, 1985). A study by Joinson (1999) found that participants who completed a measure online and were anonymous had the lowest social desirability scores. This study suggests that clients who can maintain some anonymity and complete psychological tests online may be less

likely to respond in a socially desirable way, thus contributing to the validity of the test results. Other studies (e.g., Joinson, 2001; Spears, Lea, Corneliussen, Postmes, & ter Haar, 2002; Tanis & Postmes, 2007) have demonstrated how anonymity can elicit online disinhibition that assists psychologists with gathering important information from clients. John Suler (2004) coined the term *online disinhibition effect* to describe the unusually high amount of online expression and disclosure. This effect can be defined as a decrease in behavioural inhibitions online (that can lead to greater self-disclosure) that is thought to be fostered by anonymity (Suler, 2004). In accordance with Altman and Taylor's (1973) social penetration theory, greater self-disclosure may improve the quality of the relationship between the test administrator and client from which a positive, cooperative testing environment may be created. Increased self-disclosure also allows the test administrator to make more informed decisions about the clients' needs based on the greater amount of relevant personal information.

**Therapeutic benefits and how they may present online.** Researchers have yet to examine the relation between online assessments/screening tools and therapeutic benefits (e.g., symptom reduction, feeling positive, greater hope, greater self-esteem, more self-awareness). Much of the current research is on online therapies and their benefits for individuals. It is possible that some of these findings may also apply to online assessments and screening tools.

Barak and colleagues (2008) conducted a meta-analysis that compared the effectiveness of face-to-face therapies with online therapies (effect sizes from 16 studies examining the treatment of depression were included). They found that the two forms of therapy were similar in their effectiveness (Barak, Hen, Boneil-Nissim, & Shapira, 2008).



In addition, the effect sizes for asynchronous (e.g., email) and synchronous (e.g., instant messaging, Skype) online therapies were similar. This suggests that even when there is not back-and-forth communication in real time, or visual cues with the communication partner, online therapy can still facilitate meaningful therapeutic changes. A key component of both synchronous and asynchronous online therapies is the disclosure of personal information online. The process of completing online tests is often asynchronous, whereby the individual self-discloses personal information on their own time. It is possible that completing online screening measures may also facilitate therapeutic change.

For some individuals, disclosing information in online support groups is a way of coping with stressors, including support groups for depression (Beaudoin & Tao, 2007; Eichhorn, 2008; Griffiths et al., 2012; Malik & Coulson, 2008). Similarly, receiving feedback from others through online social media has been found to foster self-esteem for some individuals (Bonds-Raacke & Raacke, 2010; Boniel-Nissim & Barak, 2011; Wilcox & Stephen, 2012). Boniel-Nissim and Barak (2013) studied the relation of online blogging (i.e., personal online written composition) and self-esteem. In the study, adolescents with social and/or emotional difficulties, ages 14 to 17, were instructed to write messages at least twice per week for 10 weeks (with the exception of those assigned to a no-treatment control group). Participants also completed measures of self-esteem at three time points (pretest, post-test, and 2-month follow-up). It was found that the adolescents that wrote online blogs reported higher self-esteem than those in the control condition at post-test and that gains in self-esteem remained stable two months later. The authors concluded that there are some therapeutic benefits to blogging (such as self-

esteem). Taken together, these findings suggest that online self-disclosure can positively impact self-esteem and that its effects are lasting.

Online testing may be comparable to social media, for they are both online environments for self-disclosing information to others that will be read, and feedback on the information is often provided by others (e.g., Facebook comments, results from a test administrator). Zhang (2017) conducted a study with 560 undergraduate participants with Facebook accounts that were asked to answer questionnaires about their experiences self-disclosing about stressful life events on Facebook. Using hierarchical regression analyses, it was found that participants who engaged in more intimate and intentional disclosures on Facebook when experiencing stressful events also reported greater levels of life satisfaction than those who self-disclosed less on Facebook. In the current study, participants may view both online testing and social media as online ways in which to express their concerns, distress, and emotions to others. Similar to the findings using online social media, it is possible that self-disclosing information on online screening acts as a buffer providing some emotional relief.

Research also suggests that using Facebook—a social networking site—may be one online self-awareness activity that affects self-esteem. In a study by Gonzales and Hancock (2011) university students were asked to complete surveys about attitudes towards themselves after being exposed to self-awareness enhancing stimuli. Participants completed measures while having one of the following: (a) their Facebook profile page open, (b) a mirror in front of them, or (c) no mirror and nothing on the computer (control group). A meta-analysis of previous research using mirrors, has shown that looking into a mirror increases self-awareness (Fejfar & Hoyle, 2000). The Facebook page condition

was a new self-awareness activity created for their study that was hypothesized to facilitate self-esteem. The authors believed that the act of viewing one's Facebook profile page may elicit self-awareness because it includes information about oneself that is similar to the information used to enhance self-awareness in other studies (e.g., photographs, personal information; Duval, Duval, & Neely, 1979; Storms, 1973). Results showed that participants that viewed their own Facebook page reported significantly more self-esteem than the other conditions. It is possible that, similar to viewing a Facebook profile page that displays personal information, viewing an online feedback report conveying information about oneself may also foster self-esteem.

Taken together, these studies suggest that online therapy, blogging, and Facebook—all settings for online self-disclosure—facilitate self-esteem. It is possible that another setting for online self-disclosure (i.e., online screening tools) may also enhance self-esteem. Furthermore, research suggests that participating in online therapy sessions (in which clients disclose distressing personal information to a therapist) is positively related to reductions in problematic symptomology. Disclosing distressing information online to a test administrator may also facilitate positive feelings (e.g., feeling good, relief, and comfort) and reduce the distress of symptomology. Researchers have yet to examine the potential therapeutic benefits (e.g., self-esteem, symptom reduction) that completing online screening tools may yield. The present study sought to address this gap in the research. This is an important step in research in order to provide as much assistance to those in distress as early as possible, even at the point of screening.

### **The Present Study**

It is particularly important to have screenings for depressive symptomology due to its higher relation to suicidality than other disorders (Angst, Stassen, Clayton, & Angst, 2002). By identifying those with depressive symptomology and informing them of their difficulties sooner, individuals may be more aware and more inclined to seek resources and treatment sooner.

One way of identifying individuals with depressive symptomology is by researching the best practices for using online screening tools and their effectiveness as a form of treatment. One purpose of the present study was to examine the potential therapeutic benefits of asynchronous psychological testing in order to help those who cannot access in-person services. Specifically, the extent to which online screening tools and feedback: (a) provide an accurate representation of the individual's perceptions (self-verification); (b) contribute to their knowledge about themselves (self-awareness); (c) foster self-esteem; (d) impact feelings of hope/hopelessness; (e) affect symptomology distress; and (f) facilitate rapport with a test administrator. Quantitative methods were used to examine changes in therapeutic benefits.

The second purpose of this study was to examine the relation between self-disclosure and positive feelings (e.g., relief, reassurance, comfort) online. Along with the provision of test feedback, self-disclosure of personally distressing information in online questionnaires may also help alleviate symptom distress by facilitating positive feelings. The implementation of a rapport-building component may facilitate self-disclosure. The present study included a rapport-building video that participants watched in order to encourage self-disclosure on subsequently administered measures. Qualitative methods allowed for exploration of participants' perceptions regarding rapport, feelings, and how

symptom reduction may occur in their relation to self-disclosure. Though quantitative methods were used to examine differences in pre-feedback and post-feedback scores, the qualitative component of this study allowed for further exploration of participants' perceptions on *why* changes occurred (e.g., feelings of relief, comfort, hope, new discoveries) that could not be captured in quantitative measures.

### **Quantitative Hypotheses**

#### **Hypothesis 1: Post-feedback changes.**

*Hypothesis 1a: Increases in post-feedback perspectives.* Because participants received information about themselves from the feedback, it was expected that some of their perspectives regarding themselves and how they view the future would change after reviewing it. Specifically, it was expected that participants' hope, self-esteem, self-awareness would be greater than their scores prior to the feedback in these areas.

*Hypothesis 1b: Decreases in post-feedback scores.* It was expected that the testing procedures (i.e., self-disclosing personal information on questionnaires and reading information provided from the feedback) would decrease symptom severity and feelings of hopelessness. It is possible that self-disclosing information may be a positive experience (e.g., a sense of relief) for individuals experiencing distress and that this may reduce scores on measures of symptomology. Furthermore, receiving feedback and resources about mental health concerns may reduce hopelessness for their future.

*Hypothesis 1c: Feedback format similarities.* In accordance with previous research indicating the similar psychometric properties between paper-and-pencil and online versions of questionnaires, it was expected that measures of symptomology, hopelessness, new awareness, self-esteem, and hope from Part 1 to Part 2 would have

similar levels across feedback formats (Holländare, Askerlund, Nieminen, & Engstrom, 2008; Vallejo, Jordán, Diaz, Comeche, & Ortega, 2007; Zlomke, 2009). That is to say that any changes in scores over time would be unrelated to the feedback format (i.e., computerized or in-person). The information provided to participants in both conditions contained the same content and therefore feedback format was not expected to directly influence scores.

**Hypothesis 2: Differences between pre-feedback and post-feedback scores.** It was hypothesized that post-feedback scores would change from pre-feedback scores due to how the participants perceived the information provided in the feedback. The specific scores that were expected to increase and decrease are outlined.

***Hypothesis 2a: Feedback satisfaction.*** It was expected that pre-feedback and post-feedback score differences would depend on whether participants were, or were not, satisfied with the feedback. For example, participants who found the feedback to be unsatisfactory, perhaps due to information they found discouraging, would negatively influence their reported post-feedback therapeutic benefits (e.g., less hope, lower self-esteem, no reduction in symptom severity). In contrast, participants who found the feedback to be satisfactory (e.g., accurate reflection of their current state), would experience greater hope, self-esteem, and reduction in symptom severity. It was hypothesized that, compared to participants with low feedback satisfaction, participants with high feedback satisfaction would report similar pre-feedback hope, self-esteem, and symptom severity, but greater post-feedback hope, self-esteem, new awareness, and less symptom severity.

***Hypothesis 2b: Self-verification.*** Similar to feedback satisfaction, differences in self-verification were expected to influence pre-feedback and post-feedback scores. For example, if a participant found the information from the feedback to be overly discrepant to their own view of themselves (i.e., low self-verification), it was expected they would not experience therapeutic benefits from the feedback (e.g., less likely to experience symptom reduction or hope). Participants that indicated congruence between the feedback and their self perceptions (i.e., high self-verification) were expected to experience symptom reduction and less distress due to the comfort found in consistencies and predictability. It was expected that participants with low self-verification would report similar therapeutic benefits pre-feedback as those with high self-verification; however, they would report less post-feedback hope, self-esteem and greater symptom severity than participants with high self-verification.

***Hypothesis 2c: New Awareness.*** By providing feedback, participants would gain new knowledge of themselves to varying degrees. It was hypothesized that participants high and low in new awareness would have similar pre-feedback but differing post-feedback scores on self-esteem, hope, reduction in symptom severity. Specifically, those with high new awareness were expected to report greater self-esteem, hope, and reductions in symptom severity post-feedback than those with low new awareness.

***Hypothesis 2d: Asynchronous rapport.*** Experiencing high or low asynchronous rapport with the test administrator was anticipated to affect the pre- and post-feedback scores. It was hypothesized that those with high perceived rapport with the test administrator would report similar pre-feedback therapeutic benefits (e.g., symptom reduction, hope, self-verification, self-esteem) as those with low perceived rapport with

the test administrator but greater therapeutic benefits after feedback. This is in accordance with previously mentioned research on the therapeutic alliance in therapy sessions whereby a trusting relationship with a therapist is related to positive therapeutic benefits (e.g., symptom reduction).

### **Qualitative Research Questions**

Qualitative responses regarding other facets of participants' screening and feedback experiences were also explored to enhance the information gained from quantitative responses.

**Research question 1: Experiencing positive feelings/relief from self-disclosure.** Participants were asked about their experience disclosing—or choosing not to disclose—personal information to the test administrator online to answer the question, “What are participants’ experiences disclosing/withholding information from the examiner and do they find it to be positive?”

**Research question 2: Feedback as self-discovery.** To examine whether participants gained insight after receiving the feedback, participants were asked questions about new discoveries they learned about themselves. This was done in order to answer the question, “Do participants gain new knowledge of themselves following feedback, and if so in what areas (e.g., self-esteem, depressive symptomology)?”

**Research Question 3: Accuracy of feedback.** Participants were asked to provide their opinion on how accurately the feedback reflected their self-perceptions of themselves. This was done to answer the question, “How congruent are participants’ feedback results from online questionnaires and participants’ self-perceptions of their symptomology and distress?”



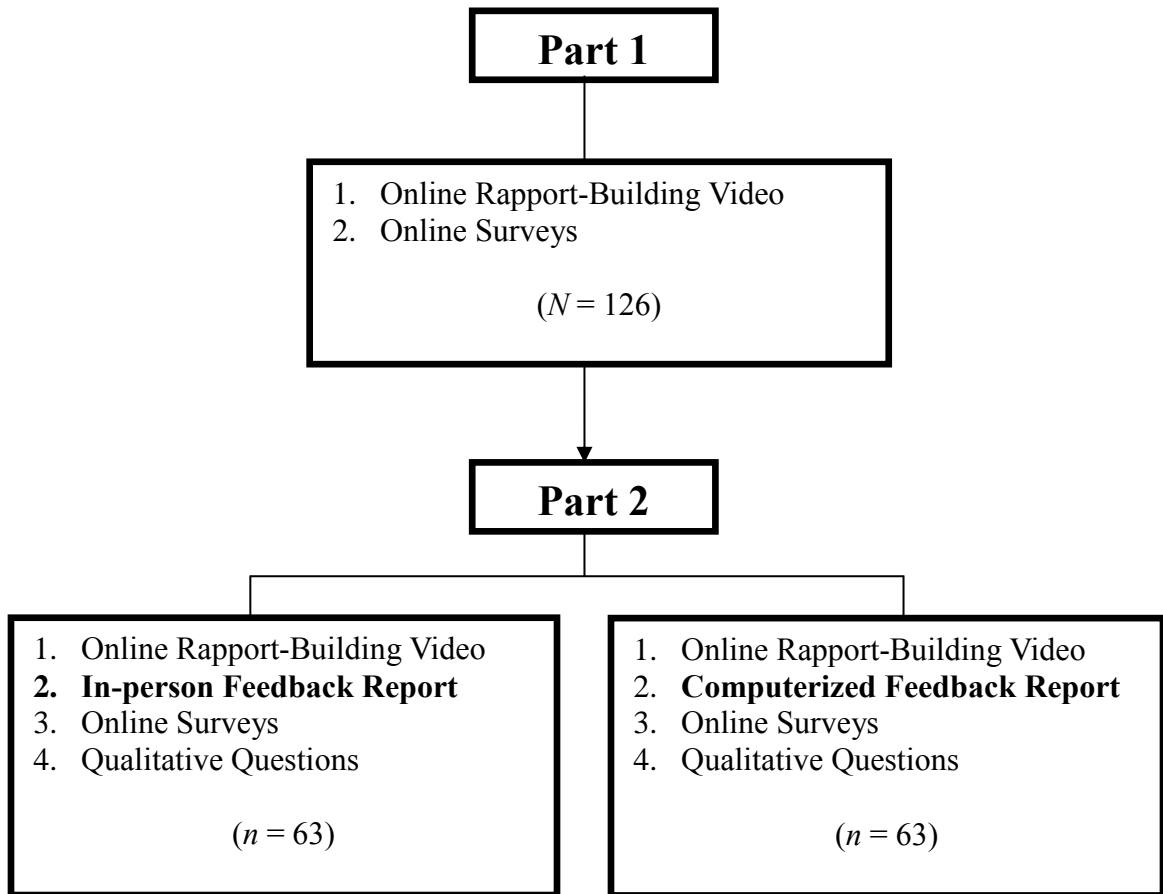
## CHAPTER III

### METHODOLOGY

#### **Study Design and Procedures**

To test the hypotheses and gain a further understanding of participants' feedback experiences, a concurrent triangulation design using quantitative and qualitative methods was conducted (see Figure 1). This type of mixed method design collects quantitative and qualitative data simultaneously and was used in order to corroborate findings from both data collection methods (Creswell, Plano Clark, Gutmann, & Hanson, 2003). The quantitative portion examined the effects of rapport and test feedback on self-disclosure, self-verification, self-awareness, self-esteem, hope, depressive symptomology, and feedback satisfaction using a pretest/post-test design, whereby measures for these variables were administered before and after receiving test feedback. Undergraduate students were recruited to participate in the two-part study. In Part 1, participants completed online self-report measures at a quiet location of their choosing that included two screening tools for depressive symptomology (Patient Health Questionnaire-9 and Depression Anxiety Stress Scale-21). In Part 2, approximately one week later, participants came to the computer lab and received a brief feedback report of their results from the screening tools for depressive symptomology administered in Part 1 (see Appendix A for example). Afterwards, they completed a second set of online questionnaires. The questionnaires included the previously given measures at Part 1 in addition to 14 qualitative questions about their experience receiving feedback.

#### **Participants**



*Figure 1.* Study Design

A power analysis was conducted using G-Power with a moderate effect size, based on the moderate effect size found in Poston & Hanson's (2010) research. The power analysis suggested that approximately 119 participants would be needed. One hundred eighty undergraduate students were recruited through the Psychology Department Participant Pool at a university in Southwestern Ontario. Historically, the Psychology Department Participant Pool has contained a greater proportion of females than males. However, because depression is twice as prevalent in emerging adult females as males, it was an opportune setting for recruitment and screening for depression (Mash & Barkley, 2014). There were no exclusion criteria for participants because the intervention was meant to be an online screening procedure that may be accessed by any adults seeking assistance. Undergraduate students were given a bonus mark toward an eligible course upon completion of each part of the study. The methodology for the present study was approved by the university's Research Ethics Board and participants were treated in accordance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

One hundred twenty-six of the 180 participants had complete, valid data at both time points. In Part 2, 63 participants received their feedback in person with the test administrator and 63 participants received a computerized feedback form. Demographic information for the two feedback format groups can be found in Table 1. Overall, the groups are very similar in age, gender, ethnicity, year of studies, psychiatric disorders, physical disabilities, medication use, therapy use, and ability to use the Internet. The 126 participants ranged in age from 17 to 45 years ( $M = 20.67$  years,  $SD = 3.72$  years). Most participants self-identified as Female ( $n = 108$ , 85.7%). One participant preferred not to

Table 1

*Demographic Information for the Feedback Format Groups*

Variable	Computerized Format ( <i>n</i> = 63)	In-Person Format ( <i>n</i> = 63)
Gender		
Male	6	11
Female	57	51
Age	<i>M</i> = 20.32	<i>M</i> = 21.03
Ethnicity		
Aboriginal	0	1
Arab/West Asian	8	7
Black	3	1
Chinese	3	1
Filipino	0	1
Korean	0	1
Latin American	0	1
South Asian	4	7
South East Asian	3	2
White	40	35
Other	1	5
Year of Studies	<i>M</i> = 2.78	<i>M</i> = 2.87
Psychiatric Disorder		
Major Depressive Disorder	5	7
Bipolar Disorder	1	0
Generalized Anxiety Disorder	5	6
Social Anxiety Disorder	2	1
Specific Phobia	0	1
Obsessive-Compulsive Disorder	1	2
Other	3	0
Treatment	4	3
Taking Medication		
Participating in Therapy	0	0
Physical Disability (e.g., motor impairment)	0	3
Internet Self-Efficacy	<i>M</i> = 41.38	<i>M</i> = 41.95

*Note.* Internet Self-Efficacy was measured using the Internet Self-Efficacy Scale (Chung, Park, Wang, Fulk, & McLaughlin, 2010). All other demographics were self-reported on the Background Information Questionnaire. Three participants did not disclose their age, one did not disclose their gender, and two did not disclose their ethnicity.

disclose gender ( $n = 1$ , 0.8%) and the remainder identified as Male ( $n = 17$ , 13.5%). The majority of participants self-identified as White ( $n = 75$ , 59.5%), whereas the remainder self-identified as Aboriginal ( $n = 1$ ), Arab/West Asian ( $n = 15$ ), Black ( $n = 4$ ), Chinese ( $n = 4$ ), Filipino ( $n = 1$ ), Korean ( $n = 1$ ), Latin American ( $n = 1$ ), South Asian ( $n = 11$ ), South East Asian ( $n = 5$ ), Other ( $n = 6$ ) or preferred not to disclose their ethnicity ( $n = 2$ ). Thirty-eight participants were in their third year of study, in comparison to 32 in fourth year, 28 in first year, 18 in second year, and 10 in their fifth year or beyond.

Participants reported their current psychological and physical disabilities. Twenty participants reported having at least one psychological disorder and three participants reported having a physical disability. Specifically, 12 participants reported having Major Depressive Disorder, 11 reported Generalized Anxiety Disorder, 3 reported Social Anxiety Disorder, 3 reported Obsessive Compulsive Disorder (OCD), 1 reported Bipolar Disorder, 1 reported a Specific Phobia, and 3 reported having “Other” psychological disorders. Seven participants reported that they were receiving a form of pharmaceutical treatment for their psychological disorder and no participants reported receiving therapeutic services. Three participants reported having a motor impairment (e.g., paralysis, muscle disease).

Participants reported their confidence using computers and the Internet on the Internet Self-Efficacy scale (ISE). The majority of participants strongly agreed that they feel confident (a) sending emails (61.9%), (b) saving email attachments (73%), (c) using a search engine (75.4%), (d) using discussion forums (53.2%), (e) attaching files to emails (78.6%), (f) downloading files and software (60.3%), and (g) chatting on the Internet (52.4%).

The validity of participants' data was examined and removed if deemed invalid. Participants who stated on the debriefing questionnaire that their responses were "Mostly Untrue" ( $n = 1$ ) or "Completely Untrue" ( $n = 2$ ) were removed from the study. Finally, three other participants were removed due to failing instructional validity questions and technical difficulties with the video. The procedure for identifying invalid data and outliers is discussed further in the Data Preparation section below.

## **Measures**

Participants completed ten measures that assessed background information, symptomology, self-esteem, hope, rapport with the test administrator, self-verification, self-awareness, and feedback satisfaction. In addition, participants completed 14 qualitative questions about their experiences in the study. See Appendix B for a summary of these measures.

**Background information.** Participants completed a questionnaire that included a series of multiple-choice and fill-in-the blank items. Items assessed background characteristics such as age, gender, program of study, and ethnicity (see Appendix C). Participants also provided a history of past and/or present psychopathology and medical conditions. Students who identified as having a past or current psychological or medical disorder were asked about their use of medication and participation in treatment.

**Internet Self-Efficacy measure (Chung, Park, Wang, Fulk, & McLaughlin, 2010).** Participants were asked to provide information on their comfort using online applications. The Internet Self-Efficacy measure is a 10-item self-report measure used to assess how confident students are in their ability to use the Internet. Participants responded to items such as, "I feel confident sending e-mail messages," and "I feel

confident finding information by using a search engine,” on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores represented greater competency in Internet use. The Internet Self Efficacy scale has been found to have high internal consistency with a Cronbach’s alpha of .85. In a study by Frost (2015), the Cronbach’s alpha was .85 on the paper-and-pencil format and .87 on the online format. The Cronbach’s alpha in the present study was .87. It has demonstrated strong convergent validity, with significant correlations with measures of perceived technology affordances, perceived ease of use and usefulness of online communities, and behavioural intention to participate in online communities (Chung et al., 2010).

**Symptomology.** Participants were asked to complete two measures of symptom distress. One of the measures solely assessed depressive symptomology. The other measure assessed depressive symptomology in addition to comorbid symptomology (e.g., anxiety, stress). Together, these measures were used to compare reductions in different symptomology and their scores were presented on the feedback reports that participants received.

***Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001).***

The PHQ-9 is a 9-item self-report measure that examined the severity of depressive symptoms over the past two weeks. Items reflect the diagnostic criteria of MDD as outlined in the *Diagnostic and Statistical Manual of Mental Disorders 5<sup>th</sup> Edition* (American Psychiatric Association, 2013). A 4-point Likert-type scale is used, ranging from 0 (*not at all*) to 3 (*nearly every day*), to evaluate the frequency of depressive symptoms such as, “Feeling down, depressed, or hopeless”. Higher scores represent greater severity of depressive symptoms. The following score ranges have been suggested

for interpretation of symptom severity: *minimal* (1 to 4), *mild* (5 to 9), *moderate* (10 to 14), *moderately severe* (15 to 19), *severe* (20 to 27). Criterion validity of these cutoff points was established by comparing 580 clients' scores on this measure to responses on a structured interview administered by mental health professionals. The positive likelihood ratios increased as the score ranges increased from 0.04 (minimal), 0.5 (mild), 2.5 (moderate), 8.4 (moderately severe), and 36.8 (severe), respectively. In addition, ROC analysis revealed an area under the curve of .95 for detecting MDD. When the total score was equal to, or greater than, ten, there was a sensitivity of 88% and a specificity of 88% for detecting MDD. Kroenke and colleagues (2001) found good internal reliability, with Cronbach's alpha coefficients ranging from .86 to .89, and test-retest reliability was established with a correlation coefficient of .84. Construct validity was determined by strong correlations with the number of sick days taken from work, functional status, and a measure of general health (Kroenke et al., 2001). Criterion validity have been confirmed in two validation studies that assessed the tool as a diagnostic and severity measure (Kroenke & Spitzer, 2002). The present study demonstrated a Cronbach's alpha of .89 in Part 1 and .87 in Part 2.

***Depression Anxiety Stress Scales-21 (DASS-21; Lovibond & Lovibond, 1995).***

The DASS-21 is a 21-item shortened version of the 42-item DASS that measures symptoms of depression, anxiety, and stress over the past week using a Likert-type scale, ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*). The shortened version was used because it does not contain items deemed problematic from the 42-item DASS and it has demonstrated clear factor structures (Henry & Crawford, 2005). It has three subscales: depression, anxiety, and stress. The



depression subscale consists of seven items that measure the severity of distress from depressive symptoms (e.g., “I felt down-hearted and blue”). The following severity score ranges have been suggested for interpretation of the depression scale: *normal* (0 to 4), *mild* (5 to 6), *moderate* (7 to 10), *severe* (11 to 13), *extremely severe* (14 and greater). The anxiety subscale consists of seven items that measure the severity of distress from anxiety (e.g., “I felt I was close to panic”). The following severity score ranges have been suggested for interpretation of the anxiety scale: *normal* (0 to 3), *mild* (4 to 5), *moderate* (6 to 7), *severe* (8 to 9), *extremely severe* (10 and greater). The stress subscale consists of seven items that measure the extent to which one has ongoing tension and is easily distressed or aggravated (e.g., “I found it difficult to relax”). The following severity score ranges have been suggested for interpretation of the stress scale: *normal* (0 to 7), *mild* (8 to 9), *moderate* (10 to 12), *severe* (13 to 16), *extremely severe* (17 and greater). Internal consistency was measured and yielded Cronbach’s alpha coefficients of .94 for the depression scale, .87 for anxiety, and .91 for stress (Antony, Bieling, Cox, Enns, & Swinson, 1998). Concurrent validity of the DASS-21 depression scale with the Beck Depression Inventory (BDI) was  $r = .79$ . Concurrent validity of the DASS-21 anxiety scale with the Beck Anxiety Inventory (BAI) was  $r = .85$ . Concurrent validity of the DASS-21 stress scale was established with the BDI, BAI, and State-Trait Anxiety Inventory-Trait version scales, resulting in correlations of  $r = .69$ ,  $r = .70$ , and  $r = .68$ , respectively. Responses on the DASS-21 by clinical populations have shown that individuals with MDD tend to score highest on the depression and stress scales, whereas individuals with panic disorder tend to score highest on the anxiety scale (Antony et al., 1998). In the present study, internal consistency yielded Cronbach’s alpha coefficients of

.88 for the depression scale, .82 for anxiety, and .83 for stress in Part 1 and Cronbach's alpha coefficients of .88 for the depression scale, .83 for anxiety, and .78 for stress in Part 2.

**Hope.** Participants were asked to complete two measures of hope: one to assess current feelings of hope and one to assess general and current feelings of hopelessness. Five additional questions were asked that assessed hope fostered by the current study's procedures.

*State Hope Scale (Snyder et al., 1996).* The State Hope Scale measures how hopeful participants feel in the moment. It is a 6-item self-report measure that uses an 8-point Likert-type scale, ranging from 1 (*definitely false*) to 8 (*definitely true*), to answer items such as, "If I should find myself in a jam, I could think of many ways to get out of it". There are two subscales – agency and pathways — each comprised of three items. Agency measures the belief that one is capable of starting and persevering in order to reach goals. Pathways measures the belief that one is capable of generating ways to accomplish goals. The total score is the sum of the item scores, in which high scores represent greater hope. Snyder and colleagues (1996) found that test-retest reliability measured every day for thirty days had correlation coefficients ranging from .82 to .95 for the total scale, .83 to .95 for the agency subscale, and .74 to .93 for the pathways subscale. Convergent validity with the Dispositional Hope Scale was  $r = .78$  and  $r = .79$ . The structure of the *State Hope Scale* was recently re-evaluated by Martin-Krumm and colleagues (2015), and they found that the two-factor structure (agency and pathways) continued to have the best fit. The Cronbach's alpha coefficients for total scores in the present study were .90 in Part 1 and .89 in Part 2.

Five additional questions, based on the State-Trait Hopelessness Scale, that assessed dispositional hope, specifically regarding this study, were asked (Appendix D). Items were rated on an 8-point Likert-type scale, ranging from 1 (*definitely false*) to 8 (*definitely true*), to answer items such as, “Participating in this study has made me feel hopeful about my future”. Scores for each question were examined individually, for which higher scores represented greater hope at the time of testing.

***State-Trait Hopelessness Scale (STHS; Dunn et al., 2014)***. The STHS measures how hopeless participants feel in the moment and in general. It is a 23-item self-report measure that uses a 4-point Likert-type scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). It has two subscales: state hopelessness and trait hopelessness. State hopelessness consists of 10 items that measure feelings of hopelessness in the present moment (e.g., “Today it is difficult for me to imagine my future”). Trait hopelessness consists of 13 items that measure feelings of hopelessness, in general (e.g., “Typically things do not work out as I would like”). The score for each subscale is the average of the responses, with higher scores representing greater hopelessness. Dunn and colleagues (2014) found very good internal consistency reliability, with Cronbach’s alpha coefficients of .87 for the state scale and .91 for the trait scale. Concurrent validity with the Beck Hopelessness Scale was  $r = .58$  with the state scale and  $r = .60$  with the trait scale. Concurrent validity with the PHQ-9 was  $r = .36$  with the state scale and  $r = .40$  with the trait scale. For the present study, the Cronbach’s alpha coefficients for State hopelessness were .86 in Part 1 and .88 in Part 2 and for Trait hopelessness were .91 in Part 1 and in .92 Part 2.

**Rosenberg Self Esteem Scale (RSES; Rosenberg, 1965).** The RSES is a 10-item self-report measure used to assess global self-esteem. Participants responded to items on a 4-point Likert-type scale, ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). Higher scores represented lower self-esteem. Items on the RSES can be classified into two themes (self-competence and self-liking) that are not individually scored but rather are summed into an overall total score. The five self-competence items measure one's perceived capability of successfully pursuing goals such as, "I feel that I have a number of good qualities". The remaining five items form the self-liking scale measures one's perceived personal worth such as, "I certainly feel useless at times". The ten items are summed into a full-scale score. The RSES has been shown to have high internal consistency reliability, with a Cronbach's alpha of .92. Robins and colleagues (2001) measured test-retest reliability of the RSES at six time points over four years. When the correlations were averaged, a mean of .69 was reported. The RSES has demonstrated strong convergent and discriminant validity with 27 variables, including domain-specific self-evaluations (e.g., academic ability), self-evaluative biases (e.g., self-enhancement bias), personality (e.g., agreeableness, neuroticism), psychological and physical well-being (e.g., depression, perceived stress, life satisfaction; Robins, Hendin, & Trzesniewski, 2001). In the present study, the Cronbach's alpha coefficients were .91 in Part 1 and .91 in Part 2.

**Assessment Questionnaire-2 (AQ-2; Allen, 2001).** The AQ-2 has four factors that were used to measure four separate variables in this study: Positive Accurate Mirroring, New Self-Awareness/Understanding, Negative Feelings, and Positive Relationship. Items within each factor measured the participants' immediate experiences

regarding the current study's testing procedures. This study used the adapted version of the measure created by Allen (2001) for non-clinical populations which was based on the original measure developed by Finn and Tonsager (1994). Items were rated on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Item scores were summed for each factor. Due to administration error, seven items from the AQ-2 were not administered to participants. Four items from the New Self-Awareness/Understanding subscale ("I came to think of myself as I never had before"; "Participation in this experiment made me rethink the way I already viewed myself"; "I feel that participation in this experiment was a positive and valuable experience for me as a person"; and "I would recommend that a friend go through this testing experience") were not administered. One item each from the Negative Feelings subscale ("I felt exposed"), Self-verification subscale ("Thoughts and feelings I have about myself were described"), and Positive Relationship subscale ("The questions I had after taking the tests were sufficiently answered") were not administered. Fortunately, the subscales maintained strong reliabilities as described below.

***Positive accurate mirroring.*** Self-verification was measured using Positive Accurate Mirroring. This factor of the AQ-2 measured the extent to which participants felt their self-perceptions were verified by the feedback they received in the study. It consists of 11 self-report items, such as, "This experiment captured the 'real' me." Scores are summed and higher scores represent greater feelings of self-verification (e.g., pride, security). This subscale has been found to have high internal consistency, with a Cronbach's alpha of .91. The present study had a Cronbach's alpha of .86 in Part 1 and .82 in Part 2.

***New Self-Awareness/Understanding.*** Self-awareness was measured using the New Self-Awareness/Understanding factor. It measured the extent to which participants felt they gained new insights about themselves after the testing. It consists of 13 self-report items such as, “The examiner introduced me to new aspects of myself.” Item scores are summed, and higher scores represent greater feelings of self-awareness and self-discovery. This subscale has been found to have high internal consistency, with a Cronbach’s alpha of .94. The present study had a Cronbach’s alpha of .84 in Part 1 and .86 in Part 2.

***Negative feelings.*** The Negative Feelings subscale was used to assess the construct validity of the Feedback Assessment Questionnaire (see Feedback Assessment Questionnaire below). It measures the extent to which participants feel dissatisfied or uncomfortable with the testing in the current study. It consists of 9 self-report items that are summed, such as, “Participation in this experiment was emotionally draining.” Higher scores represent stronger feelings of being judged and hurt. This subscale has been shown to have strong internal consistency with a Cronbach’s alpha of .88. The present study had a Cronbach’s alpha of .86 in Part 1 and .85 in Part 2.

***Positive relationship.*** Positive Relationship measures the extent to which participants feel rapport with the test administrator. It was used to support the construct validity of the FROST (see below). It consists of 12 self-report items such as, “It was easy to trust the examiner.” Item scores are summed, and higher scores represent greater positive feelings towards the test administrator. This subscale has been found to have high internal consistency, with a Cronbach’s alpha of .92. The present study had a Cronbach’s alpha of .88 in Part 1 and .86 in Part 2.

**Frost's Rapport Observations: Survey of Test administrators (FROST; Frost, 2015).** The FROST was used to examine the perceived rapport that participants feel with the test administrator (Appendix E). The initial items on the measure were created using selected themes from a meta-analysis by Gremler and Gwinner (2000) that compared researchers' definitions of rapport: comfort, researcher competence, trust, likeability, acceptance, respect, understanding, connectedness, value, and sincerity. Items were also based on Anderson & Anderson's (1962) Rapport Rating Scale, which is used to assess rapport between a client and therapist after multiple sessions. The FROST consists of 43 items that are rated on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Twenty-one items ask participants to rate how they feel about the test administrator (e.g., "I feel comfortable with the test administrator"). The remaining 22 items ask participants how much they believe the test administrator has a characteristic representative of good rapport (e.g., "The test administrator seems friendly"). All 43 items are summed into a total score.

Prior research using the FROST indicated that it measured a single construct. Principal components analysis found that there was minimal increase in the percentage of variance explained beyond the first factor that was extracted. The factor explained 41.04% of the variance. Because the FROST is a relatively new measure, its psychometric properties were also evaluated in the present study. There was high internal consistency with Cronbach's alpha values of .96 in Part 1 and .95 in Part 2. Frost (2015) found a high internal consistency, with a Cronbach's alpha of .97. Its test-retest reliability was assessed across the two time-points in the current study and a strong correlation using Pearson's  $r$  was found,  $r = 0.78, p < 0.001$ . Construct validity was examined using

correlations with the Positive Relationship measure at both time points. Strong correlations were found at Part 1 ( $r = 0.42, p < 0.001$ ) and at Part 2,  $r = 0.70, p < 0.001$ . Separate principal components analyses were conducted for each part. Nine components had eigenvalues greater than one for Part 1. The first factor explained 38.10% of the variance and there was minimal increase in the percentage of variance explained beyond the first factor. Ten components had eigenvalues greater than one for Part 2. The first factor explained 36.33% of the variance and similarly, there was minimal increase in the percentage of variance explained beyond that. Scree plots were also examined and indicated that only one factor should be extracted.

**Feedback assessment questionnaire (FAQ; Allen, 2001).** This measure assessed participants' experiences completing psychological measures and receiving feedback about their responses. It is a 7-item self-report measure that uses a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), to answer items such as, "I feel that the information I received is very useful to me as a person". The total score is the sum of the item scores. High scores represent greater satisfaction with the testing and feedback experience. The items were determined to have face validity. Allen and colleagues (2003) found strong internal consistency reliability as indicated by a Cronbach's alpha coefficient of .90. The present study found a Cronbach's alpha coefficient of .81. Construct validity was examined using correlations with the Negative Feelings subscale from the AQ-2. A strong correlation was found whereby as feedback satisfaction scores on the FAQ increased, Negative Feelings scores decreased ( $r = -0.27, p = 0.003$ ).



**Validity check.** Participants were asked three questions in order to determine the validity of their responses at the end of the study, as well as five instructional validity checks throughout the questionnaires. First, they were asked with an open-ended question what topic they believe the research was examining. Second, participants were asked how truthful their responses were, with response options including: completely untrue, mostly untrue, balance of true and untrue, mostly true, and completely true. Participants that had more untrue responses than truthful responses had their data removed from data analyses. Finally, after participants were given their feedback to read, they were asked to briefly summarize what they remembered from the feedback. This ensured that participants were reading the personalized feedback that was provided to them. The instructional validity checks consisted of five questions that asked participants to select a specific answer (e.g., “If you are reading this question, select 1 as the answer”). This examined how attentive participants were to the questions. The validity of participants’ data is elaborated on further in the Results section.

**Qualitative questions.** Participants were asked to provide responses to 14 qualitative questions incorporated in the computer survey in Part 2 after having completed the previously mentioned measures. Questions were developed by the author to gain more detailed explanations of participants’ experiences (a) participating in the study and (b) receiving their test feedback (see Appendix F for qualitative questions). Specifically, three questions explored participants’ self-disclosure tendencies including “Describe how you feel when you’re asked to talk about your emotions to others.” Three questions explored participants experiences in the current study, such as, “How did you feel when answering personal questions about yourself on the questionnaires in this

study?” Three questions explored potential gains in new awareness, such as, “Did you learn anything about yourself from the feedback report? If so, what?” Three questions explored participants’ experience of self-verification and perceived report accuracy, such as, “Were there things in the feedback you already knew? If so what?”. Two additional questions explored participants’ perceptions of the test administrator and how this may relate to rapport and self-disclosure. They were “Describe the test administrator’s personality traits and characteristics” and “Was there anything about the test administrator’s personality/appearance/demeanor that made you want to tell them more about yourself and/or withhold information? If so, what?”

*Qualitative coding.* Braun and Clarke’s (2006) thematic analysis approach followed by content analysis were used to analyze the participants’ responses from the 14 qualitative questions in Part 2. To begin, responses were downloaded by a research assistant from the online survey website into Word documents that were subsequently compiled in QDA Miner Lite version 2.0.2, a software program for analyzing qualitative data. This program was used to visually code and organize the data. The research assistant responsible for downloading the qualitative responses was a fourth-year undergraduate in Disability Studies.

Braun and Clarke’s thematic analysis approach consists of six phases: familiarization with the data; coding; searching for themes; reviewing themes; defining and naming themes; and writing up. Phase 1, becoming familiar with the data, requires the researcher to read and re-read transcripts while noting any observations. In the present study the qualitative responses were read through several times by the primary researcher and potential codes were listed. Codes were determined to be meaningful if they provided

insight into participants' self-disclosure tendencies, feelings and reactions to the study, and impressions of the test administrator. At this point, a 2<sup>nd</sup> year Psychology undergraduate was trained as a research assistant. The primary researcher initially met with the research assistant for a couple hours to train her on the QDA Miner Lite program. Two 60-minute meetings were arranged to discuss preliminary codes and to conduct practice coding on fabricated responses.

In Phase 2 (coding), a thorough list of codes was created for each of the 14 questions (i.e., labels, definitions, key words, examples). Codes in Phase 1 were more clearly defined and additional codes were created after re-reading the responses with the faculty supervisor and research assistant. The primary researcher and research assistant coded participant responses independently. To start, the research assistant submitted her coding to the primary researcher after coding each set of 30 responses. The primary researcher provided clarification if the research assistant was unsure of specific codes and coding discrepancies were discussed. As the research assistant developed competence in coding, the primary researcher checked in with the research assistant every 60 responses regarding coding concerns. A total of 1848 participant responses were coded and reviewed by both the primary researcher and research assistant.

Codes were measured by their presence or absence from the response, and participants could receive multiple codes within their response. For example, even if multiple sentences endorsed the code "Catharsis", the participant only received credit once for its presence in the response. If one sentence supported the code "Catharsis" and another sentence supported the code "Comfortable" then the participant would receive credit for the presence of both of these codes in their response.

Inter-rater reliability was calculated using a percent agreement calculation by taking the number of matching codes (i.e., “hits”), subtracting the number of discordant codes (i.e., “misses”), and dividing by the total number of coded segments. The percent of code agreement varied from 0.72 to 0.93 across the 14 qualitative questions. All coding discrepancies were discussed with the primary researcher, faculty supervisor, and research assistant to collaboratively confirm codes. These final codes represented the unique meaningful ideas that would become the data for integrative analyses (i.e., content analysis of codes based on specific group membership; see Integrative Analyses section). Additional data reduction occurred for the qualitative analyses.

In Phase 3 (searching for themes), codes with similar conceptual meanings were combined into larger themes after consensus for the individual codes was established. For example, the codes “Positive Feeling” and “Comfortable” were combined into the larger theme “General Positive Feeling” reflecting participants’ experience of a feeling with a positive salience. In Phase 4 (reviewing themes), themes for each of the 14 questions were organized further based on the initial question groupings (e.g., self-disclosure, self-awareness). In other words, more inclusive themes were generated to understand: (1) Participants’ Self-Disclosure Tendencies (themes for questions 1-3), (2) Personal Experience within the Study (themes for questions 4-6), (3) New Self-Awareness (themes for questions 7-9), (4) Self-Verification (themes for questions 10-12), and (5) Perceptions of the Test Administrator (themes for questions 13-14). In Phase 5 (defining and naming themes), a final list of themes for each grouping of questions was formed. It included a condensed list of theme names, descriptions, and examples. The themes were then

summarized in written form (Phase 6; see Qualitative Results section for complete coding schemes).

*Content analysis.* As part of the concurrent triangulation design, once the qualitative data had been coded, content analysis was used to examine the frequency of codes that related to the study's research questions and hypotheses. Content analysis includes a review of the specific units to be measured. Units can be individual words, phrases, or concepts. For this study, individual codes that represented concepts were the units that were measured. Another aspect of content analysis requires the researcher to not only examine the frequency of codes, but also what groups of individuals are reporting them (Morgan, 1993). Frequencies of codes were examined for seven groups of participants (see Integrative Analyses section for further details).

## **Procedures**

With clearance from the University of Windsor's Research Ethics Board, participants were recruited through the participant pool. Once signed up through the participant pool website, participants were provided with the study website address and were able to log on to complete the measures at home or a quiet location of their choosing. A consent form and asynchronous rapport video were presented online prior to the measures. Participants were unable to begin the measures unless they checked a box stating that they watched the entire asynchronous rapport video. The order that tests were completed was randomized except for the FROST and the Assessment Questionnaire-2. The FROST was administered first so that participants could readily recall their encounter with the test administrator on the video and how that encounter made them feel (e.g., comfortable, anxious, willing to self-disclose information). The AQ-2 was

completed last so that participants could reflect on their experiences having answered the test questions.

Approximately one week later, participants came into the lab and read a brief feedback report of their symptomology results (Part 2). There were two feedback format conditions to which participants were assigned. Block randomization was used to assign participants to either the computerized feedback format or the in-person feedback format. This ensured that a similar number of participants were in each group. For both formats, the feedback included raw scores, interpretive statements, and summary of main findings from the PHQ-9 and DASS-21. Sixty-three participants had the feedback report read to them by the test administrator and were given a paper copy. Sixty-three participants were shown the feedback report in a computerized word document and read it on their own. Due to the sensitive nature of some items (e.g., suicidal ideation), the current study did not include a “no feedback” control group. For ethical reasons, it was imperative that the examiner provide feedback to all participants that reported depressive symptomology and suicidal ideation. The current study procedure aligns with what is typically practiced by clinicians, whereby clients receive feedback after completing questionnaires about their symptomology (Canadian Psychological Association, 2017).

After having received the feedback report, participants completed the second set of online questionnaires. The second set of questionnaires included all of the measures administered the week prior in addition to the Feedback Assessment Questionnaire and open-ended qualitative questions. Qualitative information was gathered in order to gain a more comprehensive understanding of participants’ experiences disclosing sensitive information, completing psychological screening tools, and receiving feedback.

Participants were thanked, compensated, and provided with three pieces of information: a letter of information about the study, a list of community mental health resources for students (Appendix G), and a hard copy of their feedback report.

At any point during the study if there were self-harm concerns regarding any participants, criteria and protocol were followed by the examiner (see Appendix H). Twenty-four participants endorsed the item from the PHQ-9 “Thoughts that you would be better off dead or of hurting yourself in some way” and self-harm protocol was followed with them. All but one participant was deemed to have only Mild self-harm concerns. One participant met criteria for Moderate self-harm concerns due to a prior self-harm attempt in the past. For participants that did not indicate self-harm concerns but reported high levels of depressive symptomology (i.e., score of 20 or greater on the PHQ-9; score of 11 or greater on the DASS-21), they were encouraged to review the mental health resources available to them as outlined in the Resource Sheet given to all participants (Appendix G).

## **Materials**

**Rapport-building videos.** Two asynchronous rapport-building scripts were developed for the study, one for Part 1 and a second for Part 2. The scripts were performed by the test administrator (the author) and recorded in the form of an online video for participants to watch (see Appendices I & J). The video scripts were adapted from Frost’s (2015) previous asynchronous rapport video. In addition to instructions for the task, the video includes rapport-building features such as welcoming the participant and introducing the test administrator using self-disclosure about her academic program, research interests, and family. These features are in accordance with prior research on

building rapport (Bronstein et al., 2012; Ehrlich & Graeven, 1971; Sattler, 2009; Sprecher, Treger, Wondra, Hilaire, & Wallpe, 2013). In the videos, the test administrator used verbal (warm, expressive vocal quality) and nonverbal behaviours (smiling, direct body orientation, small gestures) that facilitate rapport in ways consistent with previous research (Tickle-Degnen & Rosenthal, 1990). Faculty, graduate students, and undergraduate students ( $n = 6$ ) within the department were consulted for their professional opinion regarding the extent to which they observed smiling, direct body orientation, warm vocal quality, and gestures in the videos. They all reported that they observed: a smile, direct eye contact, a gesture/hand movement, forward facing body posture, and a warm vocal quality in both videos. The online video at Part 1 was 58 seconds long and the online video at Part 2 was 50 seconds long. Participants were instructed to watch the video immediately before completing the measures.

**Feedback report.** Participants read an online feedback report in Part 2 of the study that presented their self-reported results from symptomology measures given in Part 1. Providing feedback to participants has been found to be an important part of the assessment process that is related to therapeutic benefits (Poston & Hanson, 2010). In the present study, four sections comprised the feedback report: description, depression screening scores, main findings, and a disclaimer note (see Appendix A). The description contained the title of study, notified participants that the information was for information purposes only and is not diagnostic, as well as the researcher's contact information. The depression screening scores listed participants' raw scores and the corresponding descriptor (e.g., Mild, Moderate, Severe) from the PHQ-9 and DASS-21. The main findings highlighted the descriptors in sentence format to clarify the interpretation of the



scores. Finally, participants read a note regarding how they should proceed if they had any concerns about the feedback report. Participants were given a hard copy of the feedback report after they were debriefed in Part 2.

## CHAPTER IV

### RESULTS

The results are divided into five main sections: Data Preparation, Quantitative Analyses, Qualitative Analyses, Integrative Analyses, and Supplementary Analyses. The Data Preparation section contains information about how missing data were handled and how preliminary data were analysed (e.g., order effects, assumptions). The Quantitative Analyses section examines the statistical results for both of the two hypotheses. The Qualitative Analyses section examines the themes that emerged for each of the fourteen questions. The Integrative Analyses section examines the main qualitative themes that emerged for specific groups identified using quantitative analyses (e.g., participants with depressive symptomology, participants that experienced symptomology reduction). The Supplementary Analyses section provides additional information on participants' trust in the accuracy of the feedback, feedback format preference, and feelings of hope.

#### **Data Preparation**

**Invalid data.** Six participants' data were removed due to invalid responses and difficulties with the online rapport building video. Specifically, three participants reported at the end of the questionnaire that their responses were either "Mostly Untrue" ( $n = 1$ ) or "Completely Untrue" ( $n = 2$ ). One participant failed to answer three instructional validity questions (e.g., "If you are reading this, select "1" as your response"). Two participants reported technical difficulties with the online rapport building video and that they were unable to watch it. As such, the data collected from these six participants were removed before the subsequent analyses were performed.

**Missing data.** Missing data were analyzed using the SPSS Missing Value Analysis (MVA), which indicated that no variable was missing more than 1% of data and that all scales were missing completely at random with the exception of three measures administered in Part 1: the FROST (Little's MCAR  $\chi^2(377, N = 126) = 432.46, p = 0.025$ ); DASS-21 (Little's MCAR  $\chi^2(60, N = 126) = 79.33, p = 0.048$ ); and STHS (Little's MCAR  $\chi^2(66, N = 126) = 113.22, p < 0.001$ ). Three participants were missing data on the third item of the DASS-21. Other values did not appear to be systematically missing. Because multiple imputation does not assume that variables have completely random missing values (Tabachnick & Fidell, 2013), it was used to calculate missing values.

As previously described in the methodology, seven items from the AQ-2 were not administered to participants. Consultation with multiple faculty members deemed the internal reliabilities of the subscales to be sufficiently similar to that of the original subscales. Therefore, the remaining items and subscale compositions were believed to be a valid measurement of new self-awareness, self-verification, negative feelings, and positive relationship with the test administrator.

**Preliminary analyses.** Preliminary analyses were conducted to detect potential outliers and violations of assumptions prior to data analyses. First, data on every measure at both time points were examined for outliers using boxplots in accordance with the assumptions for correlations and repeated measures ANOVAs. Eighty total scale scores from multiple measures across the two time points were identified as univariate outliers using boxplots. These 80 scores belonged to 36 participants. Of these scores, four were found to be multivariate outliers using Mahalanobis distance ( $p < .001$ ) and none were

found to be multivariate outliers influencing linearity (using Standardized Residuals > |2.5|). The four participants whose data were identified as multivariate outliers were examined and found to be high on multiple symptomology measures and/or low on multiple measures of hope. For this reason, they were not removed from the dataset as this pattern of scores is to be expected when screening for depressive symptomology. Analyses were examined with and without outliers. The exclusion of these four extreme cases impacted the results for hypotheses 1a, 2b, and 2d and are described below.

Second, the remaining assumptions for correlations, paired *t*-tests, and repeated measures ANOVAs (e.g., normality of variable distributions, homogeneity of variance) were tested. In order to test normality, skewness and kurtosis were examined for each variable. Skewness values greater than |2| and kurtosis values greater than |3| were considered problematic. No variables had problematic skewness values. Although the Positive Relationship scale of the AQ-2 had a kurtosis value of 3.12 in Part 1, which is slightly above the recommended |3| cutoff, visual inspection of the data found the distribution to follow a normal curve. Therefore, the data were not statistically transformed. Descriptive statistics for all measures are provided below (see Table 2).

Levene's test of equal variances was used to test the assumption of homogeneity of variance for repeated measures ANOVAs. Measures that violated this assumption included the PHQ-9, DASS-21, SHS, STHS, RSES, and AQ-2. In order to compensate for these violations, the Greenhouse-Geisser correction was used for interpretation. Box's M test was used to test the equality of covariance matrices of the dependent variables. Measures that violated this assumption included the DASS-21, SHS, STHS, RSES, and AQ-2. In order to compensate for these violations, the Pillai's Trace criterion was used

Table 2

*Descriptive Statistics for All Measures and Formats*

Measure	<i>M</i>	<i>SD</i>	Lowest Value	Highest Value
Time 1				
PHQ-9	8.25	6.25	0	25
DASS-Depression	4.35	4.36	0	18
DASS-Anxiety	4.79	4.51	0	20
DASS-Stress	6.77	4.69	0	20
SHS	33.53	8.64	6	48
STHS-Trait	1.93	0.50	1	3.38
STHS-State	1.93	0.49	1	3.30
RSES	29.62	6.32	13	40
AQ-2-Mirroring	30.96	6.08	10	50
AQ-2-New Self	27.14	5.93	9	42
AQ-2-Negative	13.95	4.75	8	26
AQ-2-Positive	35.25	5.86	11	55
FROST	174.96	19.62	130	215
ISE	41.67	6.59	22	50
Time 2				
PHQ-9	6.87	5.34	0	23
DASS-Depression	3.45	3.89	0	18
DASS-Anxiety	4.02	4.21	0	17
DASS-Stress	5.93	3.97	0	15
SHS	34.36	8.33	6	48
STHS-Trait	1.86	0.52	1	3.38
STHS-State	1.85	0.48	1	3.70
RSES	29.48	6.55	11	40
AQ-2-Mirroring	32.52	5.29	16	48
AQ-2-New Self	29.71	5.89	9	41
AQ-2-Negative	12.83	4.19	8	25
AQ-2-Positive	39.65	5.08	28	53
FROST	178.13	18.11	133	215
FAQ	24.28	4.29	11	33

*Note.* PHQ-9 = Patient Health Questionnaire-9; DASS = Depression Anxiety Stress Scale-21; SHS = State Hope Scale; STHS = State-Trait Hopelessness Scale; RSES = Rosenberg Self Esteem Scale; AQ-2-Mirroring = Assessment Questionnaire-2 Positive Accurate Mirroring; AQ-2-New Self = Assessment Questionnaire-2 New Self-Awareness/Understanding; AQ-2-Negative = Assessment Questionnaire-2 Negative Feelings; AQ-2-Positive = Assessment Questionnaire-2 Positive Relationship; FROST = Frost's Rapport Observations: Survey of Test administrators; ISE = Internet Self Efficacy Scale; FAQ = Feedback Assessment Questionnaire.

for interpretation.

Finally, potential covariates were examined using a correlation matrix (see Tables 3 and 4). It was expected that many of the variables being used would be correlated. Specifically, measures of depression, anxiety, stress, hopelessness, hope, and self-esteem were significantly correlated. Due to concerns that effects may not be found if similar constructs were used as covariates (e.g., self-esteem and depressive symptomology), only one covariate was used. How stressful participants perceived an event that occurred within the past week (i.e., the seven days in between Part 1 and Part 2) was strongly correlated to dependent measures of psychological symptomology (both the PHQ-9 and DASS-21), hopelessness (STHS), and self-verification (AQ-2 Positive Accurate Mirroring subscale). Therefore, analyses involving these variables are reported with, and without, the perceived stressfulness of the event score as a covariate when the differences influence the results.

### **Quantitative Analyses**

**Hypothesis 1a.** Paired *t*-tests were used to measure score differences on the SHS, RSES, and AQ-2 New Awareness between Part 1 and Part 2 to determine if participants experienced changes in hope, self-esteem, and new awareness after receiving feedback (see Table 5). Results showed that New Awareness was significantly greater at Part 2 than Part 1, but scores across time were not significantly different on the SHS or the RSES (see Table 5). When the four extreme scores were removed from the dataset, hope scores on the SHS were significantly greater in Part 2 ( $M = 34.73$ ,  $SD = 7.85$ ) than Part 1 ( $M = 33.62$ ,  $SD = 8.49$ ),  $t(121) = -2.242$ ,  $p = .027$ .

**Hypothesis 1b.** Paired samples *t*-tests were used to measure score differences on

Table 3  
Correlations Among All Variables at Part I

Measures	2	3	4	5	6	7	8	9	10	11	12	13	14
1. PHQ-9	.764**	.751**	.664**	.569**	.557**	-.488**	-.624**	.172	-.071	.319**	.074	.005	.154
2. DASS-D		.666**	.620**	.675**	.636**	-.669*	-.679**	.116	-.204*	.421**	-.010	-.072	.095
3. DASS-A			.762**	.413**	.391**	-.400**	-.437**	.134	-.065	.084	.081	.061	.082
4. DASS-S				.391**	.401**	-.387*	-.449**	.100	-.086	.111	.032	.070	.141
5. STHS-S					.924**	-.737**	-.674**	.041	-.303**	.502**	-.053	-.192*	.209*
6. STHS-T						-.759**	-.704*	.024	-.316*	.544**	-.043	-.225*	.193*
7. SHS							.619**	.066	.417**	-.381*	.106	.142	-.048
8. RSES								-.063	.205*	-.428*	-.025	.177*	-.189*
9. New Aware									.712**	.182*	.495**	.102	-.079
10. Pos-A										-.075	.594**	.248**	-.255*
11. Neg-Feel											-.053	-.412**	.123
12. Pos-Rel												.417**	-.162
13. FROST													-.097
14. Event													

Note: PHQ-9 = Patient Health Questionnaire-9; DASS-D = DASS Depression; DASS-A = DASS Anxiety; DASS-S = DASS Stress; STHS-S = STHS State; STHS-T = STHS Trait; SHS = State Hope Scale; RSES = Rosenberg Self Esteem Scale; New Aware = AQ2 New Self-Awareness/Understanding; Pos-A = Positive Accurate Mirroring; Neg-Feel = AQ2 Negative Feelings; Pos-Rel = AQ2 Positive Relationship; FROST = Frost's Rapport Observations Scale of Test administrators; Event = How Stressful was the event  
\* $p < .05$ , \*\* $p < .001$ .

Table 4  
Correlations Among All Variables at Part 2

Measures	2	3	4	5	6	7	8	9	10	11	12	13	14
1. PHQ-9	.743**	.729**	.697**	.570**	.582**	-.516**	-.597**	.131	-.218*	.248**	.004	-.068	.303**
2. DASS-D	.588**	.559**	.559**	.674**	.640**	-.548**	-.640**	.083	-.208*	.314**	-.015	-.085	.258**
3. DASS-A	.722**	.399**	.722**	.399**	.396**	-.329**	-.482**	.096	-.111	.136	.082	.037	.274**
4. DASS-S	.371**	.452**	.370**	.371**	.452**	-.370**	-.454**	.149	-.077	.163	.135	.049	.348**
5. STHS-S	.885**	-.665**	-.705**	-.015	-.362**	-.665**	-.705**	-.015	-.362**	.560**	-.135	-.261**	.205*
6. STHS-T	-.700**	-.709**	-.709**	-.007	-.397**	-.700**	-.709**	-.007	-.397**	.587**	-.146	-.298**	.220*
7. SHS	.607**	.079	.377**	.079	.377**	.607**	.079	.377**	.377**	-.356**	.120	.213*	-.162
8. RSES	-.026	.348**	-.376**	-.026	.348**	-.376**	-.026	.348**	.348**	-.376**	.058	.157	-.082
9. New Aware	.632**	.045	.427**	.632**	.045	.427**	.632**	.045	.427**	.225*	.225*	.225*	-.127
10. Pos-A	-.249**	.474**	-.348**	-.249**	.474**	-.348**	-.249**	.474**	.474**	-.348**	.474**	.474**	-.348**
11. Neg-Feel	-.308**	.098	-.578**	-.308**	.098	-.578**	-.308**	.098	-.578**	.098	-.308**	-.578**	.098
12. Pos-Rel	.696**	-.082	-.082	.696**	-.082	-.082	.696**	-.082	-.082	.696**	-.082	-.082	-.082
13. FROST	-.115	-.115	-.115	-.115	-.115	-.115	-.115	-.115	-.115	-.115	-.115	-.115	-.115
14. Event													

Note: PHQ-9 = Patient Health Questionnaire-9; DASS-D = DASS Depression; DASS-A = DASS Anxiety; DASS-S = DASS Stress; STHS-S = STHS State; STHS-T = STHS Trait; SHS = State Hope Scale; RSES = Rosenberg Self Esteem Scale; New Aware = AQ2 New Self-Awareness/Understanding; Pos-A = Positive Accurate Mirroring; Neg-Feel = AQ2 Negative Feelings; Pos-Rel = AQ2 Positive Relationship; FROST = Frost's Rapport Observations Scale of Test administrators; Event = How Stressful was the event  
\* $p < .05$ , \*\* $p < .001$ .



Table 5

*Changes in Scores from Part 1 to Part 2 Measured by Paired T-tests*

Measure	Time 1		Time 2		<i>t</i> (df)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
SHS	33.53	8.64	34.36	8.33	-1.53 (125)
RSES	29.62	6.32	29.58	6.48	0.10 (124)
AQ2-New Self	27.14	5.93	29.71	5.89	-6.06 (125)**
PHQ-9	8.25	6.25	6.87	5.34	4.55 (125)**
DASS-Depression	4.35	4.36	3.45	3.89	3.77 (125)**
DASS-Anxiety	4.79	4.51	4.02	4.21	3.35 (125)*
DASS-Stress	6.77	4.69	5.93	3.97	2.95 (125)*
STHS-State	1.93	0.49	1.86	0.52	2.94 (125)*
STHS-Trait	1.93	0.50	1.85	0.48	3.06 (125)*
FROST	174.96	19.62	178.13	18.11	-2.82 (125)*

*Note.* SHS = State Hope Scale; RSES = Rosenberg Self Esteem Scale; AQ2-New Self = Assessment Questionnaire-2 New Self-Awareness/Understanding; PHQ-9 = Patient Health Questionnaire-9; DASS = Depression Anxiety Stress Scale-21; STHS = State-Trait Hopelessness Scale; FROST = Frost's Rapport Observations: Scale of Test administrators.

\* $p < .05$ , \*\* $p < .001$ .

the PHQ-9, DASS-21 (depression, anxiety, and stress subscales), and STHS (state and trait hopelessness subscales) between Part 1 and Part 2 to determine if participants experienced changes in symptomology and feelings of hopelessness after receiving feedback. Paired *t*-tests showed that all scores of depression, anxiety, stress, and hopelessness decreased significantly (see Table 5). When these analyses were examined using ANCOVAs with the covariate “How Stressful was the Event,” all scores of depression, anxiety, and stress, remained significant. Specifically, scores on the PHQ-9 [ $F(1, 109) = 3.996, p = .048$ ], DASS-21 depression subscale [ $F(1, 109) = 5.401, p = .022$ ], DASS-21 anxiety subscale [ $F(1, 109) = 11.575, p = .001$ ], and DASS-21 stress subscale [ $F(1, 109) = 5.457, p = .021$ ] all significantly decreased. However, with the covariate, decreases in state and trait hopelessness (as measured by the STHS) did not remain significant,  $F(1, 109) = 0.074, p = .786$ , and  $F(1, 109) = 0.404, p = .526$ , respectively.

**Hypothesis 1c.** Repeated measures ANOVAs were used to further examine the noted significant score differences between Part 1 and Part 2, based on whether participants received computerized feedback or in-person feedback. An interaction effect was found for feedback format and the change in depressive symptomology on the PHQ-9 across the two time periods,  $F(1, 124) = 5.225, p = .024, \eta_p^2 = 0.040$ . Two paired samples *t*-tests were used to make post hoc comparisons using a corrected alpha level ( $\alpha = 0.025$ ). Participants who received computerized feedback reported a significantly greater decrease in depressive symptomology scores on the PHQ-9 from Part 1 to Part 2,  $t(62) = 5.029, p < .001$ . In contrast, participants who received feedback in person did not have significant changes in scores on the PHQ-9 from Part 1 to Part 2,  $t(62) = 1.610, p =$

.113. When this analysis was examined using an ANCOVA with the covariate “How Stressful was the Event”, the interaction was not significant,  $F(1, 108) = 3.432, p = .067$ .

Similarly, an interaction effect was found for feedback format and stress scores on the DASS-21,  $F(1, 124) = 8.531, p = .004, \eta_p^2 = 0.064$ . This interaction remained statistically significant even when the covariate “How Stressful was the Event” was used,  $F(1, 108) = 5.078, p = .026, \eta_p^2 = 0.045$ . Two paired samples  $t$ -tests were used to make post hoc comparisons. Participants who received computerized feedback reported a significantly greater decrease in stress scores on the DASS-21 from Part 1 to Part 2,  $t(62) = 4.261, p < .001$ . In contrast, participants who received feedback in person did not have significant changes in stress scores from Part 1 to Part 2,  $t(62) = 0.080, p = .936$ . Participants’ scores for new awareness, depression, anxiety, and hopelessness scores on the AQ-2, DASS-21, and STHS were not found to be significantly different between the two feedback format groups (see Table 6).

**Hypothesis 2a.** Repeated measure ANOVAs were used to measure score differences over time on the SHS, AQ-2 New Awareness, AQ-2 Positive Accurate Mirroring, STHS, PHQ-9, DASS-21, and RSES based on whether they reported high or low feedback satisfaction (as measured by a median split of scores from the FAQ). This was conducted to determine if participants reported changes in scores based on their satisfaction after having received feedback (see Table 7).

An interaction effect was found for feedback satisfaction and new awareness,  $F(1, 124) = 8.039, p = .005, \eta_p^2 = 0.061$ . Two paired samples  $t$ -tests were used to make post hoc comparisons. Participants with low feedback satisfaction reported a significantly greater increase in new awareness scores from Part 1 to Part 2,  $t(62) = -2.612, p = .011$ .

Table 6

*Hypothesis 1c: Changes in Scores from Part 1 to Part 2 Based on Feedback Format*

Measure	Part 1		Part 2	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<b>Computerized Feedback</b>				
AQ2-New Awareness	27.29	5.69	30.40	5.96
PHQ-9	8.95	6.05	6.89	4.80
DASS-Depression	4.86	4.25	3.62	3.90
DASS-Anxiety	5.22	4.78	4.16	4.22
DASS-Stress	7.30	4.83	5.65	3.61
STHS-State	1.93	0.46	1.84	0.44
STHS-Trait	1.91	0.45	1.85	0.49
<b>In-Person Feedback</b>				
AQ2-New Awareness	27.00	6.20	29.02	5.89
PHQ-9	7.54	6.42	6.84	5.86
DASS-Depression	3.84	4.43	3.29	3.91
DASS-Anxiety	4.37	4.20	3.89	4.24
DASS-Stress	6.24	4.54	6.21	4.32
STHS-State	1.93	0.52	1.86	0.53
STHS-Trait	1.95	0.54	1.87	0.54

*Note.* AQ-2-New Awareness = Assessment Questionnaire-2 New Self-Awareness/Understanding; PHQ-9 = Patient Health Questionnaire-9; DASS = Depression Anxiety Stress Scale-21; STHS = State-Trait Hopelessness Scale.

Table 7

*Hypothesis 2a: Changes over Time between High and Low Feedback Satisfaction Groups*

Measure	Part 1		Part 2	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
High FAQ Scorers				
AQ2-New Awareness	28.89	5.53	32.62	4.66
AQ2-SelfV	33.11	4.77	35.25	4.58
PHQ-9	7.90	5.92	6.81	5.34
DASS-Depression	4.05	3.88	3.00	3.55
DASS-Anxiety	4.89	4.03	4.06	3.95
DASS-Stress	6.65	4.10	5.76	3.90
STHS-State	1.88	0.46	1.76	0.42
STHS-Trait	1.86	0.44	1.73	0.45
SHS	35.24	6.90	36.13	6.49
RSES	30.92	5.52	30.61	5.79
Low FAQ Scorers				
AQ2-New Awareness	25.40	5.83	26.79	5.57
AQ2-SelfV	28.81	6.51	29.79	4.50
PHQ-9	8.59	6.60	6.92	5.38
DASS-Depression	4.65	4.80	3.90	4.19
DASS-Anxiety	4.70	4.96	3.98	4.50
DASS-Stress	6.89	5.26	6.10	4.08
STHS-State	1.98	0.52	1.95	0.52
STHS-Trait	2.00	0.54	1.99	0.55
SHS	31.83	9.85	32.59	9.56
RSES	28.35	6.83	28.57	6.70

*Note.* FAQ: Feedback Assessment Questionnaire; AQ-2-New Awareness = Assessment Questionnaire-2 New Self-Awareness/ Understanding; AQ-2-SelfV = Assessment Questionnaire-2 Positive Accurate Mirroring; PHQ-9 = Patient Health Questionnaire-9; DASS = Depression Anxiety Stress Scale-21; STHS = State-Trait Hopelessness Scale; SHS = State Hope Scale; RSES = Rosenberg Self-Esteem Scale.

Similarly, participants with high feedback satisfaction also reported a significantly greater increase in new awareness scores from Part 1 to Part 2,  $t(62) = -5.963, p < .001$ . The increase in new awareness was greater for the high satisfaction group.

An interaction effect was found for feedback satisfaction and changes in trait hopelessness across the two time periods,  $F(1, 124) = 8.937, p = .003, \eta_p^2 = 0.067$ . Two paired samples  $t$ -tests were used to make post hoc comparisons. Participants with low feedback satisfaction did not report changes in trait hopelessness from Part 1 to Part 2,  $t(62) = 0.122, p = .904$ . Notably, participants with high feedback satisfaction reported a significant decrease in trait hopelessness scores from Part 1 to Part 2,  $t(62) = 4.280, p < .001$ . Regardless of their level of feedback satisfaction, there were no significant differences in participants' state hopelessness scores,  $F(1, 124) = 2.946, p = .089$ . Analyses involving the SHS, PHQ-9, DASS-21, RSES, and AQ-2 Positive Accurate Mirroring measures were not statistically significant.

**Hypothesis 2b.** Repeated measures ANOVAs were used to measure score differences on the SHS, AQ-2 New Awareness, STHS, PHQ-9, DASS-21, RSES between participants who reported high or low self-verification (as measured by a median split using scores from the AQ-2 Positive Accurate Mirroring subscale) to determine if participants' perceptions of self-verification influenced changes in scores after receiving feedback. An interaction effect was found for self-verification and changes in trait hopelessness across the two time points,  $F(1, 124) = 10.062, p = .002, \eta_p^2 = 0.075$ . Two paired samples  $t$ -tests were used to make post hoc comparisons. Participants low in self-verification did not report any changes in trait hopelessness from Part 1 to Part 2,  $t(62) =$

0.00,  $p = 1.000$ . In contrast, participants high in self-verification reported decreases in trait hopelessness from Part 1 to Part 2,  $t(62) = 4.403, p < .001$ .

A cross-over interaction effect was found for self-verification and changes in self-esteem across the two parts,  $F(1, 123) = 4.048, p = .046, \eta_p^2 = 0.032$ . Participants high in self-verification reported increases in self-esteem at Part 2 whereas participants low in self-verification reported decreases in self-esteem at Part 2. Two paired samples  $t$ -tests were used to make post hoc comparisons. Main effects were not statistically significant. In other words, those high in self-verification reported greater self-esteem than those low in self-verification at Part 2 but their increase in scores was not a significant change from their baseline scores at Part 1,  $t(61) = -1.402, p = .166$ . When outliers were excluded from the analysis, the interaction between self-verification and changes in self-esteem over time was not statistically significant,  $F(1, 119) = 3.287, p = .072$ . Self-verification was not found to significantly interact with changes in scores on the SHS, PHQ-9, and DASS-21.

**Hypothesis 2c.** Repeated measures ANOVAs were used to measure score differences on the SHS, STHS, PHQ-9, DASS-21, RSES between high and low new awareness (as measured by a median split of scores from the AQ-2 New Awareness subscale) to determine if new awareness influenced changes in scores after receiving feedback (see Table 8). Interaction effects were found for new awareness and changes in state hopelessness across the time points,  $F(1, 124) = 6.344, p = .013, \eta_p^2 = 0.049$ , as well as new awareness and changes in trait hopelessness,  $F(1, 124) = 5.741, p = .018, \eta_p^2 = 0.044$ . Paired samples  $t$ -tests were used to make post hoc comparisons. Participants low in new awareness did not report any significant changes in state hopelessness after

Table 8

*Hypothesis 2c: Changes in Scores from Part 1 to Part 2 Based on New Awareness*

Measure	Part 1		Part 2	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
High New Awareness				
SHS	34.16	7.12	35.30	6.69
PHQ-9	8.38	5.63	7.16	5.20
DASS-Depression	4.60	4.11	3.57	3.80
DASS-Anxiety	5.17	4.20	4.25	4.15
DASS-Stress	7.33	4.41	6.40	3.93
STHS-State	1.94	0.48	1.80	0.45
STHS-Trait	1.93	0.45	1.81	0.47
RSES	29.65	6.17	30.00	6.04
Low New Awareness				
SHS	32.90	9.95	33.41	9.66
PHQ-9	8.11	6.86	6.57	5.49
DASS-Depression	4.10	4.60	3.33	4.02
DASS-Anxiety	4.41	4.80	3.79	4.29
DASS-Stress	6.21	4.94	5.46	4.00
STHS-State	1.92	0.50	1.90	0.52
STHS-Trait	1.92	0.55	1.91	0.56
RSES	29.60	6.52	29.17	6.92

*Note.* SHS = State Hope Scale; PHQ-9 = Patient Health Questionnaire-9; DASS = Depression Anxiety Stress Scale-21; STHS = State-Trait Hopelessness Scale; RSES = Rosenberg Self Esteem Scale.



receiving feedback,  $t(62) = 0.392, p = .696$ , or in trait hopelessness  $t(62) = 0.558, p = .579$ . In contrast, participants high in new awareness reported decreases in state hopelessness,  $t(62) = 3.485, p = .001$ , as well as decreases in trait hopelessness,  $t(62) = 3.626, p = .001$ . New awareness was not found to significantly interact with changes in scores on the SHS, PHQ-9, DASS-21, and RSES.

**Hypothesis 2d.** Repeated measures ANOVAs were used to measure score differences on the SHS, AQ-2 New Awareness, AQ-2 Positive Accurate Mirroring, STHS, PHQ-9, DASS-21, RSES between high and low rapport (as measured by a median split of scores from the FROST) to determine if rapport influenced changes in scores after receiving feedback. An interaction effect was found for rapport and changes in depression scores on the DASS-21 across the two time points,  $F(1, 124) = 4.257, p = .041, \eta_p^2 = 0.033$  (see Table 9). Two paired samples  $t$ -tests were used to make post hoc comparisons. Surprisingly, participants low in rapport reported significant decreases in depression scores on the DASS-21 after receiving feedback,  $t(62) = 3.625, p = .001$  but those high in rapport did not have a significant change in scores,  $t(62) = 1.506, p = .137$ . However, a closer examination of the scores showed that the low rapport group ( $M = 3.52, SD = 3.81$ ) was still reporting higher depression scores than the high rapport group ( $M = 3.38, SD = 4.01$ ) after receiving feedback.

Another interaction effect was found for rapport and changes in trait hopelessness across time,  $F(1, 108) = 6.919, p = .010, \eta_p^2 = 0.060$ . To further understand this finding, two paired samples  $t$ -tests were used to make post hoc comparisons. As expected, participants with low rapport did not report significant changes in trait hopelessness,  $t(62) = 1.053, p = .297$ ; those with high rapport reported a significant decrease in trait

Table 9

*Hypothesis 2d: Changes over Time between High and Low Rapport Groups*

Measure	Part 1		Part 2	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
High FROST Scorers				
AQ2-New Awareness	27.65	6.36	30.52	5.98
AQ2-SelfV	32.51	6.14	34.27	5.51
PHQ-9	7.73	6.01	6.49	5.35
DASS-Depression	3.79	3.62	3.38	4.01
DASS-Anxiety	4.79	3.96	3.92	4.05
DASS-Stress	6.76	4.28	6.02	3.92
STHS-State	1.84	0.55	1.74	0.53
STHS-Trait	1.82	0.57	1.72	0.57
SHS	34.68	8.51	35.73	8.03
RSES	30.06	6.67	30.50	7.18
Low FROST Scorers				
AQ2-New Awareness	26.63	5.46	28.89	5.73
AQ2-SelfV	29.41	5.66	30.78	4.45
PHQ-9	8.76	6.49	7.24	5.34
DASS-Depression	4.90	4.95	3.52	3.81
DASS-Anxiety	4.79	5.02	4.13	4.40
DASS-Stress	6.78	5.11	5.84	4.06
STHS-State	2.02	0.41	1.96	0.41
STHS-Trait	2.03	0.39	2.00	0.41
SHS	32.38	8.69	32.98	8.46
RSES	29.19	5.98	28.68	5.62

*Note.* FROST: Frost's Rapport Observations – A Survey of Test administrators; AQ-2-New Awareness = Assessment Questionnaire-2 New Self-Awareness/ Understanding; AQ-2-SelfV = Assessment Questionnaire-2 Positive Accurate Mirroring; PHQ-9 = Patient Health Questionnaire-9; DASS = Depression Anxiety Stress Scale-21; STHS = State-Trait Hopelessness Scale; SHS = State Hope Scale; RSES = Rosenberg Self-Esteem Scale.

hopelessness,  $t(62) = 3.171, p = .002$ . However, it is important to note that this interaction was not statistically significant when the covariate “How Stressful was the Event” was not included in the analysis,  $F(1, 124) = 2.919, p = .090$ . When the four outliers were excluded from the analysis, the interaction was statistically significant both with,  $F(1, 107) = 7.739, p = .006, \eta_p^2 = 0.067$ , and without the covariate included,  $F(1, 120) = 5.346, p = .022, \eta_p^2 = 0.043$ . Rapport was not found to significantly interact with changes in scores on the SHS, AQ-2 New Awareness, AQ-2 Positive Accurate Mirroring, STHS-State, PHQ-9, DASS-21 (anxiety and stress scales), and RSES.

### **Supplementary quantitative analyses.**

*Hope.* Results from multiple hypotheses found that hopelessness scores changed after having received feedback. Therefore, a related concept – hope – was also examined pre- and post-feedback. Participants were asked five questions about how hopeful they felt about their future after participating in the study, rated on an 8-point Likert-type scale ranging from “Definitely False” to “Definitely True”. Participants that responded “Slightly True”, “Somewhat True”, “Mostly True”, or “Definitely True” were grouped as having a degree of *agreement*. Participants that responded “Slightly False”, “Somewhat False”, “Mostly False”, or “Definitely False” were grouped as having a degree of *disagreement*. First, when asked how optimistic they felt about their future based on their responses in the study, participants responded with a degree of agreement in Part 1 of 60.3%, with an increase in frequency at Part 2 to 67.4%. Second, when asked how much they believed their future would be miserable based on their responses in the study, 89% of participants at Part 1 expressed disagreement. This finding increased to 92.8% of participants at Part 2, suggesting that some participants experienced decreases in

pessimism regarding their future after having read the feedback report. Third, when asked if participating in this study made them feel hopeful about their future, 58.8% of participants reported agreement at Part 1 and this finding increased to 69% of participants at Part 2. Fourth, when asked if having the opportunity to disclose personal information had discouraged them, 89.8% of participants reported disagreement at Part 1, and this finding increased to nearly all participants at Part 2 (95.9%). Finally, when asked more generally if they felt hopeful after participating in this study, 61.1% of participants expressed agreement at Part 1, and this finding increased to 74.6% of participants at Part 2.

**Summary of quantitative hypotheses.** The findings of this study are summarized in Table 10. Analyses for the first hypothesis found that participants reported significantly more new awareness, as well as significantly less depressive symptomology and hopelessness post-feedback (Part 2). As predicted, there were no significant differences in reported new awareness, depression, anxiety, and hopelessness between participants who received computerized feedback and participants who received in-person feedback. In contrast, participants who received computerized feedback reported a significantly greater decrease in stress scores on the DASS-21 and decrease in depression scores on the PHQ-9 post-feedback than participants who received in-person feedback.

Analyses for the second hypothesis found that feedback satisfaction as measured by the FAQ was related to gains in new awareness post-feedback. Participants with high self-verification showed greater decreases in trait hopelessness than those with low self-verification. An interaction for self-verification and changes in self-esteem across time was also found whereby those with high self-verification reported greater post-feedback

Table 10

*Summary of Quantitative Results*

Hypothesis	Main Findings	Conclusion
1a: Participants' hope, self-esteem, self-awareness would be greater post-feedback than pre-feedback.	<ul style="list-style-type: none"> <li>• Post-feedback new awareness was greater than pre-feedback new awareness.</li> <li>• Comparisons for hope and self-esteem showed no differences between pre- and post-feedback.</li> </ul>	Partially supported
1b: Participants' symptomology and hopelessness would be lower post-feedback than pre-feedback.	<ul style="list-style-type: none"> <li>• Post-feedback depression, anxiety, stress, and hopelessness was less than pre-feedback scores.</li> </ul>	Supported
1c: Feedback format would not influence changes in scores.	<ul style="list-style-type: none"> <li>• Feedback format did not influence changes in scores on the AQ-2 New Awareness, DASS-21 (depression, anxiety), and STHS (state, trait)</li> <li>• Interaction effects were found for feedback format and changes on the PHQ-9 and feedback format and changes on the DASS-21 stress</li> </ul>	Partially supported
2a: Participants with high feedback satisfaction would have greater hope, self-esteem, and reduction in symptom severity post-feedback than those with low feedback satisfaction.	<ul style="list-style-type: none"> <li>• An interaction for feedback satisfaction and changes in new awareness was found. Those with high and low feedback satisfaction had greater new awareness post-feedback.</li> <li>• An interaction for feedback satisfaction and changes in trait hopelessness was found. Those with high feedback satisfaction had post-feedback decreases in trait hopelessness.</li> <li>• Other variables were not influenced by feedback satisfaction.</li> </ul>	Partially supported

<p>2b: Participants with high self-verification would have greater hope, self-esteem, and reduction in symptom severity post-feedback than those with low self-verification.</p>	<ul style="list-style-type: none"> <li>• An interaction for self-verification and changes in trait hopelessness was found. Those with high self-verification had reductions in trait hopelessness post-feedback.</li> <li>• An interaction for self-verification and changes in self-esteem was found. Those with high self-verification had increases in self-esteem post-feedback but those with low self-verification had decreases in self-esteem post-feedback.</li> <li>• Other variables were not influenced by self-verification.</li> </ul>	<p>Partially supported</p>
<p>2c: Participants with high new awareness would have greater hope, self-esteem, and reduction in symptom severity post-feedback than those with low new awareness.</p>	<ul style="list-style-type: none"> <li>• An interaction for new awareness and changes in state hopelessness was found. Those high in new awareness reported decreases in state hopelessness post-feedback.</li> <li>• An interaction for new awareness and changes in trait hopelessness was found. Those high in new awareness reported decreases in trait hopelessness post-feedback</li> <li>• Other variables were not influenced by new awareness.</li> </ul>	<p>Partially supported</p>
<p>2d: Participants with high asynchronous rapport would have greater hope, self-esteem, self-verification, and reduction in symptom severity post-feedback than those with low asynchronous rapport.</p>	<ul style="list-style-type: none"> <li>• An interaction for rapport and changes in depression (DASS-21) was found. Those low in rapport reported decreases in depression post-feedback, but depression scores continued to be higher than those with high rapport.</li> <li>• An interaction for rapport and changes in trait hopelessness was found. Those with high rapport reported decreases in trait hopelessness post-feedback.</li> <li>• Other variables were not influenced by rapport.</li> </ul>	<p>Partially supported</p>

self-esteem than those with low self-verification. Participants with high new awareness showed greater decreases in state and trait hopelessness than those with low new awareness. Results showed minimal evidence to support that rapport with a test administrator impacts post-feedback changes in symptomology, but some evidence was found that those with high rapport reported decreases in trait hopelessness, post-feedback.

Overall, most participants reported being optimistic and hopeful about their future after participating in the study. The majority did not feel discouraged or believe their future would be miserable based on the information they provided, and were given, in this study.

### **Qualitative Analyses**

The responses from the fourteen qualitative questions are summarized in five main topics: Self-disclosure Tendencies, Current Study Experiences, New Awareness, Self-Verification, and Perceptions of the Test Administrator.

**Self-disclosure tendencies.** The first three questions examined participants' self-disclosure tendencies. Participants commented on how they feel talking about their emotions as well as how they feel disclosing information online, face-to-face, to strangers and to people they know. Participant responses differed regarding whether they feel positive or negative disclosing information to strangers versus people they know. Similarly, some participants felt more comfortable disclosing information online, whereas others felt more comfortable disclosing information face-to-face. The current study thoroughly examined the general themes for how participants typically feel when disclosing information and factors that influence whether they choose to disclose information (see Figure 2).

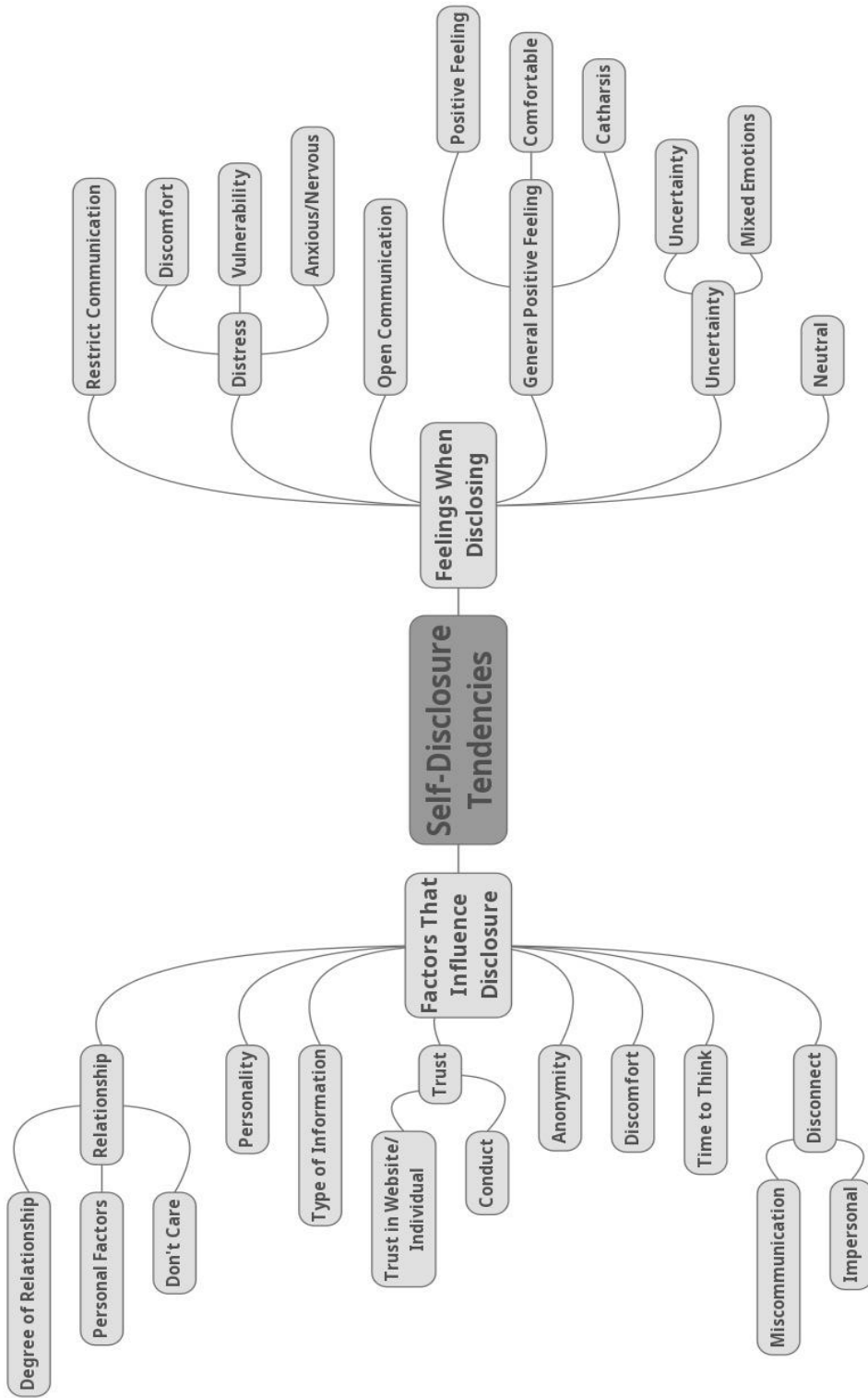


Figure 2. Self-disclosure tendencies.



***Feelings when disclosing.*** Six themes emerged to describe how participants feel disclosing personal information to others. They included: Restrict Communication, Distress, Open Communication, General Positive Feeling, Uncertainty, and Neutral (see Table 11). These themes helped answer the first research question: “What is participants’ experience disclosing/withholding information from the examiner and is it positive?” *General Positive Feeling* was the theme used when participants described feeling content or feeling better than they previously felt (codes: Positive Feeling, Comfortable, and Catharsis). The *Distress* theme captured responses that described feeling distress or unpleasantness when disclosing information (codes: Discomfort, Vulnerability, and Anxious/Nervous). The *Uncertainty* theme included responses that indicated the participant could not identify a specific emotion felt when disclosing information (codes: Uncertainty, Mixed Emotions). The remaining themes, *Restrict Communication*, *Open Communication*, and *Neutral*, are not composed of multiple codes and are described in Table 11.

***Factors that influence disclosure.*** Eight themes, or factors, emerged that participants described as influencing their decisions to disclose or withhold information from others. They included: Relationship, Personality, Type of Information, Trust, Anonymity, Discomfort, Time to Think, and Disconnect (see Table 12). *Relationship* was the theme used when participants indicated that the dynamic of their relationship with the person receiving the information influences disclosure (codes: Degree of Relationship, Personal Factors, Don’t Care). The *Trust* theme captured responses that described how the degree of trust in the individual, website, and method in which information is given, influences disclosure (codes: Trust in Website/Individual, Conduct). *Disconnect* is the

Table 11

*Themes and Codes About Participants' Feelings When Disclosing*

<b>Theme</b>	Code	Definition	Example
<b>Restrict Communication</b>		Cautious about opening up. Keeps information hidden. Reluctant to trust information with others. Has restrictions on who they disclose to.	<i>"I tend to keep my emotions hidden"</i>
<b>Distress</b>	Discomfort	Sense of personal discomfort or feeling uncomfortable.	<i>"I dislike talking about my feelings whatsoever"</i>
	Vulnerability	Sense of feeling vulnerable or under attack.	<i>"I feel a bit vulnerable"</i>
	Anxious/Nervous	Experiences feelings of anxiety/nervousness.	<i>"I get nervous"</i>
<b>Open Communication</b>		Willingly and openly talks with others. No restrictions on who they open up to.	<i>"I am a very open person"</i>
<b>General Positive Feeling</b>	Positive Feeling	Emotions that have a general positive salience.	<i>"It feels good"</i>
	Comfortable	Sense of comfort and feeling safe.	<i>"I normally feel comfortable"</i>
	Catharsis	Specific mention of emotional relief. A change from a negative or neutral feeling to a positive feeling.	<i>"Feel a sense of relief"</i>
<b>Uncertainty</b>	Uncertainty	Unsure what they feel and find it hard to describe.	<i>"It is hard to put emotions into words"</i>
	Mixed Emotions	Feels a mix of emotions.	<i>"Sometimes it is a mix of emotions"</i>
<b>Neutral</b>		Feels neutral or indifferent.	<i>"I don't really feel anything"</i>

*Note.* Some themes were composed of multiple codes (e.g., Distress). Themes without multiple codes consisted of just one code with the same name as the theme title (e.g., Restrict Communication).

Table 12

*Factors that Influence Participant Disclosure*

<b>Theme</b>	Code	Definition	Example
<b>Relationship</b>	Degree of Relationship	They disclose based on how much they can/can't relate to the other in some way (e.g., similar history, duration of acquaintance, reciprocal self-disclosure).	<i>"Whether I know the person"</i>
	Personal Factors	Depends on if the individual exhibits traits and behaviours that affect disclosure.	<i>"I can disclose personal information online if the person seems to care, and if they have good responses"</i>
	Don't Care	View that strangers don't care and the information is not valuable to them so they won't open up.	<i>"The biggest factor there is that I believe that strangers do not really care about you as a person"</i>
<b>Personality</b>		They disclose based on personality traits of the individual.	<i>"I know that they genuinely care about me and want to help me"</i>
<b>Type of Information</b>		They disclose based on the content of information that is to be disclosed.	<i>"Strangers do not deserve to know about my troubles and personal life"</i>
<b>Trust</b>	Trust in Website/Individual	They disclose based on how much trust/distrust they have in the website/individual.	<i>"Whether I can trust someone or not"</i>
	Conduct	They disclose based on the conduct of the individual or method (e.g., a professional, confidential nature, research).	<i>"No one else will hear my emotions"</i>

Table 12, continued

Theme	Code	Definition	Example
<b>Anonymity</b>		They disclose based on whether the person does not know them and won't see them (i.e., the degree of anonymity).	<i>"On an online platform, the factor of identity is completely annihilated and there is no shame to disclose any personal information"</i>
<b>Discomfort</b>		Feelings of discomfort keep one from disclosing to others.	<i>"It makes me look weak and helpless"</i>
<b>Time to Think</b>		Online platform gives them time to think and organize their thoughts before responding.	<i>"I can take more time to think about what I am saying"</i>
<b>Disconnect</b>	Miscommunication	Information can be misinterpreted online or be more difficult to understand the intended meaning.	<i>"Messages can be misconstrued to be the opposite of what a person means"</i>
	Impersonal	Online platform makes it less personal, like giving information to a machine.	<i>"Lacks that element of closeness"</i>

*Note.* Some themes were composed of multiple codes (e.g., Disconnect). Themes without multiple codes consisted of just one code with the same name as the theme title (e.g., Time to Think).

theme that was used when participants described how their disclosure is influenced by concerns with misinterpretation of information online (codes: Miscommunication and Impersonal). The remaining themes, *Personality*, *Type of Information*, *Anonymity*, *Discomfort*, and *Time to Think*, are not composed of multiple codes and are described in Table 12.

In summary, participants differed in how they feel when disclosing information and what factors influence their disclosures. Some participants reported that discussing personal information is something they try to restrict and can be distressing to do. In contrast, others reported being very open in their communication with others and that disclosing creates a general positive feeling. Some participants were less sure about how disclosing information makes them feel and others felt neutral. A variety of factors influence whether participants choose to disclose information or not. Themes seemed to be related not only to the receiver of the information (e.g., relationship, personality) but also factors that hinder (e.g. disconnect online, discomfort) and facilitate (e.g., trust, time to think) disclosure.

**Current study experiences.** The qualitative questions #4-#6 examined participants' experiences answering questionnaires and reading their feedback report in the current study. Themes regarding how participants felt during the current study and features that they liked/disliked about the feedback were examined (see Figure 3). These themes helped reveal reasons why changes in reported symptomology may have occurred.

***Feelings in the current study.*** Seven themes emerged regarding how participants felt participating in the current study. They included: Positive Feelings, Quality of

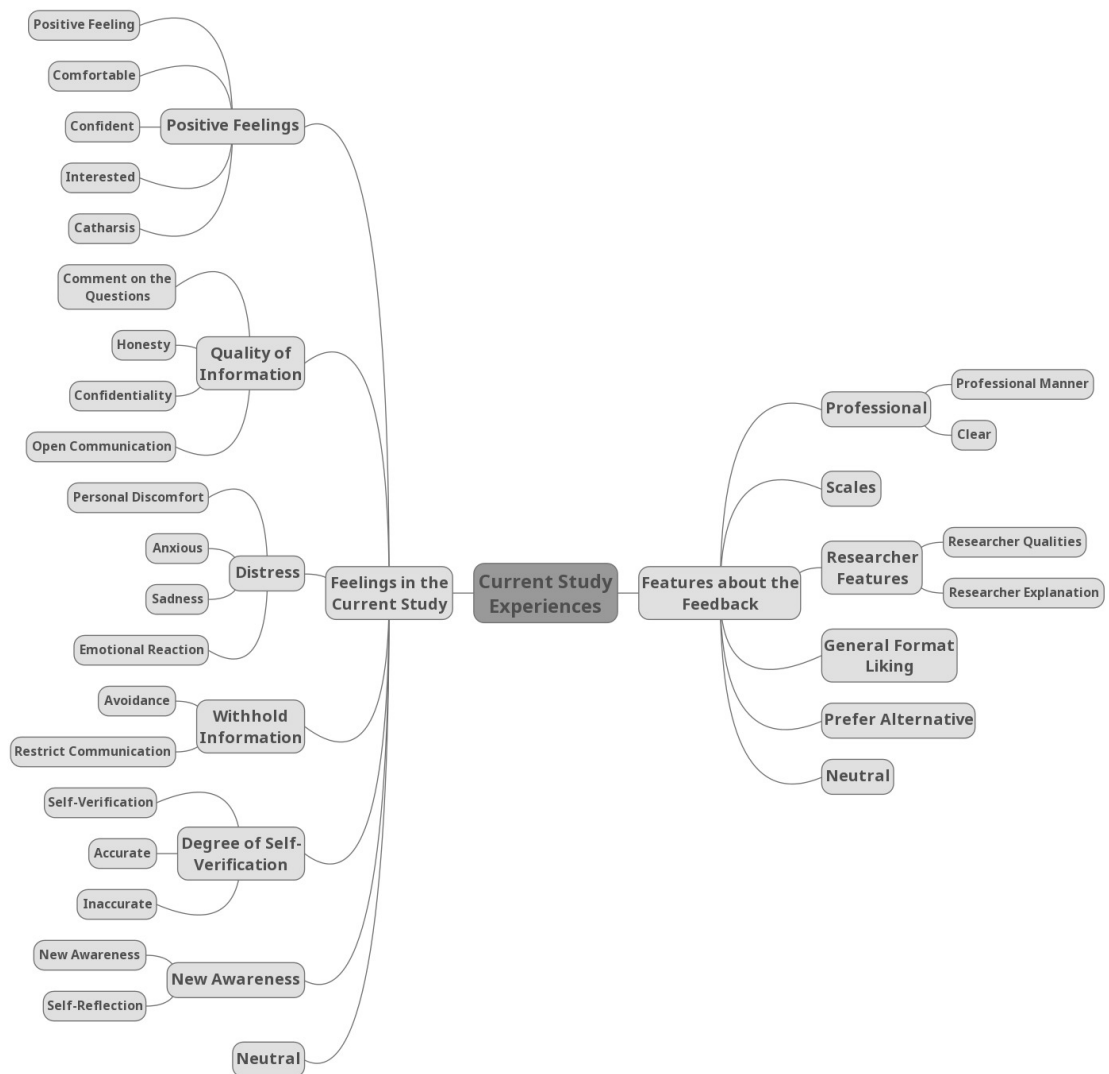


Figure 3. Current Study Experiences.

Information, Distress, Withhold Information, Degree of Self-Verification, New Awareness, and Neutral (see Table 13). *Positive Feelings* was the theme used to describe responses that included a general sense of satisfaction, contentment, and/or feeling better after having read the feedback (codes: Positive Feeling, Comfortable, Confident, Interested, Catharsis). The theme *Quality of Information* captured responses about how participants reacted to the questions that were asked (codes: Comment on Questions, Honesty, Confidentiality, Open Communication). The theme *Distress* described participant responses that included a feeling of distress or uncomfortableness after reading the feedback (codes: Personal Discomfort, Anxious, Sadness, Emotional Reaction). *Withhold Information* was the theme that captured responses regarding participants' instinct to keep information to themselves (codes: Avoidance and Restrict Communication). The theme *Degree of Self-Verification* was used when participants described the extent to which they felt the feedback confirmed their own beliefs about themselves (codes: Self-Verification, Accurate, Inaccurate). *New Awareness* captured responses that indicated participants had engaged in self-reflection to think about themselves and potentially learn something new about themselves after receiving the feedback (codes: Self-Reflection and New Awareness). The final theme, *Neutral*, was used when participants described feeling neutral, or no effect, after having read the feedback.

***Features about the feedback.*** Six themes emerged regarding features that participants liked and disliked about the feedback from the current study. They included: Professional, Scales, Researcher Features, General Format Liking, Prefer Alternative, and Neutral (see Table 14). The *Professional* theme captured participants' appreciation of the

Table 13

*Themes and Codes Regarding Participants' Feelings in the Current Study*

<b>Theme</b>	<b>Code</b>	<b>Definition</b>	<b>Example</b>
<b>Positive Feelings</b>			
	Positive Feeling	General positive feeling.	<i>"Quite calm"</i>
	Comfortable	Sense of comfort and feeling safe.	<i>"I was comfortable"</i>
	Confident	Felt confident when providing and/or reflecting on responses.	<i>"Self-confident overall"</i>
	Interested	Found the questions to be interesting.	<i>"It captivated me"</i>
	Catharsis	Specific mention of emotional relief. A change from a negative or neutral feeling to positive feeling. An improvement in negative mood.	<i>"It's a bit of a relief honestly...I think it's good to vent sometimes"</i>
<b>Quality of Information</b>			
	Comment on the Questions	How participants felt towards the action of answering questions and format of them.	<i>"I didn't find the questions to be too personal"</i>
	Honesty	Felt that they could be honest when responding.	<i>"I was honest"</i>
	Confidentiality	Felt that knowing their responses would be confidential influenced how they responded.	<i>"I know all my answers are going to be confidential"</i>
	Open Communication	Felt open to expressing oneself on the questionnaires.	<i>"Able to express myself openly"</i>
<b>Distress</b>			
	Personal Discomfort	Felt personal discomfort.	<i>"It made me feel uncomfortable"</i>
	Anxious	Emotional reaction that aligns with anxiety symptomology.	<i>"I did feel a sense of worry or anxiety regarding my responses"</i>



Table 13, continued

<b>Theme</b>		
Code	Definition	Example
Sadness	Emotional reaction that aligns with feeling sad.	<i>"I felt a bit sad"</i>
Emotional Reaction	Strong emotional reaction to how the results were given (e.g., disappointed, shocked, embarrassed).	<i>"I received it in shock and disappointment in the beginning"</i>
<b>Withhold Information</b>		
Avoidance	They disclose a tendency to avoid connecting with their emotions.	<i>"I tend to push my negative feelings away"</i>
Restrict Communication	Cautious about opening up, reluctant to trust, and/or has restrictions on who they disclose to.	<i>"I don't tell randoms my life"</i>
<b>Degree of Self-Verification</b>		
Self-Verification	The report confirmed what they suspected/already knew.	<i>"I just confirmed things about me that I suspected"</i>
Accurate	Felt it gave accurate results, no surprises regarding the results.	<i>"I felt that it was accurate"</i>
Inaccurate	Didn't feel that the report was accurate. May include surprise as an evaluation of the accuracy of the results.	<i>"I don't completely think it's true"</i>
<b>New Awareness</b>		
New Awareness	Learned something new about oneself and may take action or follow up.	<i>"It gives me an insight of what I am and what is impacting my day-to-day life"</i>
Self-reflection	Found it valuable to reflect on oneself.	<i>"It allowed me to reflect on how I feel"</i>
<b>Neutral</b>	Neutral or indifferent response.	<i>"I felt pretty neutral"</i>

*Note.* Some themes were composed of multiple codes (e.g., New Awareness). Themes without multiple codes consisted of just one code with the same name as the theme title (e.g., Neutral).

Table 14

*Themes and Codes Regarding Features about the Feedback*

<b>Theme</b>	Code	Definition	Example
<b>Professional</b>	Professional Manner	Liked how the results were given in a professional manner.	<i>“The researcher...gave me the report in a professional manner”</i>
	Clear	Easy to read, understand, and interpret.	<i>“I liked how it was really clear, and made accessible to me”</i>
<b>Scales</b>		Liked the scales, scores, descriptive categories.	<i>“I liked how it showed you your score and broke down what the other scores meant as well”</i>
<b>Researcher Features</b>	Researcher Qualities	Likes aspects of the researcher’s personality/demeanor.	<i>“The researcher was nice”</i>
	Researcher Explanation	Liked that the researcher discussed the results (in-person format only).	<i>“I liked how everything was explained so there would be no confusion about the figures or results”</i>
<b>General Format Liking</b>		A general liking of the format.	<i>“I thought it was good the way it was”</i>
<b>Prefer Alternative</b>		Would have preferred to receive the feedback in a different or slightly altered manner.	<i>“I would have preferred to have had it sent to my e-mail to read on my own”</i>
<b>Neutral</b>		Neutral, neither liked nor disliked the format.	<i>“There was no particular feature that I liked or disliked”</i>

*Note.* Some themes were composed of multiple codes (e.g., Researcher Features). Themes without multiple codes consisted of just one code with the same name as the theme title (e.g., Scales).

quality in which results were presented (codes: Professional Manner and Clear). *Researcher Features* was the theme used to describe characteristics and behaviours of the researcher which participants valued having as part of the feedback process (codes: Researcher Qualities and Researcher Explanation). The remaining themes—*Scales*, *General Format Liking*, *Prefer Alternative*, and *Neutral*—were not composed of multiple codes and are described in Table 14.

In summary, participants differed in how they described their personal experiences and features they liked/disliked about the current study. Though some participants reported themes about how they personally felt after reading the feedback (e.g., positive feeling, distress, new awareness), some participants focused on the nature of the information in the feedback (e.g., quality of the information they provided, instinct to withhold information, degree of accuracy of the information). Themes regarding feedback features centered around a general appreciation of the professional nature in which results were displayed (e.g., scales) and how the researcher presented information (e.g., researcher's explanation of results). In contrast, some participants offered alternative format suggestions for future consideration which are discussed further in the Feedback Format in the Future section.

**New awareness.** The qualitative questions #7-#9 examined aspects of participation that participants found to be beneficial. The current study examined the general themes for new insights participants gained and what they found to be valuable (see Figure 4). These themes helped answer the second research question “Do participants gain new knowledge of themselves following feedback, and if so in what areas (e.g., self-esteem, depressive symptomology)?”

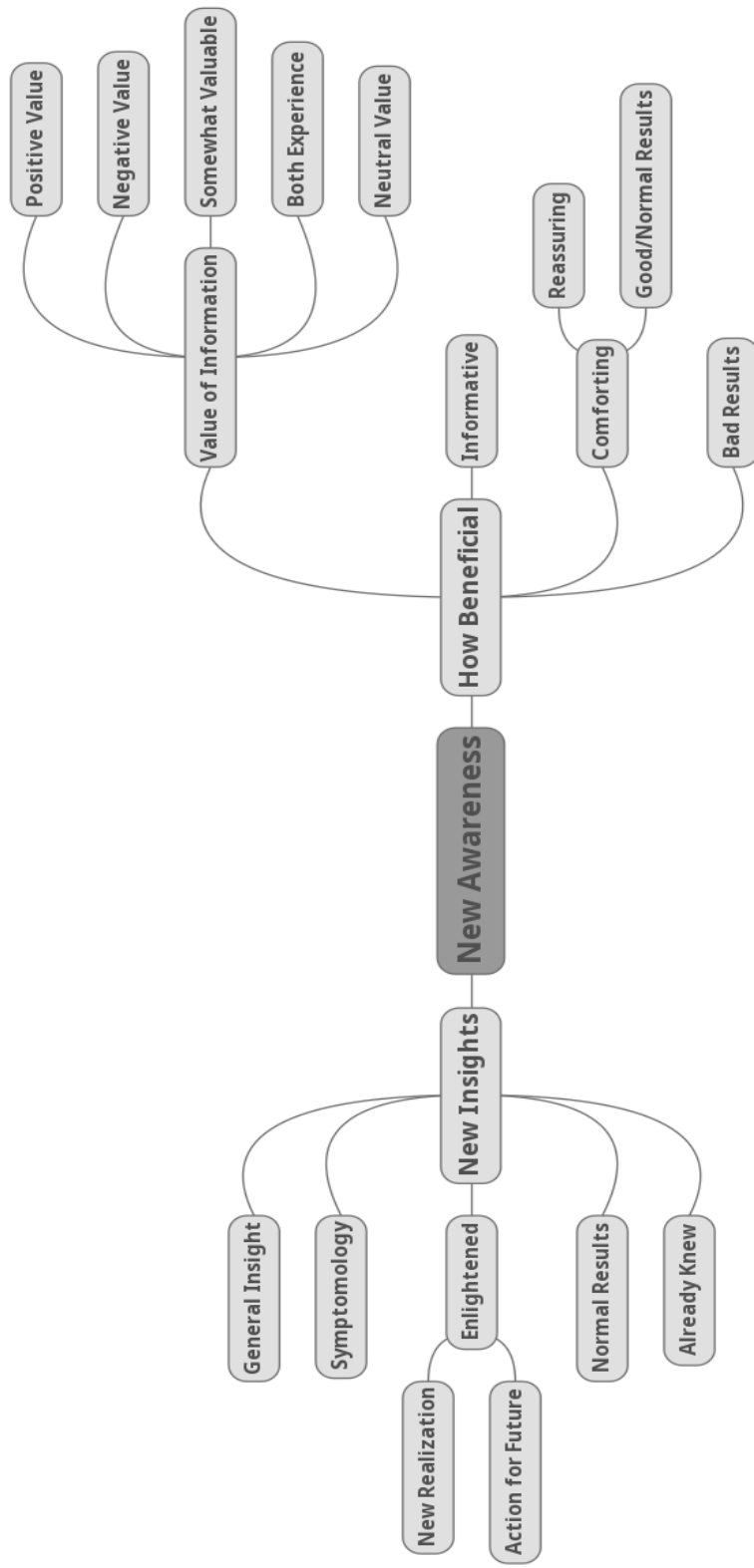


Figure 4. New Awareness

***New insights.*** Five themes emerged regarding any insights participants had in the study. They included: General Insight, Symptomology, Enlightened, Normal Results, and Already Knew (see Table 15). The theme, *Enlightened*, was used to describe participant responses that included learning new information about oneself and how to implement that information into their lives (codes: New Realization and Action for Future). The remaining four themes were not composed of multiple codes and are described in Table 15.

***Beneficial.*** Four themes emerged regarding the extent to which participants found the study to be a positive and valuable experience. Themes included: Value of Information, Informative, Comforting, and Bad Results (see Table 16). *Value of Information* was a theme that captured the extent to which participants felt the information was of positive or no value to them (codes: Positive Value, Negative Value, Somewhat Valuable, Both Experience, and Neutral Value). The *Comforting* theme described responses in which participants described how the information in the feedback had a pleasant, calming effect on them (codes: Reassuring and Good/Normal Results). The remaining codes, *Informative* and *Bad Results*, were not composed of multiple codes and are described in Table 16.

In summary, participants varied in the amount of new awareness they gained and in the areas in which they had new insights. Some participants reported that they already knew the information, whereas others learned more about themselves in various areas captured by the themes (e.g., symptomology, normal results, proactive changes to be made in the future). Participants varied in the degree to which they found the study was valuable, ranging from positive value to not valuable at all. For some participants, their

Table 15

*Themes and Codes Regarding New Insights Participants Had*

<b>Theme</b>	<b>Code</b>	<b>Definition</b>	<b>Example</b>
<b>General Insight</b>		They learned something.	<i>“Yes, I did learn something about myself”</i>
<b>Symptomology</b>		Learned about specific depressive, anxiety, stress symptomology or scores.	<i>“I learned I have high anxiety and depression”</i>
<b>Enlightened</b>			
	New Realization	Described the new information they learned about themselves.	<i>“I learned that I can sometimes be too hard on myself”</i>
	Action for Future	Learned they need to be proactive in the future and may alter their behavior in some way.	<i>“I learned that I do need to go and seek help”</i>
<b>Normal Results</b>		Learned their symptoms are normative/normal results.	<i>“The feedback helped me realize that I am in a normal range”</i>
<b>Already Knew</b>		It was information that they already knew about themselves. They did not learn anything.	<i>“Confirmed what I already knew”</i>

*Note.* Some themes were composed of multiple codes (e.g., Enlightened). Themes without multiple codes consisted of just one code with the same name as the theme title (e.g., Normal Results).

Table 16

*Themes and Codes Regarding How Beneficial Participants Thought the Study Was*

<b>Theme</b>	<b>Code</b>	<b>Definition</b>	<b>Example</b>
<b>Value of Information</b>			
	Positive Value	The study/report was a valuable, positive experience.	<i>"I think it was a positive experience"</i>
	Negative Value	The study/report was not valuable and/or it was a negative experience.	<i>"It isn't that valuable"</i>
	Somewhat valuable	It was somewhat valuable.	<i>"Slightly valuable"</i>
	Both experience	Both positive and negative experience.	<i>"Negative at first but then positive"</i>
	Neutral Value	Neutral regarding its value. Neither positive or negative experience, just neutral.	<i>"I'm neutral on whether the feedback report was valuable or not"</i>
<b>Informative</b>		It was a positive experience because it provided useful information (e.g., scores).	<i>The results were laid out in an organized fashion and the explanations given were informative"</i>
<b>Comforting</b>			
	Reassuring	The report provided reassurance.	<i>"It reassures me"</i>
	Good/Normal Results	It was positive because they were satisfied with the results (e.g., normal/good results).	<i>"I know that I don't have any issues regarding depression or anxiety"</i>
<b>Bad Results</b>		It was negative because they perceived the results to be bad.	<i>"It made me feel like I really do have issues and need 'fixing'"</i>

*Note.* Some themes were composed of multiple codes (e.g., Comforting). Themes without multiple codes consisted of just one code with the same name as the theme title (e.g., Bad Results).

perceived value of the feedback was influenced by how satisfied they were with the results (e.g., perception of “bad” scores, comforted from receiving “normal” results).

**Self-verification.** The qualitative questions #10-#12 examined participants’ perception of the accuracy of the feedback report, perception of the accuracy by family and friends, and the extent to which it matched their own perceptions of their symptomology. Five themes emerged including: Didn’t Know, Already Knew, General Accuracy, General Inaccuracy, and Uncertainty of Accuracy (see Figure 5 and Table 17). These themes helped answer the third research question “How congruent are participants’ feedback results from online questionnaires and participants’ self-perceptions of their symptomology and distress?” One participant’s response referred to another question in the study and did not answer the question. It was not included in this analysis. The theme *Already Knew* was used to describe participant responses that indicated they were already aware of some, or all, of the information in the feedback report (codes: Specific Symptomology, Combination, Knew All, No Symptoms, General Yes, and Not Surprised). *General Accuracy* captured participant responses regarding perceived accuracies within the feedback report (codes: Accurate, Parents/Friends Agree, Agree Everything, and Agree Specific Symptom). In contrast, the theme *General Inaccuracy* captured participant responses regarding perceived inaccuracies within the feedback report (codes: Inaccurate, Parents/Friends Disagree, Inaccuracies, Disagree Everything, and Disagree Specific Symptom). The theme *Uncertainty of Accuracy* described responses in which participants were not certain of how accurate or inaccurate the feedback was (codes: Unsure and Some). The final theme, *Didn’t Know*, was used when participants were previously unaware of the information in the feedback.



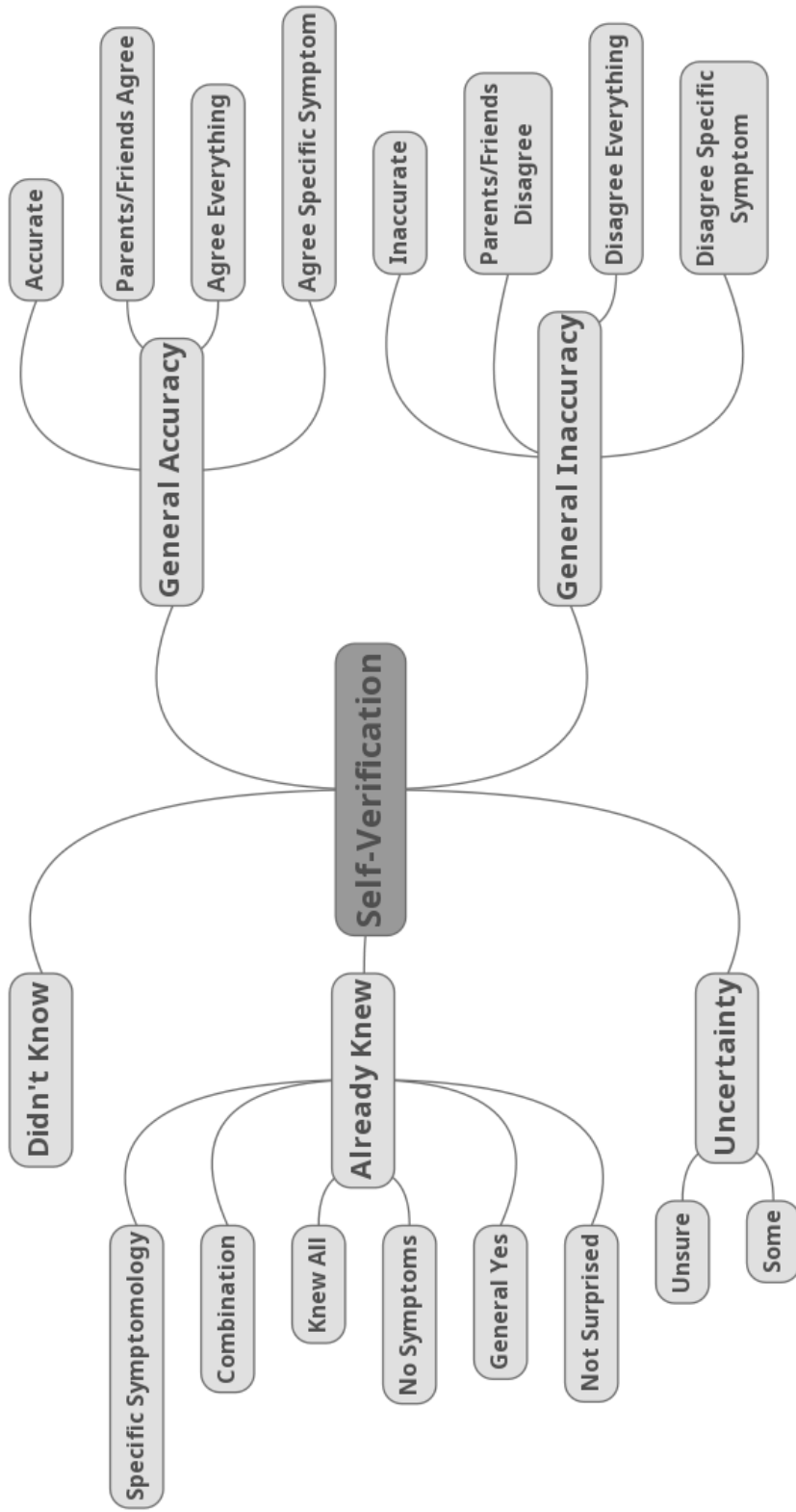


Figure 5. Self-verification.

Table 17

*Themes and Codes Regarding Self-Verification*

<b>Theme</b>	<b>Code</b>	<b>Definition</b>	<b>Example</b>
<b>Didn't Know</b>		They were previously unaware of things in the feedback.	<i>"I did not know anything that was in the feedback"</i>
<b>Already Knew</b>			
	Specific Symptomology	Already knew they were experiencing either depressive, anxiety, or stress symptomology.	<i>"Yep. That I'm usually depressed"</i>
	Combination	They were aware of a combination of two out of the three results (e.g., anxiety and/or depression and/or stress).	<i>"I knew I was stressed and had moderate anxiety"</i>
	Knew All	Was already aware of everything in the feedback (all three: depression, anxiety, and stress).	<i>"That I am stressed and anxious more than I am depressed"</i>
	No Symptoms	Knew they didn't have depressive/anxiety symptomology.	<i>"Yes, I already knew that I do not have depressive or anxiety symptomology"</i>
	General Yes	Without elaborating on the specifics, they reported that there were things they knew about the feedback.	<i>"Yes"</i>
	Not Surprised	They were not surprised with the feedback.	<i>"The fact that my score was not 0 did not surprise me"</i>
<b>General Accuracy</b>			
	Accurate	Everything seemed accurate.	<i>"Nothing seemed inaccurate"</i>
	Parents/Friends Agree	They believed their parents/friends would agree with the report.	<i>"I think they would agree with the report"</i>

Table 17, continued

<b>Theme</b>	<b>Code</b>	<b>Definition</b>	<b>Example</b>
	Agree Everything	They would agree with all the results.	<i>“I think they would agree on all of it”</i>
	Agree Specific Symptom	They would agree with either the depression, anxiety, or stress score.	<i>“They would agree with my anxiety”</i>
<b>General Inaccuracy</b>			
	Inaccurate	It seemed inaccurate.	<i>“Yes, there are things in the feedback that seemed inaccurate”</i>
	Parents/Friends Disagree	They believed their parent/friends would not agree with the report.	<i>“They would probably disagree with the feedback report”</i>
	Inaccuracies	Thought the feedback or parts of it were inaccurate.	<i>“I mean it could be a point or two higher”</i>
	Disagree Everything	They would disagree with all of the results.	<i>“I know my mom would disagree with all of the report”</i>
	Disagree Specific Symptom	They would disagree with either the depression, anxiety, and/or stress score.	<i>“I feel like my anxiety is more than moderate”</i>
<b>Uncertainty of Accuracy</b>			
	Unsure	They were not sure of its accuracy. Were not sure whether their parents/friends would agree with the report.	<i>“I cannot tell”</i>
	Some	They would agree with some of the results but not all.	<i>“...would agree with some parts of the report”</i>

*Note.* Some themes were composed of multiple codes (e.g., Already Knew). Themes without multiple codes consisted of just one code with the same name as the theme title (e.g., Didn't Know).

In summary, participants differed in the amount of self-verification they experienced from the feedback report. This was associated with participants' perceived accuracy or inaccuracy of the feedback report. Themes indicated that some participants were previously unaware of the information in the feedback report, whereas others reported that they already knew the information. Perceptions of the accuracy and inaccuracy of the feedback were examined in the themes and reflected participants' self-perceptions (e.g., agree or disagree with some or all of the results) and how much results aligned with what they believed their parents and friends would say.

**Perceptions of the test administrator.** The qualitative questions #13 and #14 examined participants' perception of the test administrator. Nine themes emerged including: Professional Qualities, Personality, Mannerisms, Appearance, Extrapolates, Fosters Negative Feeling, Unfamiliar, No Influence on Disclosure, and Influence on Disclosure (see Figure 6 and Table 18). These themes helped understand participants' study experiences and helped answer the first research question regarding participants' experience disclosing/withholding information from the test administrator. The theme *Personality* was used to capture participant responses that included descriptions of the test administrator's personality including characteristics that influenced their disclosure (codes: Personality and Personality Traits that Affected Disclosure). *Professional Qualities* was the theme used to describe responses that highlighted the test administrator's competence and expertise within the study (codes: Professional Qualities and Professional Qualities that Affected Disclosure). *Unfamiliar* was a theme that described responses in which participants felt they were not familiar enough with the test administrator to comment on her traits (codes: Don't Know Her and Need to Get to

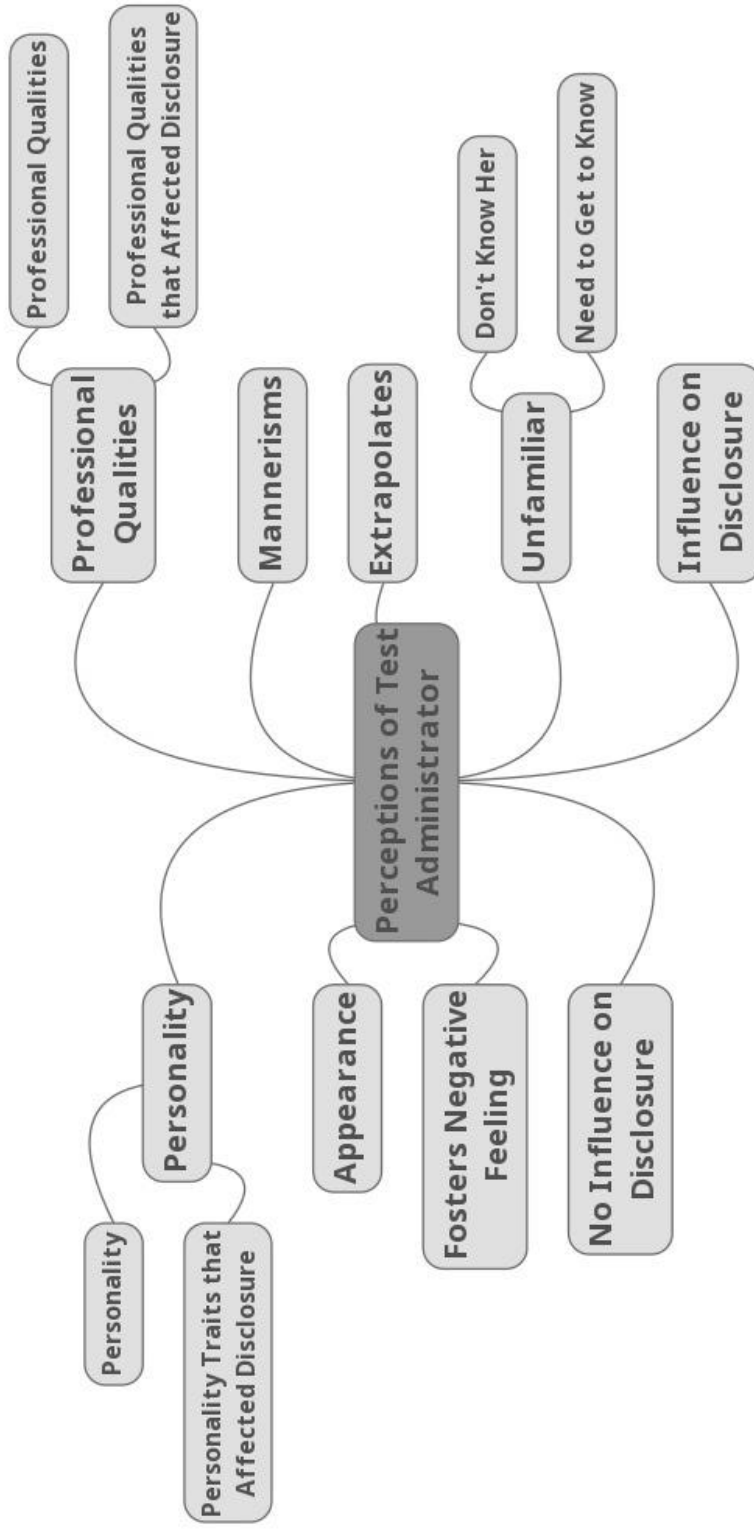


Figure 6. Perceptions of Test Administrator

Table 18

*Themes and Codes Regarding Perceptions of the Test Administrator*

<b>Theme</b>	Code	Definition	Example
<b>Professional Qualities</b>	Professional Qualities	Perception that the test administrator was professional, respectful, and knowledgeable.	<i>“I think that she was professional”</i>
	Professional Qualities that Affected Disclosure	Professional qualities influenced disclosure (e.g., respectful, nonjudgmental).	<i>“The test administrator’s tendency of acceptance is the main reason”</i>
<b>Personality</b>	Personality	Perception that the test administrator had some of the following traits: kind, approachable, caring, calm, happy, genuine, determined.	<i>“She is nice, kind”</i>
	Personality Traits that Affected Disclosure	Personality traits influenced disclosure (e.g., kind, approachable, caring, calm, positivity, genuine, not intimidating).	<i>“Not intimidating which would incline me to trust them more”</i>
<b>Mannerisms</b>		Noted particular mannerisms the test administrator displayed and how they influenced disclosure (e.g., vocal quality, smiling, presentation, self-disclosed information, empathic listening).	<i>“Her voice might have made me want to tell her more”</i>
<b>Appearance</b>		Described her appearance.	<i>“Blonde, female”</i>
<b>Extrapolates</b>		Described an impression of something that has never happened or that they do not have knowledge about.	<i>“Made me feel like she was a friend of mine who I had known for a long time”</i>
<b>Fosters Negative Feeling</b>		Fostered negative feelings in others or gave a negative impression.	<i>“Something about her makes me feel jealous”</i>

Table 18, continued

<b>Theme</b>	<b>Code</b>	<b>Definition</b>	<b>Example</b>
<b>Unfamiliar</b>			
	Don't Know Her	Participants felt like they didn't get to know the test administrator well enough to comment.	<i>"I don't really know her"</i>
	Need to Get to Know	Wouldn't disclose more without getting to know her more first.	<i>"If I got to know her better then maybe I would enclose more information"</i>
<b>No Influence on Disclosure</b>		There was nothing specific that would make them disclose more.	<i>"There was nothing in particular"</i>
<b>Influence on Disclosure</b>		They believed there were traits that made them disclose more.	<i>"Yes"</i>

*Note.* Some themes were composed of multiple codes (e.g., Unfamiliar). Themes without multiple codes consisted of just one code with the same name as the theme title (e.g., Appearance).

Know). The remaining six themes were not composed of multiple codes and are described in Table 18.

In summary, participants noted a variety of characteristics and behaviours that the test administrator demonstrated, some of which reportedly influenced participant disclosure of information. Many themes highlighted characteristics of the test administrator and feelings evoked in the participants within the study (e.g., the test administrator's professional qualities, personality, mannerisms, appearance, and fostered feelings of jealousy). However, one theme—Extrapolate—described information beyond participants' knowledge of the test administrator and extrapolated what they believe the test administrator would be like in other contexts. The test administrator's qualities did not directly affect disclosure for some participants. Others reported that they still felt unfamiliar with the test administrator and would need more time to get to know her before disclosing more.

Review of the qualitative analyses has provided more detailed information about participants' experiences disclosing information, receiving feedback, gaining new awareness, self-verification, and impressions of the test administrator. Further content analysis of the frequency of individual codes for specific groups of participants will be described further in the Integrative Analyses section.

### **Integrative Analyses**

To further interpret the quantitative hypotheses, additional analyses examined the themes that emerged from the qualitative responses from specific groups of participants identified from the quantitative analyses. The qualitative themes from seven groups were examined. First, all participants were divided into two symptomology groups:



Symptomology and No Symptomology. *Symptomology* were participants who obtained scores in the Mild, Moderate, Moderately Severe, or Severe ranges on the PHQ-9 in Part 1 and thus received feedback reporting some depressive symptomology ( $n = 82$ ). *No Symptomology* were participants who obtained scores on the PHQ-9 in Part 1 in the Normal range and thus received feedback reporting normal results ( $n = 44$ ). All participants were also divided into three symptomology change groups: *Increasesers*, *Decreasers*, and *No Changers*. *Increasesers* were identified as participants who reported increases in depressive symptomology on the PHQ-9 from Part 1 to Part 2 ( $n = 27$ ). *Decreasers* were identified as participants who reported decreases in depressive symptomology on the PHQ-9 from Part 1 to Part 2 ( $n = 80$ ). *No Changers* were identified as participants who did not report any changes in their depressive symptomology on the PHQ-9 from Part 1 to Part 2 ( $n = 19$ ). Participants were also divided into two feedback format groups. *Computerized* were participants who received a computerized feedback ( $n = 63$ ) and *In-Person* were participants who had a paper copy of their feedback report read to them in person by the test administrator ( $n = 63$ ). Responses from five of the qualitative questions were examined. These included: “How did you feel when answering personal questions about yourself on the questionnaires in this study?” (#4), “Describe how you felt after reading your feedback report” (#5), “Did you learn anything about yourself from the feedback report? If so, what?” (#7), “Did you find reading the feedback report to be valuable? Why or why not?” (#8), and “Describe the test administrator’s personality traits and characteristics” (#13). These questions were believed to provide the best understanding of participants’ experiences answering the questions, receiving feedback, and perceptions of the test administrator that closely align with the quantitative

hypotheses. In addition, codes that mapped onto the primary variables in this study (Self-disclosure, New awareness, Symptomology, Self-Verification, and perceptions of the test administrator) were examined.

**Integrative analysis – Self-disclosure tendencies.** Participants reported a range of comfort disclosing information to others. Some felt comfortable talking to others openly about their personal experiences, whereas others choose to limit their self-disclosure. Disclosure tendencies for specific groups of participants were examined. When asked how they felt answering personal questions on the study questionnaires, only a small number of participants reported a tendency to avoid connecting with their emotions, feeling the need to restrict the information they disclose, and feeling very open with their communication (see Table 19). Due to these small numbers, one must be cautious when examining self-disclosure tendencies by group. The number of participants that reported Restrict Communication and Avoidance among the seven groups was very similar (range: 0%-5.3%). However, there were more discrepancies when examining Open Communication by group. None of the No Changers reported Open Communication in comparison to 12.5% of Decreasers and 14.8% of Increases. Furthermore, a smaller percentage of participants with No Symptomology reported Open Communication than participants with Symptomology. Similar rates of Open Communication were reported by the Computerized Feedback group and the In-Person Feedback group.

**Integrative analysis – New awareness.** Multiple hypotheses suggested that gains in new awareness would result from receiving the feedback report. Results from Hypothesis 1a found that participants reported significantly greater new awareness post-

Table 19

*Percentage of the Group that Endorsed Self-Disclosure Related Codes*

Group	Code (n)		
	Open Communication	Restrict Communication	Avoidance
Symptom Change			
DEC	12.5% (10)	1.3% (1)	3.8% (3)
NC	0% (0)	5.3% (1)	0% (0)
INC	14.8% (4)	3.7% (1)	3.7% (1)
Symptomology			
SYM	15.7% (13)	3.6% (3)	4.8% (4)
NSYM	4.5% (2)	0% (0)	0% (0)
Feedback Format			
CF	9.5% (6)	1.6% (1)	3.2% (2)
IP	12.7% (8)	3.2% (2)	3.2% (2)

*Note:* DEC (Decreasers): Participants that reported decreases in PHQ scores at Part 2. NC (No Changers): Participants that did not report any changes in PHQ scores at Part 2. INC (Increaseers): Participants that reported increases in PHQ scores at Part 2. SYM (Symptomology): Participants that scored in the Mild, Moderate, Moderately Severe, and Severe ranges on the PHQ. NSYM (No Symptomology): Participants that scored in the Normal range on the PHQ. CF (Computerized Feedback): Participants that received the computerized feedback format. IP (In-Person): Participants that received the feedback in person.

feedback than prior to it. Throughout the qualitative questions, New Realization was a theme that kept arising. It was used to describe instances when participants reported learning something new about themselves. This code was present in five of the qualitative questions (#5, #6, #7, #8, #9). A similar code, Action for Future, was also a repeated theme. It was used to describe instances in which participants described the intention to change their lifestyle in the future. This code was present in three of the qualitative questions (#7, #8, #10).

Results from Hypothesis 2a found that feedback satisfaction was related to gains in new awareness. Upon further examination of the qualitative responses, additional groups were identified that reported gains in new awareness. When asked how they felt after reading the feedback (#5), 31.7% of those with Symptomology reported new realizations compared to only 6.8% of those in the No Symptomology group. Some participants in the latter group presumed they had mild symptomology but realized after reading the feedback report that it was normative. This suggests that even participants without symptomology were able to learn new information about themselves from the feedback. Furthermore, 27.5% of Decreasers reported new realizations in contrast to only 15.8% of No Changers and 14.8% of Increasers. When participants were examined based on the feedback format, 28.6% of participants that received computerized feedback reported new realizations, whereas only 17.5% of participants that received feedback in person reported new realizations. Furthermore, when asked if they learned anything about themselves (#7), multiple participants reported new realizations and wanting to take action by making proactive changes for their future (see Table 20).

Overall, responses consistently show that participants who experienced decreases

Table 20

*Percentage of the Group that Endorsed Codes Regarding if they Learned Anything*

Group	Codes ( <i>n</i> )	
	New Realizations	Action for Future
Symptom Change		
DEC	15.0% (12)	20.0% (16)
NC	10.5% (2)	15.8% (3)
INC	3.7% (1)	11.1% (3)
Symptomology		
SYM	11.0% (9)	24.4% (20)
NSYM	13.6% (6)	4.5% (2)
Feedback Format		
CF	11.1% (7)	20.6% (7)
IP	12.7% (8)	14.3% (9)

*Note:* DEC (Decreasers): Participants that reported decreases in PHQ scores at Part 2. NC (No Changers): Participants that did not report any changes in PHQ scores at Part 2. INC (Increaseers): Participants that reported increases in PHQ scores at Part 2. SYM (Symptomology): Participants that scored in the Mild, Moderate, Moderately Severe, and Severe ranges on the PHQ. NSYM (No Symptomology): Participants that scored in the Normal range on the PHQ. CF (Computerized Feedback): Participants that received the computerized feedback format. IP (In-Person): Participants that received the feedback in person.

in their depressive symptomology scores also most frequently reported gaining new awareness about themselves and the intention to change their future lifestyle. Responses based on format group were fairly consistent but participants that received the computerized feedback did show a small trend of more frequently reporting new realizations and intention to change in the future.

**Integrative analysis – Symptomology.** Results from Hypothesis 1b found that participants reported significantly less depressive symptomology at Part 2 after receiving the feedback report. However, not all participants reported decreases in symptomology (e.g., Increasers, No Changers). The following tables show the frequencies of codes for the seven groups when they were asked: (1) how they felt answering personal questions on the questionnaires (see Table 21), (2) how they felt after reading the feedback report (see Table 22), and (3) if they felt the feedback was valuable or not (see Table 23).

Overall, the Decreasers and Symptomology groups reported more frequently feeling catharsis, or a sense of relief, when disclosing information on the questionnaires and after having read the feedback report. In addition, they reported more frequently than the other groups that the report was valuable, reassuring, and interesting. There were very few differences in responses between participants that received the computerized and in-person feedback. Both groups reported similar frequencies of feeling catharsis and positive feelings. They had similar rates regarding how valuable (or not) they perceived the feedback to be. Those that received in-person feedback more frequently reported feeling personal discomfort and that the feedback was interesting. Those that received the computerized format more frequently reported feeling comfortable.

**Integrative analysis – Self-verification.** Hypothesis 2b examined the

Table 21

*Percentage of the Group that Endorsed Codes Regarding Feelings Answering Personal Questions on the Questionnaires*

Group	Codes ( <i>n</i> )			
	Catharsis	Positive Feeling	Self-Reflection	Comfortable
Symptom Change				
DEC	2.5% (2)	31.3% (25)	21.3% (17)	21.3% (17)
NC	5.3% (1)	42.1% (8)	5.3% (1)	26.3% (5)
INC	3.7% (1)	51.9% (14)	22.2% (6)	22.2% (6)
Symptomology				
SYM	4.8% (4)	34.9% (29)	24.1% (20)	18.1% (15)
NSYM	0% (0)	40.9% (18)	9.1% (4)	29.5% (13)
Feedback Format				
CF	3.2% (2)	36.5% (23)	22.2% (14)	28.6% (18)
IP	3.2% (2)	38.1% (24)	15.9% (10)	15.9% (10)

*Note:* DEC (Decreasers): Participants that reported decreases in PHQ scores at Part 2. NC (No Changers): Participants that did not report any changes in PHQ scores at Part 2. INC (Increaseers): Participants that reported increases in PHQ scores at Part 2. SYM (Symptomology): Participants that scored in the Mild, Moderate, Moderately Severe, and Severe ranges on the PHQ. NSYM (No Symptomology): Participants that scored in the Normal range on the PHQ. CF (Computerized Feedback): Participants that received the computerized feedback format. IP (In-Person): Participants that received the feedback in person.

Table 22

*Percentage of the Group that Endorsed Codes Regarding Feelings After Reading the Feedback Report*

Group	Codes ( <i>n</i> )			
	Catharsis	Positive Feeling	Personal Discomfort	Neutral
<b>Symptom Change</b>				
DEC	8.8% (7)	16.3% (13)	7.5% (6)	17.5% (14)
NC	5.3% (1)	36.8% (7)	5.3 (1)	26.3% (5)
INC	7.4% (2)	29.6% (8)	14.8% (4)	7.4% (2)
<b>Symptomology</b>				
SYM	7.3% (6)	13.4% (11)	12.2% (10)	11.0% (9)
NSYM	9.1% (4)	38.6% (17)	2.3% (1)	27.3% (12)
<b>Feedback Format</b>				
CF	9.5% (6)	20.6% (13)	6.3% (4)	17.5% (11)
IP	6.3% (4)	23.8% (15)	11.1% (7)	15.9% (10)

*Note:* DEC (Decreasers): Participants that reported decreases in PHQ scores at Part 2. NC (No Changers): Participants that did not report any changes in PHQ scores at Part 2. INC (Increaseers): Participants that reported increases in PHQ scores at Part 2. SYM (Symptomology): Participants that scored in the Mild, Moderate, Moderately Severe, and Severe ranges on the PHQ. NSYM (No Symptomology): Participants that scored in the Normal range on the PHQ. CF (Computerized Feedback): Participants that received the computerized feedback format. IP (In-Person): Participants that received the feedback in person.



Table 23

*Percentage of the Group that Endorsed Codes Regarding Feedback Value*

Group	Codes ( <i>n</i> )			
	Yes	Reassuring	Interesting	No
Symptom Change				
DEC	73.8% (59)	20.0% (16)	32.5% (26)	16.3% (13)
NC	73.7% (14)	31.6% (6)	5.3% (1)	21.1% (4)
INC	51.9% (14)	18.5% (5)	37.0% (10)	18.5% (5)
Symptomology				
SYM	74.4% (61)	20.7% (17)	32.9% (27)	12.2% (10)
NSYM	59.1% (26)	22.7% (10)	22.7% (10)	27.3% (12)
Feedback Format				
CF	69.8% (44)	23.8% (15)	19.0% (12)	17.5% (11)
IP	68.3% (43)	19.0% (12)	39.7% (25)	17.5% (11)

*Note:* DEC (Decreasers): Participants that reported decreases in PHQ scores at Part 2. NC (No Changers): Participants that did not report any changes in PHQ scores at Part 2. INC (Increaseers): Participants that reported increases in PHQ scores at Part 2. SYM (Symptomology): Participants that scored in the Mild, Moderate, Moderately Severe, and Severe ranges on the PHQ. NSYM (No Symptomology): Participants that scored in the Normal range on the PHQ. CF (Computerized Feedback): Participants that received the computerized feedback format. IP (In-Person): Participants that received the feedback in person.

relationship between self-verification and therapeutic benefits. Those with high self-verification reported less trait hopelessness post-feedback. Qualitative responses suggest that Decreasers and Symptomology groups most frequently reported that the feedback was accurate (see Table 24). A greater number of participants perceived the report to be inaccurate in the in-person feedback group than those that received the computerized feedback. Contradictorily those that received in-person feedback also reported self-verification more frequently.

**Integrative analysis – Test administrator.** Hypothesis 2d found that participants that reported high rapport with the test administrator had greater reductions in trait hopelessness post-feedback. How different groups of participants described the test administrator in qualitative questions was examined. Across all symptomology change, symptomology, and feedback format groups, participants reported that the test administrator was kind, approachable, professional, and caring (see Table 25). These positive traits were endorsed by many, ranging from 42.4% (Caring) to 51.5% (Professional).

### **Supplementary Analyses**

**Trust in feedback accuracy.** Participants were asked one question on a 4-point Likert-type scale about how much they trust the accuracy of the feedback report on the Debriefing Questionnaire. Participants reported most frequently that they “Mostly trust its [the report’s] accuracy” (60.3%). Other participants reported that they “Completely trust its accuracy” (16.7%), “Balance of trust and mistrust” (19.8%), and “Mostly distrust its accuracy” (3.2%). Across the two feedback format groups, participants reported similar rates of trust in the accuracy of the feedback report. One (1.6%) participant that

Table 24

*Percentage of the Group that Endorsed Codes Regarding Self-Verification*

Group	Code (n)		
	Self-Verification	Accurate	Inaccurate
Symptom Change			
DEC	32.5% (26)	43.8% (35)	13.8% (11)
NC	36.8% (7)	31.6% (6)	5.3% (1)
INC	59.3% (16)	18.5% (5)	18.5% (5)
Symptomology			
SYM	39.0% (32)	39.0% (32)	14.6% (12)
NSYM	38.6% (17)	31.8% (14)	38.6% (17)
Feedback Format			
CF	31.7% (20)	44.4% (28)	9.5% (6)
IP	46.0% (29)	28.6% (18)	17.5% (11)

*Note:* DEC (Decreasers): Participants that reported decreases in PHQ scores at Part 2. NC (No Changers): Participants that did not report any changes in PHQ scores at Part 2. INC (Increaseers): Participants that reported increases in PHQ scores at Part 2. SYM (Symptomology): Participants that scored in the Mild, Moderate, Moderately Severe, and Severe ranges on the PHQ. NSYM (No Symptomology): Participants that scored in the Normal range on the PHQ. CF (Computerized Feedback): Participants that received the computerized feedback format. IP (In-Person): Participants that received the feedback in person.

Table 25

*Percentage of the Group that Endorsed Codes Regarding Perceptions of the Test Administrator*

Group	Codes ( <i>n</i> )			
	Kind	Approachable	Professional	Caring
Symptom Change				
DEC	45.0% (36)	48.8% (39)	51.3% (41)	37.5% (30)
NC	52.6% (10)	36.8% (7)	47.4% (9)	47.4% (9)
INC	37.0% (10)	44.4% (12)	55.6% (15)	51.9% (14)
Symptomology				
SYM	51.2% (42)	46.3% (38)	46.3% (38)	37.8% (31)
NSYM	31.8% (14)	45.5% (20)	61.4% (27)	50.0% (22)
Feedback Format				
CF	47.6% (30)	50.8% (32)	52.4% (33)	38.1% (24)
IP	41.3% (26)	41.3% (26)	50.8% (32)	46.0% (29)

*Note:* DEC (Decreasers): Participants that reported decreases in PHQ scores at Part 2. NC (No Changers): Participants that did not report any changes in PHQ scores at Part 2. INC (Increases): Participants that reported increases in PHQ scores at Part 2. SYM (Symptomology): Participants that scored in the Mild, Moderate, Moderately Severe, and Severe ranges on the PHQ. NSYM (No Symptomology): Participants that scored in the Normal range on the PHQ. CF (Computerized Feedback): Participants that received the computerized feedback format. IP (In-Person): Participants that received the feedback in person.

received computerized feedback and three (4.8%) participants that received in-person feedback reported mostly distrusting its accuracy. In contrast, 49 (77.7%) participants that received computerized feedback and 48 (76.2%) participants that received in-person feedback reported either mostly trusting or completely trusting its accuracy. To support the validity of this question, it was compared to all participant responses on the eleventh qualitative question that asked participants to comment on the feedback accuracy. Of the 96 participants that commented directly on the accuracy in the qualitative analyses, 68.9% of participants reported that the feedback report was completely accurate and only 3.8% reported that it was completely inaccurate. Other participants commented on the inaccuracy of specific scores [e.g., Anxiety Score (12.1%), Depression Score (11.4%), and Stress Score (9.8%)]. Three participants were unsure of the accuracy (2.3%) and two felt it was a mix of accurate and inaccurate (1.5%). Of the four participants that responded “Mostly distrust its accuracy” on the debriefing questionnaire, two reported in the qualitative question that the report was inaccurate and two reported that only the depression score on the report was inaccurate. Overall, most participants reported mostly trusting the accuracy of the results in the feedback report.

**Feedback format in the future.** Participants were asked one question about whether they would prefer to receive information from a feedback report about psychological distress online or in-person in the future. There was a split whereby 50.8% of participants reported a preference for online feedback reports and 49.2% of participants reported a preference for receiving feedback reports in person. As previously mentioned, in the sixth qualitative question, 27.3% of participants mentioned alternative methods by which they would like to receive their feedback in the future (e.g., email,

detailed examiner explanation). Additional examples not previously mentioned included, “It might have been easier if she had just reported it to me verbally” (Participant #38), “A feedback may want to take a longer time period to track my feelings since 2 weeks of depressed feelings are not enough to establish a major depression” (Participant #131), “I disliked that it was done online” (Participant #124), and, “I would have liked to know more about the implications of the results” (Participant #51).

## CHAPTER V

### DISCUSSION

The goal of this study was to examine participants' experiences disclosing information on an online depression screening tool and receiving feedback either in a computerized or in-person format. Specifically, therapeutic benefits, including participants' symptomology, hopelessness/hope, self-verification, self-esteem, new awareness, and rapport with the test administrator were examined quantitatively and qualitatively. The literature examining the effects of participating in in-person testing and feedback has shown that many individuals experience therapeutic benefits, including those listed above (Allen et al., 2003; Finn & Tonsager, 1997; Poston & Hanson, 2010). By examining the therapeutic benefits of partaking in an online screening tool and receiving feedback in a computerized format, this study expanded on this previous research. It also examined the positive experiences participants may have when disclosing personal information about symptomology. To the author's knowledge, there is no known published research concerning therapeutic benefits from online screening tools for depressive symptomology or a qualitative analysis of individuals' experiences receiving feedback from online screening tools. The findings from the present study offer new insights into the field of online psychological services. The discussion is summarized in six main sections: Examination of Therapeutic Benefits; Online Screening Procedures; Feedback Format Equivalence, Satisfaction, and Preferences; Limitations and Future Research Directions; Practical Applications; and Conclusions.

#### **Examination of Therapeutic Benefits**

The primary purpose of this study was to examine potential therapeutic benefits after completing online screening tools for depressive symptomology and receiving feedback. It was hypothesized that participants would experience gains in hope, new awareness, and self-esteem. This hypothesis was partially supported. It was also hypothesized that participants would experience decreases in reported hopelessness and symptomology after receiving feedback. This hypothesis was supported, as the present study found participants reported significant decreases on multiple measures of symptomology and hopelessness post-feedback.

**Reductions in symptomology.** The current study has contributed to the body of empirical research on therapeutic benefits by deepening our understanding of how online screening tools and feedback contribute to reductions in depressive symptomology and hopelessness. In support of the first hypothesis, participants reported significant decreases on post-feedback scores of depressive symptomology, anxiety, stress, and hopelessness. Approximately 63% of participants ( $n = 80$ ) reported lower depressive symptomology scores after receiving feedback (i.e., Decreasers group). This rate of improvement in therapeutic benefits post-feedback is remarkably similar to that reported in a meta-analysis by Poston and Hanson (2009). They found that across 17 studies, 66% of participants that received assessment and feedback reported better outcomes (e.g., symptomology reduction). Because external factors may have contributed to this reduction in the current study, qualitative and integrative analyses were conducted to gain a thorough understanding of participants' experience receiving the feedback report.

In accordance with the second goal of the study and Research Question 1, instances where participants mentioned positive feelings and/or a feeling of relief were



examined to help determine if these experiences were related to reported symptom reduction. To determine why some participants reported symptomology reductions (Decreasers), whereas others did not (Increasers, No Changers), integrative analyses examined the frequency of codes indicating general positive feelings (i.e., Positive Feeling), feelings of relief (i.e., Catharsis), comfort (i.e., Comfortable), and feeling reassured (i.e., Reassuring) for these groups. Overall, more Decreasers reported feeling comfortable, a sense of relief, reassurance, and general positive feelings (e.g., good, calm, happy). This suggests a link between these feelings with positive valence and symptom reduction.

The present study, though unable to determine a sole reason for reduction in symptomology over time, suggests that some participants who reported decreases in depressive symptomology also reported positive feelings including relief, reassurance, and comfort from participating. Prior research with 216 university students found a significant negative correlation whereby the greater reported positive feeling (e.g., happiness), the less depressive symptomology (Rezaee et al., 2016). It is possible that these types of positive feelings in response to disclosing information and receiving informational feedback about what they reported may negate intense feelings of hopelessness and sadness that are considered to be depressive symptomology.

Previous research conducted by Garrison and colleagues (2012) supports this idea. They found that college students with a greater tendency to disclose negative thoughts and emotions to others, reported less depressive and anxiety symptomology. The Inventory of Depression and Anxiety Symptoms was used to measure decreases in symptomology, which included items regarding hopelessness. The current study required

participants to disclose information about their emotions and most participants did so. A similar pattern of reductions in depression and anxiety symptomology after disclosing information was found.

Together this suggests that participants that experienced decreases in symptomology were more likely to report having had a positive experience in the current study. In other words, when individuals have a positive experience disclosing information and receiving feedback, they are also more likely to experience reductions in depressive symptomology.

**New self-awareness.** Gains in self-awareness, or learning something new about oneself, was an important therapeutic benefit that was examined in the present study. Both quantitative and integrative results highlighted the relation between new awareness and depressive symptomology (e.g., hopelessness). Results from the second quantitative hypothesis showed that when two groups were formed – participants with High and Low New Awareness – those with High New Awareness reported significantly greater reductions in hopelessness than those with Low New Awareness. Integrative results indicated that participants that experienced decreases in depressive symptomology (Decreasers) more frequently reported the theme: New Awareness. This theme highlighted how participants learned something new about themselves and found it valuable to reflect on themselves. Some participants reported learning something new about themselves from the feedback, specifically about their depressive symptomology, anxiety, and stress. Additional participants identified having more general new realizations about themselves [e.g., “I learned that I can sometimes be too hard on myself” (Participant #9)].

The relation between new awareness and depressive symptomology was prominent in this study. It is possible that participants experiencing symptomology they did not understand gained new awareness from the feedback, which reduced hopelessness (a symptom of depression). A systematic review of the literature conducted by Clayton and colleagues (2008) examined how physicians give prognoses to terminally ill patients. Themes in the articles that helped foster hope included patient preference for receiving honest, accurate information (as opposed to tempering difficult news) and physicians offering treatment options. Another study by Hagerty and colleagues (2005) asked 126 adults with cancer to reflect on how they received their diagnosis from the physician. Ninety-one percent of patients reported that if the physician appeared nervous or uncomfortable it did not instill hope. The current study did not offer diagnoses or treatment options, but it did provide honest, accurate information regarding reported symptomology and a resource sheet highlighting available psychological services in the area. Almost all the test administrator's communication with participants was scripted, and those in the computerized format did not receive feedback from the test administrator. Based on participants' qualitative descriptions of the test administrator, it is unlikely that the test administrator behaved in a nervous or uncomfortable manner that would negatively impact hope. Based on the findings in the previously mentioned studies, it is possible that the provision of accurate feedback in a standardized manner instilled hope and reduced hopelessness in the current study.

Together, these findings answered the second research question "Do participants gain new knowledge of themselves following feedback, and if so in what areas (e.g., depressive symptomology)?" Many participants reported gains in self-awareness after

reading the feedback report. Furthermore, the findings suggest that gains in new awareness are related to reductions in depressive symptomology, such as hopelessness.

**Hope and action for change in the future.** Some participants experienced gains in hope for their future and expressed a desire to take steps to make positive change in their future. These are distinctly future-oriented benefits unlike the other therapeutic benefits mentioned that are more accurately described as benefits participants felt in the present moment. Though quantitative analyses did not show a significant difference between participants' hope scores at Part 1 and Part 2, there was a slight trend for participants to report increased hope scores after receiving feedback.

An additional five study-specific questions regarding participants' hope were analyzed. Participants' reported optimism and hopefulness regarding their future increased after they received the feedback report. Similarly, participants reported less feelings of discouragement and misery regarding their future at Part 2. This suggests that disclosing personal information on the screening measures and reading their feedback report made participants feel less discouraged and more hopeful for their future.

A theme that emerged in the qualitative questions was feeling Enlightened, of which the code Action for Future played a major role. Integrative results showed that approximately one quarter of participants with depressive symptomology endorsed this code. Action for Future represented participant responses that mentioned a desire to be proactive in changing their future (e.g., desires to change their lifestyle, seek help, be less critical of themselves, and use coping strategies). Furthermore, when asked if they found the feedback to be valuable, participants that endorsed this code reported wanting to improve themselves, work on decreasing stress, pay closer attention to feelings, and

wanting to learn how to monitor emotions. This drive for improvement and/or cures is not uncommon for clients to experience after having received a difficult diagnosis or prognosis from a physician (Gordon & Daugherty, 2003). Though the experience of hearing about symptomology can be challenging, for some individuals this may empower them to take action (e.g., trying new treatments).

Taken together, there is evidence that participants in the present study experienced gains in hope for the future from participating in this study. Notably, nearly one-quarter of participants with reported symptomology expressed explicit desires to change their future lifestyle based on the information they read in their feedback reports. This suggests that receiving a brief feedback report from screening tools can foster hope and potentially be a catalyst for some individuals to seek additional psychological services and resources, particularly for those with symptomology.

**Self-esteem.** Another therapeutic benefit examined was self-esteem. Quantitative analyses did not find a significant difference in reported self-esteem between Part 1 and Part 2. Self-esteem was not explicitly stated in participants' qualitative responses. However, the code Confident was mentioned, a construct related to self-esteem. Though only endorsed by six participants, the code Confident was used when participants specifically reported feeling confident after answering personal questions on the questionnaires. Only these few qualitative participant responses suggest that self-esteem was fostered through participation in this study. Therefore, this research suggests that participating in online screening tools for depressive symptomology and receiving feedback does not significantly influence positive changes in self-esteem.

**Self-verification and perceived accuracy.** Self-verification has been considered a therapeutic benefit because it establishes a sense of congruency with one's self-perceptions and reality. In this study, self-verification was the congruency between participants' self-perceptions of their symptomology and what the feedback report stated. How accurate and how much participants trust the feedback report comes into play.

Participants were asked a simple question regarding how much they trust the contents of the feedback report. Most participants reported that they either mostly trusted or completely trusted the accuracy of the feedback. Within the qualitative responses, themes emerged suggesting participants' perceptions ranged from believing the report was completely accurate to completely inaccurate, with some participants believing only specific scores were inaccurate. Any perceived inaccuracies would hinder self-verification because it would mean that feedback results do not align with self-perceptions.

When asked how they felt after reading their feedback report, the integrative results showed that two frequently endorsed codes were Accurate and Self-Verification. This suggests that many participants felt the report was accurate and similar to their own perceptions of themselves. Participants were also asked whether reading the feedback report was a positive or negative experience and why. Some participants felt it was a positive experience, specifically because they experienced self-verification. This suggests that for some individuals, having the opportunity to confirm their own suspicions or perceptions of their symptomology is a rewarding experience. The *fear of the unknown* has been described as a primary fear of humanity and it has been argued to be a fundamental component of anxiety (Carleton, 2016). Receiving a feedback report is a

way to make symptomology results known, objective, and understandable. This may remove fears of unknown symptomology. The report enabled participants to confirm their suspicions which many reported was a valuable experience.

When specific self-verification groups were analyzed in the second hypothesis, it was found that those with high self-verification reported greater decreases between Part 1 and Part 2 in trait hopelessness than those with low self-verification. As previously suggested, it is possible that those who can confirm their suspicions regarding symptomology no longer fear unidentified symptomology which may present itself as decreases in hopelessness. In addition, those with high self-verification reported greater increases in self-esteem over time than those with low self-verification. Because self-verification is an external way to confirm one's perceptions, it is possible that it fosters empowerment and boosts confidence in oneself, thereby influencing self-esteem. Together, findings suggest that many participants found the feedback to be accurate and had a positive experience because they were able to verify some of their self-perceptions. Those who experienced the most self-verification were more likely to feel less hopelessness and have gains in self-esteem. These findings helped answer the final research question regarding the perceived congruency and accuracy of the feedback results and participants' self-perceptions of their symptomology and distress.

### **Online Screening Procedures**

The testing procedures used in the present study had three main components. The first was a rapport building online video presented before each questionnaire set at both time points. This was to foster rapport between participants and the test administrator. The second component was online questionnaires that included screening measures for

depressive symptomology. Participants were asked to self-disclose personal information on these questionnaires regarding their emotions, behaviours, thoughts, and self-perceptions. The final component was the feedback report. Half of the participants received it in a computerized format and the remaining half received it in person with the test administrator reading it to them. Participants' experiences building rapport and self-disclosing information to a test administrator were explored.

**Rapport with test administrator.** After having watched two online rapport building videos of the test administrator, participants were asked via qualitative questions to comment on their perceptions of the test administrator's personality traits and characteristics. The primary types of personality traits participants mentioned included: kind, caring, approachable, determined, happy, and genuine. Participants also commented on additional professional qualities and the test administrator's appearance. It was interesting to note that some participants went beyond the scope of their knowledge of the test administrator and reported about what they assumed the test administrator would be like outside of the research setting (e.g., would make a good friend). These findings are consistent with the items participants endorsed on the FROST measure (e.g., professional, calm, friendly, comfortable).

Results from the second hypothesis showed that participants with high rapport with the test administrator reported greater decreases over time in trait hopelessness than those with low rapport with the test administrator. This is consistent with research that has found that *how* symptomology is discussed between a healthcare professional and a client affects client hopefulness. In a study by Sardell and Trierweiler (1993), 56 clients discussed how they received their diagnosis of cancer and the methods physicians used to



make them feel hopeful. In this population, discussions about effective treatment options and emotional support provided by the physician (e.g., told by the physician that they would not abandon them) were rated as yielding the most hope. The strength of the bond between the provider of results and an individual is paramount in affecting how results are perceived by the individual. In summary, participants expressed generally positive impressions of the test administrator, despite having very little time with her.

Furthermore, experiencing a connection with the test administrator was related to greater decreases in hopelessness. One of the test administrator's roles was to present the feedback to participants, particularly those in the in-person feedback condition. It is possible that having a strong connection with someone discussing sensitive information (e.g., symptomology) makes it less burdensome to hear and reduces feelings of hopelessness.

**Conditions for self-disclosure.** In order to learn about participants' self-disclosure tendencies, they were asked multiple qualitative questions regarding factors that influence whether they disclose or withhold information. These factors would presumably impact how open participants are on questionnaires that are (a) online and (b) given to a stranger (e.g., test administrator, researcher). This information would be valuable to online test developers and administrators seeking to maximize honest disclosure to increase test result accuracy. More specifically, it would be important for test developers and administrators to know that participants in this study differed in how they feel when disclosing information and what factors influence their disclosures on questionnaires.

Disclosing personal information can be quite distressing for some individuals and some may try to restrict how much information they disclose. In contrast, others may be very open in their communication with others and have a general positive feeling when doing so. It should be noted that when asked specifically how they felt answering personal questions in the questionnaires in this study, the code most frequently endorsed by participants in every group was Positive Feeling (e.g., good, relaxed, calm). This suggests that despite typical feelings of reluctance and discomfort, the methodology used in the present study did not seem to elicit the same degree of distress. In fact, most participants typed multiple sentences in response to each qualitative question.

Those administering online questionnaires need to be aware of variables regarding the person receiving the information, such as the closeness of their relationship, degree of anonymity, type of information being disclosed, how much time is given to respond, and whether their personality is warm and open. Efforts should be made in order to maximize these variables' influence on disclosure on online screening tools. In the present study, the test administrator self-disclosed personal information about her family and academic interests so that participants would be able to relate to her. The test administrator demonstrated many positive personality traits and welcoming behaviours that participants in this study described in responses. Finally, participants may have felt a sense of anonymity when completing online questionnaires, independently. Therefore, the methods used in the present study likely facilitated self-disclosure. This is consistent with previous research findings on the relation between online asynchronous rapport and self-disclosure. Frost (2015) found that the combination of receiving an online asynchronous rapport-building video and an online questionnaire format (in contrast to a paper-and-

pencil format) yielded significantly greater reported self-disclosure to the test administrator than when a rapport-building video was not used.

Findings from qualitative questions in the present study suggest that participants had a positive impression of the test administrator, and that they found her to be trustworthy. Participants were not required to answer any questions they did not wish to, and they were given as much time as needed to respond to questions. An additional question asked participants if there was anything about the test administrator that made them want to disclose more or withhold information. Participants mentioned the test administrator's personality (e.g., kind, caring, approachable), mannerisms (e.g., presentation, vocal quality, smiling), and professional qualities (e.g., professional, respectful) as influencing their disclosure.

Together, the methodology used appears to have met participants' expectations and likely facilitated self-disclosure. It also provided new insights into participants' experiences self-disclosing personal information using online screening tools with rapport building components.

### **Feedback Format Equivalence, Satisfaction, and Preferences**

*Feedback format equivalence.* The format in which participants received their feedback was manipulated (computerized versus in-person feedback) and differences between formats were examined. Many researchers have examined the validity of tests once they have been transformed into computerized formats (e.g., Holländare, Askerlund, Nieminen, & Engstrom, 2008; Kane, Walker, & Schmidt, 2011; Vallejo, Jordán, Diaz, Comeche, & Ortega, 2007; Zlomke, 2009) but little is known about individuals' experiences with computerized feedback. The information presented to participants had

the same template so it was hypothesized that feedback format would not impact therapeutic benefits differently.

The format in which participants received feedback did not influence changes of most therapeutic benefits over time. Participants that received either the computerized or in-person feedback experienced similar changes in new awareness, depression, and anxiety symptomology (as measured by the DASS-21), as well as state and trait hopelessness. When asked to describe their self-disclosure tendencies, study experiences, and impressions of the test administrator, participants that received computerized and in-person feedback responded similarly. That is to say that they reported the same themes at similar frequencies. Interestingly, participants who received computerized feedback reported significantly greater decreases in depressive symptomology (as measured by the PHQ-9) and stress (measured by the DASS-21) over time than participants who received in-person feedback. This suggests that computerized feedback may have additional therapeutic benefits above and beyond that of in-person feedback.

One possible explanation of this finding is that the experience of having a test administrator in front of them relaying the feedback to them in the in-person format condition was stressful in and of itself (e.g., sense of embarrassment, vulnerability, being judged). This could make the in-person condition more stressful than the anonymity provided in the computerized format condition. Integrative analyses support this explanation. Though, more generally speaking, there were very few differences in qualitative themes reported by participants that received the computerized and in-person feedback, there was one notable difference regarding comfort level. Those that received in-person feedback more frequently reported feeling personal discomfort after receiving

the feedback than participants that received the computerized feedback format. By having the feedback in person, individuals may have lost their sense of anonymity and privacy. In general, researchers have found that the fear of rejection and loss of privacy are some of the reasons why individuals often choose not to disclose information (Greene, Derlega, & Matthews, 2006). For these reasons the in-person feedback could be perceived to be more stressful for some individuals because it opens the possibility of perceived evaluation from the test administrator. Together, computerized feedback from online screening tools for depressive symptomology shows great promise as a resource.

***Feedback satisfaction.*** Analyses for the second hypothesis found that feedback satisfaction influenced gains in new awareness post-feedback. This suggests that participants who found receiving feedback to be a positive experience may also have learned something new about themselves. Furthermore, results from the second hypothesis showed that participants with high feedback satisfaction had greater decreases in hopelessness than those with low feedback satisfaction. It is possible that the feedback was a source of empowerment for some individuals that reduced hopelessness. In a study by Hubbeling and Bertam (2014), 152 patients that had received in-home treatment for mental health crises were asked to provide information on their satisfaction with service and their hope for the future. Approximately 76% of patients reported being satisfied with their care and approximately 56% reported feeling more hopeful about their future. Though a direct correlation was not analyzed, in both cases most participants were reporting satisfaction and increased hopefulness for the future. In summary, when individuals are highly satisfied with their experience receiving psychological services (e.g., tests and feedback), this appears to be related to gains in new self-awareness and

reductions in feelings of hopelessness. It is therefore imperative for online test developers to create a format of feedback delivery in which individuals are highly satisfied in order to enhance therapeutic benefits.

*Future feedback preferences and alternatives.* Previous research has yet to examine participants' preferences for receiving feedback from online screening tools. Participants in the current study were evenly split on their feedback format preferences. Approximately 51% of participants reported a preference for receiving information from an online feedback report about psychological distress and 49% reported a preference for receiving feedback reports in person. This split informs researchers that despite the rapid push for computerized psychological services, there is still not wide acceptance of this as the feedback format of choice. It should also be noted that even though there was a restricted range for age, age did not seem to relate to format preference. The mean age of individuals that reported a preference for receiving feedback reports online was 20.86 and the mean age for those that reported a preference for receiving feedback reports in person was 20.48. Though one may assume younger generations would prefer online feedback, in the present study the four oldest participants (ages 29-45) reported a preference for receiving feedback reports online.

In the qualitative section, participants were given the opportunity to discuss features they liked and disliked about the feedback, as well as alternative suggestions they had. Some of the themes highlighted an appreciation for the professionalism of the feedback, the scales, and features about the researcher (e.g., researcher explanation). Only participants in the in-person feedback format group reported enjoying the researcher's feedback explanation. Because having the test administrator verbally go

through the feedback with participants was a notable feature mentioned by participants, this is a limitation of the computerized format. Some participants mentioned alternative methods for how they would prefer to receive feedback in the future. Some of these included receiving the feedback via email, verbal feedback, and more detailed explanations from the test administrator. As part of the process of developing online feedback prototypes or templates for clients, researchers should be open to participants' suggestions in these matters.

### **Practical Applications**

The findings from the current study yield many practical applications including fostering ethical research and clinical practices online; online screening tools for youth; increased accessibility of psychological services; and it supports current government initiatives.

**Ethical research and clinical practices online.** Research participants and clients that seek research and psychological services online have a right to ethical treatment. They deserve to have the same quality of care that participants and clients seeking in-person opportunities have. For example, online consent for research participation has been criticized because there is less accountability that participants are reading the consent form and are thus less informed about the risks of participating. For example, in a study on online informed consent by Perrault and Keating (2018), the first line of the consent form stated, "This survey is about college students' perceptions of informed consent forms." However, of the 547 participants, only 192 (35.1%) were able to correctly identify what the consent form said the study was about when asked on a measure that followed. Participants were also asked to provide suggestions for how

online consent should be obtained. The majority of participants suggested making consent forms shorter, but a few participants recommended using online videos as part of the consent process. The current study demonstrated that participants were able to feel a sense of rapport with the test administrator even when their only exposure to the test administrator was through a brief online video and supports the idea of online videos being a part of the introduction to a study.

Similarly, researchers and clinicians using online psychological screening tools need to be fully aware of potential risks participants/clients may experience. For example, the present study found that discussing emotions is uncomfortable for many individuals. By minimizing the conditions under which individuals conceal information and maximizing the conditions under which individuals choose to disclose personal information (e.g., build rapport through mannerisms, kindness, and professionalism; provide time to think; allow visual anonymity), tests may gather the most comprehensive and informative data for screening results with minimal discomfort. For this reason, researchers and clinicians are encouraged to consider incorporating online rapport building components prior to the administration of online measures.

**Online screening tools for youth.** Adolescents and young adults are considered to be a technologically savvy population of individuals. Specifically, they are likely to have the skills necessary to access the Internet, search for a depression screening tool, and complete one online. Data from the 2012 Canadian Community Health Survey-Mental Health indicated that of Canadians aged 15 to 24, 7.6% have consulted the Internet for online diagnosis, 2.4% have used the Internet to discuss mental health problems, and 2.3% have used the Internet to find help within the past 12 months



(Statistics Canada, 2013b). These rates are similar to the number who reportedly consulted a psychologist within the past 12 months (2.7%). Therefore, Canadians aged 15 to 24 may be just as likely to look up mental health resources online as to seek mental health services from a psychologist.

This same population contains a common age-range when depressive episodes become more prevalent. It has been estimated that 7% of Canadians aged 15 to 24 have experienced a major depressive episode in the past 12 months (Statistics Canada, 2013b). The question then becomes “What can adolescents and young adults do when depressive symptomology starts emerging?”

Online screening tools and feedback provide information about depressive symptomology severity that may be particularly useful to this young population. It can be difficult for individuals who are not trained in psychological diagnosis to understand what is considered depressive symptomology that is in the normative range versus symptomology indicative of a depressive episode. One benefit of online screening tools is that they can provide new awareness to those who may be unsure of what a depressive episode is. It can provide self-verification and validation that their feelings and concerns are in fact problematic and not just imagined. It may also be informative to those with depressive symptomology in the normative and mild ranges. For example, perhaps their symptomology (e.g., weight gain, fatigue) could be alleviated through a change in lifestyle (e.g., healthy eating, earlier bedtime) instead of immediately seeking intensive therapeutic services. On the other hand, screening tools can help individuals and professionals think about the level of support and resources individuals may need if the results indicate severe levels of depressive symptomology. Because psychological

services are limited, it is important that those experiencing clinically elevated levels of distressed receive priority for services. Screening tools can be a way that helps both clients and clinicians to understand the severity of an individual's experience.

***Online test development.*** Results from the current study support the following four recommendations for developers of online screening tools and tests.

*1. Facilitate self-disclosure.* In order to facilitate self-disclosure on online screening tools, developers need to foster a trusting, professional, anonymous online environment. This may be fostered by incorporating a rapport building video with a test administrator prior to administering the questions. It is important that the test administrator be perceived as kind, caring, and professional. Therefore, videos should be piloted in advance. Anonymity can be fostered by allowing individuals to complete the screening tool without having to give identifying information (e.g., name, address).

*2. Provide feedback options.* Individuals should be given options for how they wish to receive feedback from online screening tools. It is expected that some individuals will show a preference for receiving feedback from screening tools in person. For example, individuals should be given the option to print off online feedback forms and have them read and interpreted by care providers (e.g., mental health professionals, family physicians) at the time of referral/intake for services. Another option may be enabling individuals to have the online feedback form emailed to their care provider whereby they can schedule a time to discuss the results in person. For clients who are unsure of the format in which they would like to receive feedback, they should be presented with both online and in-person feedback options. However, they should be encouraged to choose an online format as the in-person format was associated with

feelings of distress and discomfort for some individuals. Regardless of the feedback format chosen, individuals should be given the option to ask follow-up questions about the feedback in person.

The current study found equivalence between computerized and in-person feedback regarding their associated gains in most therapeutic benefits. There may even been additional symptomology reduction experienced for those that receive computerized feedback. Therefore, mental health professionals and test developers should not shy away from giving feedback from screening tools to clients online. It is expected that approximately half of individuals may prefer receiving the result this way. Some examples may include showing the results on-screen after the questions or having the feedback form emailed directly to clients.

*3. Create a highly satisfactory online feedback form.* Individuals may benefit most (e.g., lower hopelessness, increase awareness) when they are satisfied with the feedback form. Test developers are encouraged to provide easy-to-read scales with descriptors and legends. It should be clear and use language that is easy to understand for the general population. Discussion of results should also be tailored to foster hope and a plan for next steps (e.g., provide psychological resources, links to helpful websites).

*4. Distribution.* In order for individuals to benefit from online screening tools, they need to be aware of their existence. Because adolescents and young adults may find these tools particularly useful, online test developers should strive to let schools boards, high schools, colleges, and universities know about them and how to help their students access them. Another population that may benefit from knowing these tools are available are those living in rural and remote areas.

In summary, along with the creation of rapport-building videos, questionnaires, and feedback, developers of online screening tools also need to consider how they can be made readily accessible and known to all.

**Increased accessibility of psychological services.** Results from the current study support the utility of online psychological services as a method of assisting those that have difficulty accessing in-person services. Individuals with mobility, communication, scheduling, and financial constraints are just some of those that may find accessing online services more convenient. Perhaps the largest grouping of individuals that may benefit from online screening tools and feedback are those living in remote and rural areas. Unfortunately, few psychologists offer psychological services to Canadians living in rural areas. This has created a need to make psychological services, such as screenings for psychological disorders, more accessible. One dominant movement to increase accessibility is that towards online psychological services.

***Current government initiatives.*** In recent years there has been an increased demand for accessibility to psychological services. Globally, this has been demonstrated through movements including the World Health Organization's (2013) adoption of the Mental Health Action Plan 2013-2020. In Canada, accessibility to mental health services was made a priority in the Mental Health Commission of Canada's Strategic Plan 2017-2022 (Mental Health Commission of Canada, 2016). Part of the Strategic Plan is to "increase the use of tele-mental health and e-mental health by building better infrastructure, providing on-going training and support, and greater flexibility in how services are funded" (Mental Health Commission of Canada, 2016, p. 89). The goals of the current study align with this plan and aim to inform professionals, who may be

working in urban areas, that through the use of technology they can provide valuable online psychological services to those in rural areas.

### **Limitations and Future Research Directions**

The current study had several limitations. First, participants were undergraduate students that did not need to have a psychological disorder to participate. Therefore, it cannot be presumed that they were readily seeking psychological services such as online screening tools. Despite the open inclusion criteria, 20 participants reported having one or more psychological disorders, 24 participants endorsed suicidal ideation on the PHQ-9, and 82 participants reported Mild to Severe depressive symptomology on the PHQ-9 in Part 1. In contrast, because many participants did not report any symptomology, they too would not have been expected to be a group seeking online psychological services. Participants without any symptomology also would not have been expected to have significant decreases in symptomology or experience as many gains in therapeutic benefits. Though the inclusion of these participants may have affected the degree to which mean scores changed between Part 1 and Part 2, this is representative of the general population that take online screening tools and some analyses examined those with and without symptomology separately. Not all individuals that take online screening tools have problematic symptomology. Screening tools are also used to help rule out causes of distress when results are normative. This was demonstrated in the present study when some participants qualitatively reported that the feedback was beneficial for them because they felt comforted knowing that their symptomology scores were in the Normal range and/or lower severity than they suspected. It should also be noted that participants were educated individuals, many with experience in psychology courses. They may have

been more open to receiving psychological feedback and disclosing information for psychology research. Their perceptions may not accurately reflect the disclosure tendencies and perceptions about psychological tests in a community sample. It is more difficult to generalize these findings to distressed clients who may wish to complete online psychological screening tools. Future research should be conducted with clinical samples of individuals genuinely seeking information gathered from online screening tools.

Second, there are limitations regarding the online components of this study. Though steps were taken to ensure that links to the online website were only sent to the participants' e-mail address and prompts were made to watch the videos, it cannot be certain if participants completed the surveys alone or if they watched the entire rapport-building video. There was no control over the environment in which they completed the online study, which may have affected their mood (e.g., anxiety) or their attention to the tasks. For example, if participants did not attentively watch the online rapport-building videos, they may not have felt strong rapport with the test administrator, resulting in lower scores on the FROST. Similarly, if they were not alone when completing the online questionnaire, they may have felt uncomfortable answering sensitive items regarding their emotions. However, participants reported similarly high rapport scores on the FROST in Part 1 and Part 2 suggesting rapport was established from watching the videos. In addition, there were very few missing data points indicating that participants were comfortable answering sensitive items. Although this does provide an experimental limitation, these conditions are similar to how other psychological screening tools are administered online (e.g., Here to Help, Calgary Counselling Centre, Baycrest Health

Sciences). Websites like these advertise that they are quick, free, anonymous, and valid. Individuals can access them immediately no matter where they are. The organizations have no control over the clients' environment, but it appears that the perceived benefits of convenience outweigh this limitation based on how organizations continue to provide these online resources. Though the present study does not have a standardized online testing environment, findings are more representative of how online screening tools are used by the general public.

A third limitation of this study was that due to administration error some of the items of the AQ-2 were not administered to participants. There is potentially missing information that would have contributed to participants scores on the Positive Accurate Mirroring, New Self-Awareness/Understanding, Negative Feelings, and Positive Relationship subscales. However, no more than four items were missing per subscale and subscale reliabilities remained strong with Cronbach's alpha values ranging from .82 to .88. This suggests that they are still representative scores for each of these constructs. Qualitative data also supported the presence of these constructs as part of participants' experiences.

Fourth, though the qualitative data in the present study provided some insights regarding why some participants experienced decreases in symptomology and hopelessness, immediately post-feedback, there are other factors that future researchers should examine. The present study examined the effects of self-verification, self-esteem, new awareness, rapport with a test administrator, self-disclosure, and if a stressful event occurred. It is possible that other variables not studied also influenced short-term reductions in symptomology and hopelessness. Additional variables that could be studied

in the future include: medication changes, formation of new relationships, occurrence of external positive events (e.g., holidays, celebratory events), and personal goal achievements. Furthermore, because the variables measured in this study only captured short term gains immediately post-feedback, future researchers should examine these variables again at another time point (e.g., 2 months post-feedback). The long-term effects of disclosing on screening tools and receiving feedback are currently unknown.

Finally, this was the first use of these two scripts and online videos to build asynchronous rapport with participants. Though they were adapted from Frost's (2015) rapport-building script and video, the present study's videos were unique. The test administrator in the online videos and for the in-person feedback was the same person. Therefore, it is unknown how participants' perceptions would change if someone else performed the script in the videos. This may impact the generalizability of these findings to other test administrators. However, it is expected that if someone else were to accurately replicate the verbal and non-verbal cues in the script that they may foster rapport, similarly. Though it cannot be assumed that all test administrators are the same, they should all demonstrate professionalism as part of their training. Professionalism was a frequently endorsed trait by participants. Further research is needed with other test administrators to assess the generalizability and effects of the asynchronous rapport building script.

## **Conclusions**

The present study found that self-disclosing personal information on online screening tools for depressive symptomology and receiving feedback was related to: (a) reductions in reported depressive symptomology, anxiety, stress, and hopelessness and



(b) gains in new self-awareness. Additionally, through qualitative and integrative analyses, the present study found that reading the feedback report enabled some participants to reflect on themselves, inspired a plan for proactive change for the future, and fostered self-verification and new self-awareness. Participants that experienced decreases in symptomology more frequently reported that the feedback was valuable and accurate. After completing the screening tools and reading their feedback report, some participants described experiencing a variety of positive feelings (e.g., comfortable, relief, calm), a sense of self-verification, and new awareness.

Second, this study expands on findings from the literature on traditional in-person testing and feedback to provide new insights on participants' experiences with online screening tools and computerized feedback. In the present study, participants reported a generally positive impression of the test administrator despite having very limited interactions with her. Those in the computerized format condition only watched two brief online videos of the test administrator and watched her set up their computerized feedback on the computer screen in Part 2. Despite limited contact, those that received the computerized feedback format not only experienced similar rates of therapeutic benefits as those that received in-person feedback, but they experienced decreases in some symptomology and stress beyond that of those that received in-person feedback. This reinforces the notion that individuals may be able to establish rapport and experience therapeutic benefits even from primarily asynchronous online contact.

The present study suggests that fostering asynchronous rapport online, allowing individuals to self-disclose symptomology online, and providing feedback can yield short-term therapeutic benefits. This has potential to be a useful format for intervention

for youth, those in rural/remote areas, and while clients are on waitlists for additional testing or treatment.

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## APPENDICES

### Appendix A



University  
of Windsor

### FEEDBACK

This feedback is from participation in a dissertation research study entitled “*Opinions About Completing Online Psychological Questionnaires*”. These results are provided for information purposes only. The information is research-based and as such, is not to be used as health information to establish a diagnosis or make treatment or education decisions. If you have any questions, please feel free to contact the Principal Investigator, Natalie Frost, at [frostdn@uwindsor.ca](mailto:frostdn@uwindsor.ca).

**Depression Screening:** The *Patient Health Questionnaire-9* and the *Depression Anxiety Stress Scales-21* were administered. Self-report responses indicated the following:

Patient Health Questionnaire-9 (PHQ-9)	Score	Description
Severity of depressive symptoms	6	Mild

<u>Interpretation of PHQ-9 Scores</u>	
PHQ-9 Score	Levels of Depressive Symptoms Severity
0-4	None
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

Depression Anxiety Stress Scales-21 (DASS-21)	Score	Description
Depression	6	Mild
Anxiety	7	Moderate
Stress	14	Severe

<u>Interpretation of DASS-21 Scores</u>			
Depression	Anxiety	Stress	Severity Ratings
0-4	0-3	0-7	Normal
5-6	4-5	8-9	Mild
7-10	6-7	10-12	Moderate
11-13	8-9	13-16	Severe
14+	10+	17+	Extremely Severe

#### Main Findings

Your responses indicated **Mild** depressive symptomology which suggests that you are experiencing some distress (e.g., feelings of sadness, worthlessness, difficulties sleeping) that is impacting your day-to-day functioning. Your responses indicated **Moderate** anxiety symptomology which suggests that at times you experience distress (e.g., worries, nervousness) that impact your daily activities. Your responses indicated **Severe** levels of stress (e.g., irritability, tension, difficulty relaxing, easily upset).

*Note:* Should you have any concerns or wish to follow-up the results from this feedback with a mental health professional, please refer to the Resource Sheet that will be provided to you by the researcher.

## Appendix B

### *Summary Chart of Measures*

Measure	Study Variable	# of Items	Analysis
Background Information	Demographics	13	DI
Internet Self-Efficacy Measure	Demographics	10	DI
Patient Health Questionnaire-9 (PHQ-9)	Symptomology	9	IV, DV
Depression Anxiety Stress Scales-21 (DASS-21)	Symptomology	21	IV, DV
State Hope Scale (SHS)	Hope	6	IV, DV
Additional Hope Questions	Hope	5	DI
State-Trait Hopelessness Scale (STHS)	Hope	23	IV, DV
Rosenberg Self Esteem Scale (RSES)	Self-Esteem	10	IV, DV
Positive Accurate Mirroring (from the AQ-2)	Self-Verification	11	IV, DV
New Self-Awareness/Understanding (from the AQ-2)	Self-Awareness	9	IV, DV
Positive Relationship (from the AQ-2)	Rapport with Test Administrator	11	CV
Frost's Rapport Observations: Survey of Test administrators (FROST)	Rapport with Test Administrator	43	IV, DV
Negative Feelings (from the AQ-2)	Feedback Satisfaction	8	CV
Feedback Assessment Questionnaire	Feedback Satisfaction	7	IV, DI

*Note.* AQ-2=Assessment Questionnaire-2, IV=Independent Variable, DV=Dependent Variable, DI=Descriptive Information, CV=Construct Validity



## Appendix C

### Background Information

Please complete the following questionnaire by selecting your response and filling in the blanks accordingly.

1. Gender \_\_\_\_\_  
 Prefer not to answer
  
2. Age \_\_\_\_\_  
 Prefer not to answer
  
3. Ethnicity  
 Aboriginal (e.g., Inuit, Métis, North American Indian)  
 Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese)  
 Black (e.g., African, Haitian, Jamaican, Somali)  
 Chinese  
 Filipino  
 Japanese  
 Korean  
 Latin American  
 South Asian  
 South East Asian  
 White (Caucasian)  
 Other *please specify* \_\_\_\_\_  
 Prefer not to answer
  
4. Year of studies  1  2  3  4  5 or more
  
5. Program of study \_\_\_\_\_
  
6. Have you ever been diagnosed with a psychological disorder(s)?  
 Yes  No  Prefer not to answer  
  
If yes, please check all that apply:  
 Major Depressive Disorder (Depression)  
 Bipolar Disorder  
 Generalized Anxiety Disorder (GAD)  
 Social Anxiety Disorder  
 Specific Phobia  
 Obsessive Compulsive Disorder (OCD)  
 Other (please specify) \_\_\_\_\_  
 Prefer not to answer
  
7. If applicable, at what age were you diagnosed with the psychological disorder? \_\_\_\_\_  
 Prefer not to answer

8. Are you currently taking medication for a psychological disorder(s)?
- I do not have a psychological disorder
  - I have a psychological disorder but am not taking medication
  - Yes, I am taking medication for a psychological disorder
  - Prefer not to answer
9. Are you currently participating in therapy for a psychological disorder(s)? Check all that apply.
- I do not have a psychological disorder
  - I have a psychological disorder but am not participating in therapy
  - I am participating in therapy with a psychologist for a psychological disorder
  - I am participating in therapy with a social worker for a psychological disorder
  - I am participating in therapy with another professional for a psychological disorder
  - I am participating in group therapy for a psychological disorder
  - I am participating in another type of therapy not previously mentioned for a psychological disorder
  - Prefer not to answer
10. If you are currently participating in therapy for a psychological disorder(s), how long have you been in therapy?
- 1-4 weeks
  - 5-8 weeks
  - 9-12 weeks
  - 13-16 weeks
  - 17+ weeks
  - I am not currently participating in therapy.
  - Prefer not to answer
11. In the past, did you ever participate in therapy for a psychological disorder(s)? Check all that apply.
- I do not have a psychological disorder
  - I have a psychological disorder but I have never participated in therapy
  - I participated in therapy with a psychologist for a psychological disorder
  - I participated in therapy with a social worker for a psychological disorder
  - I participated in therapy with another professional for a psychological disorder
  - I participated in group therapy for a psychological disorder
  - I participated in another type of therapy not previously mentioned for a psychological disorder
  - Prefer not to answer

12. Have you ever been diagnosed with a physical disability(ies)?

- Yes       No       Prefer not to answer

If yes, please check all that apply:

- Visual impairment (e.g., blindness, restricted eye sight, colour blindness, other visual impairments)  
 Hearing impairment (e.g., deafness, hearing loss, other hearing impairments)  
 Motor impairment (e.g., paralysis, involuntary movements, physical injury, muscle disease, other motor impairments)  
 Prefer not to answer

13. Did you experience any stressful events over the past week? (e.g., exams, assignments, relationship issue, death of a loved one, etc.)

- Yes       No       Prefer not to answer

If yes, please select how stressful it was to you:

- Mildly distressing  
 Moderately distressing  
 Severely distressing  
 Prefer not to answer

## Appendix D

### Additional Hope Questions

Directions: Read each item carefully. Using the scale shown below, please select the number that best describes *how you think about yourself right now* and put that number in the blank provided. Answer each item according to the following scale: 1 = *Definitely False*; 2 = *Mostly False*; 3 = *Somewhat False*; 4 = *Slightly False*; 5 = *Slightly True*; 6 = *Somewhat True*; 7 = *Mostly True*; and 8 = *Definitely True*.

- \_\_\_\_\_ 1. My responses to the questions in this study have made me feel optimistic about my future.
- \_\_\_\_\_ 2. Based on my answers in this study, my future will probably be miserable.
- \_\_\_\_\_ 3. Having the opportunity to disclose personal information has discouraged me.
- \_\_\_\_\_ 4. Participating in this study has made me feel hopeful about my future.
- \_\_\_\_\_ 5. I feel hopeful after participating in this study.

## Appendix E

### Frost's Rapport Observations: Survey of Test administrators

Please complete the following items on how much you agree or disagree with the following statements about *how you feel* about the test administrator.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
1	2	3	4	5

#### **I FEEL...**

1. Comfortable with the test administrator.
2. Skeptical of the test administrator's abilities.
3. The test administrator has my best interests in mind.
4. The test administrator and I wouldn't get along well.
5. Accepted by the test administrator.
6. That the test administrator understands me.
7. Valuable to the test administrator.
8. I have to hide my "true" self from the test administrator.
9. Confident in the test administrator's abilities.
10. Uneasy with the test administrator.
11. That the test administrator does not have my best interests in mind.
12. Respect towards the test administrator.
13. Like I will be punished if I say the "wrong" thing.
14. Connected with the researcher.
15. That my responses will be misunderstood by the test administrator.
16. I can be myself with the test administrator.
17. Inferior to the test administrator.
18. I can trust the test administrator.

19. The test administrator trusts me.

20. Comfortable disclosing sensitive information to the test administrator.

21. Uncomfortable risking sensitive information with the test administrator.

Please complete the following items on how much you agree or disagree regarding *how the test administrator seems to you*.

Strongly Disagree    Disagree    Neither Agree or Disagree    Agree    Strongly Agree  
1                            2                            3                            4                            5

**THE TEST ADMINISTRATOR SEEMS...**

1. Calm
2. Unprofessional
3. Trustworthy
4. Impersonal
5. Accepting
6. Disrespectful
7. Empathic
8. Distant
9. Interested in me
10. Superficial
11. Intimidating
12. Professional
13. Dishonest
14. Friendly
15. Judgemental

16. Courteous
17. Unfeeling
18. Warm
19. Uninterested in me
20. Sincere
21. Naive
22. Dependable

## **Appendix F**

### **Qualitative Questions**

#### ***Self-Disclosure***

1. Describe how you feel when you're asked to talk about your emotions to others.
2. Describe how you feel when opening up about yourself to strangers vs people you know. What factors influence whether or not you disclose personal information to a stranger?
3. Describe how you feel when talking about yourself to others online vs face-to-face. What factors influence whether or not you disclose personal information online?

#### ***Current Study Experiences***

4. How did you feel when answering personal questions about yourself on the questionnaires in this study?
5. Describe how you felt after reading your feedback report.
6. Describe how you received your feedback report and any features about the method that you liked/disliked.

#### ***New Awareness***

7. Did you learn anything about yourself from the feedback report? If so, what?
8. Did you find reading the feedback report to be valuable? Why or why not?
9. Did you find reading the feedback report to be a positive or negative experience, why?

#### ***Self-verification***

10. Were there things in the feedback you already knew? If so, what?
11. Were there things in the feedback that seemed inaccurate? If so, what?
12. Would your friends/parents agree with the feedback report? What would they agree/disagree with?

#### ***Perceptions of the Test administrator***

13. Describe the test administrator's personality traits and characteristics.
14. Was there anything about the test administrator's personality/appearance/demeanor that made you want to tell them more about yourself and/or withhold information? If so, what?



## Appendix G

### Resource Sheet

Sometimes when people have questions or problems they may not know who to talk to or where to get help. We have included a list of services that are available to individuals in your area. If you, a friend, or a family member have questions, would like someone to talk to, or need help with a problem, one of these resources may be able to help.

<p><b>Student Counselling Centre</b> 293 CAW Centre, 401 Sunset Ave. Windsor, ON N9B 3P4 Tel: (519) 253-3000 Ext. 4616</p>	<p><b>Community Crisis Centre of Windsor-Essex County</b> <b>Jeanne Mance Bldg</b> 1986 Ouellette Ave, 1<sup>st</sup> Floor, Windsor, ON Tel: (519) 973-4435 24-hr Crisis Phone &amp; 1 on 1 crisis intervention</p>
<p><b>Sexual Assault Crisis Centre of Essex County (24 hours)</b> 1770 Langlois Ave, Windsor, ON N8X 4M5 Email: <a href="mailto:sacc@wincom.net">sacc@wincom.net</a> Tel: (519) 253-3100</p>	<p><b>Windsor Addiction Assessment &amp; Outpatient Service</b> Hotel Dieu Grace Hospital, Western Campus 1453 Prince Rd, Windsor, ON Tel: (519) 257-5220</p>
<p><b>Lesbian Gay Bi Youth Line</b> Tel: 1-800-268-YOUTH (Can call from anywhere in Ontario)</p>	<p><b>Distress Centre of Windsor-Essex County</b> Crisis Phone: (519) 256-5000 (12 noon – 12 midnight)</p>
<p><b>Mood and Anxiety Disorders Treatment Program</b> Hotel Dieu Grace Hospital, Western Campus 1453 Prince Rd, Windsor, ON Tel: (519) 257-5111 ext. 76948 (Referral from physician required)</p>	<p><b>Family Service Windsor-Essex County</b> 1770 Langlois Ave, Windsor, ON N8X 4M5 Short-term counselling, subsidized; walk-in counselling clinic (Tues &amp; Fri) Tel: (519) 966-5010</p>
<p><b>Windsor Essex Community Health Centre Teen Health Centre (THC)</b> 1585 Ouellette Ave. Windsor, ON N8X 1K5 Tel: (519) 253-8481</p>	<p><b>Canadian Mental Health Association Windsor-Essex County Branch (CMHA-WECB)</b> 1400 Windsor Avenue Windsor, ON N8X 3L9 Tel: (519) 255-7440 (Services include support workers, advocacy services, group programs, counselling for depression &amp; anxiety)</p>
<p><b>Mental Health Helpline</b> Information about mental health services in Ontario; Service is 24/7 1-866-531-2600</p>	<p><b>Good 2 Talk</b> Post-Secondary Student Helpline Free, professional &amp; anonymous support Tel: 1-866-925-5454</p>

## Appendix H

### Protocol for Self-Harm Concerns

#### *Criteria*

If one or more of the following criteria are met, the examiner/research assistant (RA) will initiate the steps to address concerns of self-harm.

- Participant verbally expresses an intent to harm themselves to the examiner/RA at any time point during the study (e.g., during debriefing, qualitative interviews).
- Responds with a 1 or greater on the 9<sup>th</sup> item of the PHQ-9: “Thoughts that you would be better off dead or of hurting yourself in some way”.
- Responds with a 1 or greater on the 11<sup>th</sup> item of the DSM-5 Self-Rated Level 1 Cross Cutting Symptoms Measure: “Thoughts of actually hurting yourself?”

#### *Protocol*

1. Ask the client the following questions (Rudd, 1998) to assess suicide risk.
2. Complete the Risk Assessment Matrix.
  - a. If every category in the matrix is identified as “Mild” then provide the client with the resource sheet and encourage them to seek help as needed.
  - b. If any of the categories indicate Moderate or High/Imminent Risk then proceed with the following steps.
3. If it is between the hours of 8:30am and 4:30pm (closed from 12pm-1pm), Monday through Friday, contact Student Counselling Centre (519-253-3000 ext. 4616). Ask the student if they would prefer you to walk them over to the Centre or if they would like to contact a friend/family member to escort them to the Centre.
4. If it is outside of the Student Counselling Centre’s hours, call the Community Crisis Centre (519-973-4435) that provides 24-hour crisis response services to Windsor residents experiencing psychological distress. Health care professionals will direct services from there.
5. If the student refuses to attend the Student Counselling Centre or call the Community Crisis Centre, call 9/11 from a landline on campus to access Campus police services.

## Appendix I

### Asynchronous Rapport Video Script: Part 1

*\*smile\**

Welcome to the study and thank you for choosing to take part in it. I want to start

*\*hand gesture to self\**

by telling you a bit about myself before you begin. My name is Natalie and I will be your

online test administrator today. I am a graduate student at the University of Windsor in

the Child Clinical Psychology Program. Someday I hope to be a child psychologist, but

*\*stop smile r hand then l hand\**

for now I enjoy learning all about other people and their likes, dislikes, strengths, and

*\*smile\**

weaknesses. When I'm not conducting research, I enjoy spending time with my family.

Some of my family members have been affected by depression and anxiety and I think

my research may be beneficial to them and others with mental health concerns. That is

why I'm so grateful that you and others have chosen to participate in my study.

*\*stop smile\**

Just to let you know, in this study you'll be completing questionnaires about yourself that

will take you approximately 60 minutes. All of the information you give will be kept

*\*gentle shake head\**

confidential. Your name will not be linked to your responses and your responses will

*\*smile\**

only be viewed by the research team so I encourage you to answer as honestly as

possible. Thank you.

## Appendix J

### Asynchronous Rapport Video Script: Part 2

*\*smile\**

Welcome back to the study and thank you for completing Part 1. Just as a

*\*hand gesture to self\**

reminder, my name is Natalie and I will be your online test administrator again today. I

*\*smile\**

appreciate you returning for Part 2. I understand how busy student schedules can be.

Personally, there have been times when I've been overwhelmed with classes, exams, and

Assignments. Right now, I'm continuing to collect data for this study in the hopes that it

Will be a resource for those with mental health concerns.

*\*stop smile\**

Just to let you know, in this part you'll be completing some of the same questionnaires

*\* r hand...\*                      \*...then l hand\**

from Part 1 as well as some new ones about yourself that will take you approximately 60

minutes. As a reminder, all of the information you give will be kept confidential.

*\*gentle shake head\**

Your name will not be linked to your responses and your responses will only be viewed

*\*smile\**

by the research team so I encourage you to answer as honestly as possible. Thank you.

## VITA AUCTORIS

NAME: Natalie Frost

PLACE OF BIRTH: Owen Sound, ON

YEAR OF BIRTH: 1990

EDUCATION: West Hill Secondary School, Owen Sound, ON,  
2008

University of Waterloo, B.A., Waterloo, ON, 2012

University of Windsor, M.A., Windsor, ON, 2015