Assessment of a Self-Learning Tool Designed to Improve Mental Health Literacy of Students in Higher Education

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Abstract

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Abstract: Mental health remains a pressing concern for Canadians, especially for those pursuing post-secondary studies. Although the prevalence of mental health issues among this group is well documented, there remains a significant gap in the availability and accessibility of appropriate supports. Increasing mental health literacy levels has been identified as an effective mental health promotion strategy and, to date, the on-campus enhancement of mental health literacy has been hindered by the lack of evidence-based resources. *Transitions* is the first resource of its kind, designed to improve knowledge of mental health and mental disorders, decrease stigma, promote help-seeking behaviours, decrease feelings of isolation, and increase awareness of supports. The purpose of this thesis is to evaluate the effectiveness of *Transitions* in improving student mental health literacy by comparing pre- and post-test scores, evaluating whether learning goals were achieved, and investigating the impact of gender and first language on test performance and learning.

April 12, 2021

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Chapter 1: Introduction

The first chapter provides a background to the increased need for mental health supports for Canadian post-secondary students, followed by the context for the present study. The purpose and significance of the study is described, along with a review of the thesis scope. The final section of this chapter provides an outline of the remaining thesis chapters.

1.1 Background

Mental health remains a pressing concern for Canadians, especially for those pursuing post-secondary studies. Research indicates that three-quarters of mental health disorders appear before the age of 25 (Council of Ontario Universities, 2017; Kessler et al., 2005) and the number of post-secondary students with identified mental health disorders "has more than doubled over the past five years" (Council of Ontario Universities, 2017, p. 1). Furthermore, approximately one-third of our nation's college and university students reported being diagnosed or treated by a professional for at least one mental health issue (American College Health Association, 2019).

Along with the increasing number of students facing mental health struggles comes an increasing demand for mental health support services. Although the prevalence of mental health issues and need for support services among this group is well documented in the literature, there remains a significant gap in the availability and accessibility of appropriate supports for post-secondary students. More research is required to establish and identify evidence-based resources that support post-secondary institutions in meeting the unique needs of students and providing the campus community with equitable access to effective mental health services and resources.

1.2 Context

Studies have shown that some of the primary obstacles our nation's post-secondary institutions are facing in their efforts to support students struggling with mental health issues include: fragmented services, inadequate reactive response, insufficient funding, and high resource needs (Heck et al., 2014; Ontario College Health Association, 2009). Furthermore, existing mental health services at post-secondary institutions are feeling an increasing pressure corresponding to the increasing need, and limited resources are being spread thin (Heck et al., 2014). The present study will evaluate the effectiveness of *Transitions*, a mental health literacy resource created for students navigating the transition from high school to college or university. *Transitions* equips students with a collection of information, suggestions, tools, and techniques on a variety of relevant topics that will better prepare them for success as they begin the next step in their academic journey. This tool can help post-secondary institutions be more proactive and mitigate the mental health crisis by providing students with a better understanding of mental health and mental health disorders, informing them where and when to seek additional help if needed, and reducing stigma attached to mental illness. *Transitions* could also help address some of the other challenges mentioned above, as the resource is low-cost and readily available.

1.3 Significance

This thesis could make a significant contribution to a growing body of research in several ways. Firstly, the study aims to identify an effective self-learning tool that could help address the student mental health issues that affect so many young Canadians. Identifying an effective, accessible self-learning tool would equip the majority of

Canadian post-secondary students with a plethora of knowledge at the tips of their fingers. This would enable students to educate themselves about mental health and mental illness, equip themselves with various positive coping strategies, improve help-seeking behaviours, and reduce stigma.

Secondly, students are engaged as partners in the research, giving them a platform to share their voices and provide decision-makers with a better understanding of their complex needs. This helps experts determine which mental health services and resources will be most effective in improving the health and overall experience of the campus community.

Finally, I am able to contribute my professional experience through my work as a Community Developer with Horizon Health Network, one of the Regional Health Authorities in New Brunswick, Canada. In this role, I've had the opportunity to work with and learn from healthcare professionals, students, and staff from various schools under the Woodstock Education Centre in Woodstock, N.B.

1.4 Purpose

This study serves to evaluate the effectiveness of *Transitions* as a self-learning tool designed to improve student mental health literacy at Saint Mary's University in Halifax, Nova Scotia. The impact of *Transitions* on students' knowledge was thoroughly investigated by comparing pre- and post-test scores, and breaking down knowledge questions into a series of learning goals and evaluating whether or not these learning goals were achieved. We also investigated the impacts of gender and first language on student test performance and learning of *Transitions* content.

1.5 Thesis Outline

Chapter 2 provides a literature review of research relevant to the mental health status of Canadian post-secondary students, as well as an introduction to mental health literacy, and an overview of *Transitions*. Chapter 3 looks at the methodology behind Study 1: Evaluating the effectiveness of *Transitions* (2nd ed.) as a self-learning tool, covering: survey design, sampling, study limitations, ethics, and statistical analyses. Chapter 4 includes the results and discussion of the overall evaluation of *Transitions* (2nd ed.), along with an in-depth breakdown of knowledge questions, and suggestions for improvements to *Transitions* and the evaluation survey. In addition, Chapter 4 provides a summary of students' self-reported attitudes towards *Transitions* and how they felt the resource impacted them. Chapter 5 covers the methodology of Study 2: Evaluating the effectiveness of *Transitions* (3rd ed.) as a self-learning tool, covering: survey design, sampling, study limitations, ethics, and statistical analyses. Chapter 6 provides the results and discussion of the evaluation of *Transitions* (3rd ed.), and explores the impacts of gender and first language on test performance and learning. Finally, Chapter 7 gives a summary of the main findings and provides direction for future research. It also includes a reflection on the study from a community development perspective, in addition to recommendations for future dissemination of information, tools, and techniques from *Transitions*.

Chapter 2: Literature Review

2.1 Scope of the Literature Review

The first section of this literature review provides a better understanding of mental health and mental illness, followed by a closer look at the transitional period from high

school to post-secondary education and how this population is amongst the age group most susceptible to developing a mental illness. Help-seeking behaviours of post-secondary students are then discussed, with an in-depth look at stigma and lack of knowledge about mental illness as barriers to accessing mental health supports. Mental health literacy is then defined and explored, along with a detailed description of *Transitions*. The research questions are then presented, followed by the hypotheses for this thesis.

2.2 Understanding Mental Health and Mental Illness

Mental health is the state of your psychological, spiritual, and emotional well-being (Government of Canada, 2020a); it can be described as "the capacity of each and all of us to feel, think, and act in ways that enhance our ability to enjoy life and deal with the challenges we face. It is a positive sense of emotional and spiritual well-being that respects the importance of culture, equity, social justice, interconnections, and personal dignity" (Government of Canada, 2006). This definition aligns with the World Health Organization's (2018) description of mental health and Corey Keyes' (2002) description of "flourishing."

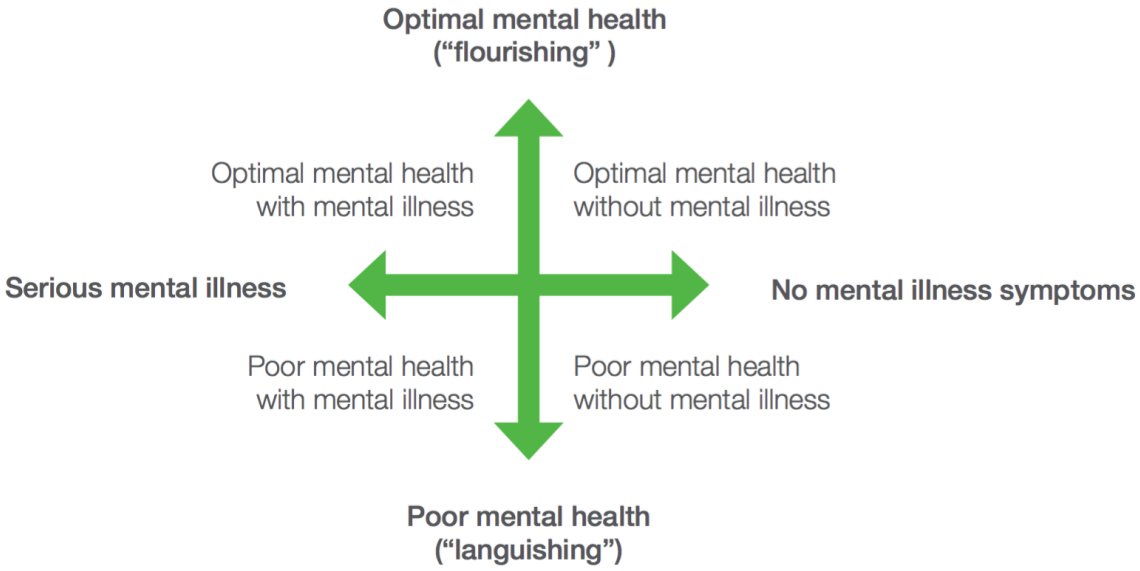
Mental illness or mental health disorder, on the other hand, is described as disturbances in mood, thinking and/or behaviour that are severe enough to impact day-to-day functioning and can cause significant distress (The Centre for Addiction and Mental Health [CAMH], 2021b; Government of Canada, 2020b). If left unrecognized or untreated, mental health disorders can lead to higher risk for numerous physical illnesses and substance abuse, poorer work and academic achievement, troubles with interpersonal relationships and social functioning, and early mortality (Kessler et al., 1995, 2005;

Kutcher et al., 2013; Lancet Global Mental Health Group, 2007; National Research Council & Institute of Medicine, 2009; Perry et al., 2014). Mental illnesses are also often associated with suicidal thoughts and behaviours, including suicidal ideation, plans, and attempts (Bruffarts et al., 2019). In Canada, one in five people will experience a mental illness or substance use disorder in any given year (CAMH, 2021; Smetanin et al., 2011).

Mental health is a fundamental component of our overall health and is much more than the absence of mental illness or disorders. Keyes (2002) looked at mental health and illness on separate continuums, where a person living with a mental illness can still achieve optimal mental health and flourish, while someone without a mental illness may experience poor mental health and languish (see Figure 1).

Figure 1

Dual Continuum Model of Mental Health and Mental Illness



Note. MacKean (2011). Adapted from: The Health Communication Unit at the Dalla Lana School of Public Health at the University of Toronto and Canadian Mental Health Association, Ontario; based on the conceptual work of Corey Keyes (2002).

Numerous social, psychological, and biological factors can influence the level of mental health of an individual at any given time, some of which make a person vulnerable to a mental disorder (Keyes, 2002; WHO, 2018). Young people (aged 15–24) are more likely than any other age group to experience mental health and/or substance use disorders (Pearson, Janz & Ali, 2013). The developmental period during which these mental health and/or substance use disorders are more likely to emerge coincides with the time when many young Canadians leave home for the first time to pursue studies in higher education (Potvin-Boucher et al., 2010).

2.3 Transitioning to a Post-Secondary Environment

As many young Canadians approach their late teenage years, they are presented with new stresses and pressures associated with the transition from high school to university or college. This challenging life transition presents students with a new level of freedom and independence, as well as a degree of uncertainty of oneself, and the need for acceptance and comfort (Dyson & Renk, 2006; Potvin-Boucher et al., 2010). Students are also expected to simultaneously navigate financial constraints, manage their academic course load and extracurricular commitments, and establish new social networks (Vallianatos et al., 2019). For many, this is all done in the absence of their previous support system (e.g. family, friends, community). These stressors, and many other changes and challenges within the context of post-secondary student life, may worsen a mental health disorder, increase the risk of onset, or simply demand coping skills not yet developed (Potvin-Boucher et al., 2010; Vallianatos et al., 2019; World Health Organization and Calouste Gulbenkian Foundation, 2014).

The American College Health Association (ACHA) National College Health

Assessment II (ACHA-NCHA II) yields the largest known comprehensive data set on post-secondary student health (ACHA, 2019). This national research survey aims to support the "health of the campus community by fulfilling the academic mission, supporting short- and long-term healthy behaviors, and gaining a current profile of health trends within the campus community" (ACHA, 2019, p. 1). In their most recent assessment, which surveyed 55,284 students from 58 Canadian post-secondary institutions, 63.6% of students reported having felt that things were hopeless in the year prior, 88.2% felt overwhelmed by all they had to do, 69.6% reported feeling very lonely, 51.6% felt "so depressed that it was difficult to function," 68.9% experienced "overwhelming anxiety," and 16.4% had seriously considered suicide (ACHA, 2019, p. 14). Most of these numbers have notably increased since the 2016 survey, with the biggest increase in reports of debilitating depression (7.2%), overwhelming anxiety (4.4%), hopelessness (4%), and serious consideration of suicide (3.4%) (ACHA, 2019, 2016). These alarming statistics illustrate the high prevalence of mental health difficulties among this population.

2.4 Barriers to Accessing Mental Health Supports

Unfortunately, despite the high number of post-secondary students struggling with a mental health issue(s), many do not receive the comprehensive care they need (Burns et al., 1995; Hunt & Eisenberg, 2010; Kutcher, Wei & Morgan, 2015; Patel et al., 2007; Prince et al., 2007; Waddell et al., 2002). According to Bruffaerts and his colleagues (2019), lifetime and 12-month treatment and help-seeking rates in this population are low, with estimates of 25.3–36.3% help-seeking rates for mental disorders and 29.5–36.1% for suicide thoughts and behaviours. These findings are consistent with the

ACHA-NCHA II (2019) data, where 36.8% of students reported being diagnosed or treated by a professional for one or more mental health problems.

In an effort to better understand why the treatment and help-seeking rates of post-secondary students are so low, numerous studies and reviews have explored different barriers this population may face in accessing mental health supports. Data suggests that attitudinal barriers (beliefs and attitudes towards mental illness and treatment) are more frequently cited as reasons for not seeking help than structural barriers (i.e. cost, time, appointment availability, travel distance) (Gulliver et al., 2010; Thompson et al., 2004; Wells et al., 1994). Barriers to accessing mental health supports for post-secondary students include, but are not limited to, stigma of mental illness (personal or public), preference to self-manage their problem, lack of knowledge about mental health disorders and treatments, and lack of knowledge around how and where to access appropriate care (Gulliver et al., 2010; McGorry, 2005; Thompson et al., 2004; Vogel & Wade, 2009; Wells et al., 1994).

2.4.1 Stigma

Stigma is a negative stereotype, described as a mark or flaw associated with a personal or physical characteristic that is viewed as socially unacceptable (Blaine, 2000; Canadian Mental Health Association [CMHA] Ontario, 2021). Oftentimes, people living with mental illness are faced with multiple layers of discrimination resulting from the stigma attached to their mental illness (CMHA Ontario, 2021). This prejudice and discrimination can cause feelings of shame, hopelessness, and low self-esteem for the person dealing with a mental illness, creating a significant barrier to diagnosis and treatment (The Centre for Addiction and Mental Health [CAMH], 2021a).

Numerous studies have linked stigma to a lack of mental health service utilization, as many individuals choose not to seek professional help due to the fear of being stigmatized (Barney et al., 2006; Corrigan & Watson, 2002; Lally et al., 2013; Thompson et al., 2004; Vogel & Wade, 2009). In the post-secondary context, most students avoid disclosing a mental health problem due to the fear of stigmatization and discrimination (Martin, 2010). A study by Martin (2010) found that students would go out of their way to hide a mental health disorder and that their condition often negatively impacted their ability to meet the school requirements. In contrast, those who did disclose a mental illness received effective supports that helped them succeed in their studies and manage their condition (Martin, 2010).

There are two types of stigma that impact an individual's decision to seek mental health treatment: self-stigma and public stigma (Corrigan, 2004; Corrigan & Watson, 2002). Self-stigma is "the prejudice which people with mental illness turn against themselves" (Corrigan & Watson, 2002, p. 16), resulting in a socially devalued identity (Martínez-Hidalgo et al., 2018). Public stigma, on the other hand, is described as "the reaction that the general population has to people with mental illness" (Corrigan & Watson, 2002, p. 16). A study by Lally and his colleagues (2013) found personal (self-) stigma to be a more significant barrier to mental health treatment utilization than public stigma in the post-secondary population, as self-stigma was associated with low help-seeking behaviours.

In order to improve attitudes towards mental illness and treatment and increase help-seeking behaviours for this population, efforts need to be focused on reducing stigma and improving mental health literacy levels across campus (Gulliver et al., 2010;

Kutcher, Wei & Morgan, 2015; Wrigley et al., 2005). Individuals may feel less self-stigma if their symptoms are normalized and they have a better understanding of their symptoms (Schreiber & Hartrick, 2002). Gulliver and her colleagues (2010) suggest providing students with evidence-based self-help material or offering a program to increase mental health literacy, specifically to increase knowledge of their own symptoms.

2.4.2 Lack of Knowledge about Mental Illness

As previously mentioned, the new circumstances associated with the transition from high school to university or college can be very stressful and may worsen a mental health disorder, increase the risk of onset, or demand coping skills not yet developed. Students navigating these new circumstances may not have the ability to recognize their symptoms as a mental health issue, presenting another major barrier to accessing mental health supports (Thompson et al., 2014; Kutcher, Wei & Cognilio, 2016; Kutcher, Wei, Costa et al. 2016).

For the majority of people, recognizing the problem takes place prior to help-seeking, and the time taken for problem recognition accounts for most of the delay in seeking treatment (Thompson et al., 2004). A literature review by Hunt and Eisenberg (2010) found a median delay of eleven years from the onset of symptoms to seeking professional mental health treatment. If individuals were well-informed and equipped to recognize a mental health problem sooner, we could expect that delays to seek treatment would be shorter (Thompson et al., 2004).

On the other hand, students may misinterpret a normal negative emotional reaction to the difficult life changes they are experiencing as a mental health problem requiring professional treatment (Kutcher, Wei & Cognilio, 2016; Kutcher, Wei, Costa et al., 2016). Therefore, educating young people about mental health and mental illness in the context of other important topics specific to this transitional period could improve their ability to cope with these changes, identify a mental health disorder, and seek help appropriately, if needed (Kutcher, Wei & Cognilio, 2016; Kutcher, Wei, Costa et al., 2016).

2.5 Mental Health Literacy

Increasing mental health literacy levels has been identified as an effective mental health promotion strategy that has the potential to positively impact the entire campus community and improve numerous outcomes, including reducing stigma around mental illness, improving students' ability to identify mental health disorders, and improving help-seeking behaviours (The Canadian Alliance on Mental Illness and Mental Health, 2007; Coles, Coleman & Heimberg, 2008; Kutcher, Wei & Morgan, 2015; Potvin-Boucher et al., 2010). Mental health literacy is defined as: "understanding how to obtain and maintain positive mental health; understanding mental disorders and their treatments; decreasing stigma related to mental disorders; and enhancing help-seeking efficacy (knowing when and where to seek help and developing competencies designed to improve one's mental health care and self-management capabilities)" (Kutcher, Wei & Cognilio, 2016, p. 155; Kutcher, Bagnell & Wei, 2015; Kutcher & Wei, 2014). While the level of mental health literacy in young adults (aged 18–25) remains unknown in Canada,

other studies from around the world suggest many people from this age group have poor mental health literacy (Marcus & Westra, 2012).

In the context of transitioning to university or college, targeting mental health literacy would involve providing students with information, skills, support, and resources to help them cope with stresses and pressures they may face during this time (Potvin-Boucher et al., 2010). Previous studies have indicated that improving the level of mental health literacy for students pursuing studies in higher education can improve their ability to cope with these stresses of post-secondary life, potentially identify the onset of mental disorder, reduce stigma attached to mental illness, encourage more students to seek the help they need, and lead to enhanced support for these young adults (Kutcher, Wei, Costa et al., 2016; McLuckie et al., 2014; Milin et al., 2016; Potvin-Boucher et al., 2010). Connecting all students with the right knowledge, tools, and resources early on in their academic journey will help them navigate, overcome challenges, and thrive in the post-secondary setting. To date, the on-campus enhancement of mental health literacy has been hindered by the lack of evidence-based resources (Kutcher, Wei & Morgan, 2015).

2.6 Transitions

Transitions, a mental health literacy program designed by Potvin-Boucher and her colleagues (2010), is the first evidence-based resource of its kind that offers a collection of suggestions, information, tools, and techniques to help students make the most of their time at university. The material uses a holistic approach, covering a variety of new circumstances associated with the transition into university, such as study skills, choosing a roommate, budgeting your student loan, peer pressure, time management, sexual health, and suicide, in addition to information on mental health and mental disorders (Kutcher,

2014, 2019; Potvin-Boucher et al., 2010). *Transitions* was designed to improve student knowledge of mental health and mental disorders, decrease stigma associated with mental health and mental disorders, promote help-seeking behaviours, decrease feelings of isolation, and increase awareness of supports and help resources (Potvin-Boucher et al., 2010, p. 724).

If made readily available to students, *Transitions* can play a key role in preventing the onset or worsening of mental health disorders, supporting existing mental health services for students, and fostering adaptive coping strategies that students will carry with them for life. The mental health literacy program was initially introduced to several university and college campuses in Nova Scotia, Canada (Potvin-Boucher et al, 2010), and is currently used by a variety of post-secondary institutions and community organizations across the country.

2.6.1 1st, 2nd and 3rd Editions of *Transitions*

The first edition of *Transitions: Student Reality Check* was written and designed by Jacqueline Potvin-Boucher and edited by Marla Cranston, under Dr. Stan Kutcher's direction. The Sun Life Financial Chair in Adolescent Mental Health Youth Advisory Council conducted the review.

The second edition of *Transitions* was written by Dr. Stan Kutcher with support from Vanessa Bruce and Ardath Whynacht. This edition was reviewed by Dr. Selene Etches and Faten Alshazly and designed by WeUsThem, Inc.

The current (third) edition of *Transitions: Making the most of your campus experience,* also referred to as *Transitions* throughout this thesis, was designed by Kate

Elliot and Mallory Comeau, with graphics by Rachel Toner and cover design by WeUsThem, Inc. Students, staff, and faculty from partner institutions (Holland College, Mount Allison University, Mount Saint Vincent University, Nova Scotia Community College, St. Francis Xavier University, Saint Mary's University, and Students Nova Scotia) provided detailed input and feedback throughout the revision process of *Transitions* (2nd ed.). Other partner organizations provided suggestions, content, critique, and feedback on the current edition. *Transitions* is available in Canada's two official languages: English and French.

2.7 Research Objectives

This project aims to identify an effective self-learning tool to help address the mental health issues affecting so many young Canadians.

Study 1: The first study evaluates the effectiveness of *Transitions* (2nd ed.) as a self-learning tool designed to improve student mental health literacy at Saint Mary's University in Halifax, Nova Scotia. We investigate the overall effectiveness of *Transitions* (2nd ed.) and take a closer look at each survey question to gain a better understanding of whether learning goals were achieved, and whether or not there were trends in student survey answers. In addition, students were asked to complete post-test survey questions to investigate the impact of *Transitions* on student knowledge, attitude, and help-seeking behaviours.

Study 2: The second study aims to evaluate the effectiveness of *Transitions* (3rd ed.) as a self-learning tool designed to improve student mental health literacy at Saint Mary's University in Halifax, Nova Scotia. We look at the overall effectiveness of Transitions

(3rd ed.), as well as the impact of gender and first language on test performance and learning.

2.8 Hypotheses

H1: A significant increase between the mean pre-test and post-test scores indicates that *Transitions* was an effective self-learning tool for improving student mental health literacy at Saint Mary's University.

H2: A significant increase between the mean pre-test and post-test scores for a specific question indicates the specific learning goal was achieved and *Transitions* effectively enhanced student mental health literacy in that context.

H3: A significant difference between the means of the male and female test scores would suggest gender influenced student test performance and learning of *Transitions* content.

H4: A significant difference between the means of English as first-language and Non-English as first language test scores would suggest first language influenced student test performance and learning of *Transitions* content.

Chapter 3: Methodology of Study 1: Evaluating the Effectiveness of *Transitions* (2nd ed.) as a Self-Learning Tool

This chapter looks at the methodology behind evaluating the effectiveness of *Transitions* (2nd ed.) as a self-learning tool to improve mental health literacy for post-secondary students. First, the administration and design of the questionnaire used to evaluate student knowledge before and after reading *Transitions* are covered. The sampling process and setting of the study are explored, followed by study limitations and ethical approval. Finally, the methods for statistical analysis are discussed.

3.1 Survey Distribution and Design

In the Fall of 2016, two online surveys[1] (pre- and post-) were given to first-year students at Saint Mary's University one month apart, such that participants read *Transitions* in between. The first questionnaire (referred to as pre-test) aimed to establish a baseline knowledge for each participant on topics relating to mental health and illness. The second (referred to as post-test) followed up with the same 12 knowledge questions, and an additional 11 self-report questions to captured students' attitudes towards *Transitions* and how they felt the resource impacted them.

The survey included three sections: (1) Demographics (refer to Appendix A); (2) Knowledge Questions (refer to Appendix B); and (3) Self-Report Questions (refer to Appendix C). For the demographics section, participants provided information about their age, gender, preferred language, the program they were studying, and their year of study. The second section of the questionnaire consisted of the 12 knowledge questions, where participants answered "true," "false," or "do not know." The "do not know" option was included to avoid random guessing when the participants didn't know the answer. Thus, the results are representative of accurate knowledge (correct answer), a misunderstanding (wrong answer), or lack of knowledge ("Do Not Know" answer). These knowledge questions tested students on various topics relating to mental health and illness, and were designed to measure improvement in mental health literacy. The sections of *Transitions* in which the correct answers to these knowledge questions can be found are included in Appendix D. Finally, the post-test survey was complemented by 11 self-report questions

[1] The terms "survey" and "questionnaire" will be used interchangeably when referring to the pre-test and post-test surveys.

to gather more feedback on how students felt about *Transitions*. All self-report questions, except for questions 4 and 11, used a 5-point likert scale, in which participants selected their answer based on their level of agreement with the statement. Choices for questions 4 and 11 are included in Appendix C.

The post-test survey included an additional question at the beginning, asking students whether or not they had read *Transitions*. If they answered no, completion of the post-test survey was not required and any completed surveys from students who had not read *Transitions* were disregarded.

3.2 Sample and Setting

The sample was selected using a non-probabilistic approach, as participants were chosen out of convenience. It was convenient to distribute surveys to commerce students at Saint Mary's University, as researchers conducting the study could easily access the email addresses of these students. There were 415 students who completed the pre-test survey, and 148 students who completed the post-test. We were able to match 106 students' pre- and post-test questionnaires using their student number, which allowed us to look at each knowledge question and see where the majority of individuals improved, stayed the same, or struggled.

3.3 Limitations

This study sought to evaluate the effectiveness of *Transitions* as a self-learning tool, and therefore puts all responsibility on the student to read and learn the material themselves. We cannot guarantee that students read *Transitions*, even if they claimed to on the post-test survey, posing a possible limitation to the study. Another limitation is

that students were selected out of convenience, meaning findings cannot be generalized to the population as a whole.

3.4 Ethical Clearance

The Saint Mary's University Research Ethics Board approved this study (Certificate #16-012).

3.5 Statistical Analysis

When looking at the overall effectiveness of *Transitions*, participant progress between pre-test and post-test scores was measured using a "no penalty sum" method. For each correct answer the participants gained a point, and no point was gained or lost by a wrong answer or a "Do Not Know." Student scores could range from 0 to 12. A two sample t-test assuming equal variances was conducted, with alpha pre-set at 0.05, to evaluate the effectiveness of *Transitions* as a self-learning tool for improving student mental health literacy at Saint Mary's University.

Next, paired two sample t-tests, with alpha pre-set at 0.05, were completed for each knowledge question, using the 106 matched surveys, to determine whether learning goals were achieved and to gain a better understanding of trends in student survey answers. For each question, a specific knowledge point was identified to measure whether or not *Transitions* helped achieve the learning goal and was an effective self-learning tool for improving student mental health literacy in the context of that learning goal.

Chapter 4: Results and Discussion of Study 1: Evaluating the Effectiveness of *Transitions* (2nd ed.) as a Self-Learning Tool

4.1 Overall Effectiveness of *Transitions* (2nd ed.)

The two sample t-test assuming equal variances revealed an increase between the mean pre-test and post-test scores that was deemed statistically significant, with a p value of 0.005 (see Appendix E). This allows us to accept the alternate hypothesis H1, and assume that *Transitions* was an effective self-learning tool for improving student mental health literacy at Saint Mary's University.

4.2 Knowledge Questions and Learning Goals

For each question, a specific knowledge point was identified to measure whether or not *Transitions* helped achieve the learning goal and was an effective self-learning tool for improving student mental health literacy. These 12 learning points are summarized in the following table:

Table 1

Knowledge questions from 2016 survey and their respective learning points

Question	Learning Goals
1. A small amount of anxiety is helpful to improving how well you perform (for example: at a sporting event; on a test; etc.).	Anxiety can be helpful in certain situations.
2. A delusion occurs when someone sees things that are not really there, or hears things that are not really there.	A hallucination (not a delusion, as stated in the question) occurs when someone sees things that are not really there, or hears things that are not really there.
3. Three common symptoms of Depression are: problems with sleeping; feeling hopeless; having thoughts about death or suicide.	Common symptoms of depression.
4. Mental distress is a term that is used to describe the symptoms of mental illness.	Mental distress is NOT a term that is used to describe the symptoms of mental illness.

5. Cognitive Behaviour Therapy is a psychological treatment that can be used to help people who have Depression OR an Anxiety Disorder.	Cognitive Behaviour Therapy can be used to treat Depression and Anxiety Disorders.
6. Anorexia Nervosa AND Bulimia Nervosa are BOTH types of eating disorders.	Types of eating disorders.
7. Having two drinks within the time frame of an hour is considered to be binge drinking.	Binge drinking (pattern of excessive alcohol use) is when men have 5+ drinks and women have 4+ drinks on one occasion.
8. Counsellors, family doctors, AND health clinic nurses are all health care professionals that may be able to help a student who is having a mental health problem.	Where a student can get help if they're having a mental health problem.
9. Telling a student "don't do drugs" is an effective way of preventing over-use or misuse of alcohol or marijuana.	Effective ways to prevent overuse or misuse of alcohol or marijuana.
10. Panic Disorder, Social Anxiety Disorder, and Examination Anxiety, are all examples of Anxiety Disorders.	Types of Anxiety Disorders.
11. ALL of the following describe Bipolar Disorder: it affects about 1% of the population; is comprised of BOTH manic and depressive episodes; is treated with mood stabilizers.	Symptoms of Bipolar Disorder.
12. EACH of these activities is important to help a person stay well if they are being treated for a mental disorder: nutritious diet; 30 minutes of vigorous exercise daily; having a regular sleep / wake cycle.	Activities that promote wellness if someone is being treated for a mental disorder.

A paired two sample t-test was conducted for each of the 12 knowledge questions, using the 106 matched pre- and post-test scores. A statistically significant increase was found between the mean pre- and post-test scores for Questions 5, with a p value of 0.004 (see Appendix F). This allows us to accept H2, assuming *Transitions* has effectively helped students achieve the learning goal and improved student mental health literacy in the context of Cognitive Behavioural Therapy. For Question 7, a statistically significant decrease in score means was found (p value of 0.037, see Appendix F), meaning students scored significantly worse after reading *Transitions* when asked about binge drinking. As a result, we reject H2, as *Transitions* did not help students achieve the learning goal or

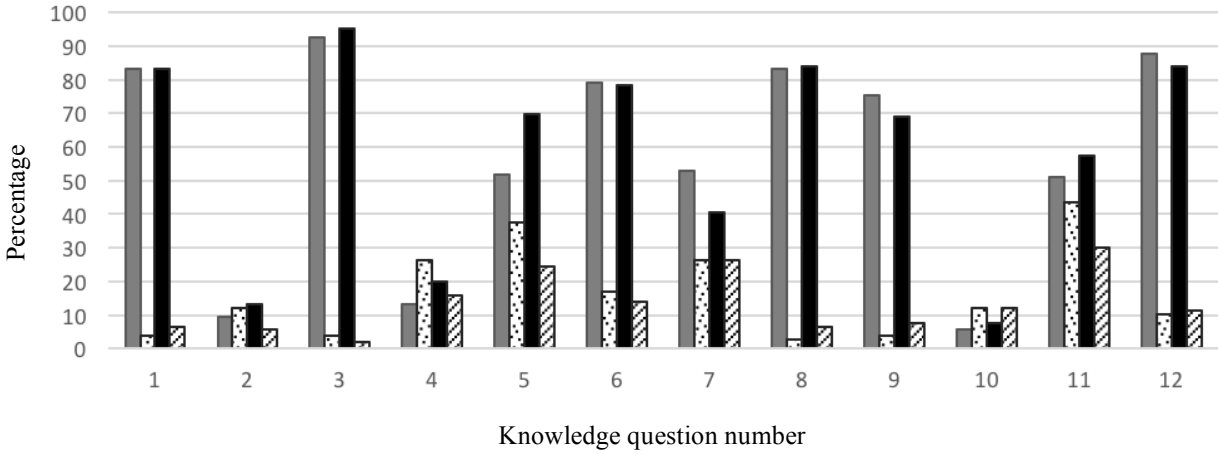
improve mental health literacy in the context of binge drinking. These results will be further investigated in the next section.

4.2.1 Knowledge Question Analysis

To gain a better understanding of where student scores improved, stayed relatively the same, or worsened, we looked at the student matched pre- and post-test scores for each knowledge question. Figure 2 allowed us to compare the percentage of students who answered each question correctly, did not know the answer, or answered incorrectly on both pre- and post-test surveys.

Figure 2

Comparing percentages of students who answered each knowledge question correctly, did not know the answer, or answered incorrectly on the pre- and post-test surveys



Note. Grey bars represent the percentage of students who answered the pre-test question correctly; polka-dot bars represent the percentage of students who answered "do not know" pre-test; black bars represent post-test answered correctly; striped bars represent post-test answered "do not know." The remaining percentages not illustrated in the graph account for the students who answered incorrectly.

For Questions 1, 3, 6, 8, and 12, most students answered correctly pre- and post-test, suggesting these questions address content that is generally known or was previously

taught in school. Improved scores from students who answered incorrectly or "do not know" on the pre-test survey and correctly post-test could be from *Transitions* effectively improving mental health literacy, discussion of material amongst peers, or random guessing. Students who answered correctly pre-test and changed their answer post-test may have randomly guessed correctly on the pre-test or did not retain information from *Transitions*.

For the remaining questions, we wanted to take a closer look at trends in student response. Below, answers are presented (see Tables 2–8) and accompanied by a discussion of possible reasons for patterns in response. Based on this analysis, we were able to make recommendations for improvement to the *Transitions* document and evaluation questionnaire itself.

Table 2

Pre- and post-test answers for Question 2

		Post-test		
		Correct	Incorrect	Did Not Know
Pre-test	Correct	2[a]	8[b]	0
	Incorrect	11[c]	66	6
	Did Not Know	1	12[d]	0

[a]: 2 students answered correctly in both pre- and post-test surveys.
[b]: 8 students answered correctly pre-test and incorrectly post-test.
[c]: 11 students answered incorrectly pre-test and correctly post-test.
[d]: 12 students answered "do not know" pre-test and incorrectly post-test.

Approximately 80% of students answered this question incorrectly post-test, suggesting the question was extremely difficult, the correct information was not easily found in *Transitions,* or the correct answer was not retained after reading *Transitions*. Eight out of 10 students who answered correctly in the pre-test answered incorrectly in

the post-test, which further supports that the question was extremely difficult or the correct information was not easily found in *Transitions*.

We suggest changing the question or adding a second part to the question: "When someone sees things that are not really there, or hears things that are not really there, should they seek help from a healthcare professional?" This addition would improve the validity of the questionnaire by assessing student knowledge of appropriate help-seeking behaviours, an important component of mental health literacy, rather than evaluating students' ability to recall the definition of hallucination.

Table 3

Pre- and post-test answers for Question 4

		Post-test		
		Correct	Incorrect	Did Not Know
Pre-test	Correct	2	11	1
	Incorrect	12	41	11
	Did Not Know	7	16	5

Approximately 70% of students answered incorrectly or did not know the answer to Question 4 pre- and post-test, suggesting the question was extremely difficult, the correct information was not easily found in *Transitions,* or the correct answer was not retained after reading *Transitions.* Eleven out of 14 who answered correctly pre-test answered incorrectly post-test, which further supports that the question was extremely difficult or the correct information was not easily found in *Transitions*.

Similar to our suggestion for Question 2, we suggest changing the question or adding a second part to this question: "If an individual is experiencing mental distress, should they seek help from a healthcare professional?" Again, this would assess student

knowledge of appropriate help-seeking behaviours rather than testing their ability to memorize a definition or recall professional terminology. We feel this change improves the validity of the questionnaire, ensuring the question measures student mental health literacy as intended.

Table 4

Pre- and post-test answers for Question 5

		Post-test		
		Correct	Incorrect	Did Not Know
Pre-test	Correct	39	2	14
	Incorrect	6	1	4
	Did Not Know	29	3	8

Of the 106 matched pre- and post-surveys, 35 students who answered incorrectly or did not know the answer pre-test, answered correctly post-test. This increase in the number of students who answered Question 5 correctly was deemed statistically significant, and allowed us to accept our alternative hypothesis H2, assuming *Transitions* effectively helped students achieve the Cognitive Behavioural Therapy learning goal and improve student mental health literacy in that context. This improvement could have been from students reading *Transitions* themselves or discussing the material amongst peers.

Incidentally, there were 14 students who answered correctly pre-test and then "do not know" in the post-test. This could be because they could not find the correct information in *Transitions* easily, they found the information in the text to be confusing, or they simply did not retain the information after reading.

Table 5

Pre- and post-test answers for Question 7

		Post-test		
		Correct	Incorrect	Did Not Know
Pre-test	Correct	23	23	10
	Incorrect	7	6	9
	Did Not Know	13	6	9

There is no improvement between the pre- and post-test scores for Question 7. We see a decrease in the number of students who answered correctly between the pre- and post-test, suggesting the question itself was difficult/confusing, the section about binge drinking in *Transitions* was confusing, or the correct information was not easily found in the text. When revisiting this section of the *Transitions* document, binge drinking is discussed in terms of "how many drinks are had on one occasion," not "within a certain time frame" as worded in the questionnaire. We suggest aligning the wording in the question to match the wording in *Transitions*, to eliminate the confusion for participants and ensure we are evaluating them on *Transitions* content.

Table 6

Pre- and post-test answers for Question 9

		Post-test		
		Correct	Incorrect	Did Not Know
Pre-test	Correct	53	21	6
	Incorrect	15	5	2
	Did Not Know	3	1	0

There is no improvement between the pre- and post-test scores for this question. We see a decrease in the number of students who answered correctly between the pre- and post-test, suggesting the question was difficult or confusing, the correct information was not easily found in *Transitions,* or the correct answer was not retained after reading

Transitions. We felt another possible explanation for no improvement in scores for Question 9 is the dilemma students may face when reading this question, as they may have been repeatedly told not to do drugs growing up.

Table 7

Pre- and post-test answers for Question 10

		Post-test		
		Correct	Incorrect	Did Not Know
Pre-test	Correct	0	6	0
	Incorrect	7	68	12
	Did Not Know	1	11	1

Over 60% of students answered this question incorrectly both pre- and post-test, suggesting the question was extremely difficult, the correct information was not easily found in *Transitions,* or the correct answer was not retained after reading *Transitions*. The few students who answered correctly in the pre-test answered incorrectly post-test, which further supports that the question was extremely difficult or the correct information was not easily found in *Transitions*.

We felt Question 10 used professional terminology that would require a certain degree of knowledge in the area of anxiety disorders. Expecting students to retain the correct terminology for these disorders after reading *Transitions* once is unfair and their response to this question may not accurately represent the knowledge they've acquired. We suggest including the definition and/or symptoms of each disorder listed in the question, making it less about their ability to memorize professional terminology and more about their knowledge and understanding of the definition and symptoms, another important aspect of mental health literacy.

Table 8

Pre- and post-test answers for Question 11

		Post-test		
		Correct	Incorrect	Did Not Know
Pre-test	Correct	32	4	18
	Incorrect	3	1	2
	Did Not Know	26	8	12

There was a slight improvement in post-test scores for Question 11; approximately 25% of participants did not know the answer pre-test and answered correctly post-test, which could be due to *Transitions* effectively improving mental health literacy or to discussion of material amongst peers. Of the 45 students who did not answer correctly post-test, 32 of them answered "do not know," which, accompanied by the information on other students seeing an improvement in their score, suggests that the correct answer was simply not retained after reading *Transitions.* We felt Question 11 provides enough information to students from the *Transitions* text and appropriately evaluates student mental health literacy in the context of Bipolar Disorder.

4.2.2 Summary of Recommendations from Knowledge Question Analysis

In summary, we suggest making changes to Questions 2 and 4 to improve the validity of the questionnaire and ensure they measure student mental health literacy as intended. To help students achieve the learning goal in Question 7, we recommend aligning the wording in the question with the *Transitions* text to reduce confusion and ensure the respondents are being evaluated on *Transitions* content. Finally, we suggest including the definition and/or symptoms of each anxiety disorder listed in Question 10.

This would shift the focus of the question from their ability to memorize the correct terminology to their understanding of the disorders and their respective symptoms, which we feel is a better assessment of student mental health literacy.

4.3 Self-Report Questions

The post-test knowledge questions were complemented by a series of self-report questions, where participants reported their attitudes towards *Transitions* and how they felt it impacted them.

Table 9

Student responses (in percentages) to self-report questions from 2016 survey

Statement Questions	Positive	Neutral	Negative
1. Overall, I find *Transitions* helpful.	58.4	34.2	7.4
2. Overall, I feel more prepared for college or university after reading *Transitions*.	41.6	43.6	14.8
3. As a result of reading *Transitions*, my knowledge about mental health and mental illness has improved.	59.7	30.9	9.4
4. I talked about what I read in *Transitions* with (check all that apply): My roommates, Friends, Other	N/A	N/A	N/A
5. I would recommend *Transitions* to someone I know.	55.0	35.6	9.4
6. As a result of reading *Transition*s, I am comfortable having someone with mental illness in my class.	71.1	22.1	6.7
7. As a result of *Transitions*, my knowledge about treatment of mental illness has improved.	67.1	24.8	8.1

8. As a result of *Transitions*, I understand most people with mental illness can live a productive life.	70.5	25.5	4.0
9. As a result of reading *Transitions*, I would suggest someone I know get help for a mental health concern.	69.8	22.8	7.4
10. After reading *Transitions*, I would feel more comfortable seeking help for a mental health concern if I need to.	69.1	22.8	8.1
11. I plan to seek help for a mental health concern because of what I read in *Transitions*.	25.5	67.1	7.4

Overall, student feedback regarding *Transitions* was positive and supports our findings that *Transitions* is an effective self-learning tool for improving student mental health literacy. Student responses to Questions 3 and 7 suggest *Transitions* increased knowledge about mental disorders and their treatments. Responses to Questions 6 and 8 suggest *Transitions* played an important role in decreasing stigma related to mental disorders. Responses to Questions 9 and 10 support that *Transitions* has enhanced help-seeking efficacy. This study confirms the findings of Kutcher, Wei & Morgan (2015), who found that *Transitions* positively impacted post-secondary students' mental health literacy.

It is worth noting that 14.8% of students reported negative feelings about *Transitions* preparing them for college or university. In future surveys, we suggest including "if you disagree or strongly disagree with a statement, please provide additional feedback to help us make *Transitions* better" to gain further insight from participants.

Chapter 5: Methodology of Study 2: Evaluating the Effectiveness of *Transitions* (3rd ed.) as a Self-Learning Tool

This chapter looks at the methodology behind evaluating the effectiveness of *Transitions* (3rd ed.) as a self-learning tool for post-secondary students. First, the administration and design of the questionnaire used to evaluate student knowledge before and after reading *Transitions* are covered. The sampling process and setting of the study are explored, followed by study limitations and ethical approval. Finally, the methods for statistical analysis are discussed.

5.1 Survey Distribution and Design

In the Fall of 2017, researchers distributed paper copies of the pre-test survey to first-year commerce classes at Saint Mary's University, along with a hard copy of *Transitions*. Students were asked to read *Transitions* and then two to three weeks later, researchers returned and administered the post-test survey. The pre-test established a baseline for each participant, while the follow up survey aimed to capture changes in students' knowledge, attitudes, behaviours, general health, and perceived stress after reading *Transitions*.

The 2017 survey consisted of 6 segments: Demographics (refer to Appendix G); Section A: Knowledge Questions (refer to Appendix H); Section B: Stigma and Attitudes (refer to Appendix I); Section C: Previous Help-Seeking Behaviour and Attitudes towards Seeking Help (refer Appendix J); Section D: General Health Questionnaire (refer to Appendix K); and Section E: Perceived Stress (refer to Appendix L). For the demographics section in the updated survey, participants were asked to provide the same information as asked in the 2016 survey, in addition to whether or not they had received

previous mental health training, and whether they or a family member had received professional treatment for a mental disorder. The updated survey also asked participants whether they had previously read *Transitions* on both pre- and post-test surveys; students who answered yes to this question pre-test and no to this question post-test were removed from the study. Section A consisted of 20 knowledge questions, 6 knowledge questions from the 2016 survey and 14 new questions. Once again, students had the option to answer each question with “true,” “false,” or "do not know" to avoid facilitating a random guess when the participants didn't know the answer. Section B of the survey included 12 questions to evaluate stigma and attitudes about people with mental health disorders. The next section asked participants two questions about previous help-seeking behaviours (included in the pre-test only) and five questions regarding attitudes towards seeking help (included in pre- and post-test surveys). Section D consisted of 12 general health questions to better understand the student’s current mental health status (included in the pre-test only). The final section of the survey included 10 perceived stress questions (included in the pre-test only).

5.2 Sample and Setting

The sample for this study was selected using a non-probabilistic approach, as participants were chosen out of convenience. Researchers conducting the study were on campus and able to distribute surveys to first-year classes at Saint Mary’s University whose instructors opted into the study. There were 472 students who completed the pre-test survey, and 440 students who completed the post-test. We were able to match 340 students’ pre- and post-test questionnaires using their student number.

5.3 Limitations

This study sought to evaluate the effectiveness of *Transitions* as a self-learning tool, and therefore puts all responsibility on the student to read and learn the material themselves. As mentioned in the first study, we cannot guarantee that students read *Transitions*, even if they claimed to on the post-test survey. This poses a possible limitation to the study. Another limitation is that students were selected out of convenience, meaning findings cannot be generalized to the population as a whole.

5.4 Ethical Clearance

This study, as part of the *LIST (Learn, Identify, Support & Treat): The Impact of a Comprehensive Mental Health Literacy Intervention for Postsecondary Settings – The Implementation and Evaluation of Transitions Among 6 Campuses in Atlantic Provinces* project, received Research Ethics Board approval from the principal investigator's institution (Certificate #2017-4174) and other participating institutions: Saint Mary's University (Certificate #17-518), Holland College, Saint Francis Xavier University, Mount Allison University, Nova Scotia Community College, and Mount Saint Vincent University.

5.5 Statistical Analysis

When looking at the overall effectiveness of *Transitions* (3rd ed.), participant progress between pre-test and post-test scores was measured using a "no penalty sum" method. For each correct answer the participants gained a point, and no point was gained or lost by a wrong answer or a "do not know." Student scores could range from 0 to 20. A two sample t-test assuming equal variances was conducted, with alpha pre-set at 0.05, to

evaluate the effectiveness of *Transitions* as a self-learning tool for improving student mental health literacy at Saint Mary's University.

Next, we sought to determine whether certain demographics could impact student learning of *Transitions* content. Gender and first language were our demographics of choice, and the 340 matched questionnaires were used for this part of the analysis. Two sample t-tests assuming equal variances, with alpha pre-set at 0.05, were conducted on male and female pre-test scores and male and female post-test scores respectively. Another set of two sample t-tests were carried out, assuming equal variances with alpha preset to 0.5 for English and Non-English pre-tests, and assuming unequal variances with alpha preset to 0.5 for English and Non-English post-tests. An f-test confirmed that variability among the mean English and Non-English post-test scores exceeds that expected due to chance (see Appendix M).

Chapter 6: Results and Discussion of Study 2: Evaluating the Effectiveness of *Transitions* (3rd ed.) as a Self-Learning Tool

6.1 Overall Effectiveness of *Transitions*

The two sample t-test assuming equal variances revealed a statistically significant increase between mean pre- and post-test scores, with a p value of 1.1×10^{-26} (see Appendix E). This allows us to accept the alternative H1, and assume *Transitions* was an effective self-learning tool for improving student mental health literacy at Saint Mary's University. Finding a statistically significant improvement in test scores demonstrates that students gained a better understanding about mental health and mental illness as a result of being exposed to *Transitions*. This supports the findings of Kutcher, Wei &

Morgan (2015) and preliminary findings from other institutions participating in the LIST project.

6.2 Gender Differences

The 340 participants matched for pre- and post-test scores were fairly evenly split on gender, with 193 males, 145 females, and 2 students who did not wish to disclose their gender. We hypothesized that a significant difference between the means of the male and female test scores would suggest that gender influenced student test performance and learning of *Transitions* content. A two sample t-test assuming equal variances was performed on male and female pre-test scores, alpha preset to 0.5, and found a p value of 0.0997 (see Appendix N), showing no significant difference between the means. Another two sample t-test was performed on male and female post-test scores and revealed no significant difference between the means, with a p value of 0.45 (see Appendix N). This allowed us to reject the hypothesis H3 and assume gender does not affect test performance or learning. Our assumption is supported by other findings from institutions participating in the LIST project, which also found that gender did not influence student learning. This implies that student exposure to *Transitions* will produce a similar impact, regardless of gender.

6.3 First Language Differences

A large proportion of students self-reported English as their first language compared to any other language, 233 students and 107 students respectively. We hypothesized that a significant difference between the means of the English and Non-English test scores would suggest first language influenced student test performance and learning of

Transitions content, as *Transitions* text and questionnaire were only offered to students in English for this study.

A two sample t-test assuming equal variances was performed on English and Non-English pre-test scores and found a p value of 8.61×10^{-18} (see Appendix O), showing a significant difference between the means. A two sample t-test assuming unequal variances was performed on English and Non-English post-test scores and found a p value of 5.54×10^{-11} (see Appendix O), also revealing a significant difference between the mean scores. These findings allow us to accept the hypothesis H4, and assume that first language affected student test performance and overall learning of *Transitions* content, as students who reported a non-English first language had significantly lower scores pre- and post-test than students reporting English as their first language. In future, we suggest looking into making *Transitions* materials available in more languages than just French and English. We also suggest offering students additional support while completing pre- and post-test surveys, in their first language if possible, to ensure they understand the questionnaire. These suggestions could help mitigate the impacts of first language on test performance and learning and reduce the variability among the mean English and Non-English post-test scores.

Cultural barriers could also serve as a possible explanation for first language impacting student test performance and for unequal variance in the post-test evaluation samples. A study by Hyun and her colleagues (2006) found that cultural stigma attached to the use of mental health services and less acculturation to western cultural norms are barriers to international students seeking mental health support. Perhaps these barriers impact other mental health literacy components as well, such as knowledge about mental

health, mental disorders, and their treatments. Future research could be done to gain a better understanding of cultural barriers international students at Saint Mary's University are experiencing, and what measures should be taken to help address those barriers and better support international students. Studies in other countries could also shed more light on this issue.

Chapter 7: Application of Findings

7.1 Summary of Main Findings

We conducted our evaluation of the second and third editions of *Transitions* independently. Both studies found *Transitions* to be an effective self-learning tool for improving student mental health literacy at Saint Mary's University. The significant improvement between pre- and post-test scores in both evaluations demonstrates that exposure to *Transitions* equipped students with a better understanding of mental health and mental illness, an important component of mental health literacy. Student feedback from the follow-up self-report questions in the first study suggest *Transitions* played an important role in decreasing stigma related to mental health disorders and enhanced help-seeking efficacy. These findings support the call for post-secondary institutions to focus efforts on reducing stigma and improving mental health literacy levels across campus to address stigma and poor help-seeking behaviours (Gulliver et al., 2010; Kutcher, Wei & Morgan, 2015; Wrigley et al., 2005).

Our knowledge question analysis provided recommendations for survey improvement. Changes to Questions 2 and 4 could improve the validity of the questionnaire, alignment between the wording of Question 7 and *Transitions* content

could improve student performance, and changes to Question 10 could improve the assessment of student learning.

Furthermore, we concluded that gender did not impact student test performance or learning of *Transitions* content, while students with a non-English first language had significantly lower pre- and post-test scores than English first language students. More research is needed to determine whether language and/or cultural barriers play a role in poorer scores for non-English first language students.

7.2 Direction for Future Research

In addition to recommendations for future research presented throughout this document, Section B of the 2017 survey should be looked into, as collected data included pre- and post-test responses to questions evaluating stigma and attitudes about people with mental health disorders. Furthermore, it would be interesting to compare those stigma question responses from Section B to responses from Section C regarding help-seeking behaviours and attitudes towards seeking help, and explore whether exposure to *Transitions* positively impacted student responses.

Another suggestion for future research is to perform chi-square tests to validate the paired t-tests conducted in Study 1 of this thesis.

7.3 Perspective from a Community Development Lens

As previously stated, *Transitions* can play an important role in preventing the onset or worsening of mental health disorders, supporting existing mental health services for students, and fostering adaptive coping strategies that students will carry with them for life. While *Transitions* is designed to be a self-learning tool, expecting a first-year student

to read and learn the material while simultaneously navigating the new stresses and commitments of post-secondary student life is a lot to ask. By granting students access to *Transitions* content earlier in their academic journey, we can help *Transitions* serve that integral role in the lives of Canadian students without burdening them with additional stress in their first year of post-secondary studies.

For the past three years, I have worked for the Population Health department of Horizon Health Network, a regional health authority in New Brunswick, Canada, as a Community Developer. These are a few key strategies that guide my work: building partnerships and trusting relationships, strengthening community capacity, improving access to services and information, creating healthy and supportive environments, and using a social determinants of health approach to address health inequities and identify needs or gaps in service. When it comes to youth and mental health, data from Horizon Health Network's (2021) *Community Health Needs Assessments* and New Brunswick Health Council's (2021) *My Community at A Glance* reports emphasize an increased need for mental health services to address the growing rate of mental health issues among youth across the province. Various healthcare professionals, school staff, and youth from various schools in my region have echoed this concern and expressed a desperate need for more resources and supports.

Based on the above, integrating *Transitions* content into the middle and high school curriculum has the potential to be much more effective than introducing the material to first-year post-secondary students. Some elements of *Transitions* could be embedded into the middle school health curriculum (i.e. mental health, gender identity, sexual orientation, healthy behaviours, healthy relationships), and other pieces into the high

school personal development/wellness curriculum (i.e. mental health, mental illness, treatments for mental disorders, stress, healthy relationships, budgeting, time management). This would equip students with important life skills and adaptive coping strategies and help them prepare for the next big step in their academic journey, all while they are in a familiar environment, surrounded by their support system. When students reach their last year of secondary school, they would be presented with the *Transitions* document itself, which would serve as a review for key concepts previously learned, in addition to new, relevant information to better prepare them for the transition to first-year university or college. This suggestion is supported by Fraser (2010), who believes that the solution to empowering youth to access mental health services is through "…prevention and early intervention aimed at educating young people about mental health, including mental health literacy and self-help skills, [which] will give young people more confidence and opportunity to access the help they need, when they need it" (p. 278).

On another note, several *Community Health Needs Assessments* (Horizon Health Network, 2021) have also identified the lack of awareness regarding existing programs and services available in the community as a priority. Authors of *Transitions* could present institutions with the opportunity to tailor pages in the document to include information about local resources and supports specific to that institution, allowing *Transitions* to become a one-stop-shop for the campus community.

7.4 Dissemination of *Transitions* Content

Information and materials associated with this project will be available to students and other stakeholders through the Saint Mary's University library, the school website,

presentations at various conferences, and the *teenmentalhealth.org* website. *Transitions* will be provided to new students in their welcome week package when they arrive at Saint Mary's University. *Transitions* has also been circulated to all school guidance counsellors and Healthy Learners nurses in Anglophone School District West in New Brunswick, Canada.

7.5 Concluding Remarks

In conclusion, *Transitions* shows promise as an effective resource for university and college campuses across Canada to utilize in their efforts to reduce stigma and enhance student mental health literacy. This tool is low-cost and readily available, providing the entire campus community with equitable access to a resource that can help students navigate the transition from high school to college or university more effectively. The use of *Transitions* addresses the need for evidence-based resources for on-campus enhancement of mental health literacy and, while further research on its impacts would be useful, available evidence suggests that Canadian post-secondary institutions may want to consider adopting this tool as part of their approach to mental health on campus. In future, we hope to see an increase in the promotion of *Transitions* on campuses across Canada to help students make the most of their university or college experience.

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Appendix A. Demographics (2016 survey)

Question	Answer
Which year were you born?	
What is your first language?	
Are you an international student?	Yes/No
I identify my gender as	Male Female Other

Appendix B. Knowledge Questions (2016 survey)

Transitions Knowledge Questions – ANSWE KEY (DO NOT DISTRIBUTE)

To help us match your anonymous responses between surveys done at the start and end of the training please answer the following questions. These answers allow you to remain anonymous and still allow us to see if your scores on the survey change before and after participating in the training.

a) The name of your first pet _____,

b) Your birth **month** _____, c) Your postal code_____, d) Your shoe size _____,

e) The last two digits/numbers of your home phone number _____.

For each of the following statements choose the **option most likely to be correct** by marking an **X** in the appropriate box. If you do not know the answer please choose the "Don't Know" option. Thank you.

Question	True	False	Do Not Know
1) A small amount of anxiety is helpful to improving how well you perform (for example: at a sporting event; on a test; etc.)	X		
2) A delusion occurs when someone sees things that are not really there or hears things that are not really there.		X	
3) Three common symptoms of Depression are: problems with sleeping; feeling hopeless; having thoughts about death or suicide.	X		
4) Mental distress is a term that is used to describe the symptoms of a mental illness.		X	
5) Cognitive Behavior Therapy is a psychological treatment that can be used to help people who have Depression OR an Anxiety Disorder.	X		
6) Anorexia Nervosa AND Bulimia Nervosa are BOTH types of eating disorders.	X		
7) Having two drinks within the time frame of one hour is considered to be binge drinking.		X	
8) Counselors, family doctors AND health clinic nurses are all health care professionals that may be able to help a student who is having a mental health problem.	X		
9) Telling a student "don't do drugs" is an effective way of preventing over-use or miss-use of alcohol or marijuana.		X	
10) Panic Disorder, Social Anxiety Disorder and Examination Anxiety are all examples of Anxiety Disorders.		X	
11) ALL of the following describe Bipolar Disorder: it affects about 1% of the population; is comprised of BOTH manic and depressive episodes; is treated with mood stabilizers.	X		
12) EACH of these activities is important to help a person stay well if they are being treated for a mental disorder: nutritious diet; 30 minutes of vigorous exercise daily; having a regular sleep/wake cycle.	X		

Appendix C. Self-report questionnaire (2016 survey)

Question	Answer
1. Overall, I find *Transitions* helpful.	
2. Overall, I feel more prepared for college or university after reading *Transitions*.	
3. As a result of reading *Transitions*, my knowledge about mental health and mental illness has improved.	
4. I talked about what I read in *Transitions* with (check all that apply):	
5. I would recommend *Transitions* to someone I know.	
6. As a result of reading *Transitions*, I am comfortable having someone with mental illness in my class.	
7. As a result of reading *Transitions*, my knowledge about treatment of mental illness has improved.	
8. As a result of reading *Transitions*, I understand most people with mental illness can live a productive life.	
9. As a result of reading *Transitions*, I would suggest someone I know get help for a mental health concern.	
10. After reading *Transitions*, I would feel more comfortable seeking help for a mental health concern if I need to.	
11. I plan to seek help for a mental health concern because of what I read in *Transitions*.	

Choices except for Question 4, and 11:
Strongly disagree
Disagree
Neutral
Agree
Strongly agree

Choices for Question 4:
My roommates
Friends
Other

Choices for Question 11:
Yes
No, I don't plan to seek help although I have a mental health concern
No, I don't have any mental health concern

Appendix D. The sections of *Transitions* (2nd ed.) in which the correct answers to the knowledge questions can be found

Question 1: page 66, paragraph 1 under "What is Anxiety?"

Question 2: page 64, table about positive symptoms of schizophrenia

Question 3: page 58, list of symptoms of Major Depressive Disorder

Question 4: page 56, paragraph 2 starting with "In the diagram…"

Question 5: page 58, paragraph 1 under "How is Depression treated?"; page 68, paragraph 2 under "How are Anxiety Disorders treated? – Cognitive Behaviour Therapy"

Question 6: page 69, table titled "There are three main categories of eating disorders"

Question 7: page 74, under "What is binge drinking?"

Question 8: page 81, under "Help for all addictions & mental illnesses"

Question 9: page 72, paragraph 1 under "Drug and Alcohol Use/Abuse"

Question 10: pages 66 and 67, under "Are there different types of Anxiety Disorders?"

Question 11:

- Affects 1% of population: page 62, under "Facts"
- Comprised of BOTH manic and depressive: page 61, paragraph 1 under "What is Bipolar Disorder?"
- Treated with mood stabilizers: page 62, under "How is Bipolar Disorder treated?"

Question 12: page 59

Appendix E. Overall Effectiveness of *Transitions*

Evaluating overall effectiveness of *Transitions* (2nd ed.) using a two sample t-test assuming equal variances, with alpha pre-set at 0.05.

	Pre-test	*Post-test*
Mean	6.720481928	7.162162162
Variance	3.056946627	3.578966722
Observations	415	148
Pooled Variance	3.193732641	
Hypothesized Mean Difference	0	
df	561	
t Stat	-2.581424305	
P(T<=t) one-tail	0.005045987	
t Critical one-tail	1.647574311	
P(T<=t) two-tail	0.010091975	
t Critical two-tail	1.964201615	

Evaluating overall effectiveness of *Transitions* (3rd ed.) using a two sample t-test assuming equal variances, with alpha pre-set at 0.05.

	Pre-test	*Post-test*
Mean	10.00635593	12.17045455
Variance	8.681488179	9.057439428
Observations	472	440
Pooled Variance	8.862853672	
Hypothesized Mean Difference	0	
df	910	
t Stat	-10.96958444	
P(T<=t) one-tail	1.10482441520414E-26	
t Critical one-tail	1.646529815	
P(T<=t) two-tail	2.21E-26	
t Critical two-tail	1.962574288	

Appendix F. Learning Goals for Questions 5 and 7

Paired two sample t-test, alpha preset to 0.5, on matched 2016 pre- and post-test surveys for Question 5.

	Pre-test	*Post-test*
Mean	0.518867925	0.698113208
Variance	0.252021563	0.212758311
Observations	106	106
Pearson Correlation	0.024832629	
Hypothesized Mean Difference	0	
df	105	
t Stat	-2.741054466	
P(T<=t) one-tail	0.00359984	
t Critical one-tail	1.659495383	
P(T<=t) two-tail	0.007199681	
t Critical two-tail	1.982815274	

Paired two sample t-test, alpha preset to 0.5, on matched 2016 pre- and post-test surveys for Question 7.

	Pre-test	*Post-test*
Mean	0.528301887	0.40566037
Variance	0.251572327	0.24339622
Observations	106	106
Pearson Correlation	0.010892755	
Hypothesized Mean Difference	0	
df	105	
t Stat	1.804594369	
P(T<=t) one-tail	0.037002338	
t Critical one-tail	1.659495383	
P(T<=t) two-tail	0.074004676	
t Critical two-tail	1.982815274	

Appendix G. Demographics (2017 Survey)

SAINT MARY'S UNIVERSITY SINCE 1802
One University. One World. Yours.

Transitions Pre-Evaluation (Student)

Demographics: this evaluation will help us evaluate the impact of Transitions program.

Please Note: All the information you provide will be strictly kept confidential.

1. You're A number: _____
2. What do you consider to be your first language:_____
3. I am international student/visa student
   □ Yes □ No
4. Gender:
   □ Male □ Female □ Other □ Not disclosed
5. If you are a student:

   What program you are in: _____

   What year you are in:
   a) □ Firt year
   b) □ Second year
   c) □ Third year
   d) □ Fourth year
   e) □ Other, please specify: _____
6. Have you read Transitions previously?
   □ Yes □ No
7. Have you ever received mental health education/training previously?
   □ Yes (If you check yes, please complete question 8)
   □ No (If you check no, please skip question 8 and move to question 9 directly)
8. If yes, what type (all that apply)

   □ Mental Health First Aid
   □ High school course
   □ Other: _____
   □ University course (e.g., psychology, social work, counseling)
   □ Anti-stigma program
9. Have you or a family member received professional treatment for a mental disorder?
   □ Yes □ No □ Not disclosed
10. Please identify your Ethnicity (For example: Aboriginal, African, American, Arab, Chinese, Indian…)

    _____

Appendix H. Section A: Knowledge Questions (2017 survey)

Section A: For each of the following statements choose the **option most likely to be correct** by marking an **X** in the appropriate box. If you do not know the answer please choose the "Don't Know" option. Thank you.

Question	True	False	Do Not Know
1) An amount of stress is helpful to improving how well you perform (for example: at a sporting event; on a test; etc.)			
2) A delusion occurs when someone sees things that are not really there or hears things that are not really there.			
3) Three common symptoms of Depression are: problems with sleeping; feeling worthless; having thoughts about death or suicide.			
4) All the following are different types of learning styles: auditory learning, visual learning, and friendship learning.			
5) Mental distress is a term that is used to describe the symptoms of a mental illness.			
6) Using a condom is always protective against contracting a sexually transmitted infection.			
7) Eating disorders such as Anorexia Nervosa and Bulimia Nervosa are common, affecting about 20% of students on campus.			
8) A person can have a mental illness and good mental health at the same time.			
9) Having persistent suicidal thoughts is a normal response to a stressful situation in your life.			
10) Complementary and alternative treatments have good scientific evidence to support their use to treat Depression.			
11) Panic Disorder, Social Anxiety Disorder and Examination Anxiety are all examples of Anxiety Disorders.			
12) ALL of the following describe Bipolar Disorder: it affects about 1% of the population; is comprised of BOTH manic and depressive episodes; often begins before age 25.			
13) Most stressful situations encountered on campus can trigger Posttraumatic Stress Disorder.			
14) A person with Attention-Deficit/Hyperactivity Disorder can often achieve academic success with interventions such as medication and learning specific study strategies.			
15) Box breathing is a technique that you can learn to help you deal with stressful situations.			
16) All of the following are examples of sexually transmitted diseases: HIV/AIDS, Hepatitis E, and Syphilis.			
17) Failing a test or doing poorly on an assignment can be something that helps a person develop academic resilience.			
18) Having a partner who isolates you from family or friends may be a warning sign of an abusive relationship.			
19) Self-harm or self-injury is a useful strategy to deal with problems in your life.			
20) A person's identity is usually set in childhood and does not change over time.			

Appendix I. Section B: Stigma and Attitudes (2017 survey)

Section B: For each of the following statements please mark an X in the box that you feel best describes your agreement with the statement. Please select only one answer for each statement.

	Strongly Disagree	Disagree	Disagree a little	Not sure	Agree a little	Agree	Strongly Agree
1. A person who has received mental health treatment is just as intelligent as the average person.							
2. Someone who has received mental health treatment is just as trustworthy as the average person.							
3. It is acceptable that someone who has fully recovered from a mental illness can work as a teacher of young children in a public school.							
4. Receiving mental health treatment is a sign of personal failure or weakness.							
5. People with severe mental illness can never recover enough to have a good quality of life.							
6. People with mental illness are to blame for their own condition.							
7. If my colleague told me they had a mental illness, I would still want to work with them.							
8. If I had neighbors with mental illness. I would move out of that neighborhood.							
9. If a person who had fully recovered from mental illness asked me for a letter of support to get employment, I would provide a reference.							
10. If I had a mental illness, I would not admit this to any of my friends for fear of being treated differently.							
11. I would accept someone who has received mental health treatment as a friend.							
12. I would think less of a person who has received mental health treatment.							

Revised from Youth Opinion Survey

Appendix J. Section C: Previous Help-Seeking Behaviour and Attitudes towards Seeking Help (2017 survey)

Section C: About Help-Seeking

Talking about mental health
Please select only one answer for the question.

At any point during the past 3 months, did you ever speak to a health professional about any mental health problem or concern?

- ☐ I did not have any mental health problem or concern
- ☐ I am waiting to see a health professional about a mental health problem or concern
- ☐ I spoke to a health professional about a mental health problem or concern
- ☐ I opted not to speak to a health professional although I am concerned about my mental health

In this question, we would like to know who, if anyone, you talked to about or asked for help with a mental health problem or concern you were having (in the past 3 months). Complete only those questions that are relevant to you.

	Asked for help	Wanted to but did not ask for help	Did not feel the need to ask for help
My mother or father (or equivalent)			
A sibling (brother, sister, step sibling, etc.)			
Another relative (or equivalent)			
A close friend			
A work colleague			
My minister, priest, rabbi, imam (or some other spiritual or religious leader)			
My regular family health professional (e.g., a physician or a nurse)			
A mental health professional (like a counselor, psychologist, psychiatrist, or mental health nurse)			
A person not identified above			

In general, how strongly do you agree or disagree with each of the following statements?

	Strongly Disagree	Disagree a lot	Disagree	Not sure	Agree	Agree a lot	Strongly Agree
1. In general, asking for help for a mental health problem or disorder is helpful.							
2. I am comfortable asking for help for a mental health problem or disorder.							
3. If I think I may have a mental health problem or mental disorder (such as depression, social anxiety disorder, etc), I will ask for help.							
4. If I thought one of my friends or peers needed help with a mental health problem or disorder (such as depression), I would encourage them to seek help.							
5. If I thought one of my family members needed help with a mental health problem or disorder (such as depression), I would encourage them to seek help.							

Appendix K. Section D: General Health Questionnaire (2017 survey)

Section D: We want to know how your health has been in general over the last few weeks. Please read the questions below and each of the four possible answers. Circle the response that best applies to you.

Have you recently:

1. **Been able to concentrate on what you're doing?**
   Better than usual | same as usual | less than usual | much less than usual

2. **Lost much sleep over worry?**
   Not at all | no more than usual | rather more than usual | much more than usual

3. **Felt that you are playing a useful part in things?**
   More so than usual | same as usual | less so than usual | much less than usual

4. **Felt capable of making decisions about things?**
   More so than usual | same as usual | less than usual | much less than usual

5. **Felt constantly under strain?**
   Not at all | no more than usual | rather more than usual | much more than usual

6. **Felt you couldn't overcome your difficulties?**
   Not at all | no more than usual | rather more than usual | much more than usual

7. **Been able to enjoy your normal day to day activities?**
   More so than usual | same as usual | less so than usual | much less than usual

8. **Been able to face up to your problems?**
   More so than usual | same as usual | less than usual | much less than usual

9. **Been feeling unhappy or depressed?**
   Not at all | no more than usual | rather more than usual | much more than usual

10. **Been losing confidence in yourself?**
    Not at all | no more than usual | rather more than usual | much more than usual

11. **Been thinking of yourself as a worthless person?**
    Not at all | no more than usual | rather more than usual | much more than usual

12. **Been feeling reasonably happy, all things considered?**
    More so than usual | same as usual | less so than usual | much less than usual

Appendix L. Section E: Perceived Stress (2017 survey)

Section E: For each of the following statements, please mark an **X** in the box that you feel best describes your response toward the statement. Please select only one answer for each statement.

Question	Never	Almost never	Sometimes	Fairly often	Very often
1. In the last month, how often have you been upset because of something that happened unexpectedly?					
2. In the last month, how often have you felt that you were unable to control the important things in your life?					
3. In the last month, how often have you felt nervous and "stressed"?					
4. In the last month, how often have you felt confident about your ability to handle your personal problems?					
5. In the last month, how often have you felt that things were going your way?					
6. In the last month, how often have you found that you could not cope with all the things that you had to do?					
7. In the last month, how often have you been able to control irritations in your life?					
8. In the last month, how often have you felt that you were on top of things?					
9. In the last month, how often have you been angered because of things that were outside of your control?					
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?					

Appendix M. Verification of Variance Assumption for First Language Post-Test Samples

Verifying the sample variance assumption among the mean English and Non-English first language post-test scores.

	English Post-test	*Non-English Post-test*
Mean	12.95708155	10.60747664
Variance	6.40332248	9.165226591
Observations	233	107
df	232	106
f Stat	1.431323601	
f Crit	1.30424163	

Appendix N. Gender, Student Test Performance and Learning of *Transitions* Content

Evaluating the impact gender has on student pre-test performance using a two sample t-test assuming equal variances, with alpha pre-set at 0.05.

	Male Pre-test	*Female Pre-test*
Mean	10.16062176	9.634482759
Variance	8.552191278	8.219636015
Observations	193	145
Pooled Variance	8.409667594	
Hypothesized Mean Difference	0	
df	336	
t Stat	1.650879551	
P(T<=t) one-tail	0.049848751	
t Critical one-tail	1.64940126	
P(T<=t) two-tail	0.099697501	
t Critical two-tail	1.967049384	

Evaluating the impact gender has on student post-test performance and learning of *Transitions* (3rd ed.) content using a two sample t-test assuming equal variances, with alpha pre-set at 0.05.

	Male Post-test	*Female post-test*
Mean	12.31088083	12.06896552
Variance	8.611183074	8.300766284
Observations	193	145
Pooled Variance	8.478147307	
Hypothesized Mean Difference	0	
df	336	
t Stat	0.755991972	
P(T<=t) one-tail	0.225091845	
t Critical one-tail	1.64940126	
P(T<=t) two-tail	0.450183689	
t Critical two-tail	1.967049384	

Appendix O. First Language, Student Test Performance and Learning of *Transitions* Content

Evaluating the impact first language has on student pre-test performance using a two sample t-test assuming equal variances, with alpha pre-set at 0.05.

	English Pre-test	*Non-English Pre-test*
Mean	10.8111588	8.046728972
Variance	6.964185289	6.384588256
Observations	233	107
Pooled Variance	6.782418172	
Hypothesized Mean Difference	0	
df	338	
t Stat	9.089577135	
P(T<=t) one-tail	4.30436E-18	
t Critical one-tail	1.649374276	
P(T<=t) two-tail	8.60871E-18	
t Critical two-tail	1.967007311	

Evaluating the impact first language has on student post-test performance and learning of *Transitions* (3rd ed.) content using a two sample t-test assuming unequal variances, with alpha pre-set at 0.05.

	English Post-test	*Non-English Post-test*
Mean	12.95708155	10.60747664
Variance	6.40332248	9.165226591
Observations	233	107
Hypothesized Mean Difference	0	
df	177	
t Stat	6.985376778	
P(T<=t) one-tail	2.76957E-11	
t Critical one-tail	1.653508002	
P(T<=t) two-tail	5.53914E-11	
t Critical two-tail	1.973457202	
Mean	12.95708155	10.60747664