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Reducing Stigma and Encouraging Help Seeking Intentions Through a Mental Health Literacy Program

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Abstract

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MSc, Syracuse University, 2001

BS, Laurentian University, 1986

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Many individuals do not seek help for a mental health problem due to stigma and fear of rejection by peers and family. Researchers have highlighted that the age group least likely to seek help is youth. Stigma acts as an important barrier to help-seeking. Evidence indicating how mental health literacy can reduce stigma and encourage help-seeking remains inconclusive. In this study, the health belief model was used to understand how college students perceived an individual's susceptibility to mental illness and the barriers associated with seeking help. A posttest-only randomized controlled trial evaluated the impact of the Is It Just Me? mental health literacy program among college students and assessed whether the program was effective in generating changes in knowledge, lessening stigma, and encouraging help-seeking intentions should students experience a mental health problem. Gender and age data were collected for background information. The results of 2-tailed *t* tests showed less stigma $p = .047$, $t = -2.02$ in the experimental (*M*= 18.30*,* SD *(*2.21*)* compared to the control condition (*M* 17.02*, SD (*3.78*)*), with no effect on knowledge. With respect to help-seeking intentions, the control condition scored significantly higher than the experimental condition. In conclusion, college students who participated in this short-term mental health literacy program reported less stigma but also less help-seeking. Thus, the program contributed to a greater understanding and acceptance of people living with mental illness. Breaking down stigma and encouraging early intervention for students to seek help if they experience mental health problems can lead to better recovery outcomes and healthier trajectories.

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Dedication

This dissertation is dedicated to my fiancé and children, who have been so supportive in this major milestone for me.

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Chapter 1: Introduction to the Study

One in three Canadians will experience a mental health problem during his or her lifetime (Statistics Canada, 2015), yet stigma continues to prevent people from seeking help early, as they would for a physical illness (Judd, Jackson, Komiti, Bell, & Fraser, 2012). Saporito, Ryan, and Teachman (2011) contended that adolescents are not immune to stigma and may experience rejection and discrimination by their peers and social networks. Adolescence is a developmental period that is characterized by important biological, social, and psychological changes that may cause young people difficulty and anxiety as they seek to adjust (Spear, 2013). Signs of mental illness can manifest as adolescents are shaping their identities and establishing relationships with their peers. Many adults with psychiatric disorders had the onset of their disorders in childhood and adolescence (Copeland et al., 2009; Kessler & Walters, 1998). A rise in psychopathology has also been reported in adolescence, with more than 22% of youth experiencing a severe episode of mental illness, in addition to 23% experiencing a mild episode of mental illness such as anxiety, a mood disorder, or substance abuse (Ormel et al., 2014). At the elementary school level, more than 8% to 18% of school-age children are diagnosed with a psychiatric disorder, yet strategies to help them are limited (Fazel et al., 2014). In Canada, 70% of mental health issues have their onset during childhood or adolescence (Statistics Canada, 2006). Richwood et al. (2005) reported that adolescents are the demographic group least likely to seek help for a mental health problem.

Stigma has been identified as the most significant barrier preventing adolescents from seeking help. Moses (2010) revealed that youth who exhibit signs of mental illness

do not disclose due to fear of rejection and being branded mentally ill or "crazy" among their peers. Peer influence was also found to play a significant role in reinforcing stigma for people with mental illness (Grosbas et al., 2007; Yoshioka et al., 2014). Stigma is a complex social construct that has two principal types: public stigma and self-stigma (Bathje & Pryor, 2011; Corrigan et al., 2012). *Public stigma* is manifested through negative attitudes and discrimination toward people with mental illness, who are perceived to be dangerous and untrustworthy individuals (Corrigan, 2009; Corrigan et al., 2012). *Self-stigma* is what can consume the minds of those afflicted with mental illness. Studies have indicated that adolescents with mental illness internalize the influences of stigma and labeling, developing "stigmatized" identities for themselves (Arria et al., 2011; Clement et al., 2015; Corrigan, 2009; Elkington et al., 2012; Evans-Lacko et al., 2012). Faced with prejudice, individuals with mental illness believe that they are unworthy of a good job, a network of friends, a fulfilling life, and attainment of their potential (Corrigan, 2009; Corrigan & Rao, 2012). They live the consequences of isolation, fear, and prejudice. Consequently, governmental and public efforts have focused on changing public attitudes toward people with mental illness and reducing the damaging effects of public and self-stigma on generations of individuals.

While stigma is characterized as the predominant barrier to help-seeking, poor mental health literacy has been recognized as a persistent challenge to address in schools and communities. *Mental health literacy* has been described as "knowledge and beliefs about mental disorders which aid their recognition, management or prevention" (Jorm et al., 1997, p. 182). In the past decade, peer-reviewed studies have shown that low mental

health literacy among youth is an important barrier to help-seeking behavior, particularly for those who experience mental health problems during adolescence (Milin et al., 2016; Perry et al., 2014; Wei, Hayden, & Kutcher, 2015). During the past two decades, many educational programs have been developed in an effort to enhance mental health knowledge and, by association, reduce stigmatizing attitudes toward individuals with mental illness (Kutcher et al., 2013; Logsdon, & Myers, 2011; Perry et al., 2014; Pinto-Foltz; et al., 2014). Mental health literacy encompasses knowledge about various mental illnesses, as well as the biological and psychosocial factors that contribute to the development of an illness. Mental health literacy also involves an understanding about stigma and the value of seeking help/early intervention for a mental health problem (Wei et al., 2013). For many years, professionals in mental health have intuitively understood the association of mental health literacy and stigma, yet that relationship was not fully established in the literature (Li,Juan, Thornicroft, & Huang, 2014; Milin et al., 2016; Schomerus et al., 2012). While Perry et al. (2014) confirmed that educational mental health literacy programs engendered awareness and greater knowledge of mental health, evidence to this effect was rather limited and not highly replicated. Many studies generated mixed results (Brohan et al., 2010; Mackenzie et al., 2014). The body of evidence has been plagued by poor research design, inconsistencies in methodology, and inconclusive results (Kutcher et al., 2013; Perry et al., 2014; Pinto-Foltz et al., 2011; Yoshioka et al., 2014).

Problem Statement

Emerging research is providing evidence that mental health knowledge has an effect on stigma reduction (Busby, Bruce, & Batterham, 2015; Milin et al., 2016; Rodgers et al., 2015). Milin et al. (2016) argued that a mental health literacy curriculum could challenge attitudes on mental illness in youth and foster help-seeking intentions should they experience a mental health problem. However, the evidence remains deficient with respect to the components that constitute an effective mental health literacy program. Programs have varied in format, ranging from a traditional educational method of dispensing information on mental illnesses to students to a social program format where youth listen to a person with lived experience of a mental illness share a personal journey of recovery. Corrigan (2009) defined this approach as the contact method. Results were found to be inconsistent and inconclusive concerning the best methods to effect stigma reduction (Chisholm et al., 2016). To date, research has focused on comparing the effectiveness of the educational method to the method involving contact with people with lived experience (Chisholm et al., 2016; Wei et al., 2013). Both groups of researchers have commented on the relatively low number of studies that use both content delivery approaches and have questioned whether incorporating the two methods might increase the level and depth of knowledge and thus have a greater impact on stigma reduction and help-seeking behavior. The methods are not mutually exclusive. Wei, Kutcher, and Szumilas (2011) argued that an effective mental health literacy program could include an overview of the biological and psychosocial factors that contribute to the development of a mental illness, create opportunities for interaction with people who live with mental illness, and

teach coping skills that can reduce the risk factors associated with the development of a mental illness.

This research study measured stigma among youth and determined that a multilevel educational program could foster mental health knowledge, address the stigma of mental illness, and encourage help-seeking intentions in students. Very few educational programs incorporate information on mental illnesses, direct contact with people with lived experience, a neuroscientific explanation of the brain addressing the biological and psychosocial factors of mental illness, and coping strategies to help youth manage challenges of life and school. In the past, those factors have been researched separately without consideration of the interrelationship between knowledge, attitude, and behavior (Chisholm et al., 2012).

Purpose of the Study

This posttest-only randomized controlled quantitative study evaluated the effectiveness of an educational mental health program in comparison to a control group in promoting mental health knowledge as well as help-seeking intentions, and addressing stigma around mental illness. The educational program was developed at the Royal Ottawa Mental Health Centre in 2011 in response to two student suicides that generated high public reaction and requests for youth mental health awareness by parents, teachers, and school board officials. The program was designed to consist of open and informal conversations with youth on mental wellness and mental health problems, along with a short facility tour to demystify mental illness and treatment. It involved presentations by a neuroscientist who showed brain scans of various subjects, both healthy and depressed,

conveying the connection between brain function and moods and behaviors; a psychologist, who impressed on students that mental health is parallel to physical health, described various types of mental illness, and explained how crucial it is for youth to reach out to a trusted adult when they or their friends need help; and an addiction counselor, who spoke of alcohol and drug use and treatments. It also included testimonials of young adults living with mental illness, who shared their personal stories of recovery, as well as a demonstration by a social worker of some coping techniques that help to reduce stress and foster positive health behavior. To date, more than 14,000 students have participated. While the program has received very positive responses among students and teachers, it has not been scientifically evaluated until now.

In this study, the educational program constituted the independent variable, while knowledge, stigma, and help-seeking intentions formed the dependent variables. Gender and age were collected in this study as demographic data and to understand the potential impact of age and gender on attitudes.

Research Questions

RQ1—Quantitative: Can a multifaceted mental health literacy program affect mental health knowledge?

Null Hypothesis 1: There is no difference in mental health knowledge between students who participated in the mental health literacy program and students who did not receive the program.

Alternative Hypothesis 1: There is a difference in mental health knowledge between students who took the mental health literacy program and students who did not partake in the program.

RQ2—Quantitative: Can a multifaceted mental health literacy program affect stigma?

Null Hypothesis 2: There is no difference in stigma between students who received the mental health literacy program and students who did not participate in the program.

Alternative Hypothesis 2: There is a difference in stigma between students who received the mental health literacy program and students who did not participate in the program.

RQ3—Quantitative: Can a mental health literacy program affect help-seeking intentions among youth?

Null Hypothesis 3: There is no difference in help-seeking intentions between youth who participated in the mental health program and students who did not participate in the program.

Alternative Hypothesis 3: There is a difference in help-seeking intentions between youth who participated in the mental health literacy program and students who did not participate in the program.

Theoretical Framework

The health belief model (HBM), as modified by Rosenstock (1974), constituted the theoretical framework for this study. The HBM was established as a theoretical framework

with constructs that could influence population-based health promotion. The premise is that a person's beliefs concerning a health problem will determine how he or she will assess the perceived benefits and susceptibility to an illness and whether he or she will engage in proactive healthy behavior. The model is based on five core perceptions: susceptibility to developing or having a problem, severity, benefits, barriers, and general health motivation (Rosenstock, 1988). For example, a person may make a decision to seek out medical help for a problem or to participate in an exercise program to reduce the risk of heart disease. In sum, a person thinks of changing a negative behavior by assessing his or her susceptibility to and the seriousness of illness, as well as evaluating the potential benefits of the decision in relation to what is required in action (see Appendix A). Because HBM is a population-based health promotion model, its value is in helping to promote information and knowledge that will encourage people to consider existing health behaviors that can be harmful or damaging to their health and take necessary action. The model has been applied extensively in relation to physical health (Wright et al. 2012), and a growing body of evidence supports its usefulness and validity in relation to mental health (Henshaw & Freedman-Doan, 2009). Future testing of the HBM model may elucidate how adolescents perceive benefits in seeking help, how they perceive barriers to seeking help, and how these variables can influence help-seeking intentions (O'Connor, Martin, Weeks & Ong, 2014).

Mental illness is an increasingly important societal health issue, one that requires concerted intervention. In its report on the Global Burden of Disease Study 2010, the World Health Organization (WHO) identified mental, neurological, and substance use

disorders as representing the most significant proportion of disease burdens. Ratnasingham et al. (2012) concluded in a study on public health that the "burden of mental illness and addictions in Ontario is more than 1.5 times that of all cancers, and more than seven times that of all infectious diseases" (p. 6). Governments and health organizations are working together to enhance literacy concerning mental health in order to reduce stigma and encourage more people to seek help early (WHO, 2010). According to HBM theory, once individuals learn about mental health and understand signs of mental illness, they will seek help to deal with mental health problems. However, human behavior is not simply governed by rational thinking and information; a number of factors are involved. With respect to mental illness, Corrigan et al. (2012) reported that stigma not only is a treatment barrier, but also can influence treatment adherence. In the spirit of the HBM model, lessening the effect of stigma for mental illness could lead individuals to recognize the need for help and seek treatment without feeling ostracized, isolated, or ashamed; thus, with less stigma, help-seeking intentions could increase.

The HBM model serves as an excellent framework for population-based health promotion efforts concerning mental illness among youth that help to challenge existing beliefs and perceptions about those with mental illness. This model emphasizes the potential to foster mental health literacy and encourage help-seeking behavior. According to Jones et al. (2013), the HBM has been shown to be very effective in terms of disease prevention, treatment adherence, and health benefits. This model acts as a guide to measuring health beliefs, stigma, and help-seeking in students who receive a mental health literacy intervention compared to those who do not.

Nature of the Study

This study was a randomized controlled trial that examined whether the program design of a 3-hour mental health literacy program was effective in affecting mental health knowledge, lessening stigma, and encouraging help-seeking intentions. This randomized trial employed a posttest-only control design (Campbell & Stanley, 1963; Marczyk, DeMatteo &Festinger, 2010). Three scales were used. The first scale, the Mental Health Knowledge Scale (MAKS), measured mental health knowledge; the second, the Reported and Intended Behaviour Scale (RIBS), assessed stigma; and the third, the General-Help-seeking Questionnaire (GHSQ), predicted whether students would be encouraged to seek help when encountering a mental health problem.

Using *t* tests, the independent variable of a mental health literacy program was tested to determine whether there was an impact on knowledge, stigma, and help-seeking intentions following the participation of students in the program. The first variable tested the effect of mental health literacy (program vs. treatment as usual) on knowledge; the second variable tested the effect of the program on stigma; and the third variable tested whether the literacy program had an effect in encouraging students to seek help should they present with a mental health problem. Gender and age data were also collected for background information.

Definitions of Key Terms

The following terms are used throughout this dissertation.

Mental Illness

Mental illness is a brain disease that has a biological base like other medical illnesses and impairs an individual's emotions, thought processes, perception, behavior, and daily functioning. It also affects an individual's sense of self, others, and the environment (Malla, Joober &Garcia, 2015).

Mental Health

Mental health is "knowledge and beliefs about mental disorders which aid their recognition, management or prevention" (Jorm et al., 1997, p. 182).

Mental Health Literacy

Wei et al. (2013) described mental health literacy as encompassing knowledge and skills that address the biological, psychological, and social aspects of mental health to increase understanding of mental health and mental disorders, reduce stigma, help recognize and prevent mental disorders, and facilitate help-seeking behaviors in youth along the pathway to mental health care (p. 110).

Stigma

Stigma is defined as involving cues that elicit stereotypes and knowledge structures that the general public learns about a marked social group (Corrigan, 2004). Commonly held stereotypes about people with mental illness involve notions of violence, incompetence, and blame (Corrigan, 2004, p. 615). Stigma has two dimensions: public stigma and self-stigma. *Public stigma* involves attitudes of fear and anger that members of the public have concerning people with mental illness and that result in prejudice, social distance, and loss of opportunity (Corrigan & Rao, 2012). *Self-stigma* occurs when

individuals with mental illness internalize the public's negative attitudes toward mental illness and begin to manifest behaviors that support the negative perceptions (Corrigan, Watson & Barr, 2006).

Help-seeking

Help-seeking is defined as an adaptive coping process that is an attempt to obtain external assistance to deal with a mental health concern (Rickwood & Thomas, 2012). Using the definitions for its components in the *Oxford Dictionary*, it may be described as an attempt to find ("Seek," 2017) assistance to improve a situation or problem ("Help," 2017). It is also understood as seeking assistance from professionals who have legitimate and recognized professional roles in providing relevant advice, support, and/or treatment (Rickwood & Thomas, 2012).

Assumptions

A major assumption in the study was that all students wanted to participate in the mental health literacy program. Students were randomly assigned to either control or experimental groups and were subjected to differential dropout rates. A second assumption was that scales normally tested on adults are equally effective in measuring knowledge, stigma, and help-seeking intentions among the college student population.

Delimitations

In research, the objective is to establish cause and effect by investigating an intervention and its effect on a targeted population. While causality cannot always be proven, posttest-only randomized experimental design is recognized as one of the best designs for testing cause-effect relationships (Trochim, 2006). Mental health literacy can

have an impact on people of all ages; however, this study was limited to college students in light of the challenge of conducting research with vulnerable populations such as adolescents. For this reason, high school students were excluded from the research study. This study involved students at Algonquin College, the largest college in Eastern Ontario. This research study was offered only in English and not in French, which impacted its potential generalization.

The full effects of an educational intervention cannot fully be measured following the intervention but require a longitudinal research approach. Behavioral change would need to be measured over a longer timeframe to effectively assess the impact of the educational intervention. For that reason, this study gauged help-seeking intentions among youth, and not help-seeking behavior (Eisenberg et al., 2012; Pham et al., 2014). During that program timeframe, students did not have time to process or reflect on information presented, or to consolidate the information and translate it into an attitudinal or behavioural change (Chisholm et al., 2016; Mcluckie et al., 2014).

Stigma is a complex construct that encompasses a level of complexity in measurement. The scales proposed in this study measured stigma as a global concept but did not examine specific facets of stigma that deal with the perceptions of dangerousness and unpredictability that contribute to stigmatizing attitudes toward people with mental illness (Corrigan & Rao, 2012). Concepts of self-stigma and public stigma were not measured in this study.

Limitations

Social desirability is a threat to validity that must always be considered when dealing with youth populations whose members may want to please researchers or their teachers in generating favorable responses to questions of stigma and how they would treat someone with a mental illness (Chisholm et al., 2016). To minimize issues related to social desirability, instructions were presented in simple language, stating that there were no perfect answers in the survey and that participants should respond according to what they believed. The validated questionnaires were also tested for social desirability and were structured to elicit guided responses from participants. To minimize threats of social desirability, questionnaires were filled out onsite within a designated period of time.

It is probable that participants in this study were subjected to history and social threats. It was impossible to control the learning setting prior to the data collection phase; students could have received information about mental health literacy through another class, a special outing, or an article in the newspaper that would have rendered a history threat occurring in a natural setting. There was also the possibility of a social threat, given that one group of students participated in the program as the experimental group while other students were randomly selected to participate in the survey as the control group. This study potentially involved some interaction effect where the intervention and some other variable interacted without my knowledge during the data collection period. Although an interaction effect has bearing on external validity, generalization of findings on the effect of an educational mental health literacy intervention on stigma and help-seeking behaviors was recognized.

Attention span also constituted an important limitation, given that students completed the survey following the program without time for full reflection on the experience and information presented (McCambridge, Witton & Elbourne, 2014). This study focused on measuring the attitudes of college students on mental health and cannot be generalized to students from other populations or age groups. Milin et al. (2016) found important differences between higher grade and lower grade students in high schools, and differences have also been described between high school and college students (Chen, Romero &Carver, 2015). Socioeconomic and cultural factors may have exercised an influence on attitudes toward mental illness and willingness to seek help (Ungar et al., 2013; Yu et al., 2015), but they were not tested in this current study.

Significance

This study offered the potential of serving as a mental health literacy model that can change stigmatizing attitudes toward people with mental illness and at the same time create a social context where students do not feel stigmatized in seeking help. Breaking down stigma and encouraging early intervention for students to seek help if they experience mental health problems do lead to better recovery outcomes, and healthy trajectories. This educational mental health literacy program acts as an impetus for informed dialogue, understanding, and support among youth in their social networks. By interacting with students of other schools in the region, the program served to demonstrate how mental illness affects many individuals and their families and does not discriminate by social status, income, or geographical location.

Summary

Mental health literacy, stigma, and help-seeking behaviors are important constructs that need to be better understood prior to understanding how these concepts are interrelated in order to encourage proactive health behavior and generate positive attitudinal change toward individuals with mental illness. Emerging research is now confirming the role of mental health literacy in fostering better understanding of mental illness, its causes, and how stigma can isolate and prevent young people from getting help for a mental health problem. Being subjected to prejudice and fear can affect individuals' life trajectories and limit opportunities for self-development and fulfillment. Knowledge, literacy, and a positive environment can have a profound impact in encouraging people to seek help.

Chapter 2: Literature Review

Mental illness and addictions have been identified as the second leading global burden of disease, surpassing all other chronic diseases (WHO, 2014). The rising cost of mental illness amounts to more than $52 billion annually in Canada, where mental illness results in more than 500,000 people not working (Cohen & Peachey, 2014). Chan, Batterham, Christensen, and Galletly (2014) found that the diagnosis of mental illness led people to feel excluded, devalued, and discriminated against. Many experienced impaired social functioning as a result of their disorder, as well as unemployment and substance abuse (Purcell et al., 2011). Delay in seeking treatment for mental health disorders is a worldwide phenomenon (Thornicroft, 2012; ten Have, de Graaf, van Dorsselaer & Beekman, 2013). Globally, less than one-third of people with a mental illness receive treatment. Thornicroft (2012) reported that 52% to 74% of individuals with a mental disorder in Europe and the United States do not seek treatment. Untreated mental illness can become severe and treatment resistant and can lead to secondary psychiatric disorders (deGirolamo, Dagani, Purcell, Cocchi & McGorry, 2012).

The prevalence statistics are no better for youth. Worldwide, mental illness affects 10-20% of children and youth (Kieling et al., 2011). Purcell et al. (2011) highlighted in the National Comorbidity Survey Replication that 75% of people with a mental disorder had the onset of their illness in adolescence. Insel and Fenton (2005) called this phenomenon the "chronic diseases of the young." Less than 1 in 4 Australians aged 16-24 who had been diagnosed with a mental disorder accessed any treatment (Reavley & Jorm, 2011). The reasons why individuals have avoided or delayed seeking help for mental health problems

have been the focus of many studies.

Stigma plays a significant role in deterring help-seeking behavior and reinforcing negative perceptions of people with mental illness. Adolescents are not immune to stigma, and many have experienced rejection and discrimination from their peers and social networks (Beardslee, Chien, & Bell, 2011; Saporito, Ryan, & Teachman, 2011). Adolescents with a psychiatric disorder were troubled about how their peers would react to their diagnosis and whether it would affect their standing in the peer network (Beardslee et al., 2011; Crosnoe & McNeely, 2008; Wisdom, Clarke, & Greene, 2006). Corrigan (2012, 2006) also reported that many individuals were unwilling or afraid to seek help, as this would entail acknowledging the presence of a mental health problem, which would be negatively seen by family members and peers.

Mental health has become an important societal issue. There have been an abundance of studies on the causes and manifestations of mental illness in adolescence and during adulthood. Searches were conducted in the Google Scholar, PsycINFO, and PsycARTICLES databases between 2007 and 2017 using the following word associations: *youth and mental health literacy*, *adolescence and mental illness*, and *mental health and adolescence*. These searches yielded more than 460 peer-reviewed journal articles. Additional searches included the combinations *stigma*, *mental illness*, *and adolescence*; *stigma and mental health literacy*; *help-seeking behavior and stigma*, *self-efficacy and mental illness*; *health belief model and mental illness*; and *attitudes and help-seeking intentions*. This search generated more than 385 peer-reviewed journal articles. Seminal articles by renowned mental health researchers such as Kutcher, Chisholm, Corrigan, Jorm

& Reavely were also selected. Of the 945 original articles, 244 were retained for review. Articles were limited to the relationship between stigma, mental illness, and mental health literacy. Longitudinal studies on stigma and mental illness in adults were excluded from the review, along with studies on the range of mental illnesses such as depression or schizophrenia among youth.

This literature review addresses why the onset of mental health illness occurs in adolescence, the barriers to seeking help, and the factors that contribute to the development of stigma in youth. The impact of stigma on help-seeking intentions is explored, as is how mental health literacy can play a determining role in fostering knowledge and understanding of mental illness while breaking down stigma and encouraging help-seeking intentions.

Mental Illness and Adolescence: A Critical Development Phase

Adolescence is a time of significant biological, psychological, and social change, with critical transformation in brain structure and function. Early signs of mental illness manifest as adolescents are shaping their identities, establishing social relationships with peers, and seeking social acceptance (Schulenberg et al., 2004; Spear, 2013; Viner et al., 2012). Changes in hormonal levels have resulted in adolescents feeling unsure of themselves and vulnerable to negative peer influences such as the consumption of alcohol and substance use (Haglund, 2007; Spear, 2013). Neuroscientists have indicated that the adolescent brain undergoes significant maturation during this stage, and the hippocampus is still growing when youth are exposed to new life stressors. Lupien et al. (2009) showed that the amygdala, which controls fear responses, activates the hypothalamus-pituitary-

adrenal axis (HPA) and stress responses. Vulnerability to new stressors profoundly impacts the adolescent brain and increases the levels of glucocorticoids compared to those in the adult brain (Lupien et al., 2009).

Haglund, Nestadt, Cooper, Southwick & Charney (2007) argued that stress during adolescence is a contributing factor in the development of mental health disorders. They found that continued exposure to social stress and early adverse events exert a considerable effect on a person's physical health, and by age 20, can trigger anxiety episodes and subsequent depression. Viner et al. (2012) highlighted that biological and psychological changes in adolescence resulted in many college and university students feeling displaced, stressed, and isolated. Stress from transitioning from adolescence to collegiate or university life was seen as the most common and significant risk factor for a mental health problem (Grosbas et al., 2007; Viner et al., 2012; Sawatzy et al., 2012). Researchers found that those who had higher resistance to peer pressure had a better time dealing with their emotions than adolescents who had lower resistance to peer pressure. Low resistance to peer pressure has resulted in many youth experimenting with alcohol and drugs in order to fit in and conform to peer pressure (Griffiths, 2013; Spear, 2013; Haglund et al., 2009; Jorm & Wright, 2008; Grosbas et al., 2007; Purcell et al., 2015; Sawatzy et al., 2012). The Royal College of Psychiatrists in the UK (2011) reported that more than 29% of students were having mental health problems causing high levels of psychological distress.

Adolescence is a critical developmental period for brain maturation and identity development. The transition from adolescence to adulthood, and peer pressure have been

noted as risk factors in the development of a mental illness. With the onset of mental illness often occurring in adolescence, it is essential to understand the factors that encourage or deter help-seeking behavior in youth.

Seeking Help for a Mental Illness

Help-seeking is defined as a process of making use of personal and social relationships, formal (school teachers, counselors), and informal (parents), to seek help in dealing with a problem (Rickwood, Wilson & Ciarrochi, 2005). There are many factors that can exert influence on help-seeking behavior. The severity and type of a mental health problem may strongly influence help-seeking behavior. Two national epidemiology studies seem to indicate differences in which illnesses people will actually seek help in addressing. Studies in the United States and Australia have served to indicate the severity and type of illness as the foundational basis for help-seeking. Mackenzie, Reynolds, Cairney, Streiner, &Sareen (2012) reported that individuals primarily sought help for panic disorder and depression but also found that help-seeking rates were higher if comorbid depression and anxiety or depression and substance use were present. Help-seeking rates for panic disorder (45.3%) and dysthymia (44.5%) were the highest among adults, particularly middle-aged adults. There was no reported change in rates for panic disorders throughout the lifespan. The lowest rate of help-seeking for a mental disorder was for specific phobias (7.8%), which refer to fear or avoidance of objects or situations. With respect to gender, more women than men sought help for anxiety disorders, specifically in two age brackets, 20-44 and 65+ (Mackenzie et al., 2012). A study in Australia revealed an imbalance ratio for those seeking help versus those who met the diagnosis criteria, a

phenomenon noted in many other studies. More than 11.95% of the adult population sought help for mental health problems in a given year, whereas more than 34.9% met the criteria for a mental disorder (Burgess et al., 2009; Drapalski et al., 2008). These statistics clearly show that panic disorder and dysthymia are the two predominant disorders that impel people to seek treatment for a mental illness (Beardslee, et al., 2011; deGirolamo, Dagani, Purcell, Cocchi & McGorry, 2012; Mackenzie & Sareen, 2012; Wang et al., 2007). The statistics also frame the question of why help-seeking percentages are so low when the need is high.

Why Do Many Affected by Mental Illness Not Seek Help?

Global statistics signal that many individuals do not feel compelled to seek help. According to a WHO study, it can take a person suffering a mental illness several years before seeking treatment. The median for seeking help ranged from 3 years to 30 years for anxiety disorders in various countries; specifically, 1 to 14 years for mood disorders and 6 to 18 years for substance use (Wang et al., 2007). In a U.S. national comorbidity study, 44.8% of people diagnosed with a mental disorder did not seek help, and 57% of people with a mild disorder reported a low perceived need to seek help (Mojtabai et al., 2011). A low perceived need is defined as having symptoms that do not appear to cause psychological or social impairment that would impact a person's life. Those with a moderate disorder reported a low perceived need for help (39.3%), compared to 25.9% of those with a severe disorder (Mojtabai et al., 2011). The situation is no different for adolescents. More than three-quarters of students surveyed in a university study did not pursue help for their mental health symptoms (Andrade et al., 2014). It has been reported

that youth with high suicidal ideation have the lowest intentions to seek help versus youth who exhibited low suicidal ideation (Czyz, Horwitz, Eisenberg, Kramer & King, 2013; Klimes-Dougan, Klingbeil & Meller, 2013). High suicidal ideation affects an adolescent's cognition and impedes the help-seeking process (Klimes-Dougan et al., 2013). A belief in self-reliance and the ability to handle one's own problems are identified as some of the most important barriers to help-seeking (Griffiths, Crisp, Jorm & Christensen, 2011; Prins et al., 2010; Rickwood, Wilson & Ciarrochi, 2005). This trend is associated with a subjective evaluation of mental health symptoms and is often defined and understood as help negation.

Help negation manifests in refusal or avoidance in relation to seeking help as symptoms of a mental health problem increase (Calear, Batterham & Christensen, 2014; Wilson & Deane, 2010; Yakunina, Rogers, Waehler & Werth, 2010; Yoshioka, Reavley, MacKinnon & Jorm, 2014). Students with mental health issues may report that their need for care is not urgent (Eisenberg et al., 2012). They may minimize the severity of their symptoms, stating that emotional distress is to be expected when attending a college or university. Many have acknowledged the need for help but reported that they preferred handling the issue on their own (Eisenberg et al., 2012 ; Reavley & Jorm, 2014). Thus, a high percentage of people with a mental health problem do not seek help or delay seeking help. The rates of help-seeking are low among students and those who exhibit minor or moderate symptoms of mental illness. There is an important need to identify the barriers that prevent those from seeking help prior to looking at strategies that can foster help-seeking intentions.

There continues to be much debate among researchers about the barriers that undermine help-seeking behavior and to explain how the adolescent population responds to the need for help. Several studies appear to indicate that although adolescents display positive attitudes about mental health and have low stigma toward people with mental illness, they still choose not to seek help (Bidle, Donovan, Sharp, & Gunnell, 2007, Eisenberg et al., 2012; Reavley & Jorm, 2014). However, students of this age may have difficulty in recognizing the symptoms of a mental health problem, may be uncertain as to how to obtain help, and may be too embarrassed to confide in others (Reavley & Jorm, 2014). Students have acknowledged not knowing what to do when they experience their first episode of a mental health problem in university or college (Beardslee et al., 2011; Reavley &Jorm, 2014; Wilson, Bushnell and Caputi, 2011). Some students have also reported that their sense of autonomy would be violated if they sought help (Wilson et al., 2011). It has been suggested that students may see mental health treatment as similar to nutritious diet and exercise. They recognize that it is important, yet they do not necessarily want to adopt those healthy behaviors (Wilson et al., 2011). Awareness of a mental health issue and where to seek help remains an important barrier to help-seeking for adolescents experiencing a mental health problem during the transition to college and university life. The subjective evaluation of their mental health symptoms also contributes as a barrier. Many students question the severity of their symptoms and rationalize why mental health care services should not pursued on or off campus (Laidlaw, McLellan, & Ozakinci, 2015).

Another mitigating factor that curtails help-seeking behavior is the belief that

treatment options are ineffective or not helpful. More than 16% of university students indicated that they would not talk to anyone if they experienced a mental health problem based on negative accounts of other students who sought help (Beardslee et al., 2011). Many students believed that taking medications would be ineffective, would make them feel different, and would isolate them from others (Beardslee et al., 2011; Dubow et al., 1990; Wilson et al., 2011). These attitudes may be explained by a lack of understanding of medications and their properties and the effects of stigma (Beardslee et al., 2011).

The health care model has also been identified as obstructing help-seeking behavior among youth. Pottick, Warner, Vander, Stoep & Knight (2014) stated that current mental health services do not make a distinction between adult and youth needs in the delivery of mental health services. They found that mental health services for adults were designed for serious and persistent mental illnesses, and appropriate and age-related services were not available to meet the needs of youth who might be struggling with emotional and behavioral problems, precursor symptoms of mental illness (Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001; Laidlaw et al., 2015; Kazdin & Rabbit, 2013). The clinical profile of youth does not often correspond to the designated criteria for service, and consequently, the expertise of staff is not matched to the clinical needs of children and youth. Children and youth require clinical services that reflect their developmental needs and an understanding of the difficulties inherent in the transition from adolescence to early adulthood (Laidlaw et al., 2015). Pottick et al. (2014) argued that care approaches should be modeled differently for youth. Sukhera, Fisman, & Davidson (2015) also highlighted gaps in the continuity of care where youth have

difficulty accessing services in the adult mental health system once they have transitioned to adulthood. They feel a sense of disconnectedness. While they are no longer children, they are not quite adults. Young adults are at different developmental stages than older adults and may not experience the same types of challenges or life stressors such as work, having a mortgage, or raising children (Spear, 2013). Mental health services need to be age appropriate and tailored to specific needs. Consequently, transitional mental health services remain a significant gap in meeting the needs of emerging adults (Bates & Birchwood, 2013; Pottick et al., 2014; Sukhera, Fisman, & Davidson, 2015; Singh, 2009).

Culture also plays a role in whether adolescents decide to seek help. Guo et al. (2015) found that ethnic minority youth do not seek help despite a higher need for mental health treatment compared to European Americans. In a global WHO study, Pescosolido et al. (2013) argued that cultural perceptions of mental illness have shaped how many cultures react and respond to mental illness and their attitudes toward help-seeking and treatment. Many studies have highlighted how adolescents from ethnic groups such as Mexican, Vietnamese, Chinese, and Latino Americans view mental illness and how their cultures influence their attitudes and beliefs about mental illness and the need for treatment (Caplan & Cordero, 2015; Elkington et al., 2013; Chen, Romero, & Karver, 2015; Guo, Nguyen, Weiss, Ngo & Lau, 2015; Hirai, Vernon, Popan, & Clum, 2015). Researchers Guo et al. (2015) also found that ethnic groups such as Vietnamese place greater value on group interest and harmony than on individual concerns. There is an implicit expectation of restraint in the expression of emotions, where negative-valence emotions are not encouraged or expressed. For example, many Vietnamese refugees experienced high levels

of trauma during the political crisis and displacement in the early 1980s, yet these issues are not openly discussed or referred to. Guo et al. (2015) highlighted that help-seeking was lower among Vietnamese compared to American youth. In addition, family obligations had a greater impact on decisions to seek help for Vietnamese youth versus American youth. Youth will often try to convince themselves that their emotional state is not as important as the interests of the family. For many youth, it is more important not to burden the family than to seek help for mental health problems (Friedlmeier, Corapci, & Cole, 2011; Louie, Oh & Lau, 2013).

The reality is different in cultures where independence, individual self-interest, autonomy and expression are recognized and valued within society such as the United States and Canada. Emotional expression is considered an important value in self-actualization and adolescents are encouraged to seek mental health care. Individual interests often take precedent over family or community expectations (Friedlmeier, Corapci, & Cole, 2011; Louie et al., 2013). Acculturation and enculturation are two concepts that impact the influence of culture on adolescents. Acculturation was found not to have any effect on stigma or help-seeking behavior. However, the study did show that higher rates of enculturation were associated in not seeking cultural and religious treatment modalities or no treatment at all (Hirai et al., 2015). Culture is a critical variable in encouraging or discouraging help-seeking behavior. It also needs to be understood within the phenomena of acculturation and enculturation, adding a level of complexity to the issue of help-seeking behavior and receiving treatment.

Many of the factors and barriers described above have resulted in a decline of

positive youth attitudes towards mental health services during the past 40 years. Mackenzie, Erickson, Deane, & Wright (2014)'s meta analysis found that help-seeking attitudes have become more negative since 1968. Several researchers (Reavley & Jorm, 2011; Yap et al., 2013) have clearly attributed the effects of stigma to negative youth attitudes. These studies underline the need to understand the relationship between stigma and help-seeking behavior in mental illness.

Stigma and Mental Illness

Stigma of mental illness needs to be understood within a historical context. Stigma is a term born during the Roman Empire and subsequently shaped by many theorists over the decades. Goffman (1963) first characterized the phenomenon as a "spoiled identity". The term implied that a person is publically discredited and rejected by peers in the community. That person is designated "out of the group", someone who doesn't belong and who loses social status in the community (Link & Phelan 2001). The cause of mental illness has been the subject of much debate. For decades, the causes of mental illness were entrenched in the belief that individuals with mental illness had certain personality traits that could explain their behavior (Schomerus et al., 2012). A person with mental illness was seen as weak, unstable and deemed not deemed in the sense of a physical illness (Corrigan & Shapiro, 2010). Community leaders or influencers assisted in reinforcing this phenomenon by attributing negative characteristics to individuals who did not conform to their sense of societal standards (Corrigan, Larson & Rusch, 2009). Among the illnesses, mental illness has the lowest level of public acceptance (Mojtabai et al., 2011).

Perceptions of individuals with mental illness are rooted in a lack of understanding of mental illness, giving rise to the concept of stigma.

In recent decades, stigma has also been associated with the belief that mentally ill people are violent and unpredictable (Corrigan, Morris, Michaels, Rafacz & Rusch, 2012). This view was also supported by some psychiatrists such as Torrey (2011) who declared that the lack of treatment caused mentally ill people to be violent, a perception often propagated in the media with reports of mentally ill individuals killing innocent members of the community. Vivid images of these stories have been extensively profiled in the media and served to reinforce the perception of dangerousness in individuals with mental illness, particularly those with schizophrenia or an untreated mental illness (Corrigan et al., 2009; Jorm & Reavley, 2014). Although medical understanding of mental illness has evolved, negative perceptions of the mentally ill have led to generalizations and nurturing of public stigmatizing attitudes. There appears to be no significant gender or age difference in stigmatizing attitudes, nor influenced by education, employment and ethnicity (Jorm & Wright, 2012a; Jorm & Wright, 2008; Livingston & Boyd, 2010). The most common stigmatizing attitude is towards individuals with schizophrenia in comparison to depression or anxiety (Reavley & Jorm, 2011). Stigma has shown to be the most important barrier to help-seeking behavior surpassing physical, financial or psychological barriers (Kim & Zane, 2015). This phenomenon has led the Surgeon General of the Department of Health and Human Services (USDHHS) to declare stigma as "the most formidable obstacle to future progress in the arena of mental illness and health" (Elkington et al., 2013, p. 291).

Researchers (Clement et al. 2015; Corrigan, 2005, 2009, 2012; Link and Phelan, 2001) expounded concepts of stigma, describing the effects of social stigma on individual attitudes and behaviors but also how stigma affects the person living with mental illness. Link and Phelan (2001) advanced a social-psychological process where influential individuals in the community labeled an individual as having negative traits and casting them in isolation, and resulting in social stigma. This stigmatization process resulted in labeling and stereotyping of individuals with important and negative consequences on their lives (Clement et al., 2015; Corrigan 2009; Griffiths et al., 2004; Watson & Barr, 2006). Individuals seeking treatment perceive the cultural stereotypes of mental illness as unwanted characteristics and internalize these perceptions about themselves. This social-psychological process impacts how they feel about their identity, deters help-seeking behavior and ultimately affects their recovery from mental illness. Many individuals hide their thoughts, behaviors and symptoms in fear that people would stereotype them if they knew of the existence of a mental illness (Clement et al., 2015; Corrigan 2009; Griffiths et al., 2004; Watson & Barr, 2006). These researchers characterized stigma differently. Clement et al. (2015) and Yap & Jorm (2013) argued that stigma is a multidimensional construct generating four types of stigmatizing attitudes reinforcing self-stigma and two propagating public stigma. The first type involves the question of *anticipated* stigma where the individual with a mental illness perceives and expects to be treated unfairly. In *experienced* stigma, an individual actually has the experience of being perceived and treated unfairly. This type of stigma was found negatively correlated with quality of life and personal mastery (Depla, DeGraaf, Weeghel, & Heeren, 2005; Markowitz, 1998). The third type

internalized stigma builds on the concept of self-stigma and causes the individual to believe the stigmatized view of themselves. A high level of *internalized* stigma was found to increase depressive symptoms and lower self-esteem (Livingston & Boyd, 2010; Quinn et al., 2014;). Stigma also generated a positive correlation to depressive symptoms and anxiety (Mickelson & Williams, 2008; Werner, Aviv & Barak, 2008). Fourthly, *perceived* stigma involves people's general perceptions of individuals with mental illness as weak and potentially dangerous, which are by definition stigmatizing. The fifth type is associated with *stigma endorsement* where people display stigmatizing attitudes and behaviors towards those with mental illness. The last type refers to *treatment stigma*, the stigma specifically related to seeking or receiving treatment. Individuals with mental illness are often torn with the decision to receive treatment and whether to tell their family and friends about their illness and their treatment. Corrigan and Rao (2012) have found that individuals experience sequential phases of self-stigma from awareness, agreement to application and harm. Once an individual is diagnosed with a mental illness, the individual becomes aware of the public stigma of their illness (awareness) and moves to accept the public view (agreement), begins to apply the stereotypes unto themselves (application). The last stage involves (harm) to oneself where self-esteem is deflated and the person manifests low efficacy (Corrigan, Watson & Barr, 2006; Corrigan & Rao, 2012; Livingston and Boyd, 2010). The cycle revolves around more episodes of self-discrimination to the point where they isolate themselves from others, choose poor health behaviors over healthy choices and consequently experience low self-worth (Corrigan & Rao, 2012). They will also be less inclined to pursue employment opportunities and accept a lower quality of life due to their

devalued sense of self (Bathje & Pryor, 2011). Life goals are often sidelined and not pursued as the influence of stigma shapes their assessment of capacities and future hopes (Corrigan & Rao, 2012).

Stigma plays out a little differently for youth than for adults. Youth can experience the same types of stigma identified above, however the manifestations of stigma are more explicit among adolescents (Elkington et al., 2013; Yoshioka et al., 2014). With the onset of mental illness occurring during adolescence, stigma has the power to alter the development of a healthy identity, the level of acceptance among peers and disrupt a positive transitional period from childhood to adolescence (Rappaport & Chubinsky, 2000). Youth with mental illness have a fear of rejection, feel socially disconnected or "less than" others, and discriminated upon by their friends and family, peer and teachers (Elkington et al., 2013; Moses, 2009, 2010a; Yoshioka et al., 2014). Many youth will reinforce the notion of self-stigma by denying the existence of a mental health problem; avoid telling others of their diagnosis and withdrawing from their peers (Elkington et al., 2013; Moses, 2009, 2010a, Yoshioka et al., 2014). They will also internalized stigma and believe that their peers have stigmatizing attitudes about them (Busby et al., 2015; Chen et al., 2015; Elkington et al., 2013). Internalized and perceived stigmas are embedded within their social relationships as they engage in risky sexual behavior, self harm and low self esteem. Rusch et al. (2014) and Elkington et al. (2013) contend that 'labeled' youth attribute the stigma of mental illness to their sexual identity, seeing themselves as undesirable, having little or no choice in choosing their partners or believing that they were undeserving of positive relationships. Consequently, many youth find themselves in

unsafe sexual relationships in order to avoid rejection and desertion. Youth with mental illness have recounted experiences of rejection and discrimination in sexual relationships due to their illness and stigma than youth without a mental disorder.

The veil of stigma is pervasive and systematically wields influence over the course of a person's life. Stigma is no longer seen as a minor obstacle but has evolved into a complex and critical societal issue. It has the capacity to shape attitudes, beliefs and judgments about those who are healthy and contributing to society, and those who have a mental illness and consequently a burden to society (Elkington et al., 2013; Jorm & Wright, 2008; Moses, 2009, 2010a; Yoshioka et al., 2014;). Yap, Reavley and Jorm (2014) attributed stigmatizing attitudes among youth as the direct cause for low help-seeking intentions and reinforcing perceptions that help is not very beneficial. Other researchers demonstrated the link between stigma, attitudes, and help-seeking behavior (Corrigan et al., 2004; Gary, 2005;Thornicroft, 2008; Schomerus and Angermeyer, 2008). In a review of more than 144 studies, which included 90,189 participants, Clement et al. (2015) found a small to moderate negative effect of stigma on help-seeking behavior which has prevented many individuals from getting mental health treatment. Negative attitudes, stigma, and shame act as important barriers to seek psychological support (Reynders, Kerkhof, Molenberghs & Audenhove, 2014). Efforts to lower stigma and increase public acceptance of mental illness are needed to change stigmatizing attitudes and end the vicious cycle of self-stigma that prevent youth from getting treatment and reaching their full potential (Corrigan & Rao, 2012). In an effort to increase the acceptance of mental

illness and encourage help-seeking behavior in youth, an understanding of a behavioral theory of youth attitudes and mental illness is a valuable starting point.

Health Belief Model, Mental Illness, and Help-Seeking Behavior

The health belief model adapted from Rosenstock (1974) was established as a theoretical framework based on five constructs that could influence and predict health behavior and population-based health promotion. The premise is that a person's beliefs of a health problem will determine how they assess the *perceived severity* and *susceptibility* to an illness. They will evaluate the perceived health risks, *barriers*, and *benefits* and determine the possibility of taking action towards a healthy behavior. *Cues to action* may be internal such as symptom manifestation to external, such as going to a clinic. Self-efficacy was added as an additional construct in 1988 to reflect a person's confidence and ability to undertake an action and change health behavior (Rosenstock, Strecher & Becker, 1988).

The constructs in the health beliefs model helps to gauge the probability a person will seek help for a mental illness. In the health belief model, the first two constructs are where an individual evaluates their perceived susceptibility and severity of developing a health problem such as mental illness. Under this scenario, a person considers all the factors, which could make them vulnerable to developing a mental illness including biological and psychosocial factors, and evaluates the threat that mental illness can happen to them. Neuroscientific research on the biological underpinnings of mental illness has generated a better understanding of mental illness as a medical and chronic disease, particularly for depression and schizophrenia (Angermeyer, Holzinger, Carta &

Schomerus, 2011). An individual will assess psychosocial factors that may have bearing on their health such at family history, genetics, presence of early-life adverse events, coping mechanisms in relation to stress and life challenges, relationships and financial concerns (Jones et al., 2013). The person will evaluate the perceived severity of the mental health problem. Severity is normally determined by the perception of medical consequences such as death and social consequences such as family life and social relationships. Level of psychological distress and functional impairment are generally the principal criteria influencing the perception of the severity of the problem and whether the resolution of the problem warrants professional help (Kim & Zane, 2015). Corrigan, Druss and Perlick (2014) found that self-stigma and public stigma exert a strong influence on an individual's perception of their psychological distress and can hinder decision-making for seeking care. They argue that individuals minimize their symptoms of psychological distress to avoid the contempt or disapproval of other people or are embarrassed and experience shame as a result of stigma. Social exclusion is an omnipresent concern.

The issue of perceived susceptibility is also associated with mental health literacy and problem recognition of a mental health problem; particularly if individuals do not recognize or believe they have a mental health problem (Arria et al., 2011; Henshaw & Freedman-Doan, 2009; Mcluckie et al., 2014; Perry et al., 2014). Lack of knowledge of mental health was reported by youth as a barrier to help-seeking (Gulliver et al., 2010). Eisenberg et al. (2012) found in their study that many college students do not seek help because they may deny the existence of a mental health problem, are unaware of their level

of distress, or believe the problem will eventually resolve itself. Eisenberg et al. (2012) and Jorm (2012) argued that poor problem recognition may explain low rates of help-seeking behavior. Compounded to this issue is the fact that many individuals do not know if their mental health symptoms are treatable or that treatment is urgent or needed (Goldney, Fisher, Wilson, & Cheok, 2002). Another construct in the theory is for the individual to assess the perceived benefits of help-seeking. If a youth has a positive attitude towards help-seeking and treatment, they would be more apt to making the decision to seek help versus adopting a negative attitude towards treatment (Digiuni, Jones & Camic, 2013; Yoshioka et al., 2014). Treatment credibility implies that youth believe that treatment can be helpful and effective. Under the model, the youth will determine a course of action based on their evaluation of the perceived susceptibility and severity of having a mental illness, and belief that seeking treatment will help them return to their regular emotional state (Kim & Zane, 2015).

Treatment adherence is also attributed to stigma and acts as a perceived barrier where the adolescent believes that seeking treatment can affect their social status within their peer network. Cues to action may trigger an adolescent's decision whether to seek help or not. The cues may relate to the severity of the symptoms (internal cue) such as psychological or cognitive impairment or experiencing anxiety (Kim & Zane, 2015). Should they be afraid or shamed to go to a clinic or hospital for help (external cue), the probability of co-opting the decision to seek help will be high (Kazdin & Rabbit, 2013; Laidlaw, McLellan & Ozakinci, 2015). The last construct in the health belief model is self-efficacy, which may very well be the final step in their evaluation to seek help. Once a youth recognizes the need for treatment and believes they have the capacity to get better,

they will be more apt to seek treatment for their mental health problem. If their self-efficacy is low, chances of making the decision to seek help will be negligible and they could deny the existence of a mental health issue (Eisenberg et al., 2012; Sawatzky et al., 2012).

This health belief model is a simple yet effective theoretical framework that can shed light on how a person can assess their symptoms of mental illness and how values and attitudes are manifested in behaviors that support or deter help-seeking intentions. A closer look at stigma reduction models will facilitate the discussion of what mental health literacy model can best reduce stigma and encourage help-seeking intentions.

Stigma Reduction Approaches

Since 2000, the WHO in collaboration with national governments across the globe issued several studies illustrating the pervasiveness of stigma in society and identifying the mechanisms to address stigma and stigmatizing attitudes (Thornicroft et al., 2015). Corrigan, Druss and Perlick (2014) contend that reducing stigma is vital to increasing help-seeking intentions in individuals and engaging in treatment. Stigma reduction has been at the forefront of many campaigns that have attempted to dispel the negative perceptions and prejudices of mentally ill individual as weak, dangerous and unpredictable (Corrigan et al., 2012; Thornicroft et al., 2015). Many researchers have called for the need for coordinated and continued efforts to reduce stigma and improve on the lives of people suffering from mental illness (Pescosolido, Medina, Martin & Long, 2013; Thornicroft et al., 2015). Approaches to stigma reduction have generally been conducted as community at large or school programs. Some programs address stigma as an general issue while

others target specific forms of stigma separately: self-stigma for those living with the illness (Mittal, Sullivan, Chekuri, Allee & Corrigan, 2012) and public stigma, the stigmatizing and discriminatory attitudes individuals in society have towards people with mental illness (Thornicroft et al., 2015; Corrigan et al., 2012).

Reducing self-stigma within individuals living with a mental illness can be a challenging behavioral and social issue. Many studies have targeted high-risk groups such as young adults attending college or university who experience their first bouts of psychological problems. A person with mental illness can internalize the stereotype, suffer low self-esteem and undervalue their abilities and capabilities (Corrigan & Shapiro, 2010; Corrigan, Larson & Rusch, 2009). Other researchers argue that self-stigma is not an inescapable curse (Corrigan & Rao, 2012). They recommend structured programs or peer support that would enhance personal empowerment in order to reduce self-stigma (Corrigan & Rao, 2012). Mittal et al., (2012) found that psychoeducation alone or in a combination with cognitive restructuring were very effective in decreasing self-stigma. Outcomes included higher coping skills and improvements in self-esteem, and help-seeking behavior. The authors believe that these strategies could also be effective with victims of natural disasters or life traumatic events.

In dealing with public stigma, Corrigan et al. (2012); Corrigan and Rao (2012) and Corrigan and Shapiro (2010) have categorized three predominant strategies that strive to challenge stigmatizing attitudes. Corrigan et al. (2012) labeled them protest, education and contact. *Protest* implies an organized action where individuals want to discredit the public stigma imposed on people living with mental illness. This approach has taken the form of

public awareness and anti-stigma campaigns by groups such as the National Alliance on Mental Illness in the US and Canada, Time to Change in the UK and Beyond Blue in Australia. They have been recognized as the most noted and effective campaigns to reduce public stigma (Beldie et al., 2012; Pescosolido et al., 2013; Schomerus et al., 2012; Thornicroft et al., 2015; Thornicroft et al., 2012). The second approach consists of educational strategies aim to generate awareness of mental illness and boost mental health literacy (Chisholm et al., 2012; Mcluckie, Kutchner, Wei & Weaver, 2014; Mendenhall & Frauenholtz, 2015; Skre, et al., 2013; Wei, Kutcher, Hines & Mackay, 2014; Wei, Kutcher and Szumilas, 2011). Studies have demonstrated that an increase in mental health literacy is correlated with a reduction of stigma. It also reduces social exclusion of people living with mental illness and can encourage help-seeking behavior. The third strategy involves *contact* with people who live with a mental illness. It may take the form of direct contact with people with a mental illness present at an organized event or indirect contact, where a video or vignette is shown on a personal story of someone with mental illness. Notwithstanding the low number of research trials on the effectiveness of contact, researchers have found that contact with people living with a mental illness generated positive changes in attitudes and reduced discrimination towards people living a mental illness (Beldie et al., 2012; Corrigan et al., 2010; Corrigan & Rao, 2012; Thornicroft et al., 2015).

The researchers highlighted the caveat that social contact was more effective in the short term but low on long term outcomes (Thornicroft et al., 2015). Corrigan et al. (2012) found differences in how adults and youth reacted to programs aimed at reducing stigma.

They found that adults responded more effectively to contact with people with lived experience while youth responded more effectively to educational methods (Thornicroft et al., 2015). Other reviews found inconclusive results whether education or contact-based programming was the best method to achieve stigma reduction (Reavley & Jorm, 2014; Schomerus et al., 2012).

Reducing self and public stigma in mental health remains important goals in encouraging youth and adults to seek help for mental health problems. In understanding stigma as a complex social construct, several strategies are needed at the personal, organizational and societal level to change people's perceptions of those living with mental illness, and to encourage those who are suffering to seek help without shame. Fostering understanding of mental illness through mental health literacy programs has been found to be very effective among the youth (Chisholm, Patterson, Torgerson, Turner and Birchwood, 2012; Mendenhall & Frauenholtz, 2015; Mcluckie et al., 2014; Skre et al., 2013; Wei et al., 2011). Mental health literacy has taken the form of educational programs in schools and in communities that have demonstrated important shifts in attitudes and behaviors towards people living with mental illness and encouraging those with mental health programs to seek help.

Mental Health Literacy

Jorm (1997) wanted to create public knowledge of mental illness in the same manner the public learns of chronic disease. He made a clear distinction between mental health literacy and mental health intervention. Mental health literacy is characterized as the "knowledge and beliefs about mental disorders which aid their recognition, management

or prevention" (Jorm, Wright & Morgan, 2007, p. 182). Wei et al., (2013) further extended the definition to embody knowledge and skills that examines the biological, psychological and social aspects of mental disorders in addition to instilling help-seeking behavior in youth and enhances their understanding of the pathways to mental health care (Wei et al., 2013). Jorm et al. (1997) categorized four types of interventions to improve mental health literacy: public information and community campaigns; campaigns targeted to youth population; school-based interventions (help-seeking and mental health knowledge), and mental health crisis intervention training. This review will focus on school-based interventions to improve mental health literacy among the youth population.

School-based interventions better known as educational mental health literacy programs developed rapidly over the past two decades in Australia, United States, UK and Canada to reach a greater number of youth (Chisholm et al., 2016; Chisholm et al., 2012; Mcluckie et al., 2014; Mendenhall & Frauenholtz, 2015; Skre et al., 2013; Wei et al., 2011). The principle objective was to reduce stigma and encourage youth to seek early intervention of their mental health problems (Kauer et al., 2012). However, the state of evidence on the effectiveness of mental health literacy interventions continues to remain in infancy with respect to demonstrating knowledge enhancement, fostering attitude change, or help-seeking behavior in youth (Kutcher et al., 2013; Pinto-Foltz et al., 2011; Wei et al., 2013; Yamaguchi, Mino and Udding, 2011). Schachter et al. (2008) argued that poor research methodology; design and unreliable data prevented any significant body of evidence in mental health literacy and minimized the level of effectiveness of mental health literacy programs. With greater awareness of mental health on a societal level, there

has been a recent surge of interest by researchers around the globe dedicated to resolving this quandary in youth mental health research.

One of the most extensive, systematic review on the effectiveness of mental health literacy programs was conducted by Wei et al. (2013) and included the participation of more than 13,798 high school and 3,845 post-secondary students. The review highlighted a number of programs that have been evaluated as randomized control trials to quasi and controlled-before and after studies. To date, eight randomized control trials have been conducted in North America (Esters et al., 1998; Kelly and Jorm, 2007; Kutcher et al., 2013; Pinto-Foltz, Logsdon and Myers, 2011; Wei et al., 2013; Yamaguchi, Mino and Udding, 2011), one in Norway (Skre et al., 2013) and two in the UK (Chisholm et al., 2016). Educational programs were designed in two streams: programs that addressed mental health and the range of mental illnesses and programs focused on specific disorders such as depression, anxiety and schizophrenia (Wei et al., 2013). The structure of the programs also varied. Some programs incorporated mental health curriculum in existing health promotion programs such as *Beyondblue* and *MindMatters*, (Kelly, Jorm & Wright, 2007) or offered as workshops or courses such as *HeadStrong* (Perry et al., 2014). Several programs were tailored for stigma reduction and attitudinal change towards people with lived experience (Naylor et al., 2009; Pinfold et al., 2005; Yoshioka et al., 2014) while others were focused on encouraging positive attitudes towards help-seeking (Chan, Batterham, Christensen & Galletly, 2014; Taylor-Rodgers & Batterham, 2014). Some other programs were presented as community-based interventions such as *In Our Own Voice* in the United States (Pinto-Foltz, Logsdon and Myers, 2011). The duration of

programs ranged from 40 minute educational sessions (Spagnolo, Murphy & Librera, 2008); 3 hour lectures and videos on depression, diagnosis to treatment (Swartz et al. 2010) to longer programs that include on average 6 weekly sessions (Pejovic-Milovancevic et al., 2009; Watson et al., 2004). Some researchers evaluated the factors or program components that measured the effectiveness of improving mental health literacy. Several programs have been recognized for increasing knowledge and understanding of mental illness and in some cases, encouraged youth to seek help should they experience a mental health program.

BeyondBlue is a 50-school mental health literacy study in Australia (Sawyers et al., 2010). It is the first and most successful mental health literacy program established in 2007. It was structured as in class curriculum that included 30 sessions progressing from Grades 8 to 10 and focused on the development of resiliency skills. Findings revealed small changes in youth attitudes and help-seeking behaviour for mental health problems, yet did not decrease depression rates for youth. *SchoolSpace* was a feasibility trial of a mental health literacy program targeted to 7 secondary school with students aged 12-13 years old in the UK with an experimental condition where students received information on mental illness and contact with students with lived experience, and an active control condition where the students received information but no contact with someone with lived experience (Chisholm, Patterson, Torgerson, Turner & Birchwood, 2012). The program was of 4-hour duration. The study was finally conducted in 2014-2015 with the results published in 2016. They found mental health knowledge increased but they found that intergroup contact in addition to education did not reduce stigmatizing attitudes. *Our Own*

Voice was a 1-hour intervention for 10 weeks among adolescent girls 13-17 years old in two U.S. high schools. The program is structured on the storytelling approach, video presentation and discussion covering signs and symptoms of mental illness, personal experiences, information on the range of mental illnesses and potential treatments. Mental health literacy did not immediately improve following the program; however, noted changed were recorded at 4 and 8 weeks post intervention. While literacy increased, stigma of mental illness remained (Pinto-Foltz, Logsdon & Myers, 2011). *Mindwise* was a mental health literacy information campaign inspired by the Australian Beyondblue Campaign and targeted to university students and to staff as a secondary audience to improve mental health literacy, encourage help-seeking behavior and decrease psychological distress. The *Mindwise* was a cluster-randomized trial on a number of campuses. Messages were delivered to students in nine paired campuses in course unit guides with brochures, campus website, twitter, emails to students and campus special events on mental health literacy for a two year period. Findings were not significant and marked low improvement in mental health literacy, and help-seeking behavior (Reavley et al., 2014).

Mental health for everyone, is a 3 day school program targeted to more than 1070 adolescents, aged 13-15 years old in three Norwegian schools. The objective was to improve knowledge of the signs and symptoms of mental illness, reduce prejudiced attitudes about people with mental illness and educate them on where to seek help (Skre et al., 2013). The program consisted of videos, student tasks that focused on self-awareness and identity, wellness and mental health problems. The study found significant increases in knowledge

and recognition of mental illness in the intervention group in comparison to the control group. There was a small change in youth who had prejudiced beliefs about mental health problems. Interestingly, the researchers found a correlation between prejudiced beliefs and knowing where to seek help (Skre et al., 2013). The higher the prejudiced views, the lower chances of seeking help. Yap et al., (2011) assessed youth skills in a first aid mental health literacy program using vignettes through a telephone survey with a 2-year follow up. They interviewed more than 3,746 Australian youth ranging from 12 to 25 years old. They evaluated youth's attitudes of people with mental illness on three beliefs and whether these beliefs were related to help-seeking behavior. The three beliefs included: i) believing whether a person was weak and not sick, ii) social distance (desire to maintain distance from the mentally ill person) and iii) whether the person believed the mentally ill person was dangerous and/or unpredictable. They found that youth attitudes were linked to their intentions of seeking help should they have a mental health problem as characterized in the vignettes. The higher the belief the person was weak, the lower the intention to seek help, while a belief in seeing the mentally ill as more dangerous or unpredictable increased the likelihood of seeking help (Yap et al., 2011).

The majority of mental health literacy programs generated only minor gains in students' attitudes or knowledge or help-seeking behavior (Wei et al., 2013). It is important to recognize that most of the educational interventions evaluated occurred between 1983 and 2009, with more than 11 studies during 2008-2009. Wei et al. (2013)'s study supports other researchers' findings that existing educational programs have not significantly changed current attitudes of mental illness, whether they are explicit or

implicit (Mackenzie et al., 2014; Brohan et al., 2014;Wei et al., 2013 and Skre et al., 2013). Chisholm et al. (2012) found that school interventions were based on several intervention methods with little comparability. Yamagucci, Mino and Uddin (2011) examined the effects of educational interventions on more than 34 studies. They evaluated whether an educational intervention, face to face contact with a person with lived experience or video-based contact improve mental literacy awareness and reduced stigma. They found that different educational strategies using direct or indirect contact with persons with lived experience, and presentations by mental health professionals did generate important changes in literacy and stigma. Specifically, 18 of 23 studies reported significant improvements in mental literacy knowledge while 27 of 34 studies yielded significant changes in attitudes towards people with mental illness. However, the studies did not measure long-term changes or help-seeking intentions. In another substantive review, Wei, Kutcher and Szumilas (2011) concluded that no educational program addressed the beliefs and dispelled myths of the dangerousness of people with mental illness, provided a balanced perspective on the biological and psychosocial causes of mental illness, and included a forum of interaction between youth and people with lived experience of mental illness. Such a combined program may be more efficacious in meeting the objectives of mental health literacy and stigma reduction. In the current review, there appears to be no multi-component program that combines information about mental illness, contact with people of lived experience in addition to ways youth can seek help.

Summary

In conclusion, the literature has described the social and psychological impact mental health, and stigma can have on youth and their development, and the role and power stigma plays in fostering negative misperceptions and beliefs of people with mental illness. Stigma has resulted in many people feeling isolated and alienated, not seeking help, and consequently not pursuing educational or professional aspirations. Governments around the globe and stakeholder groups have promoted efforts to correct the misperceptions many people have in regards to individuals living with a mental illness, and to improve inclusion within their communities. Public stigma and internalized stigma are not only experienced in adulthood, but is omnipresent in adolescence as youth develop their identities and social networks. While the nature and content structure of mental health literacy programs have varied significantly in schools and countries around the globe, researchers have concurred that mental health literacy is a valuable tool in reducing stigma, helping change people's attitudes on the mentally ill, and fostering better understanding of the need to seek help. The body of evidence on the effectiveness of mental health literacy programs is growing and will remain important until a full-fledge program model can replicate consistent results demonstrating overall effectiveness of mental health literacy program in reducing stigma, and encouraging young people to seek help should they experience a mental health problem.

The purpose of this study is to evaluate a multifold educational mental health program that aims to affect mental health knowledge, stigma about mental illness and promote help-seeking intentions in young people. The evaluation will determine whether

the combination of awareness and understanding of the biological and psychosocial causes of mental illness, interaction with people with lived experience, and coping strategies in a presentation is effective at affecting stigma and encouraging help-seeking intentions. In the next Chapter, a description of the study design will be described in addition to the selection of students as participants and the process for the quantitative study.

Chapter 3: Research Method

Introduction

This quantitative study, a randomized controlled trial, examined whether a mental health literacy program can foster mental health knowledge, lessen the influence of stigma, and encourage help-seeking intentions among college students. The onset of mental illness has often been identified as occurring during adolescence. Many youth experience stigma in relation to mental illness, which prevents them from seeking help. Mental health literacy presents an opportunity to diminish the influence of stigma in fostering misperceptions of people with mental illness and discouraging students from seeking help should they experience a mental health problem (Chan et al., 2014; Elkington et al., 2013; Yap, Reavley & Jorm, 2013; Yap, Reavley & Jorm, 2011; Yoshioka et al., 2014). Wei et al. (2011) argued that an effective mental health literacy program should include an explanation of biological and psychosocial factors that contribute to the development of mental illness, should dispel myths, and should include an interactive component so that individuals can hear personal stories of people living with mental illness and how they sought help. The independent variable (IV) for the study was the mental health literacy program, and the dependent variables (DV) were knowledge, stigma, and help-seeking intentions.

This chapter consists of the research design, approach, and rationale of the study. It also describes the setting and study design, including sample size and instruments used to measure the three identified dependent variables.

The research questions and associated hypotheses were as follows:

RQ1—Quantitative: Can a multifaceted mental health literacy program affect mental health knowledge?

Null hypothesis: There is no difference in mental health knowledge between students who participated in the mental health literacy program and students who did not receive the program.

Alternative hypothesis: There is a difference in mental health knowledge between students who took the mental health knowledge program and students who did not partake in the program.

RQ2—Quantitative: Can a multifaceted mental health literacy program affect stigma?

Null hypothesis: There is no difference in stigma between students who received the mental health literacy program and students who did not participate in the program.

Alternative hypothesis: There is a difference in stigma between students who received the mental health literacy program and students who did not participate in the program.

RQ3—Quantitative: Can a mental health literacy program affect help-seeking intentions among youth?

Null hypothesis: There is no difference in help-seeking intentions between youth who participated in the mental health program and students who did not participate in the program.

Alternative hypothesis: There is a difference in help-seeking intentions between youth who participated in the mental health program and students who did not participate in the program.

Nature of Study

This study was a randomized controlled trial experimental study with a posttest-only control design. A posttest-only control design was chosen as the primary research method rather than adopting the traditional pre- and posttest control research design. A posttest-only control group design is considered a strong experimental research design and was selected over a pretest and posttest control group design based on several factors (Campbell & Stanley, 1963; Marczyk, DeMatteo & Festinger, 2010). This type of design also minimizes effects of maturation and interaction (Campbell & Stanley, 1963; Trochim, 1980). This design is also effective against single-group, multiple-group, or social interaction threats that are found in other experimental designs (Marczyk, DeMatteo, & Festinger, 2010). The objective of the posttest-only control only design was to measure a cause-to-effect relation, which this research design enabled effectively. A pretest is often used when researchers are trying to determine compatibility of groups; however, Trochim (1980) argued that groups in a posttest-only control design are considered equivalent from a probability standpoint. The study involved an experimental group of college students who accepted an invitation to participate in the Is It Just Me? program and completed the survey following the program and a control group who completed the survey prior to participating in the Is It Just Me? program (control group) in April 2017.

About the Program Is It Just Me?

In the Is It Just Me? Program, young clinicians delivered a 2-hour presentation in an interactive and open conversation with youth on mental illness and mental wellness. The presenters included a psychologist, social worker, addiction counselor, neuroscientist, and person with lived experience of mental illness. Segments of the program addressed how the brain functions; what is known about mental illnesses such as depression, anxiety, substance use, eating disorders, psychosis, and comorbidities; coping strategies; and the personal story of a young person who lives with mental illness. A Q & A session is offered. Is It Just Me? has been offered to Algonquin College and local high schools for the past 6 years and has generated strong interest among students and teachers. The program was developed as a result of two high-profile youth suicides, in which the victims were the daughter of a local NHL hockey coach and the son of a municipal councilor. Schools and parents expressed the need to educate adolescents on mental health and mental illness. More than 14,000 students have participated in the Is It Just Me? program since 2011.

Research Design and Approach

This research study evaluated whether a multifold mental health literacy program fostered knowledge and resulted in less stigma in addition to encouraging help-seeking intentions among students. The evaluation determined whether the combination of the biological and psychosocial causes of mental illness, interaction with people with lived experience of mental illness, and information on coping strategies, as delivered in a 2-hour

session, was effective in increasing knowledge, reducing stigma, and encouraging help-seeking intentions.

Sampling Strategy

The sampling strategy for this study was non random sampling of students from programs whose faculty expressed an interest in the Is It Just Me? program. Probability sampling was not feasible among the college population due to the nature of the program and the fact that it needed to be offered in a classroom setting. There was no ability to randomly select college students to participate in the study. Faculty from child and youth counseling and police foundations programs were interested in having the program as a complement to their curriculum on mental health. Certain dates were selected in April 2017 before end-of-term exams. Random assignment was used to randomize college students to the experimental group (Group A), whose members participated in the Is It Just Me? program and completed the survey following their attendance of the program, and the control group (Group B), whose members completed the survey before participating in the program. The inclusion criteria applied to all registered students at Algonquin College. The only exclusion criterion was inability to understand English.

Recruitment Procedures

The program and survey were conducted from April 6 to April 10, 2017. All professors wanted to ensure that all of their students had access to the program, which constituted one of the conditions of the Research Ethics Board. Students received a random ID number and an information letter and consent form as they entered their classroom. They had the opportunity to read the information letter and decide whether they

wanted to participate in the survey. Students were also told that they could stop at any time during the survey if they were feeling uncomfortable. They were also informed that they could speak to the team of clinicians in the program following the program as an informal debriefing activity. Once students had made their decision to accept or not accept the invitation to participate in the survey, they turned the consent form over, and I collected the forms. Students with odd numbers were placed in the control group, which constituted Group B, and were provided a specific link to the survey. Students with even numbers were placed in the experimental group (Group A) and completed the survey at the end of the program; these students were given a different survey link.

Sample Size

The desired sample size for this study was 102 students: 51 in Group A, the experimental group, and 51 students in Group B. *G*Power was used for measuring the difference between two independent means (two groups) with an alpha of 0.05, an effect size of 0.05, and a power of 0.80. For this study, the required sample size was 51 for each group, for a total of 102.

Data Collection Instruments

Three existing scales were used for the dissertation study. The first scale used was the Mental Health Knowledge Scale (MAKS), which was developed by Evans-Lacko et al. (2010) to measure mental health literacy. Mental health literacy is often characterized as knowledge of mental illnesses and an understanding of their symptoms and treatments, as well as how to seek help (Wei et al, 2013). Studies have demonstrated that an increase in mental health literacy is correlated with a reduction of stigma (Mcluckie, Kutcher, Wei, &

Weaver, 2014). The MAKS is the first psychometrically tested scale to measure knowledge of mental health applicable to a population base. MAKS measures 6 areas of mental health knowledge (help-seeking, recognition, support, employment, treatment, and recovery) and 6 items on knowledge of mental illness conditions (Evans-Lacko et al., 2010). This scale involves measuring the responses to 12 items rated on an ordinal scale (1 to 5). Items rated *strongly agree* are set at 5, whereas 1 point is linked to *strongly disagree* and 3 is rated as *neutral*. The survey took approximately 1 minute and 23 seconds to complete. The internal reliability has a Cronbach's alpha (*a*) of 0.71, and the test-retest reliability is rated as moderate to substantial (Evans-Lacko et al., 2010). This scale has been tested in the 25 to 45 adult age categories during the course of three studies. The authors argued that the MAKS scale (knowledge) can measure how knowledge can lead to changes in attitudes and behaviors (Evans-Lacko et al., 2010).

A total score for the MAKS is created by averaging Items 1 through 6, with Item 6 reverse scored so that the correct response is associated with a higher score. Participants answered on a 5-point Likert scale and indicated whether they *agreed strongly* (5) or *disagreed strongly* (1) with each of the questions, with "don't know" coded as *neutral* (3). Higher scores indicated greater mental health knowledge.

For purposes of this study, the MAKS scale was modified to minimize a ceiling effect and included an additional question, "Do you think clinicians/researchers know the causes of mental illness?" with answer options ranging from *agree strongly* (5) to *disagree strongly* (1) and "don't know" coded as *neutral* (3).

The modified scale score therefore included 7 items averaged to compute a total score, with higher scores indicating great mental health knowledge. Further, participants were also asked whether they considered a list of 6 conditions as a type of mental illness (depression, stress, schizophrenia, bipolar disorder [manic depression], drug addiction, and grief). Likert scale answers ranged from *agree strongly* (5) to *disagree strongly* (1), with "don't know" coded as *neutral* (3). Higher scores indicated greater mental health knowledge, and Items 8 and 12 were reverse scored and are presented separately from total scores. The modified scale results are shown separately from the main findings to maintain the integrity of the scale used for this study and to respect the protocol relating to this scale (Appendix D).

The second scale used was the Reported and Intended Behaviour Scale (RIBS), which measures stigma-related behavior (Evans-Lacko et al., 2011). Researchers have argued that behaviors are at the core of discrimination. This scale was used to assess a person's actual behavior and future behavior toward people with mental illness using hypothetical vignettes (Evans-Lacko et al., 2011; Thornicroft et al., 2007). The RIBS (2011) was built on an original scale by Star (1952) called The Star Social Distance Scale, which measured people's attitudes of social distance toward people with mental illness. The RIBS scale was used to measure intended stigma-related behavior and to evaluate the effectiveness of an educational intervention aimed at reducing stigma about mental illness (Evans-Lacko et al., 2011). There were eight items in RIBS measuring intended behavior. The scale evaluated reported and intended behaviors toward an individual with a mental illness in four contexts: (a) living with, (b) working with, (c) living nearby, and (d)

continuing a relationship with someone who has a mental health problem. The first four items measured reported behavior using *yes*/*no* options, and the last four items measured intended behavior using a 5-point ordinal scale ranging from *strongly agree* (5) to *strongly disagree* (1), with "don't know" in the middle with a score of 3. Overall test-retest reliability was 0.75. The sample for the three studies conducted in the development of the scale was 495 adults. On average, it took 1 minute and 1 second to complete the online questionnaire. The overall internal consistency-based Cronbach's alpha (*a*) was 0.85 (Evans-Lacko et al., 2011). The scale has been population-based and can be applied to the general population. Another advantage is the feasibility of adding this scale to an existing survey without significant additional response time for respondents (Evans-Lacko et al., 2011). The total score for the RIBS was computed by adding Items 5 through 8. Participants answered using a 5-point Likert scale and indicated whether they *agreed strongly* (5) or *disagreed strongly* (1) with each of the questions, with "don't know" coded as *neutral* (3). Higher scores indicated reduced mental health stigma and a greater likelihood of willingness to live with or nearby, work with, or continue a relationship with someone with a mental health problem.

The third scale was the General Help-seeking Questionnaire (GHSQ; Wilson et al., 2005), which assessed a student's future help-seeking intentions from different sources and for different problems. This questionnaire explored whom youth and young adults would consult when dealing with two problem-type issues: (a) having suicidal ideation and (b) experiencing personal-emotional problems. As one scale, the questionnaire generated a Cronbach's alpha $a = .83$ and test-retest reliability, assessed over a 3-week period, of .88

(Wilson et al., 2005). Wilson et al. (2005) also tested the properties of the questionnaire as two separate scales (one scale measuring decision making with suicidal ideation and one scale measuring personal emotional problems). In this study, for the first type (suicidal ideation), the Cronbach's alpha was $a = .83$, with a test-retest reliability over a 3-week period of .88, and for the second type (personal-emotional problems), Cronbach's alpha was $\alpha = .70$, with a test-retest reliability assessed over a 3-week period of .86 (Wilson et al., 2005). One of the two questions in the questionnaire was "If you were having a personal or emotional problem, how likely is it that you would seek help from the following people?" Each question followed a Likert rating scale, and students were asked to rank how they would respond from 1 (*extremely unlikely*) to 7 (*extremely likely*) for each help option. The 10 help options included intimate partner (e.g., girlfriend, boyfriend, etc.), friend, parent, family member, doctor, and "no one." This questionnaire's format has been recognized for its flexibility and introspective quality in capturing future help-seeking intentions for specific problems and is an important tool in mental health promotion and early intervention among adolescents (Wilson et al., 2005).

Participants were asked to indicate whether they were *extremely unlikely* (1) or *extremely likely* (7) to seek help from someone, such as an intimate partner (e.g., girlfriend, boyfriend), unrelated friend, parent, or phone helpline, among other sources. Higher scores indicated greater likelihood of help-seeking intentions from a greater number of persons. The GHSQ scale produced a total score (sum of 18 items) and two subscale scores (sum of 9 items each), one for personal/emotional problems and another for suicidal thoughts.

Data Analysis

The data was analyzed using the statistical software package SAS (2013), the Statistical Analysis System, a fourth generation programming language used in social sciences research. *t* Tests were the chosen data analysis method, as it is known to be effective in analyzing the effect of the outcome variable, the mental health literacy program. t Tests are as effective as one-way Analysis (ANOVA) and regression analysis and research has found that these three data analysis methods generated the same type of results (Trochim, 2006). Age and gender were collected in the survey, but random assignment equalized effects that age and gender had on the outcome variable. They were reported as valuable demographic information. With respect to the predictor/variable of knowledge, if the hypothesis was rejected, there would be a difference of mental health literacy between those who participated in the program versus students from schools who did not participate in the program. With the predictor/variable of stigma, there would be an effect on stigma between students who receive the mental health literacy program versus students who did not participate in the program. The third predictor/variable will determine whether a mental health literacy program has a statistically significant effect on help-seeking intentions among youth. Independent samples, 2 tailed *t* tests were conducted to compare group means on the MAKS total scale scores with α set at .05.

The Pearson product-moment correlation coefficient and the Spearman rank-order correlation coefficient were used to explore the strength of the association between stigma and help-seeking behaviors.

Protection of Participants' Rights

All participants signed informed consent prior to the beginning of the survey. The information letter stipulated that students had the right to participate, refuse or withdraw from the study at any time. No additional communication was conducted with those who wish to withdraw. To protect participant confidentiality, no identifying information was collected and all questionnaires received a random ID number. No individuals were identified in any reporting of the study findings. The data and information obtained were stored electronically on a password-protected computer. The author was the only one with access to the data from completed surveys. Once the student completed the online self-administered survey, this protocol signified the participant's consent and acknowledgement of the study.

Ethical Considerations

No data collection process was initiated until approval was obtained by the Research Ethics Board of the Royal Ottawa Mental Health Centre in addition to the Research Ethics Board of Algonquin College for a study among their student population. A Walden University's Institutional Review Board (IRB) was also received for data analysis of secondary data, which had been authorized by the Royal Ottawa Mental Health Centre and Algonquin College. Each student had the right to participate or withdraw from the study as indicated on the informed consent form provided to the student. Each student was informed about resources available should they experience any level of stress as a result of participating in the program and/or completing the self-administered questionnaire (survey). In analyzing all the potential ethical considerations, the study did

not appear to put students in any significant risk and helped them gain better understanding on how mental health literacy can reduce stigma and help those with mental health problems get the help they need and deserve. Hence the risk/benefit ratio was excellent.

Threats to Study Validity

Many threats can affect the validity of a study, which vary according to research design. Creswell (2009) argued that internal validity matters in studies that look at a causal relationship between independent variable and dependent variables. The objective in a posttest-only control design is to measure outcomes, whether any observable change can be attributed to the intervention. In non-random sampling, students agreed to participate in the program and complete the survey before or after the program. Consequently, no testing or instrumentation threats were present (Creswell, 2009). There was very little opportunity for design contamination where students in the experimental group could compare notes about study expectations with students in the control group. One disadvantage of this design is the fact that a researcher cannot fully measure changes in attitudes or behaviors between the groups within classroom and school clusters (Corrigan, 2000). Social threats can surface since human interaction is the basis of research activity, however, if experimental group and control group are distinct and chosen in different schools, the probability of social bias is well guarded (Social Research Methods, 2015).

Frankfurt-Nachmias & Nachmias (2008) cautioned that if a study is effective at controlling internal validity in causation type experimental studies, then the question of generalization becomes an issue since it affects external validity. External validity in this

study was not be comprised given that students will be in a natural setting similar to their classroom. Self-report questionnaires have the potential to affect validity; however, all questionnaires have shown good reliability and validity (Grotle, Garratt, Krogstad & Stuge, 2012) reducing this concern.

Delimitations

This study was limited to college students and did not include high school students in light of their designation as a vulnerable population in research for a student dissertation. This study involved the only English speaking college in Ottawa and no other community college. This research study was offered in English and not in French, which could impact the generalization of the study. Evaluating students following a 2-hour program did not fully evaluate student attitude or behavior but rather gave an indication of student attitudes with respect to mental illness, and how stigma can influence their current perceptions of mental illness and their decision to seek help should they experience a mental health problem. Behavioral change would need to be measured over a longer timeframe to determine the impact of the educational intervention (Eisenberg et al., 2012; Pham, Hawley McWhirter & Murray, 2014). For that reason, this study gauged help-seeking intentions among students, and not help-seeking behavior. During that 2-hour timeframe, students did not have the time to process or reflect on information presented, nor at another level, consolidate the information and translate that into an attitudinal or behavioral change (Chisholm et al., 2016; Milin et al., 2016; Mcluckie et al., 2014). Information on mental wellness was presented as part of the mental health literacy

program; however, the study did not explore the retention of knowledge of positive and good mental health (Milin et al., 2016).

Stigma is also a complex construct that involves a level of complexity in measurement. The scales proposed in this study cover key elements of stigma but did not examine in totality the perceptions of dangerousness and unpredictability that contribute to stigmatizing attitudes towards people with mental illness (Corrigan & Rao, 2012). Measuring impact two hours following the educational intervention did not determine the real impact of the intervention without a larger and longer trial. Generalization of results were also limited to the college level surveyed, and can't necessarily be generalized to students in the provincial college system, or high school system (Chisholm et al., 2016; Mackenzie et al., 2015). Geographical data was not analyzed to explore whether there are differences between youth in urban and rural areas and whether it may influence attitudes towards mental illness and willingness to seek help (Ungar et al., 2013; Yu et al., 2015).

Limitations

Studies have shown that social desirability can influence participants (Evans-Lacko et al., 2011; Thornicroft, 2007). Both the MASK and RIBS scales may have had the potential to create social desirability where participants, students respond in a manner that will please the researchers. It is sometimes difficult to predict how students will respond and anticipate how much social desirability can affect the quality of the response (Henderson et al., 2012). However, it has been noted that if the scale is completed online, social desirability can decrease. While the MASK scale can assess stigma and knowledge, it becomes more effective when combined with an instrument such as RIBS that measures

attitudes or behaviors (Evans-Lacko et al., 2011). Social desirability was also a noted limitation of RIBS yet the authors could not determine the extent of the ceiling effect (Evans-Lacko et al., 2011). The ceiling effect was potentially a factor that needs to be considered in the MASK scale. In recent pilots, the high response rates and answers of college students highlighted the potential issue of the ceiling effects. In the two surveys, students' rates were considered very high lending the hypothesis that the baseline of responses that could be generated was likely due to the ceiling effect.

Another limitation was the potential interpretation of the reported behavior for each individual in a brief evaluation period of 5 minutes. While a self-administered questionnaire can elicit quick responses, it can also lead to misinterpretation of behavior on the part of a respondent, something a face-to-face interview could eliminate (Henderson et al., 2012). Furthermore, the effects of attention were not being controlled in this study. Attention is a key factor in research participation and it is difficult to effectively control the effects or magnitude under the conditions of this study (McCambridge,Witton, & Elbourne, 2013).

Using 2-tailed *t* tests, this study had strong generalizability of findings shaping the foundation of understanding of the key elements in a mental health literacy program and its potential in resulting in less stigma and encouraging help-seeking intentions among youth.

Summary

This study examined whether a mental health literacy program given to college students helped change myths and misperceptions of mental illness, and lessen the

influence of stigma. The study considered whether fostering mental health knowledge encouraged students to seek help should they ever be faced with a mental health problem. Students in the experimental and control group both completed self-reported questionnaires. For the experimental group, the questionnaire followed the presentation. For the control group, the questionnaire was given to students prior to their participation in the mental health literacy program. Using *t* tests, this study analyzed the impact a mental health literacy program can have on students' knowledge of mental health, whether it addresses stigma, and encourages help-seeking intentions should they experience a mental health problem.

Chapter 4: Results

In this chapter, I describe the results of the data collection effort among college students participating in the Is It Just Me? program. A randomized trial, with a posttest-only control group design, was used to determine whether this multicomponent mental health literacy program increased mental health knowledge, reduced mental health stigma, and encouraged help-seeking intentions among college students. Specifically, one research question focused on mental health knowledge, another focused on stigma, and the third focused on help-seeking intentions among youth.

Data Cleaning

Analyses were conducted using SAS software (version 9.4). Data screening and cleaning techniques were conducted as recommended by Tabachinck and Fidell (2006; 5th ed.). Outcome measures were assessed for normality, including skewness and kurtosis, influential observations (outliers), and equality of variances. To identify unusual or highly influential data points, Cook's distance (Cook's *D*) statistic, leverage (Hat) statistic, and bubble plots examining residuals, Cook's *D*, and leverage were explored. Observations, which had a Cook's distance value exceeding 4/n, where *n* is the number of observations, were considered to be potential outliers. For purposes of this study, a Cook's distance cutoff of 0.04 was used (4/94 = 0.04). However, as indicated by Tabachinck and Fidell, a Cook's *D* cutoff score of 1.00 is sometimes used to indicate whether a value may be an outlier. For purposes of this study, the more conservative approach using a cutoff of 0.04 was used and examined in conjunction with the other exploratory analyses. Leverage statistic values exceeding 0.20 were also considered in need of more detailed data

screening investigation and a comparison using multiple sources of information (e.g., Cook's *D* value, etc.) in order to determine whether outlying scores may influence the analyses. Skewness and kurtosis values of zero indicate a normal distribution and values that diverge from zero indicate departure from normality. All observations were independent. The amount of missing data was minimal (< 5%) for each outcome measure and therefore considered missing at random. All participants answered more than half of each of the scale items used in the computation of total scale scores; as such, all participants were retained in analyses (Appendix B).

Total scores for measures were computed by taking the mean of the scale items. Where participants had missing data on one or more items used in the computation of the total scale score, a total score was calculated by taking the prorated mean of answered items and is noted below. To explore whether there were differences between the treatment and control conditions on total scores of the Mental Health Knowledge Schedule (MAKS), Reported and Intended Behaviour Scale (RIBS), and General Help-Seeking Questionnaire (GHSQ), two-tailed independent samples *t* tests were conducted with α set at .05. Included in the *t* test analyses was test of equality of variances, and when violated, the Satterthwaite correction was reported and noted in the relevant tables; otherwise, estimates using pooled variances were reported.

Results

Out of a potential sampling base of 130 students, 115 students signed consent forms following random assignment. Overall, 94 students participated, 46 students in the experimental group and 48 in the control group. The program was offered to 3 different

classes during one week in April 2017. In the first class, 11 students in the experimental condition did not complete the survey due to a shortage of time, and they did not submit later that day. In the second class, 4 students (two in the experimental condition and two in the control condition) signed the consent forms but did not complete the survey. In the third class, 2 students in the experimental class signed the consent form but did not complete the survey. Students may have decided not to pursue the survey, given they had the right to decide at any stage of the process, as outlined on the information sheet.

Table 1

Participant Characteristics by Experimental (Is It Just Me?) Condition (n = 46) and Control Condition (n = 48)

	Is It Just Me?	Control			
	n (%)	*n* (%)	*Df*	χ^2	*p*
Age			3	4.70	0.195
18 years	25 (54.3)	18 (37.5)			
19 years	7 (15.2)	5 (10.4)			
20 years	5 (10.9)	9 (18.8)			
≥ 21 years	8 (17.4)	15 (31.3)			
Missing	1 (2.2)	1 (2.1)			
Sex			1	1.85	0.174
Males	18 (39.1)	25 (52.1)			
Female	28 (60.9)	22 (45.8)			
Other	0 (0.0)	1 (2.1)			

Note. Percentages may exceed 100% due to rounding. Missing and other categories were excluded from chi-square analyses due to small cell sizes.

As shown in Table 1, the experimental condition had a higher proportion of younger participants (18 and 19 years) compared to the control condition, which had a higher proportion of older participants (20 and ≥ 21 years); however, there were no significant differences between groups (p = .195). The experimental condition had a higher proportion of females (60.9%) and a smaller proportion of males (39.1%) compared to the

control condition (45.8% and 52.1%, respectively); however, there were no significant differences between the treatment arms (p = .174). Missing and other categories were excluded from analyses due to small cell sizes.

Research Question 1: Mental Health Knowledge

Mental health knowledge was assessed using the Mental Health Knowledge Schedule (MAKS). A total score for the MAKS was created by averaging Items 1 through 6, with Item 6 reverse scored so that the correct response was associated with a higher score. Only one participant failed to answer a MAKS item required for the computation of the total scale score. As such, only one MAKS item had 1.1% of missing data. The total scale score was computed by taking the average of answered items (i.e., prorated). The distributions of the MAKS total score approximated normal (see Appendix B), with small deviations from zero for skewness (-0.81) and kurtosis (0.60). Two observations exceeded the recommended Cook's D cutoff of 0.04, and one could be considered an influential outlier in the control group. The highest Cook's D value observed was 0.11, and this observation had the lowest original MAKS total score of 2.33. This observation was considered an influential outlier. The next lowest original MAKS total score was 2.67, with an associated Cook's D value of .07. The remaining scores fell below the cutoff value. There was minimal variation in leverage scores (range: 0.0208 to 0.0217), and no observation exceeded the cutoff of 0.20. In preliminary testing of MAKS among college students, there was noted concern of a potential ceiling effect among the experimental and control conditions demonstrating good knowledge. Questions were added to the MAKS questionnaire. While these items were unvalidated and contravened the protocol of the

MAKS scale, it was hoped that these additions would curb the ceiling effect of the scale. However, the analysis showed no difference with the added questions compared to the original scale. For the purpose of this study, the descriptive analysis of the supplementary questions is found in Appendix C. Analyses examining the original MAKS total scale score without the additional items created for purposes of this study were solely conducted for comparison purposes. A sensitivity analysis assessed the robustness of the results by examining how study results could change through the application of different methods of handling data.

Table 2

Assessment of Mental Health (MH) Knowledge Using Original Version of the Mental Health Knowledge Schedule (MAKS): Independent Samples t Tests

	Is It Just Me?	Control			
	M (*SD*)	*M* (*SD*)	*Df*	*T*	*p*
MH Knowledge			--	--	--
Original total score	24.46 (2.42)	23.47 (3.33)	85.86[a]	-1.65	0.103

As shown in Table 2, there were no significant differences in mental health knowledge between the experimental and control conditions on the original MAKS scale (p = .103) Although participants in the experimental condition reported higher mental health knowledge compared to the control condition on the original MAKS scale (experimental: M = 4.08, SD = 0.40; control: M = 3.91, SD = 0.55), this difference was not significant (p =.103).

Research Question 2: Mental Health Stigma

Mental health stigma was assessed using the Reported and Intended Behaviour Scale (RIBS). The total score for the RIBS was computed by summing Items 5 through 8. Missing data were observed on one of the scale items not used in the calculation of the RIBS total score; thus, one question had 1.1% of missing data, while the remaining items had 0% missing. All participants answered all of the four items used in the computation of the RIBS total score, and so all participants were retained in analyses. Distributions were negatively skewed, indicating a large buildup of high overall total scores. Values of skewness (-1.86) and kurtosis (4.21) indicated a departure from normality. In total, four observations exceeded the 0.04 cutoff for Cook's *D*, and the remaining observations had Cook's *D* values < 0.04 (see Appendix B). More specifically, the control condition appeared to have two outliers (i.e., extreme scores) with total RIBS scores < 10. These observations had Cook's *D* values of 0.14 and 0.19, both of which exceeded the recommended cutoff of 0.04. Additionally, these observations were considered to be of considerable distance from the remaining observations (see Appendix B, figures of Cook's D for RIBS total scale score).

There was greater than a 0.09 (Cook's *D*) unit separation between these observations and the majority (see Appendix B). Given the potential for these observations to impact analyses, further exploratory analyses were conducted and demonstrated that these observations also had high residual and leverage values compared to the other observations (see Appendix B). As in the preliminary analyses for the other total scale scores, there was minimal variation in leverage values (range: 0.0208 to 0.0217).

Sensitivity analyses were conducted with the two primary influential outliers removed from analysis and then rerun with the outliers included. Additionally, a square root transformation of the RIBS total score was computed as a means to examine whether a statistical adjustment could correct some of the nonnormality. The square root transformation did not substantially improve the lack of normality. A log transformation was then conducted but also did not substantially improve the distribution and produced comparable results (see Table 3). As such, primary analyses were conducted using untransformed data with α set at .05.

Table 3

Assessment of Mental Health (MH) Stigma Using the Reported and Intended Behaviour Scale (RIBS): Independent Samples t Tests

	Is It Just Me?	Control			
	M (*SD*)	*M* (*SD*)	*df*	*t*	*P*
MH stigma	--	--	--	--	--
Total score with outliers	18.30 (2.21)	17.02 (3.78)	76.38[a]	-2.02	0.047*
Square root MH stigma	4.27 (0.27)	4.09 (0.53)	70.66[a]	-2.06	0.043*
Log MH stigma	2.90 (0.13)	2.80 (0.31)	64.05[a]	-2.07	0.043*
Total score no outliers	18.30 (2.21)	17.54 (2.86)	90	-1.43	0.157

As shown in Table 3, using the untransformed data with outliers, there were significant differences between the experimental and control conditions on mental health stigma (p = .047). Participants in the experimental condition had higher total scores (M = 18.30, SD = 2.21) compared to the control condition (M = 17.02, SD = 3.78), thus

indicating that participants in the experimental condition had reduced mental health stigma including greater willingness to live with or nearby, work with, or continue a relationship with someone with a mental illness. Sensitivity analyses were conducted to compare results using the untransformed data but with the exclusion of two outliers identified in the control condition (RIBS total scores < 10). With the exclusion of the outliers, there were no significant differences between the control and experimental conditions on mental health stigma (p = .157). However, the experimental condition had higher total scores, indicating reduced mental health stigma (M = 18.30, SD = 2.21) compared to the control condition (M = 17.54, SD = 2.86).

Given that the two total RIBS scores < 10 are representative of actual observations and the results of the analyses using the square root and log transformations mirrored those of the untransformed data, it would be reasonable to interpret the results of the analyses with the two extreme scores included. However, it should be noted that their removal had moderate impact on the mean RIBS total score for the control condition (Δ 0.52), which impacted the significance of the findings.

Research Question 3: General Help-seeking Intentions

General help-seeking intentions were assessed using the General Help-Seeking Behaviour Questionnaire (GHSQ). Participants were asked to rate how likely they were to seek help from different people for a personal or emotional problem (10 items) and if they were experiencing suicidal thoughts (10 items) on a 7-point Likert scale. Missing data were considered minimal, and therefore mean substitution on the outcome measure was performed for cases with missing data. All participants were retained in analyses because

more than 50% of the scale items were answered by each participant. One question had 4 missing responses (4.3%), two questions had 2.1% missing, and five questions had 1.1% missing. For participants with missing data, the average of answered items was taken (i.e., prorated mean scale scores). This was the same technique used to handle missing data on the MAKS (previously reported). The distribution for total GHSQ scores approximated normal as indicated by the minor deviations from zero for skewness (-0.45) and kurtosis (0.27; see Appendix x). The maximum Cook's *D* and leverage values were 0.07 and 0.02, respectively. As in the exploratory analyses for the other total scale scores, there was minimal variation in leverage values (range: 0.0208 to 0.0217). While there was some evidence of possible outliers, as indicated by the scores that exceeded the recommended Cook's *D* cutoff of 0.04; the measure of influence, which demonstrated that no scores exceeded the cutoff of 0.20, and visual aids such as histograms and box plots (see Appendix B) did not indicate that the potential outliers were of considerable distance from the remaining observations. There was less than a 0.04 (Cook's *D*) unit separation between these observations and the majority (see Appendix B).

The overall total score for the GHSQ personal/emotional subscale approximated normal as demonstrated by the skewness and kurtosis values of -0.37 and 0.34, respectively (see Appendix B). The maximum Cook's *D* and leverage values were 0.08 and 0.02, respectively, which were comparable to that for the distribution of the total GHSQ scale score. Statistical visual aids indicated that the distribution of GHSQ personal/emotional subscale scores approximated normal for the control condition; however, histograms and boxplots indicated that there was evidence of some negative

skew for the experimental condition. As a precautionary measure, square root and then log transformations of the total score were compared. Neither substantially improved the total scale distributions, and produced comparable results (see Table 4). As such, untransformed data were used in the primary analyses for this subscale with α set at .05. The overall total score for the GHSQ suicidal thoughts subscale roughly approximated normal, as demonstrated by the skewness and kurtosis values of -0.28 and 0.05, respectively (see Appendix B). The maximum Cook's D and leverage values were 0.05 and 0.02, respectively, which was comparable to that for the distribution of the total GHSQ scale score and the GHSQ personal/emotional subscale score. Statistical visual aids indicated that the distribution of GHSQ suicidal subscale scores approximated normal for the control condition; however, histograms and boxplots indicated that there was evidence of some negative skew for the experimental condition. As a precautionary measure, square root and then log transformations of the total score were compared; they produced comparable results (see Table 4). As such, untransformed data were used in the primary analyses for this subscale with α set at .05.

Table 4

Assessment of General Help-seeking Behaviors Using the General Help-Seeking Questionnaire (GHSQ): Independent Samples t Tests and Descriptive Statistics for Overall (Total) Help-seeking Behaviors, and Help-seeking for a Personal/Emotional Problem or Suicidal Thoughts

	Is It Just Me?	Control			
	M (*SD*)	*M* (*SD*)	*df*	*T*	*P*
Help-seeking			--	--	--
Total score	3.80 (1.08)	4.28 (1.14)	92	2.07	0.041*
Personal/emotional problems	3.92 (1.03)	4.25 (1.20)	92	1.41	0.161
Suicidal thoughts	3.68 (1.25)	4.31 (1.25)	92	2.44	0.017*
Subscale transformations					
Square root personal/emotional problems	1.96 (0.29)	2.04 (0.30)	92	1.31	0.194
Log personal/emotional problems	1.32 (0.35)	1.40 (0.31)	92	1.23	0.222
Square root suicidal thoughts	1.89 (0.36)	2.05 (0.32)	92	2.39	0.019*
Log suicidal thoughts	1.23 (0.44)	1.41 (0.33)	92	2.33	0.022*

*$p < .05$.

As shown in Table 4, there were significant differences between the experimental condition and control condition for total help-seeking behaviours ($p = .041$) and for help-seeking if experiencing suicidal thoughts ($p = .017$). The control condition had significantly higher scores for both total help-seeking behaviours and for the suicidal thoughts subscale, indicating a greater likelihood to seek help from someone overall and if experiencing suicidal thoughts. There was a nonsignificant difference between the experimental and control conditions for help-seeking if having a personal/emotional problem ($p = 0.161$). The control condition had a higher total score for the personal/emotional subscale, indicating a greater likelihood to seek help from someone if having a personal or emotional problem; however, this was non significant.

Summary

Compared to the control condition, students in the Is It Just Me? Program experimental condition reported less stigma and lower help-seeking intentions but no difference in mental health knowledge. Knowledge and attitudes about help-seeking were high in both the experimental and control condition, which may signal the presence of a ceiling effect in the primary scales used. This constellation will be looked at in greater detail in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

Discussion

Is It Just Me?, a mental health literacy program, was evaluated to determine its impact on mental health knowledge, stigma, and help-seeking intentions should students experience a mental health problem. More than 14,000 high school and college students have attended the program. The program was well received by students and teachers yet never scientifically evaluated. A scientific evaluation of this program would help determine its impact with respect to mental health literacy and its association to knowledge, stigma reduction, and help-seeking intentions. It could also contribute to the growing body of evidence on educational interventions in mental health literacy. This chapter contains a discussion of the results of the study and their relationship to the current literature on mental health literacy. Recommendations are advanced to support future research in this important and growing field.

Findings of the study showed that the Is It Just Me? mental health literacy program had minimal impact on knowledge; however, less mental health stigma and lower help-seeking intentions were found in the experimental condition compared to the control condition. Notwithstanding these mixed results, enhancing knowledge, breaking down mental health stigma, and encouraging help-seeking intentions help to promote good mental health among college students. Wei et al. (2015) argued that mental health literacy is an important strategy that generates awareness, facilitates early identification of risk factors associated with mental illness, exerts a positive influence on stigma, and encourages help-seeking behaviour. Milin et al. (2016) also inferred that increases in

knowledge about mental health and disorders could ensure effective early interventions and use of services, but also ultimately improve mental health outcomes.

In this chapter, I provide an evaluation of the findings of this randomized trial of the Is It Just Me? program and consider recommendations to build the body of knowledge in the field of mental health literacy for college and high school students.

Impact of Is It Just Me? on Mental Health Knowledge

Knowledge is a key construct of a mental health literacy program. The Is It Just Me? program did not generate significant differences in knowledge between the experimental and control conditions. In the current study, both the experimental and control conditions demonstrated good mental health awareness while not presenting any significant statistical difference. Friedrich et al. (2013) found similar findings, with no significant improvements in mental health knowledge of medical students following an *educational* intervention; however, improvements were seen in lowering stigmatizing attitudes toward people with mental illness. The current findings may be attributed to a ceiling effect: Mental health knowledge was already very high before starting the Is It Just Me? program, and hence the program could not have been expected to raise mental health knowledge significantly. Milin and colleagues (2016) and Sebbens, Hassmen, Crisp, and Wensley (2016) also found a potential ceiling effect in their mental health literacy studies.

There are several explanations for a ceiling effect. First, a ceiling effect may be due to the lack of validated scales used for mental health knowledge and literacy (Wei et al., 2015). Wei et al. (2015) examined measures of mental health literacy in 401 studies that evaluated knowledge, stigma, and help-seeking and identified significant gaps in the

psychometric properties of these scales, especially for youth. No scales were found to concisely measure general knowledge and stigma associated with mental illness in youth and young adults (Wei et al., 2015). In a meta-analysis of scales, MAKS and RIBS scales, used in the current study, were found to be the most comprehensive in the field and have been used in a number of studies evaluating mental health knowledge and stigma levels (Chisholm et al., 2016; Li, Thornicroft, & Huang, 2014). It is important to mention that the scales were not validated with adolescent and young adult populations, which may affect the baseline in attitudes. In one of the most significant randomized trials on mental health literacy in the youth population, Milin et al. (2016) did not use any standardized measures as they found that no validated standardized tools existed to measure mental health knowledge and stigma constructs in their study. They developed their questionnaire based on the curriculum content they were evaluating. Hence, the lack of well-validated questionnaires is a well-known problem in the field.

A second reason for a ceiling effect in Canada could be the success of mental health awareness campaigns on college campuses and of national campaigns in the past couple of years. One such campaign in Canada is Bell Let's Talk, a public outreach campaign that has garnered substantial awareness and support over the past 5 years (Milin et al., 2016). Although past studies may have reported that mental health literacy knowledge was lacking among students, research by Mackenzie et al. (2014) and Yamagucci et al. (2011) has indicated that students have higher mental health literacy awareness and as a result has indicated important ceiling effects in knowledge scales (Friedrich et al., 2013; Milin et al., 2016). The fact that more students have been more

likely to experience mental health issues themselves may also contribute to the higher scores (Milin et al., 2016). With higher awareness levels in students resulting from public education campaigns, future research could consider validating new scales that could more accurately measure the effect of knowledge on stigma and help-seeking intentions. It could also be argued that if students receive a perfect knowledge score for important mental health concepts, then perhaps that components of mental health literacy has been achieved, and efforts could focus on stigma and help-seeking exclusively. At the time of this writing, no study had been found that could help to explain this phenomenon.

Stigma

Compared to the control condition, participants in the experimental condition following the Is It Just Me? program reported less stigma and a greater willingness to live with or nearby, work with, or continue a relationship with someone with a mental illness following the program. These findings were similar to the Milin et al. (2016) educational intervention mental health literacy study that evaluated the effect of a mental health literacy curriculum on knowledge. Milin et al. (2016) found a reduction in stigma and improved knowledge among high school students who participated in their curriculum. The majority of the students in the Is It Just Me? study (63% of the experimental condition and 56% of the control condition) reported currently living with or having lived with a person with a mental health concern. This is even higher than national statistics showing that mental illness will affect 1 in every 3 Canadians sometime in their lifetime (Statistics Canada, 2012). Two large studies by Hunt and Eisenberg (2010) clearly illustrated how common mental health issues are among U.S. college students. One in three

undergraduates acknowledged depressive thoughts while 1 in 10 reported having suicidal ideation and 17% of students met the DSM-IV criteria for depression (Hunt & Eisenber, 2010). Clement et al. (2012) particularly highlighted that adolescents who had more contact with people with lived experience of mental illness had lower stigmatising attitudes toward people with mental illness than students who did not receive the educational intervention. These experiences may explain a high level of knowledge about mental health.

Even though the Is It Just Me? program did not seem to affect knowledge, there was evidence that it may have affected stigma. The finding that college students who participate in an educational program have less stigma than those students who do not attend, is particularly encouraging, in that the last national antistigma campaign found that half of the 2,000 respondents were uncomfortable or would feel somewhat uncomfortable socializing with a person with mental illness (Stuart et al., 2014). Previous research by Lyndon et al. (2016), Griffiths et al. (2014), and Corrigan et al. (2012) reported that adolescents mirrored the attitudes of many adults who believed that people were responsible for their mental illness in comparison to those who had cancer or heart disease. These adolescents viewed their peers as responsible for their mental illness. In a college student perception study, Lyndon et al. (2016) found that a high percentage of students who knew someone with mental illness also preferred to have some level of social distance from people with mental illness, qualified as a moderate level of stigma. While the evidence on short-term educational interventions may be limited (Yamaguchi et al. 2013),

the current study may indicate that short mental health literacy programs and contact with people with lived experience can have some impact on stigma.

In the next section, I look specifically at help-seeking intentions and whether the mental health literacy program had any bearing on encouraging help-seeking intentions among college students.

Help-Seeking Intentions

Those in the control condition showed higher help-seeking intentions compared to those in the experimental condition who participated in the mental health literacy program. The score included two questions on help-seeking intentions, the first on personal or emotional problems and the second on help-seeking intentions for suicidal thoughts. Compared to the experimental condition, the control condition showed higher response in their intention to seek help from partners or close friends for a personal or emotional problem. For a separate question, students in the control condition also responded at a higher rate to indicate that they would seek the help of close friends, but not family members, should they experience suicidal thoughts. Seeking the help of close friends when experiencing suicidal thoughts has been noted in other educational intervention studies where researchers found a marked difference between seeking help from friends and seeking help from family members (Chen et al., 2015; Chisholm et al., 2016; Deanne, Ciarrochi and Richwood & Gulliver et al., 2010; Eisenberg et al., 2012).

Why would help-seeking be increased in the control group? As discussed in the previous section, approximately 60% of students in both groups indicated that they knew or lived with someone with a mental illness. Personal experience with mental illness may

be one factor explaining high scores to seek help for a mental health problem. Reynders et al. (2015) and Calear et al. (2014) highlighted that many students reported seeking help from "no one" for personal-emotional and suicidal problems. Many have acknowledged the need for help but have reported that they preferred handling the issue on their own. Reavley and Jorm (2014) and Eisenberg, Speer & Hunt (2012) further elucidated that students believed that their problem would get better with time or categorized their symptoms as normal stress in college. However, the control and experimental conditions had similar numbers of people who lived with someone who had a mental health problem, so this cannot explain why the control group reported higher help-seeking intentions. Despite randomizing participants to groups, health seek intentions may have been different at baseline. Although randomization is the gold standard and controls for bias, differences between control and experimental conditions in baseline variables can happen by chance and this is not an uncommon occurrence in randomized trials. In a posttest control only study design no measurement is taken pre-program in the intervention condition. Baseline differences are not expected given randomization, but it cannot be tested if this happened by chance.

Notwithstanding these potential explanations, it remains surprising that the experimental condition's response levels were not higher than those of the control condition, particularly in light of the presentation of the public speaker with lived experience who shared her personal story with mental illness, described her suicide attempts, and strongly encouraged students to seek help if they experienced a mental health problem. This observation is supported by the findings of Chisholm et al. (2016)

and Corrigan et al. (2012), which indicated that intergroup contact added to educational teaching on mental illness did not appear to add any significant value to the educational method of mental health literacy nor for intentions to seek help. More research is needed to determine why this might be the case.

Another factor to take into account is that the study measured intentions to seek help but not actual help-seeking behavior. Actual help-seeking behaviors can only be measured if the participants are followed over time, which was not in the purview of this study. It may be that the Is It Just Me? program was better at changing actual help-seeking rather than help-seeking intentions. However, help-seeking intentions are recognized as important precursors to actually seeking help. Reynders et al. (2015) contended that if a person displays a positive attitude toward the intention of getting help, the person's intention is strong enough to initiate behavior in getting help. Behavioral researchers Ajzen and Fishbein (2005) argued that intentions are actual precursors/antecedents of behavior. Skre et al. (2013), Bathje and Pryor (2011), and Olsson and Kennedy (2010) revealed strong correlations between positive attitudes, help-seeking intentions, and contacting a professional service for help.

Stigma and mental health knowledge are theoretically related to help-seeking intentions. Calear et al. (2014), in an extensive study with 1,274 Australian young adults, contended that high suicide literacy and low stigma were directly linked to higher help-seeking intentions. Calear et al. (2014) also highlighted the fact that students who experience suicidal ideation have predominantly negative attitudes about seeking help and consequently lower intentions to actually seek help. These studies underscore the need for

further investigation in exploring the role and effect of a mental health literacy program on suicide ideation and negative attitudes resulting from stigma and how this could impact help-seeking.

The Is It Just Me? study did not allow any specific evaluation of whether individuals exhibited minor or moderate symptoms of mental illness. It is therefore not possible to determine any conclusion on students' frame of mind or any antecedents of mental health symptoms as they completed the survey. A post follow up and longitudinal study with the college student population could certain provide valuable data on the correlation of attitudes to help-seeking intentions and, more importantly, how intentions can be translated into help-seeking behaviors should students experience a mental health problem or suicidal ideation. Higher help-seeking intentions among the control condition appear to indicate that the Is It Just Me? program did not translate an effect on stigma into help-seeking intentions among those in the experimental condition, who were exposed to suicide ideation literacy and testimony of a person with lived experience.

Several researchers have noted that stigma is an influential factor in fostering negative attitudes toward seeking help while at the same time lowering intentions of seeking help (Eisenberg et al., 2009; Elkington et al., 2012; Evans-Lacko et al., 2012 Golberstein et al., 2009; Yoshioka et al., 2014). Based on this existing body of literature, a correlation analysis was explored to measure the relationship between stigma and help-seeking intentions. However, following analysis of the Pearson product moment correlation coefficient, the correlation was nonsignificant (r_p -0.12). Thus, changes in stigma are not associated with changes in help-seeking intentions. Given the complexity of

stigma and its many dimensions (Eisenberg et al., 2009; Golberstein et al., 2009), more research is needed to discern the dimensions and their relationship to help-seeking. In retrospect, the RIBS stigma scale measured general stigma, which characterizes perceived public stigma and not specifically personal stigma. To date, Eisenberg et al. (2009) have conducted the only study to consider perceived stigma and personal stigma in relation to help-seeking. They found that personal stigma was significantly correlated with a lower willingness to seek help and that perceived stigma was not significantly correlated with help-seeking (Eisenberg et al., 2009). Yak et al. (2013) suggested that future research could explore the various dimensions of stigma in relation to different sources of help and effectively measure its relational impact. This type of research could help to support targeted efforts to impact self-stigma and encourage higher help-seeking intentions.

Furthermore, the findings in the Is It Just Me? study may be accounted for by the large buildup of scores on the higher ends of the distributions of the measures used in analyses. The reduced variability in the distribution of scores may be responsible for the small correlation. Cautious interpretation of these correlation results is recommended, and future work with more sensitive measures may yield an association between stigma and help-seeking.

In the end, short educational interventions such as this program still have an important role to play in addressing stigma, which impacts attitudes towards people with mental illness and can help foster help-seeking among students.

The health beliefs model was the theoretical framework that guided this research study and the next section will highlight possible understanding of the constructs that influence attitudes and health behavior.

Health Beliefs Model

The health belief model is a model that predicts how likely a person will perform a health behaviour such as treatment seeking for a mental health illness. The health beliefs model predicts that the readiness of someone to act is driven by analyzing whether the benefits outweigh the barriers to action. To do so, a person assesses the probability, severity and susceptibility to the illness and their own self-efficacy (See Appendix A for health belief model). The Is It Just Me? program addressed many of these health beliefs including probability and severity of the illness. For example, the current study found that students were able to describe the types of mental illness appropriately and estimated the *perceived severity* of a mental illness correctly. With respect to analyzing barriers and benefits of dealing with a mental health problem, college students identified key sources they would seek in talking about their problem with significant members i.e. partners and friends. While the sample size was small in comparison to the two current and relevant studies in the field (Milin et al. 2016 and Chisholm et al. 2016), the high percentage of scores and responses are very positive. The current study also measured health behaviour by assessing the intention to seek help for an emotional or personal problem or for suicidal ideation.

While the current findings are largely in line with the health behavior model, the study was not designed to test the model. Many aspects of the model were not assessed

such as s*usceptibility* to developing a mental illness, or *cues to action.* These would clearly be an area of interest for future research. Furthermore, concepts that were not included in the health behavior model, such as stigma, are still expected to exert an influence on an individual's perception of their psychological distress, and hinder help-seeking behaviour.

In sum, the health belief model was a valuable theoretical framework that provided a good theoretical approach in understanding how knowledge and stigma can impact help-seeking intentions and how this model can be used to promote good health behavior, in other words, help-seeking behavior for a mental health problem.

Limitations

Despite a number of strengths, the current study has a few delimitations, limitations, and assumptions. As delimitation, this research study was a short-term educational intervention in mental health literacy that measured the impact on knowledge, stigma and help-seeking intentions among the college student population in Ottawa. The findings cannot be generalized or representative of the entire college study population but rather presented a perspective on current attitudes of students on mental health in one primary college. Socio-economic and cultural factors may have exercised an influence on attitudes towards mental illness and willingness to seek help (Reynders et al., 2015; Ungar et al., 2013; Yu et al., 2015) but were not tested in this current study. Age of participants may also be a limiting factor. Milin et al. (2016) and Chen, Romero and Carver (2015) found differences in knowledge and stigma between higher grade and lower grade students in high schools. There may be important differences between college and high school students, which would be useful to evaluate in the future. The ceiling effect noted in the

mental health knowledge scale may be associated with the age factor.

There were also some limitations in the study that must be noted. First, social desirability is an important threat to validity, therefore, the professor nor the investigator was aware who signed or didn't sign consent forms, thereby limiting the need to answer questions in a socially, desirable way. This message was communicated to students before they were asked to sign the consent forms. Social threats were also minimized due to random assignment as students walked into class.

Students' mental health literacy levels may be higher than expected due to students' learning in other classes, from experience in knowing or living with someone with mental illness. The potential of ceiling effects in the knowledge scales cannot be overlooked. It may have had an impact on measuring any significance resulting from the mental health literacy program. With the relatively high levels of awareness among students, future research could focus on evaluating a younger student population to assess whether their mental health knowledge scores are comparable to college students, and evaluate the presence and depth of ceiling effects.

The short duration of the study was another limitation. The program is generally presented in a 3-hour presentation at the Mental Health Centre but in order to accommodate class schedule and time, the content of the presentation was limited to 2 hours. Students may not have had adequate time to absorb or reflect on the information, or discussions held during the program before being asked to complete the survey. The short duration of the program could be addressed by conducting a more intensive and longer intervention among the college student population. Potential social desirability and lack of

generalization of findings could also be corrected by designing a multi-site study involving a number of colleges in the province, or in the country could also help validate findings and ensure generalization of the results of college students. Furthermore, the short time frame of the study was a limitation. Clearly studies are needed that measure the long-term impact of the Is It Just Me? program over time and on actual help-seeking behaviors rather than intentions. Using pre and post baseline measures in future research could help quantify changes in knowledge, stigma, and help-seeking intentions.

Recommendations

This research study has generated interest in assessing the potential long-term impact of a short educational intervention among college students' attitudes and help-seeking intentions. Conducting a longitudinal study could help qualify the impact this program may have on attitudinal change and help-seeking behavior. This may be designed as a yearly evaluation at the beginning of the students' first college semester with subsequent measurements the following year. This is particularly important when measuring a complex and multifaceted construct such as stigma and looking at the association with help-seeking. While that relationship of knowledge and stigma on help-seeking intentions has been established in the literature, the relationship of suicide ideation literacy and actual help-seeking behavior should be further investigated. Suicide prevention remains an important goal, and where the risk of suicide remains a significant issue among the student population (Skre et al., 2013; Calear et al., 2014). The program can also be implemented across the programs at the college, thus enabling a more robust

evaluation and large sample size of its effects on knowledge, stigma reduction and help-seeking.

As there are very few scales that address positive or good mental health, it would be valuable to measure the ability to foster, or take care of one's mental health, a key outcome of mental health literacy. Future research can serve to build evidenced-based practices that can be incorporated into existing educational venues that will embed curriculum to enhance knowledge, address stigma and foster not only help-seeking intentions but also effective coping skills that can decrease risk factors in the development of a mental illness. It is also hoped that in future research, there will be new validated scales that can help prevent ceiling effects in studies, and more adequately measure the effects of a mental health literacy program on knowledge, stigma reduction and help-seeking intentions among the youth and young adult population.

Significance

The Is It Just Me? mental health literacy program has shown that stigma can be addressed in an educational intervention, which can have a positive effect on attitudes towards individuals with mental illness. While the program did not have an impact on knowledge among the students, the noted significant difference in stigma among attendees and non-attendees could have a positive influence in attitudes as students prepare to enter the workforce and encounter people with lived experience in their future line of work. Educating students could help in fostering understanding and empathy in their interactions with vulnerable populations such as people living with mental illness.

While not a dimension evaluated in the program, many college professors

expressed interest in hosting more Is It Just Me? presentations as an annual component of their program curriculum. Recognizing the importance of integrating mental health literacy within existing curriculum is a positive step in promoting good mental health and positive help-seeking intentions among the student population.

Conclusion

Mental health literacy, stigma reduction, and help-seeking behavior have become important societal goals in fostering healthy individuals and healthy communities. Statistics Canada (2012) have confirmed that 1 out of 3 Canadians will experience a mental health problem during their lifetime with symptoms of a mental illness manifesting during adolescence. There is a critical role in implementing mental health literacy programs to help younger generations such as college students learn about their mental health, better understand the risk factors that lead to the development of mental illnesses and foster positive attitudes in seeking help should they experience a mental health problem. Furthermore, mental health literacy can also help foster positive coping mechanisms, and educate students among the effects of poor coping mechanisms (Chen, Romero & Carver 2015; Chisholm et al., 2016; Milin et al., 2016). Educating future generations of health and community service providers could help change stigmatizing attitudes towards people with mental illness.

We know from research that knowledge and stigma reduction are interrelated constructs, which impact and influence each other (Chisholm et al., 2016; Milin et al., 2016; Wei et al., 2015). A person's life trajectory can be negatively influenced by stigma and they may experience fewer opportunities for self-development and self-fulfillment

than others (Chisholm et al., 2016). Consequently, there is critical value in promoting mental health literacy in order to foster proactive health behavior and support positive attitudes towards individuals who are afflicted with mental illness. If students can experience little or no stigma in getting help early for a mental health problem, as a society, we will be successful in caring for all members of the community.

This research study confirms that those who attended the Is It Just Me? mental health literacy program demonstrated less stigma towards people with mental illness than college students who did not attend the program. Stigma can exert a damaging influence in attitude development and formation, and can negatively impact the attitudes of students towards people with mental illness. Addressing stigma among a group of college students could help them become more supportive towards those living with mental illness as they enter the workforce. Stigma reduction is an important societal goal and mental health literacy programs such as Is It Just Me? may contribute to students having a better understanding and acceptance of those individuals living with mental illness, and an awareness of their own attitudes and beliefs about mental illness and help-seeking.

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Appendix A: Health Belief Model (Chapter 2)

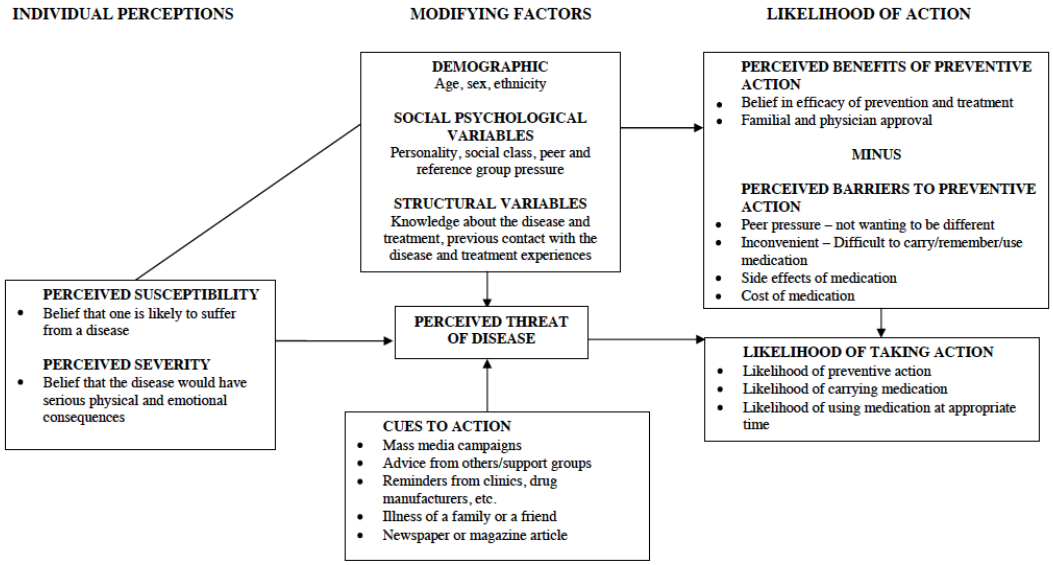


Figure 1. The health belief model (adapted from Rosenstock, 1974).

Appendix B: Data Cleaning

MAKS Original Total Scale Score

Variable: MAKS_totscore_nonew_edit

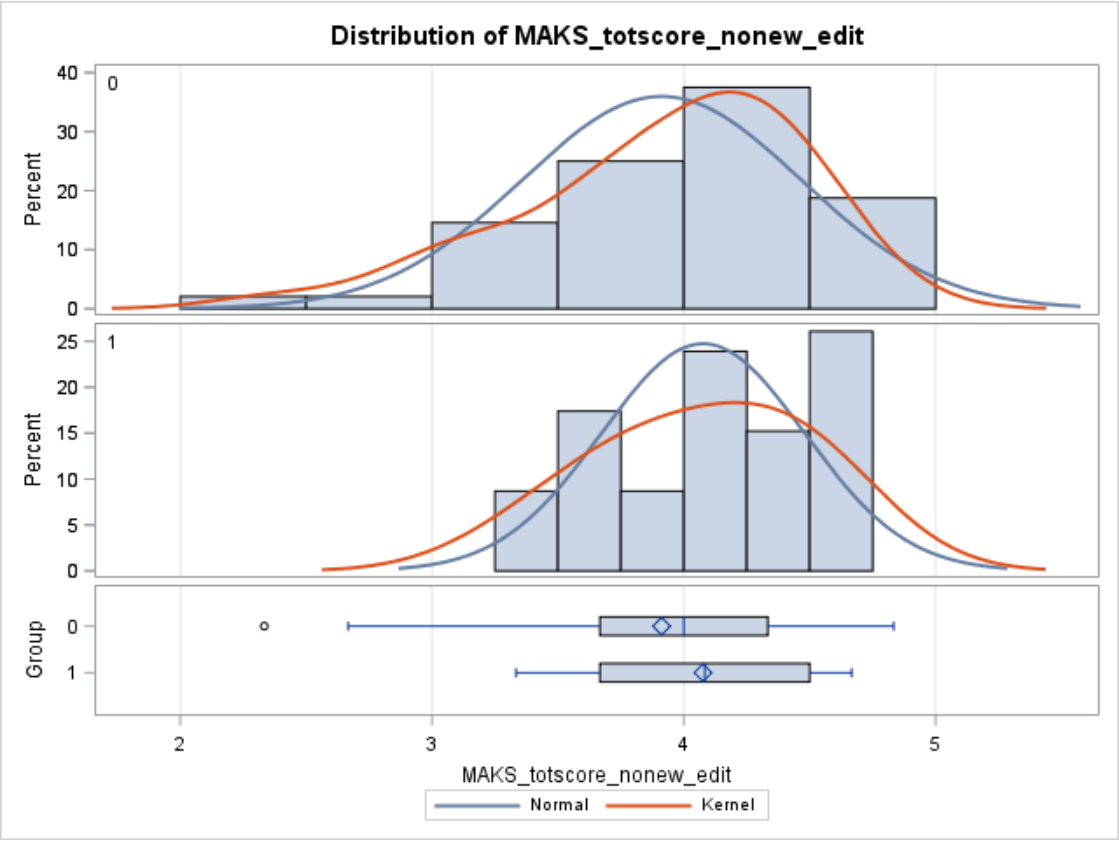
Group	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	48	3.9118	0.5546	0.0801	2.3333	4.8333
1	46	4.0761	0.4032	0.0595	3.3333	4.6667
Diff (1-2)		-0.1643	0.4865	0.1004		

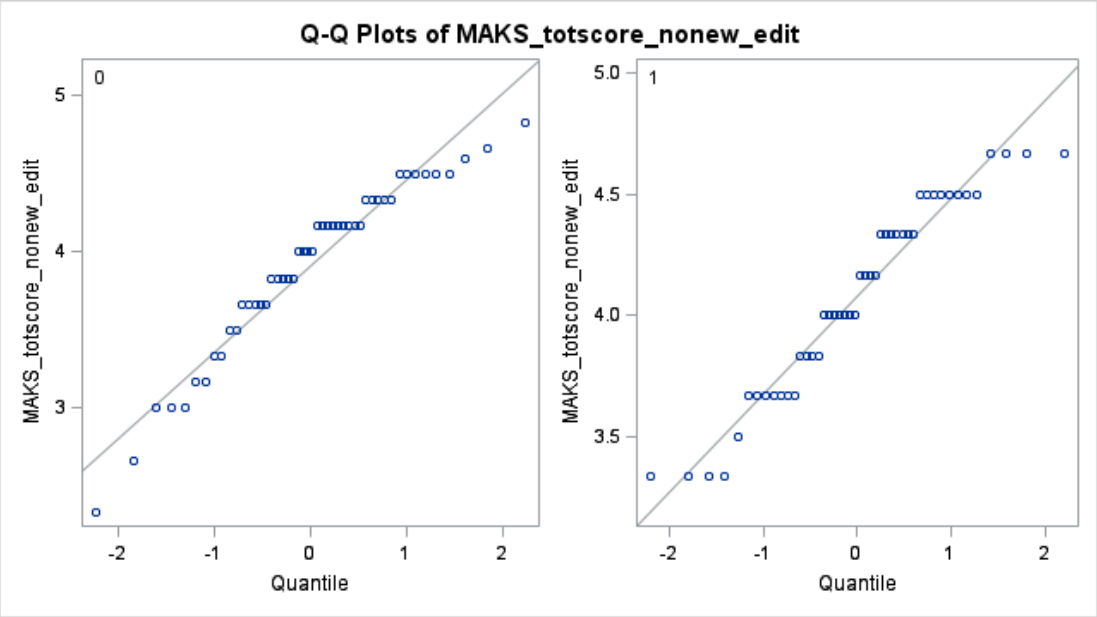
Group	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		3.9118	3.7508	4.0729	0.5546	0.4617	0.6947
1		4.0761	3.9563	4.1958	0.4032	0.3345	0.5079
Diff (1-2)	**Pooled**	-0.1643	-0.3636	0.0351	0.4865	0.4252	0.5686
Diff (1-2)	**Satterthwaite**	-0.1643	-0.3625	0.0340			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	92	-1.64	0.1051
Satterthwaite	Unequal	85.862	-1.65	0.1031

Equality of Variances

Method	Num DF	Den DF	F Value	Pr > F
Folded F	47	45	1.89	0.0336





The SAS System

The UNIVARIATE Procedure

Variable: MAKS_totscore_nonew_edit

Moments

N	94	**Sum Weights**	94
Mean	3.99219858	**Sum Observations**	375.266667
Std Deviation	0.49088284	**Variance**	0.24096596
Skewness	-0.811862	**Kurtosis**	0.59856921
Uncorrected SS	1520.54889	**Corrected SS**	22.4098345
Coeff Variation	12.2960527	**Std Error Mean**	0.0506307

Basic Statistical Measures

Location		Variability	
Mean	3.992199	**Std Deviation**	0.49088
Median	4.000000	**Variance**	0.24097
Mode	4.500000	**Range**	2.50000
		Interquartile Range	0.66667

Tests for Location: Mu0=0

Test	Statistic		p Value	
Student's t	**t**	78.84937	**Pr > |t|**	<.0001
Sign	**M**	47	**Pr >= |M|**	<.0001
Signed Rank	**S**	2232.5	**Pr >= |S|**	<.0001

Quantiles (Definition 5)

Level	Quantile
100% Max	4.83333
99%	4.83333
95%	4.66667
90%	4.50000

Quantiles (Definition 5)

Level	Quantile
75% Q3	4.33333
50% Median	4.00000
25% Q1	3.66667
10%	3.33333
5%	3.00000
1%	2.33333
0% Min	2.33333

Extreme Observations

Lowest		Highest	
Value	**Obs**	**Value**	**Obs**
2.33333	28	4.66667	56
2.66667	16	4.66667	57
3.00000	18	4.66667	85
3.00000	13	4.66667	86
3.00000	8	4.83333	37

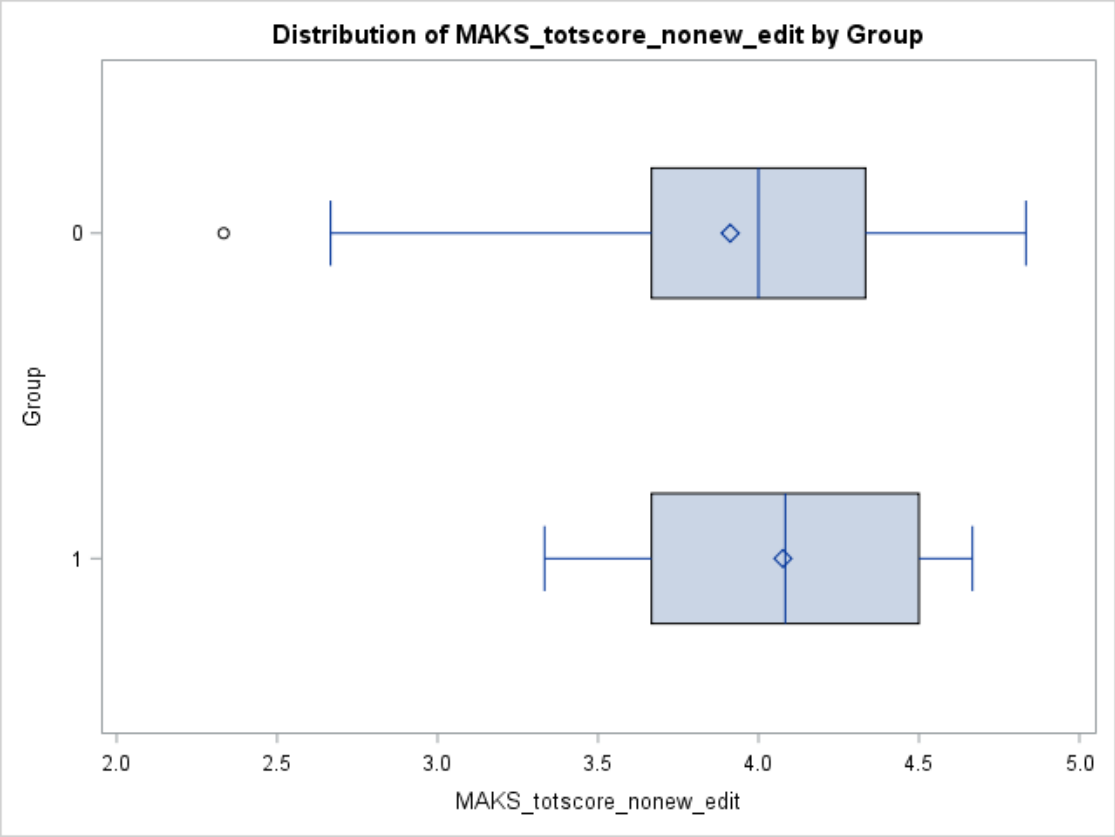
The SAS System

The MEANS Procedure

Analysis Variable : MAKS_totscore_nonew_edit

N	Mean	Std Dev	Minimum	Maximum
94	3.9921986	0.4908828	2.3333333	4.8333333

The SAS System


Distribution of MAKS_totscore_nonew_edit by Group
Group
0
1
2.0
2.5
3.0
3.5
4.0
4.5
5.0
MAKS_totscore_nonew_edit

The SAS System

The REG Procedure

Model: MODEL1

Dependent Variable: MAKS_totscore_nonew_edit

Number of Observations Read 94

Number of Observations Used 94

Analysis of Variance

Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	1	0.63394	0.63394	2.68	0.1051
Error	92	21.77589	0.23669		
Corrected Total	93	22.40983			

Root MSE	0.48651	**R-Square**	0.0283
Dependent Mean	3.99220	**Adj R-Sq**	0.0177
Coeff Var	12.18658		

Parameter Estimates

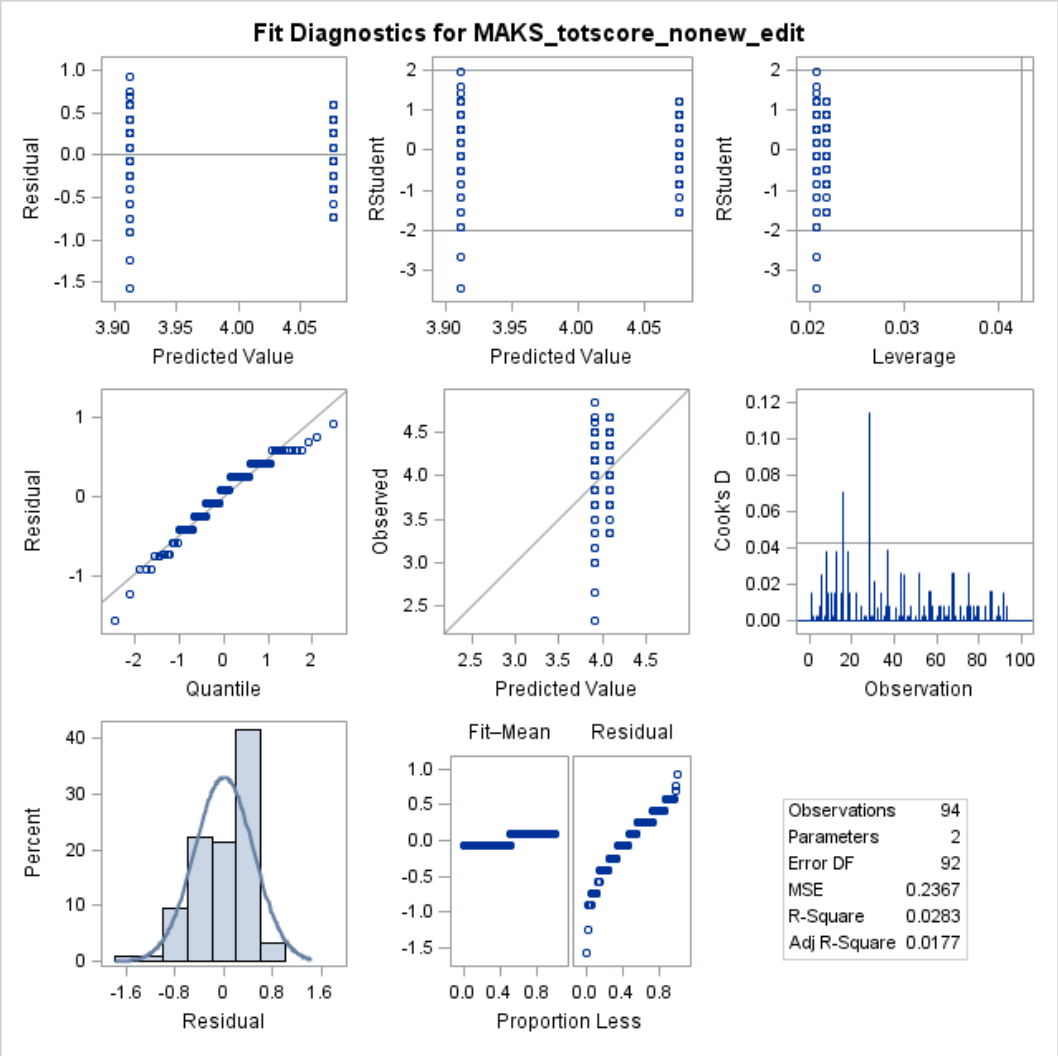
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	**1**	3.91181	0.07022	55.71	<.0001	3.77234	4.05127
Group	**1**	0.16428	0.10038	1.64	0.1051	-0.03509	0.36365

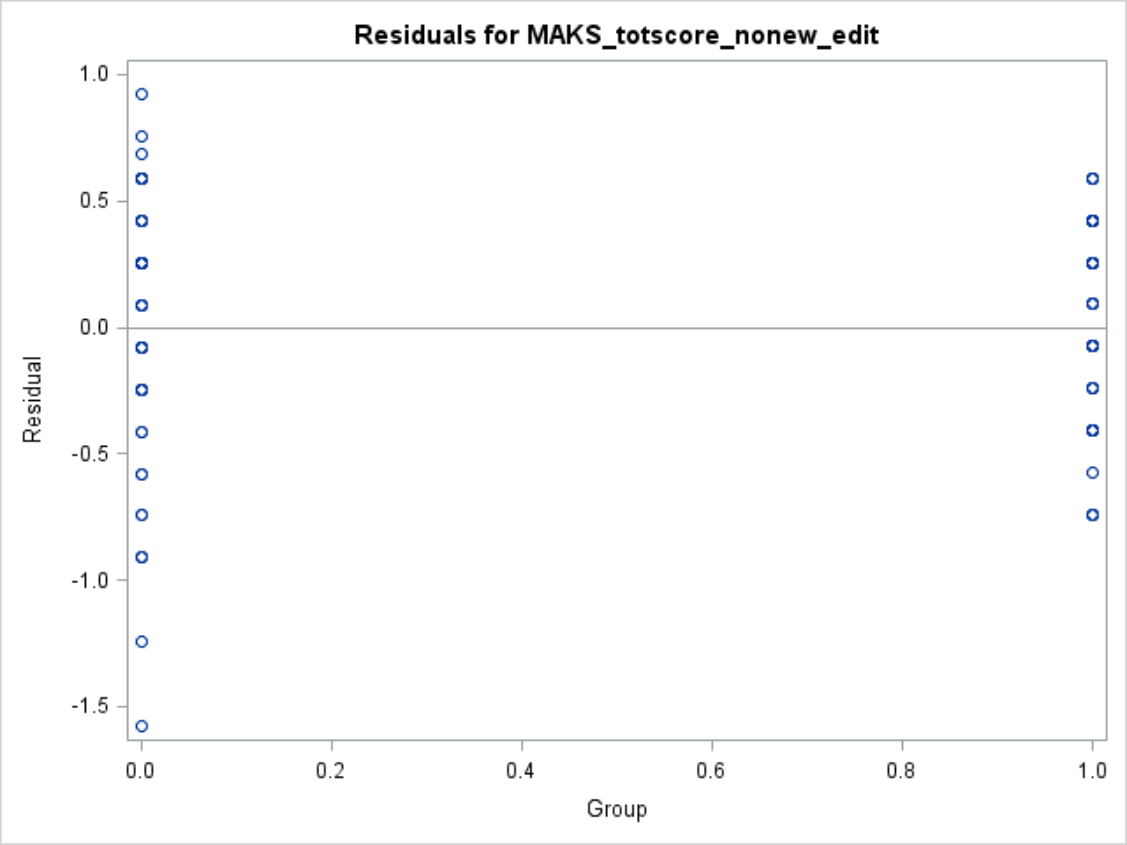
The SAS System

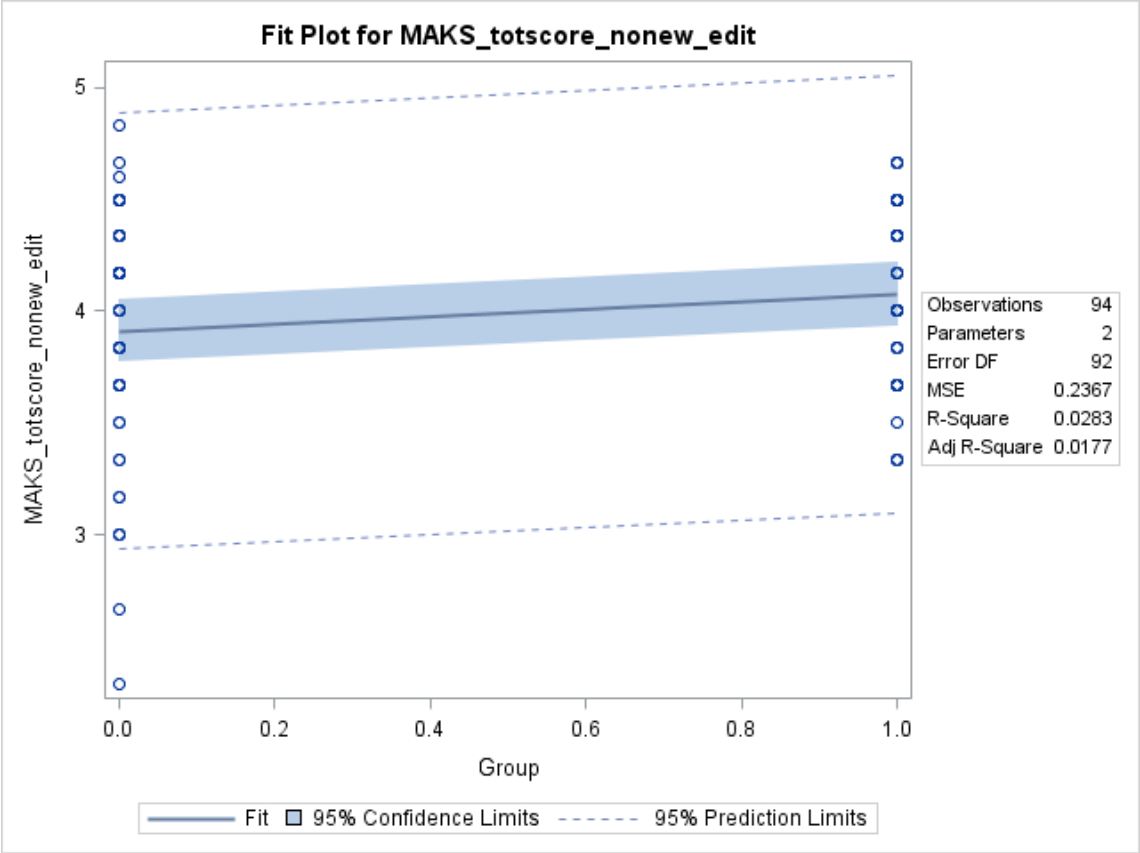
The REG Procedure

Model: MODEL1

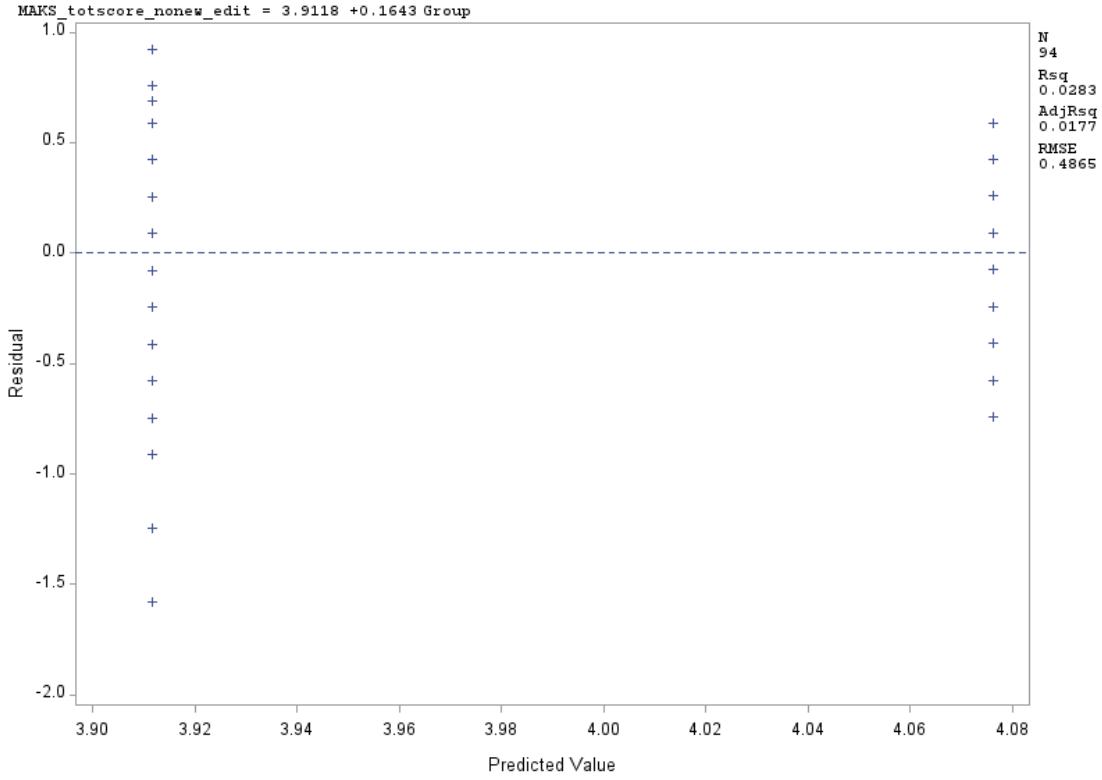
Dependent Variable: MAKS_totscore_nonew_edit




Residuals for MAKS_totscore_nonew_edit
Residual
1.0
0.5
0.0
-0.5
-1.0
-1.5
0.0
0.2
0.4
0.6
0.8
1.0
Group


Fit Plot for MAKS_totscore_nonew_edit
MAKS_totscore_nonew_edit
5
4
3
0.0
0.2
0.4
0.6
0.8
1.0
Group
Observations 94
Parameters 2
Error DF 92
MSE 0.2367
R-Square 0.0283
Adj R-Square 0.0177
Fit
95% Confidence Limits
95% Prediction Limits

The REG Procedure



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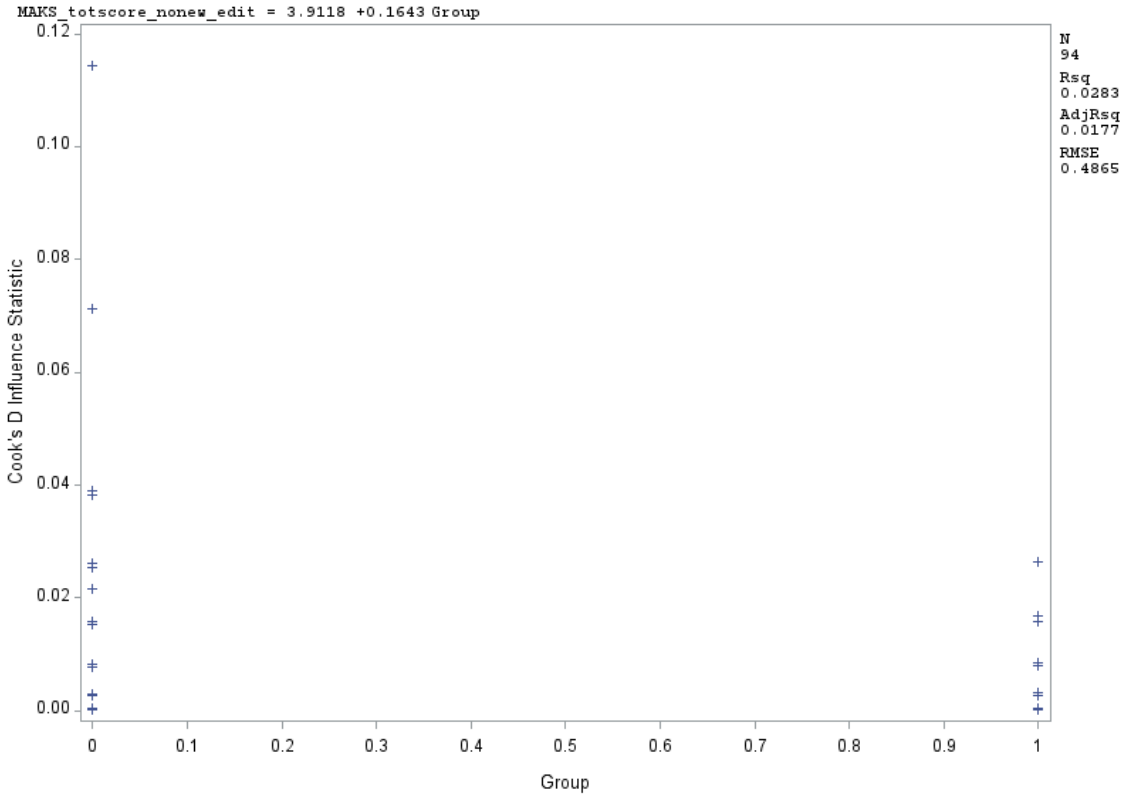

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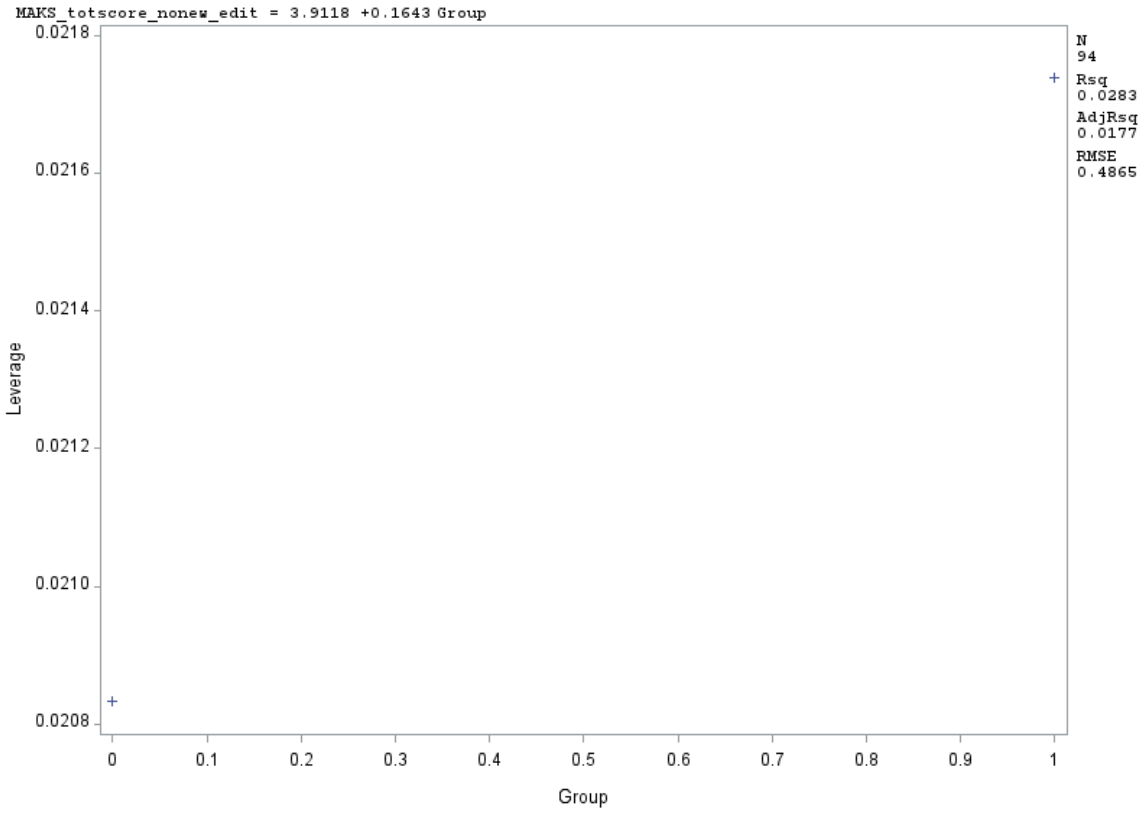

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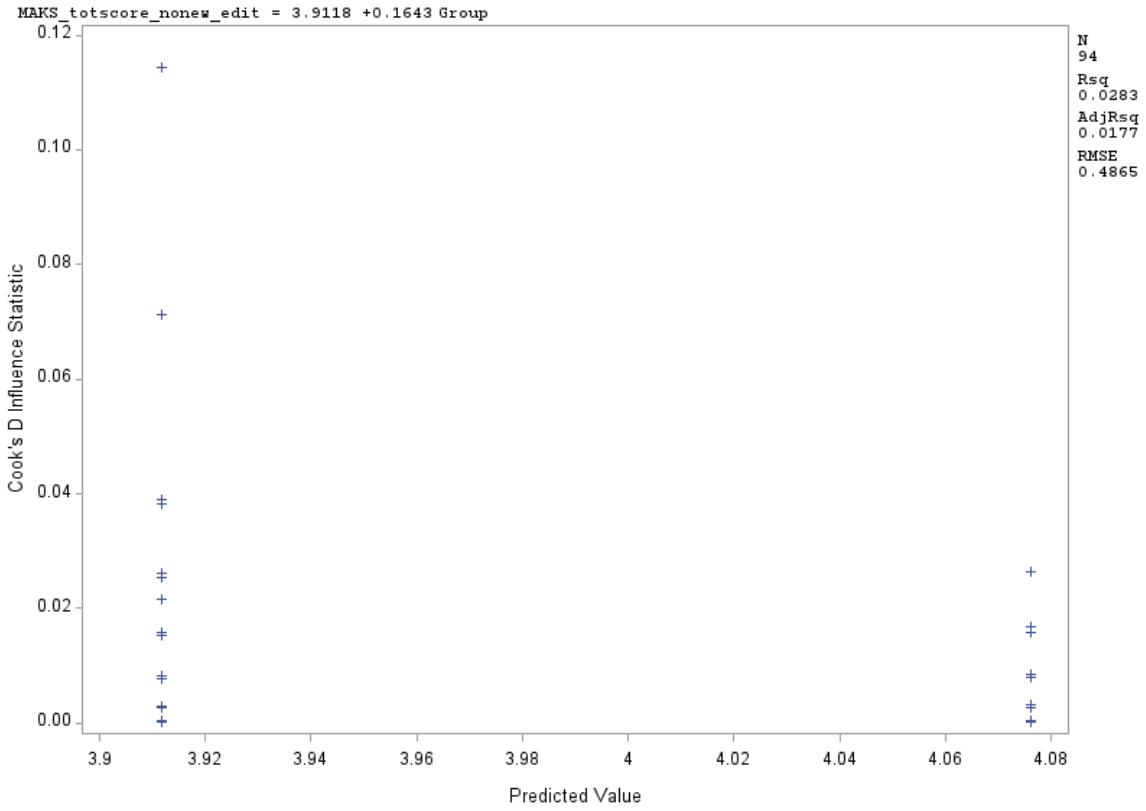
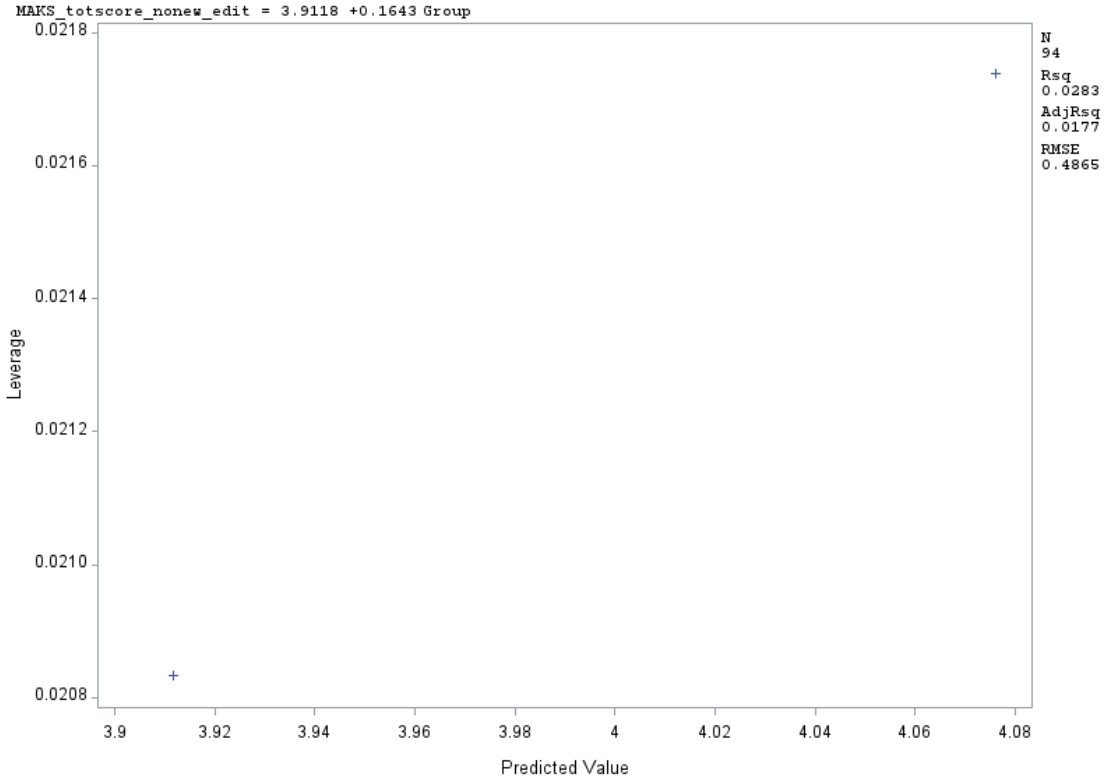
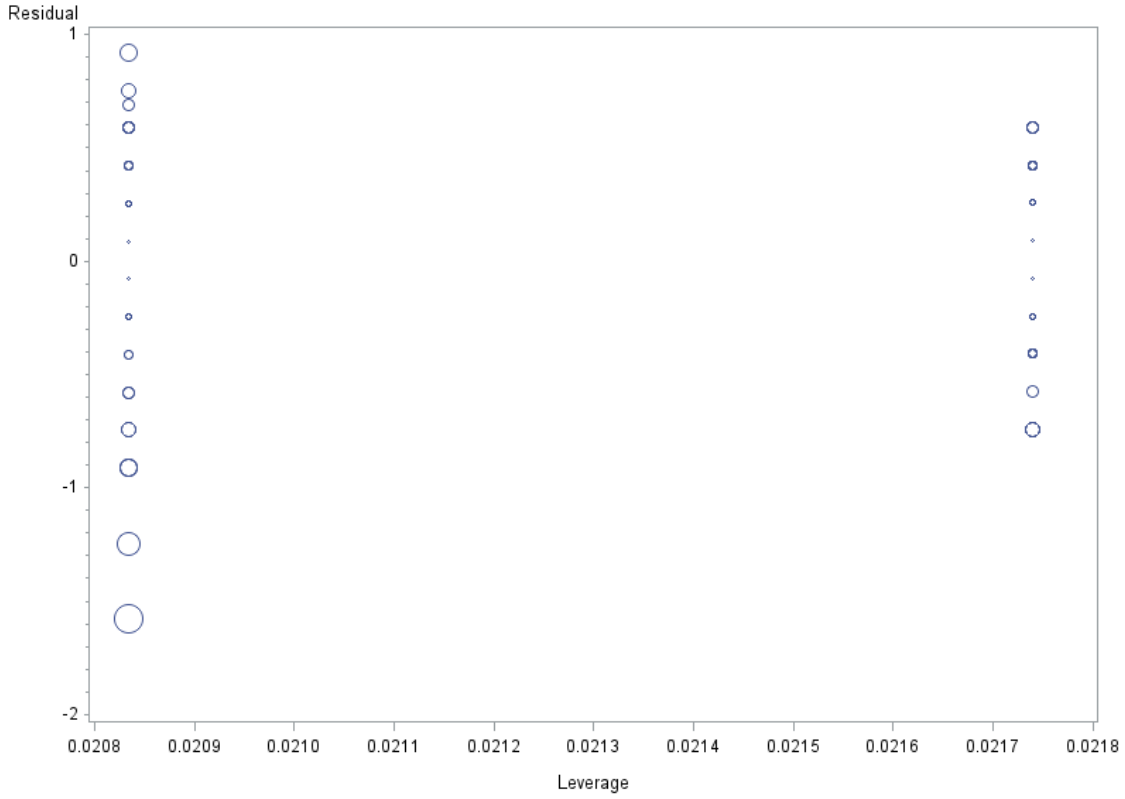


The REG Procedure




Residual
1
0
-1
-2
0.0208
0.0209
0.0210
0.0211
0.0212
0.0213
0.0214
0.0215
0.0216
0.0217
0.0218
Leverage

The SAS System

The MEANS Procedure

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
cookd	**Cook's D**	94	0.0107957	0.0158690	0.000277802	0.1143671
leverage	**Influence Statistic Leverage**	94	0.0212766	0.000455224	0.0208333	0.0217391

RIBS Total Scale Score

The SAS System

The TTEST Procedure

Variable: RIBS_sum

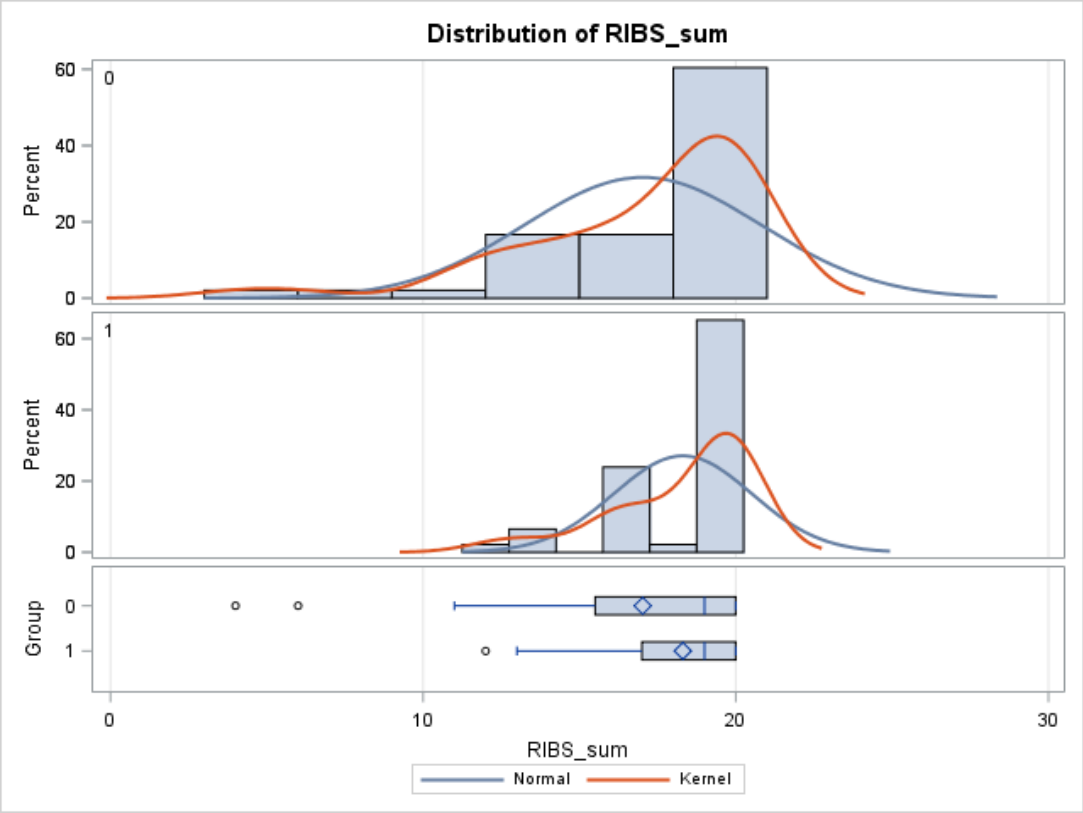
Group	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	48	17.0208	3.7784	0.5454	4.0000	20.0000
1	46	18.3043	2.2098	0.3258	12.0000	20.0000
Diff (1-2)		-1.2835	3.1115	0.6420		

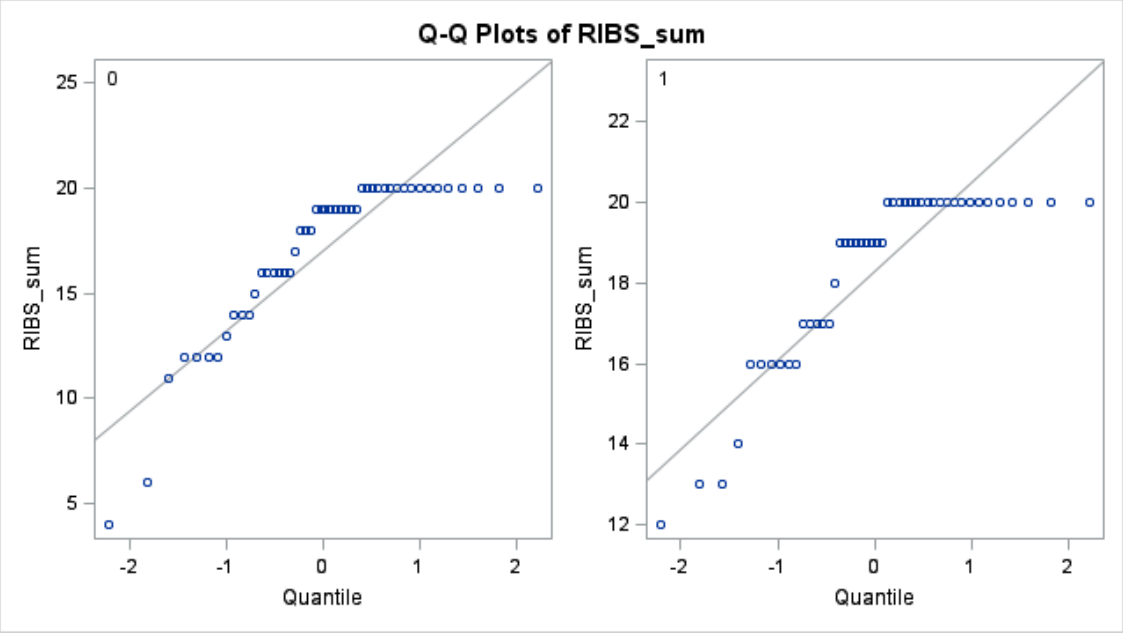
Group	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		17.0208	15.9237	18.1180	3.7784	3.1454	4.7327
1		18.3043	17.6481	18.9606	2.2098	1.8329	2.7833
Diff (1-2)	**Pooled**	-1.2835	-2.5586	-0.00843	3.1115	2.7196	3.6365
Diff (1-2)	**Satterthwaite**	-1.2835	-2.5487	-0.0184			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	92	-2.00	0.0485
Satterthwaite	Unequal	76.376	-2.02	0.0468

Equality of Variances

Method	Num DF	Den DF	F Value	Pr > F
Folded F	47	45	2.92	0.0004


Distribution of RIBS_sum
Percent
60
40
20
0
0
1
Group
0
1
0
10
20
30
RIBS_sum
Normal
Kernel


Q-Q Plots of RIBS_sum
RIBS_sum
25
20
15
10
5
0
-2
-1
0
1
2
Quantile
1
22
20
18
16
14
12

The SAS System

The UNIVARIATE Procedure

Variable: RIBS_sum

Moments

N	94	**Sum Weights**	94
Mean	17.6489362	**Sum Observations**	1659
Std Deviation	3.16128274	**Variance**	9.99370853
Skewness	-1.8604903	**Kurtosis**	4.20850943
Uncorrected SS	30209	**Corrected SS**	929.414894
Coeff Variation	17.91203	**Std Error Mean**	0.32606142

Basic Statistical Measures

Location		**Variability**	
Mean	17.64894	**Std Deviation**	3.16128
Median	19.00000	**Variance**	9.99371
Mode	20.00000	**Range**	16.00000
		Interquartile Range	4.00000

Tests for Location: Mu0=0

Test		Statistic		p Value
Student's t	**t**	54.12764	**Pr > |t|**	<.0001
Sign	**M**	47	**Pr >= |M|**	<.0001
Signed Rank	**S**	2232.5	**Pr >= |S|**	<.0001

Quantiles (Definition 5)

Level	Quantile
100% Max	20
99%	20
95%	20
90%	20
75% Q3	20
50% Median	19
25% Q1	16
10%	13
5%	12
1%	4

Quantiles (Definition 5)

Level	Quantile
0% Min	4

Extreme Observations

Lowest		Highest	
Value	**Obs**	**Value**	**Obs**
4	3	20	87
6	28	20	90
11	17	20	91
12	74	20	92
12	16	20	94

The SAS System

The MEANS Procedure

Analysis Variable : RIBS_sum

N	Mean	Std Dev	Minimum	Maximum
94	17.6489362	3.1612827	4.0000000	20.0000000

The SAS System

The REG Procedure

Model: MODEL1

Dependent Variable: RIBS_sum

Number of Observations Read 94

Number of Observations Used 94

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	38.69660	38.69660	4.00	0.0485

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Error	92	890.71830	9.68172		
Corrected Total	93	929.41489			

Root MSE	3.11155	**R-Square**	0.0416
Dependent Mean	17.64894	**Adj R-Sq**	0.0312
Coeff Var	17.63022		

Parameter Estimates

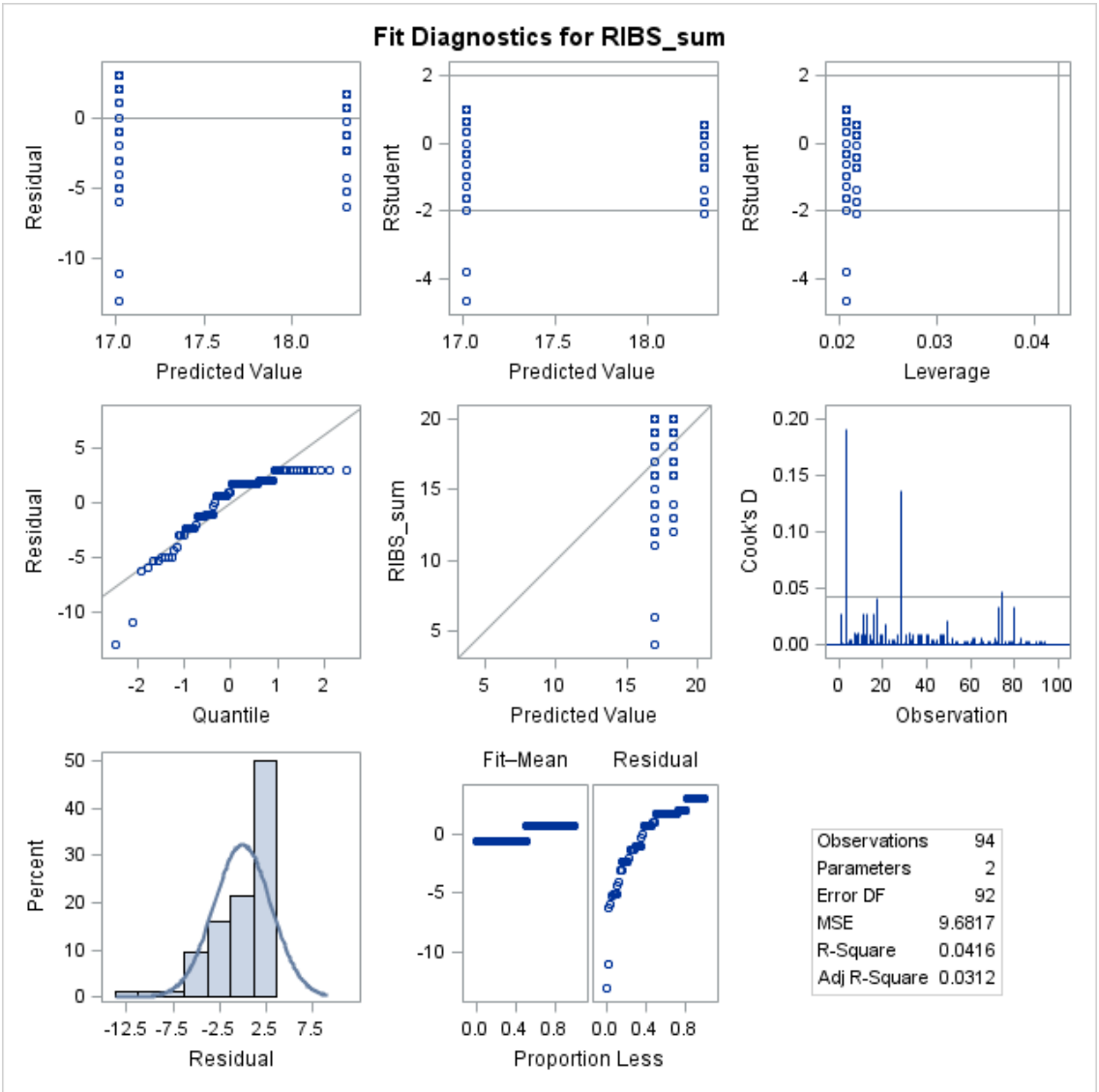
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	**1**	17.02083	0.44911	37.90	<.0001	16.12886	17.91281
Group	**1**	1.28351	0.64201	2.00	0.0485	0.00843	2.55860

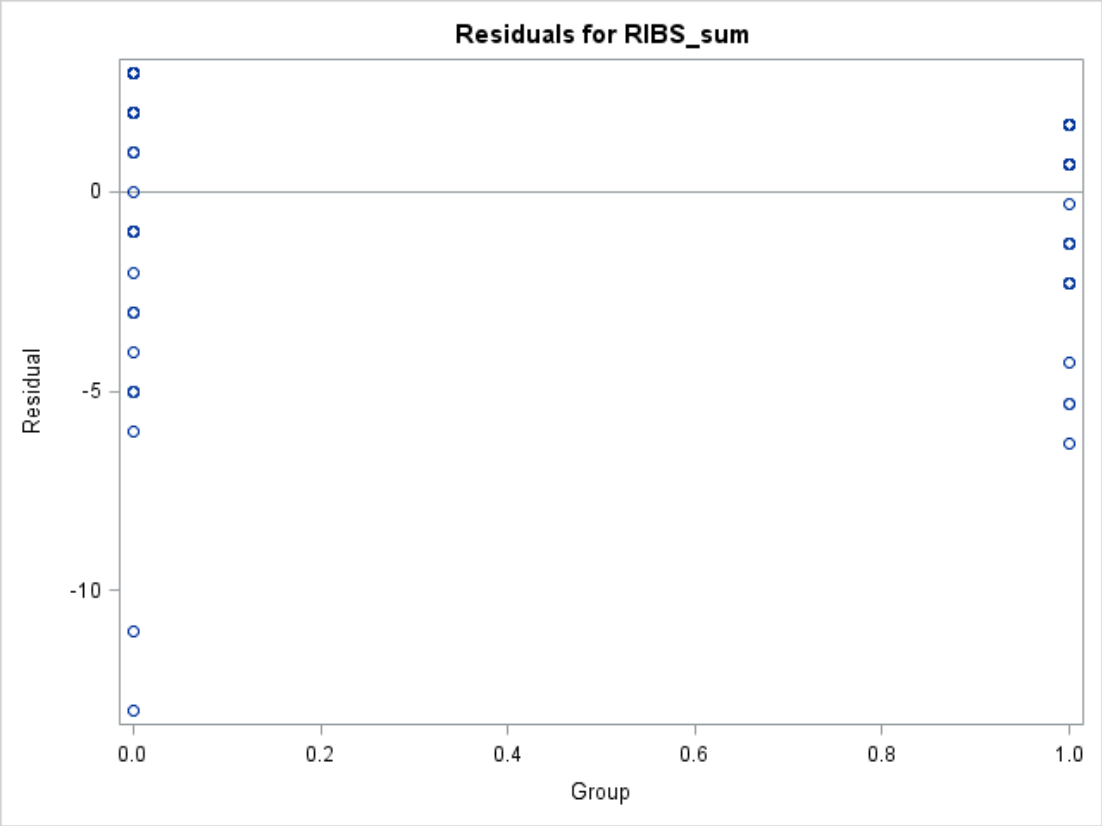
The SAS System

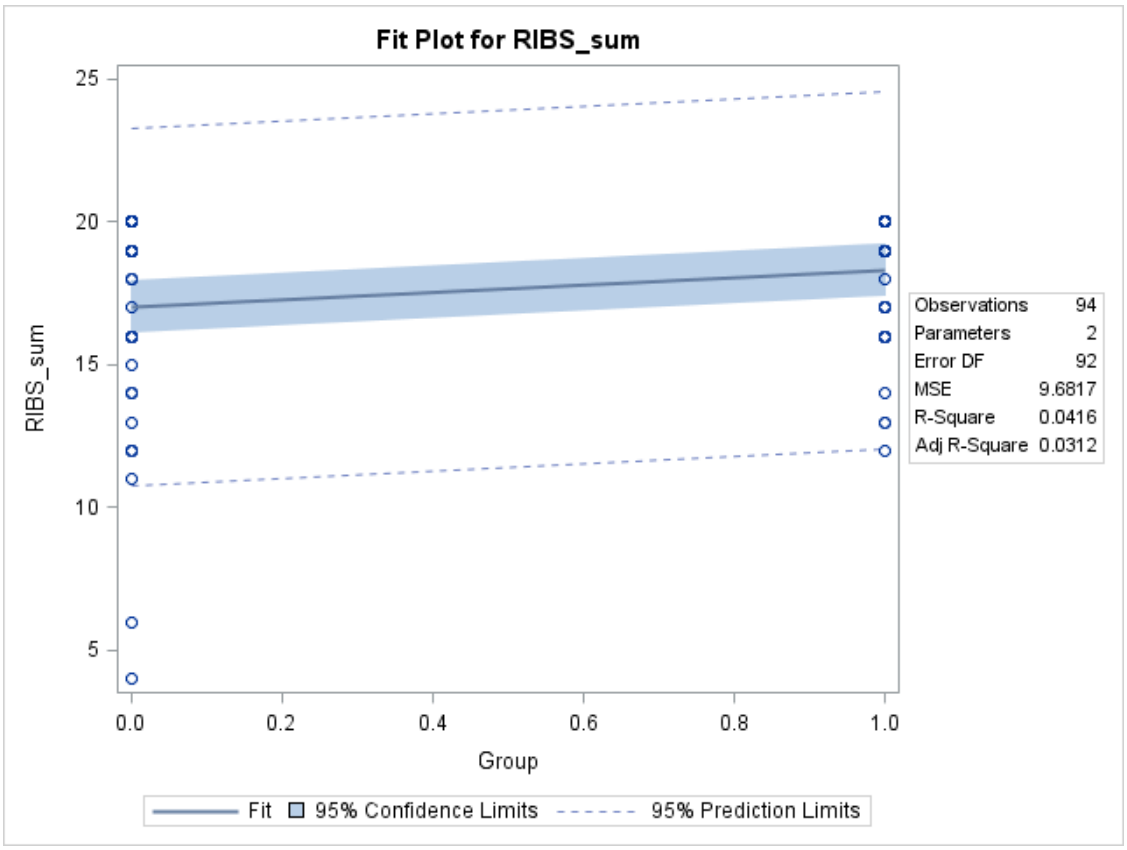
The REG Procedure

Model: MODEL1

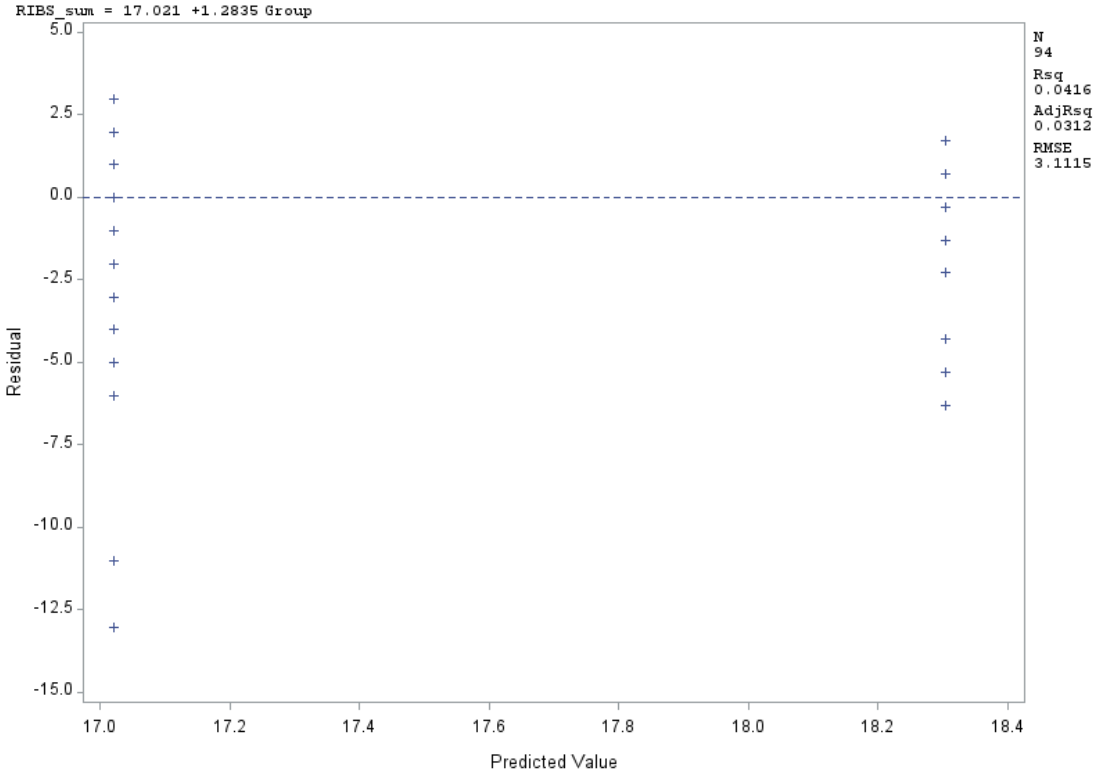
Dependent Variable: RIBS_sum



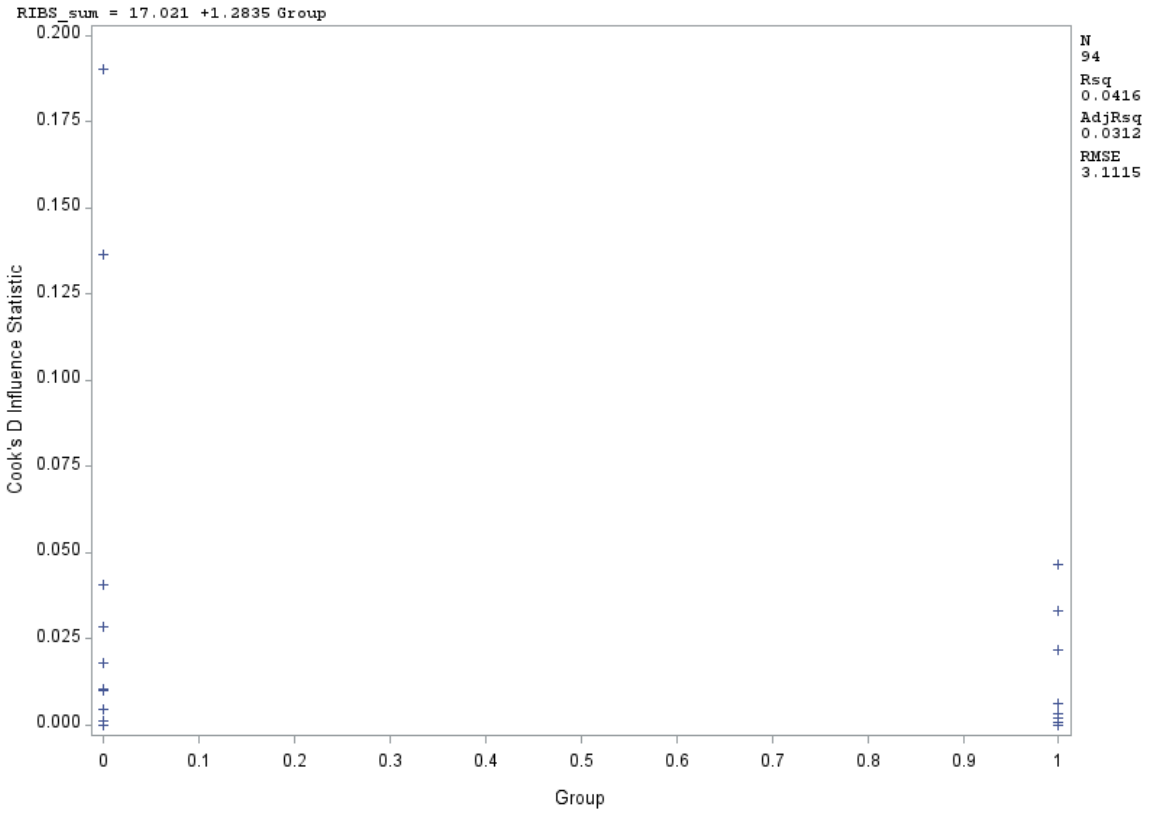

Residuals for RIBS_sum
Residual
0
-5
-10
0.0
0.2
0.4
0.6
0.8
1.0
Group


Fit Plot for RIBS_sum
RIBS_sum
25
20
15
10
5
0.0
0.2
0.4
0.6
0.8
1.0
Group
Observations 94
Parameters 2
Error DF 92
MSE 9.6817
R-Square 0.0416
Adj R-Square 0.0312
Fit
95% Confidence Limits
95% Prediction Limits

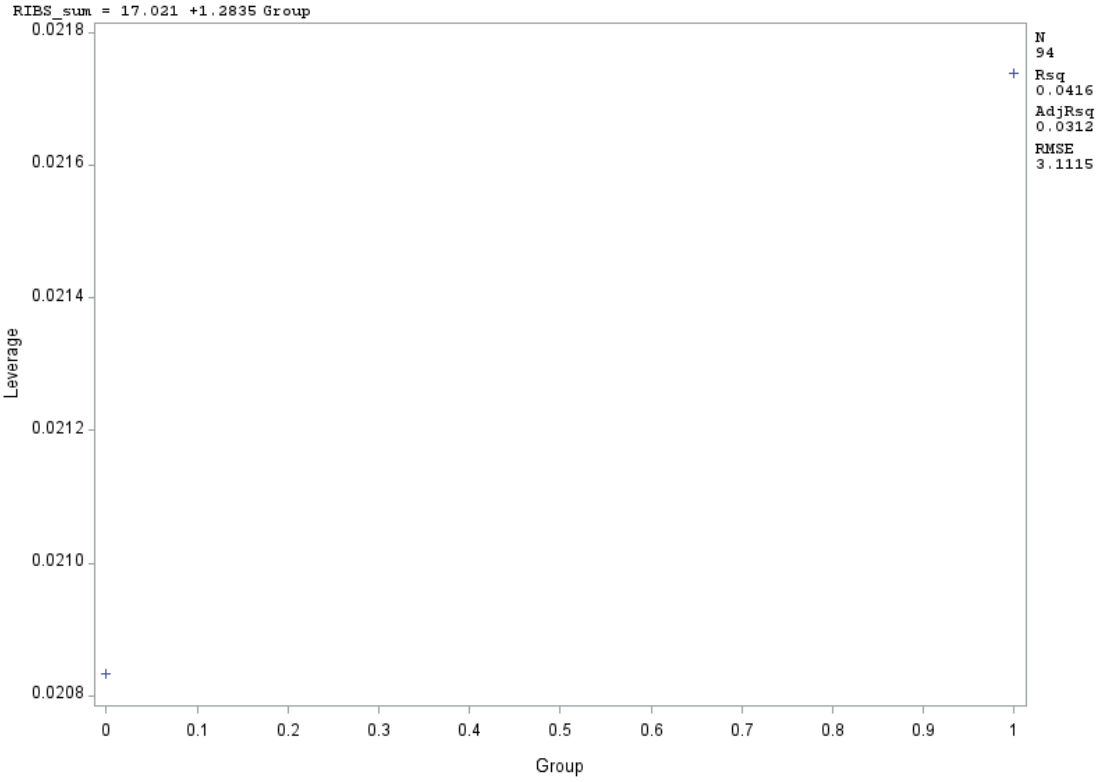
The REG Procedure



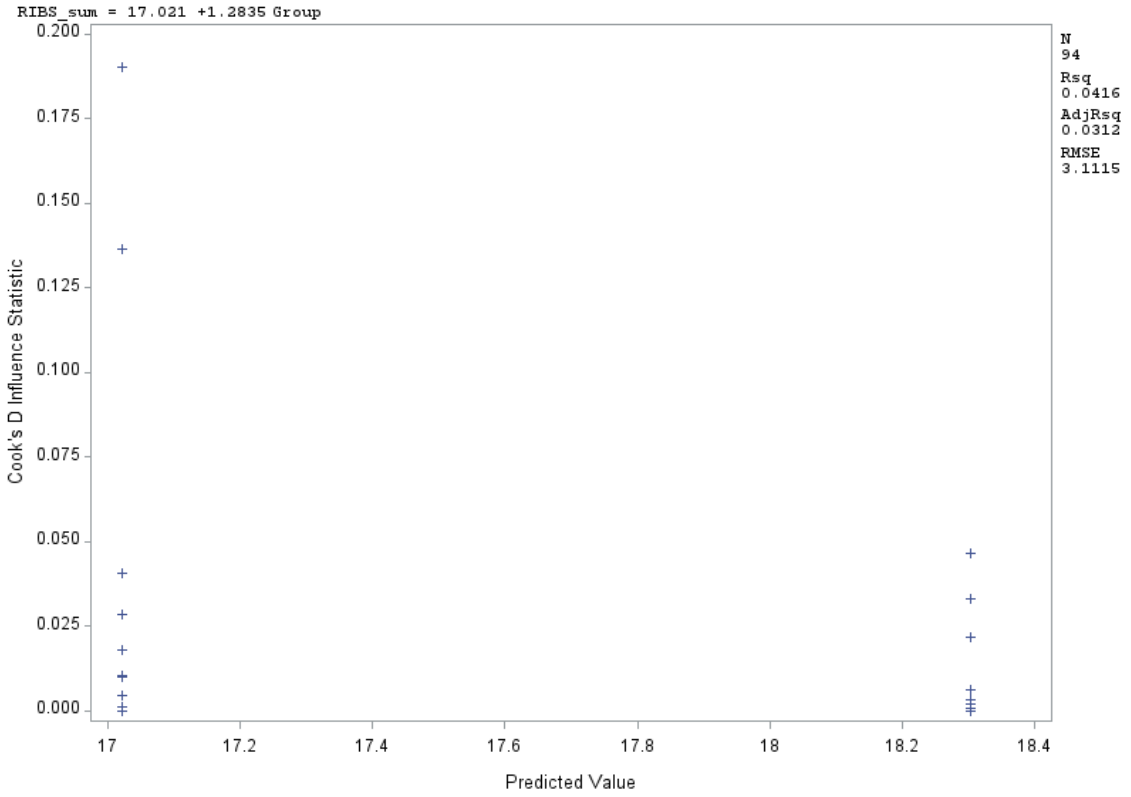
The REG Procedure



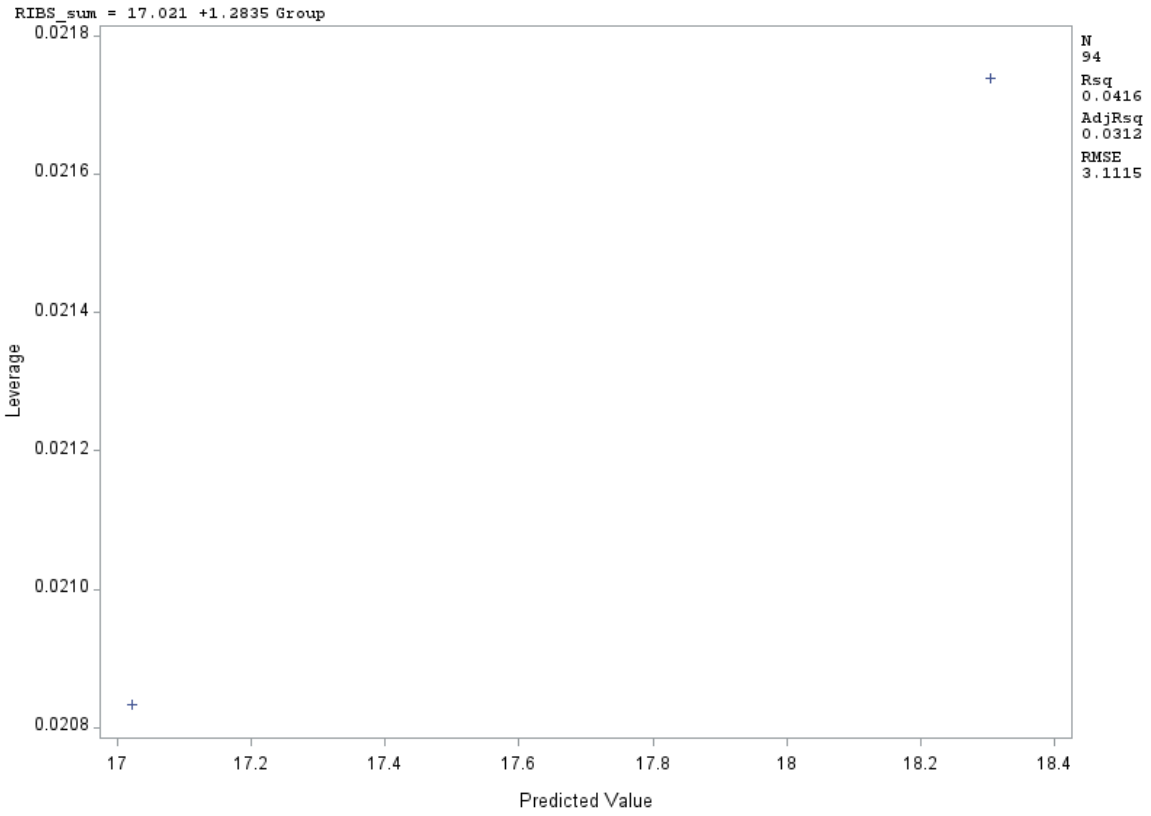
The REG Procedure

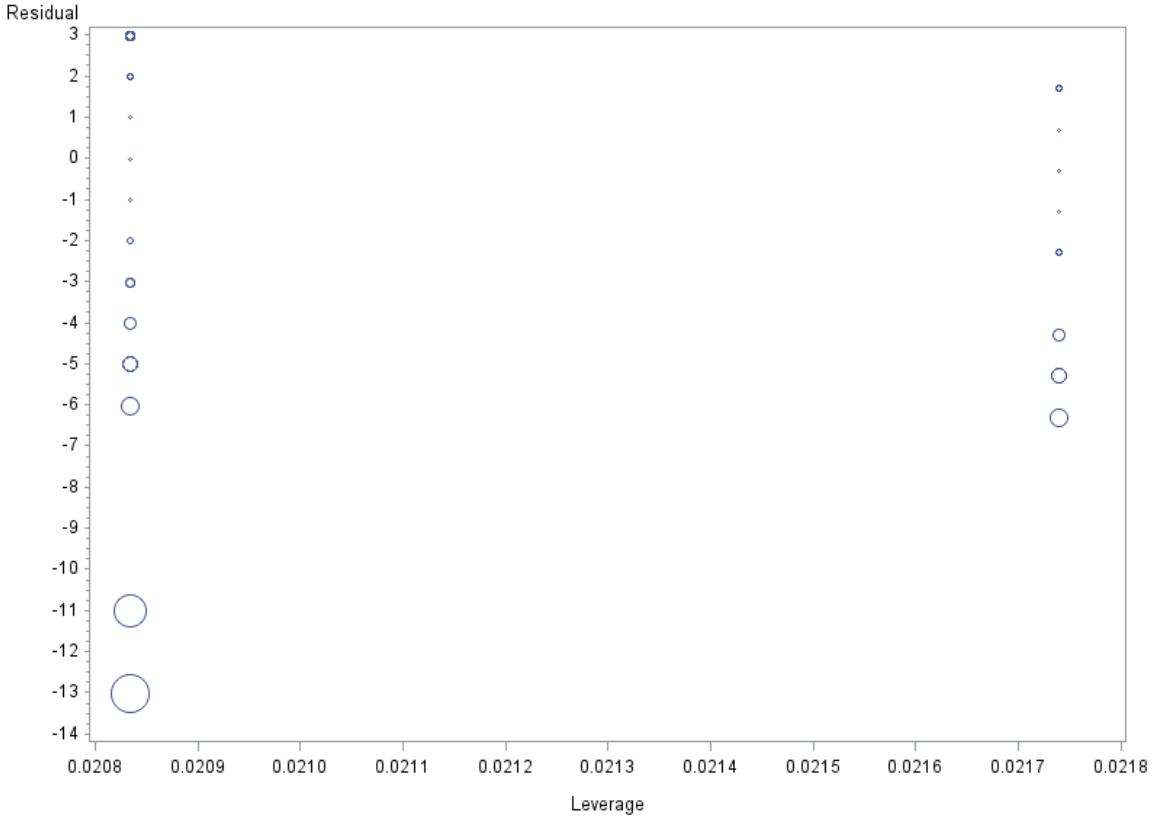


The REG Procedure



The REG Procedure





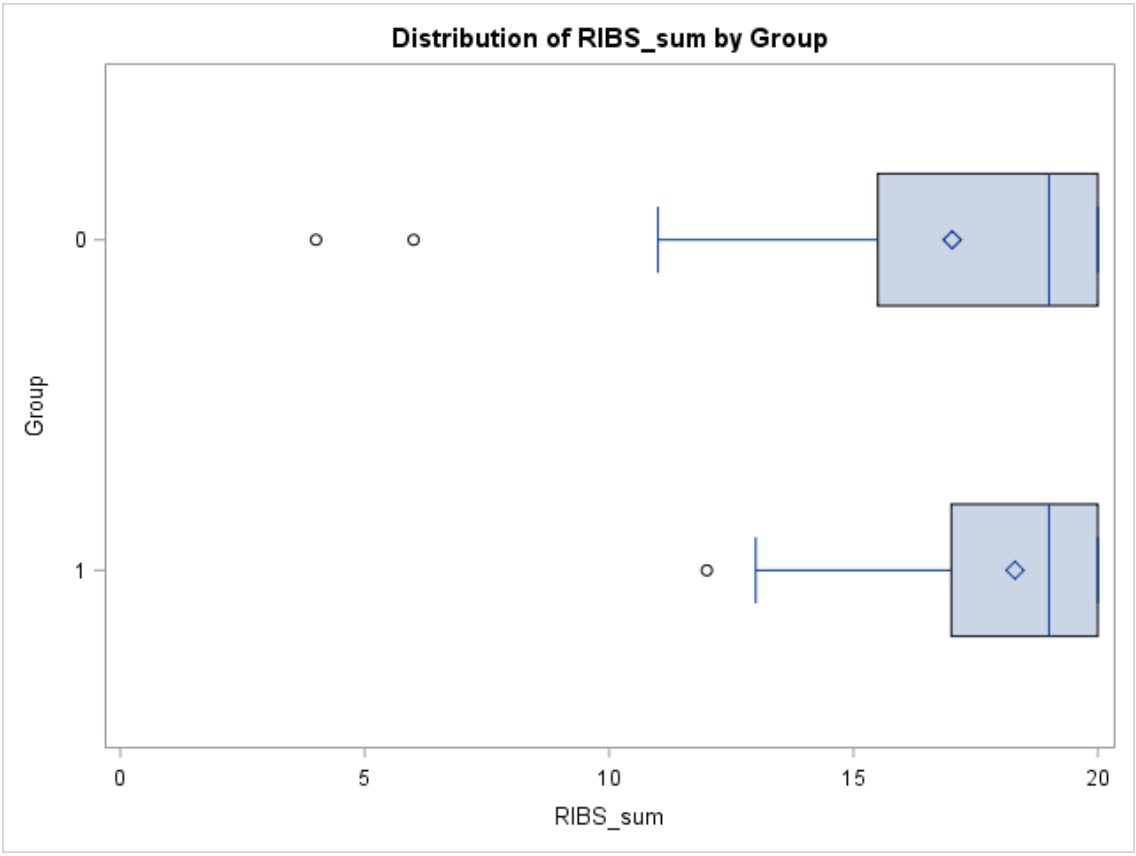
The SAS System

The MEANS Procedure

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
cookd	**Cook's D**	94	0.0107526	0.0246741	4.870578E-7	0.1902570
leverage	**Influence Statistic**	94	0.0212766	0.000455224	0.0208333	0.0217391

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
	Leverage					

The SAS System



Square Root RIBS Total Scale Score

The SAS System

The TTEST Procedure

Variable: sqrtRIBS_sum

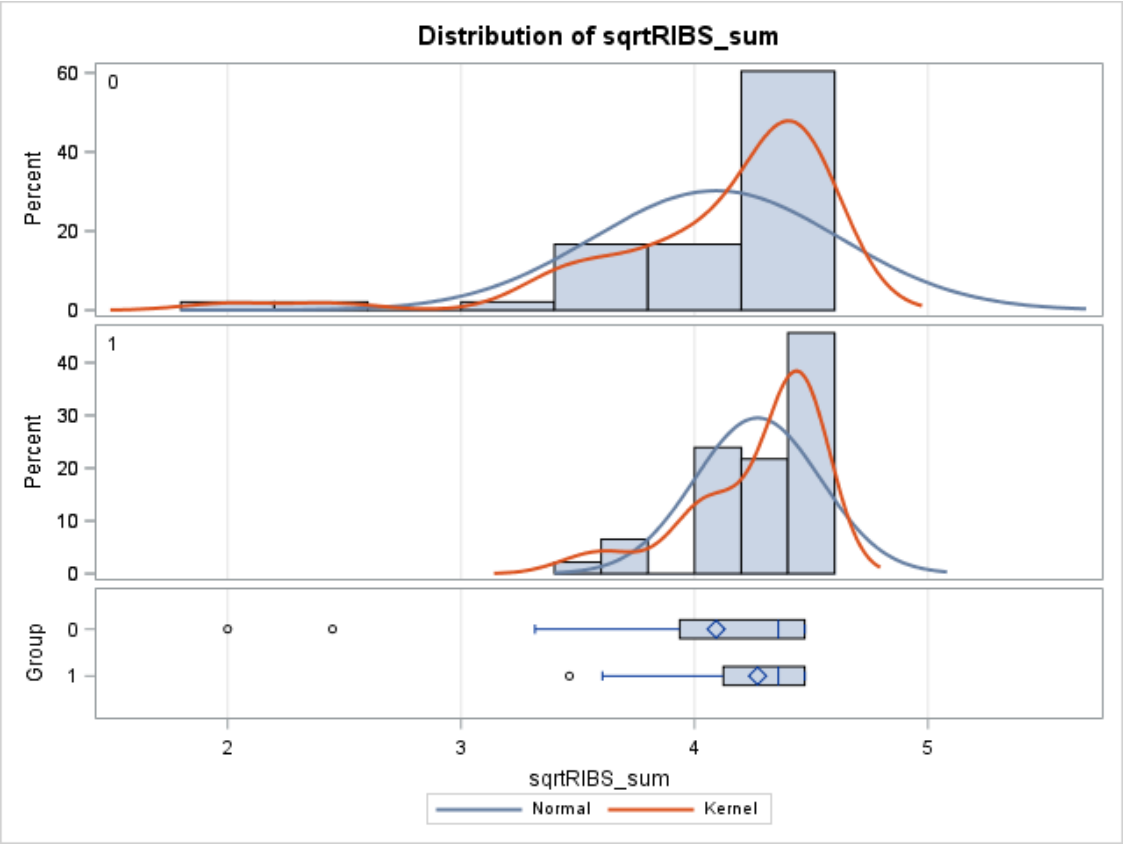
Group	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	48	4.0924	0.5284	0.0763	2.0000	4.4721
1	46	4.2700	0.2703	0.0398	3.4641	4.4721
Diff (1-2)		-0.1776	0.4223	0.0871		

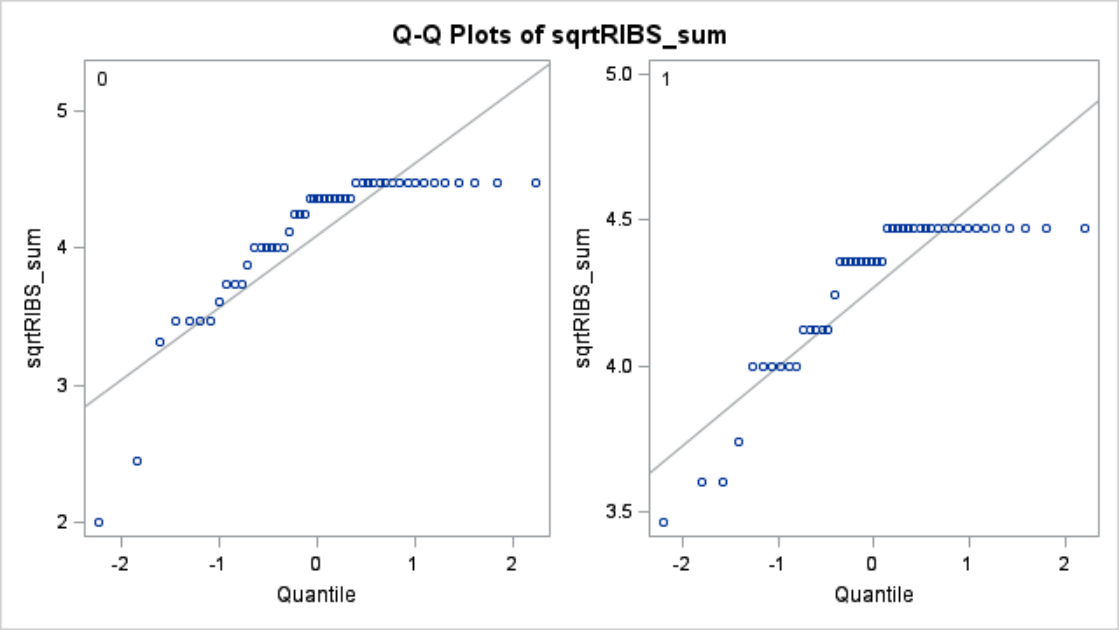
Group	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		4.0924	3.9389	4.2458	0.5284	0.4399	0.6619
1		4.2700	4.1897	4.3503	0.2703	0.2242	0.3404
Diff (1-2)	**Pooled**	-0.1776	-0.3507	-0.00457	0.4223	0.3691	0.4936
Diff (1-2)	**Satterthwaite**	-0.1776	-0.3492	-0.00604			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	92	-2.04	0.0444
Satterthwaite	Unequal	70.662	-2.06	0.0427

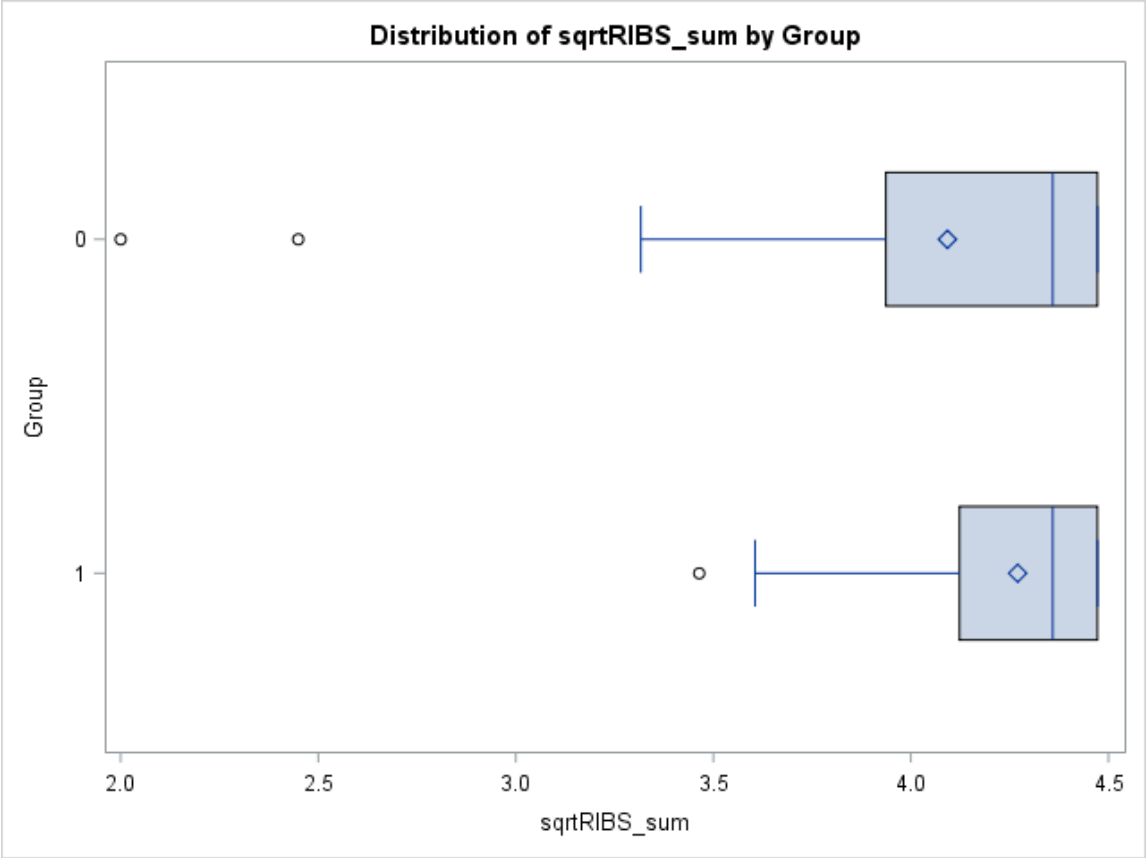
Equality of Variances

Method	Num DF	Den DF	F Value	Pr > F
Folded F	47	45	3.82	<.0001





The SAS System


Distribution of sqrtRIBS_sum by Group
Group
0
1
2.0
2.5
3.0
3.5
4.0
4.5
sqrtRIBS_sum

The SAS System

The REG Procedure

Model: MODEL1

Dependent Variable: sqrtRIBS_sum

Number of Observations Read 94

Number of Observations Used 94

Analysis of Variance

Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	1	0.74119	0.74119	4.16	0.0444
Error	92	16.40966	0.17837		
Corrected Total	93	17.15085			

Root MSE	0.42233	**R-Square**	0.0432
Dependent Mean	4.17929	**Adj R-Sq**	0.0328
Coeff Var	10.10539		

Parameter Estimates

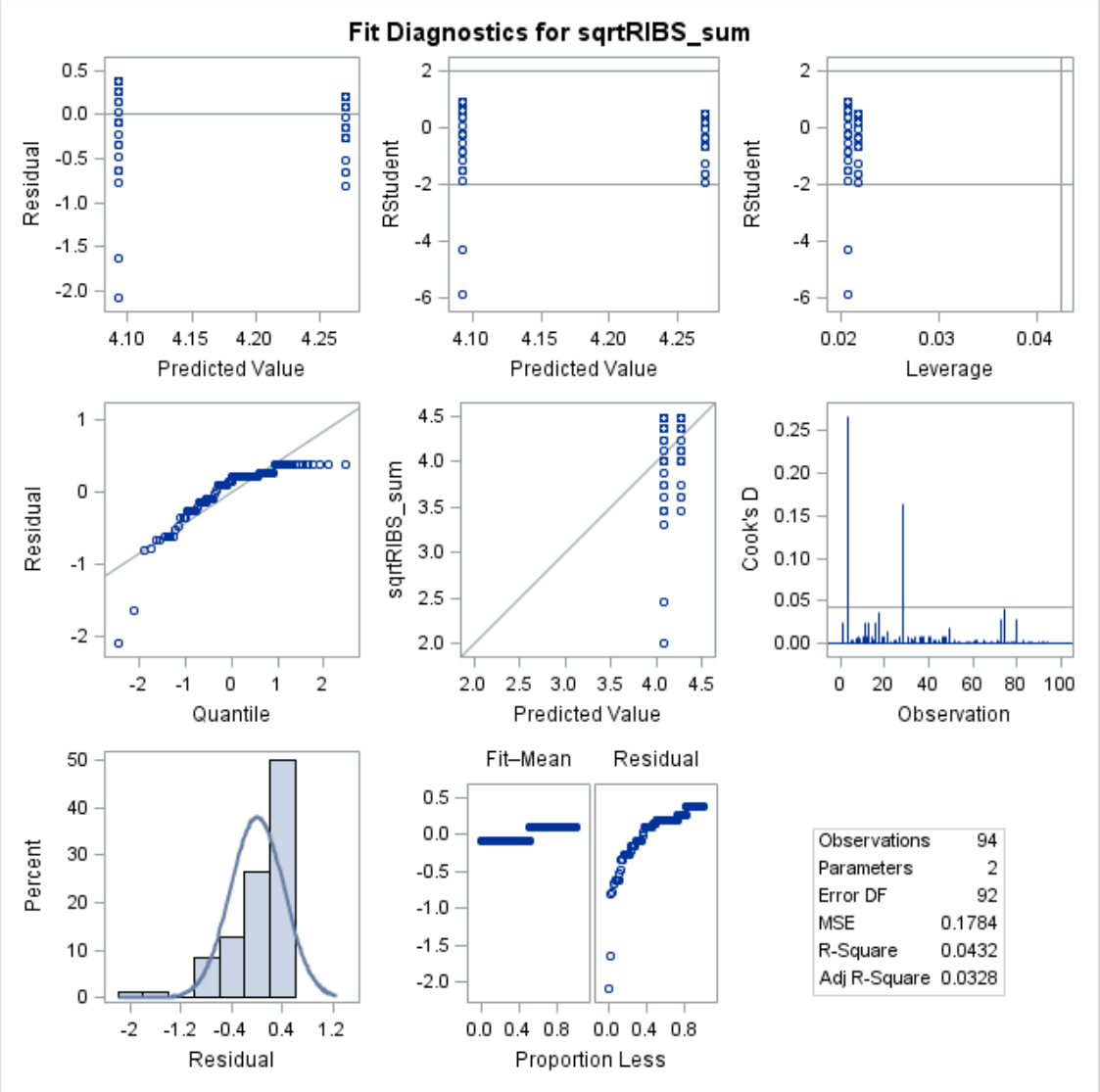
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	**1**	4.09236	0.06096	67.13	<.0001	3.97129	4.21343
Group	**1**	0.17764	0.08714	2.04	0.0444	0.00457	0.35070

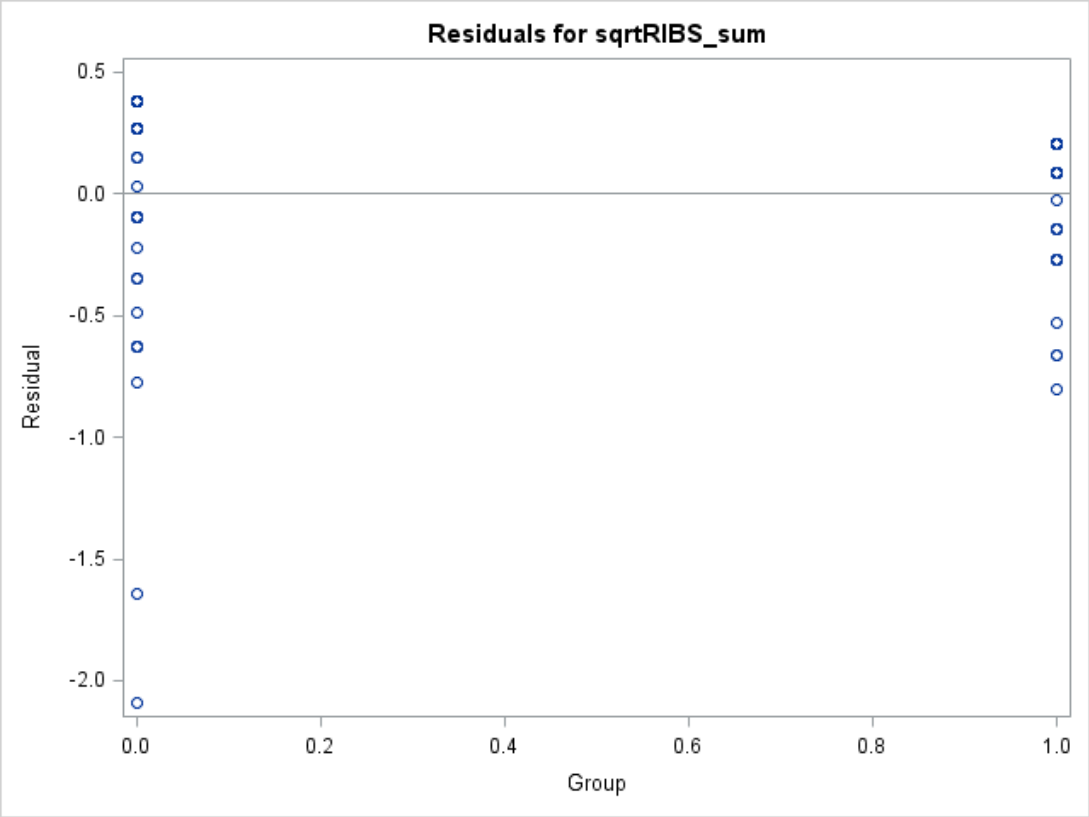
The SAS System

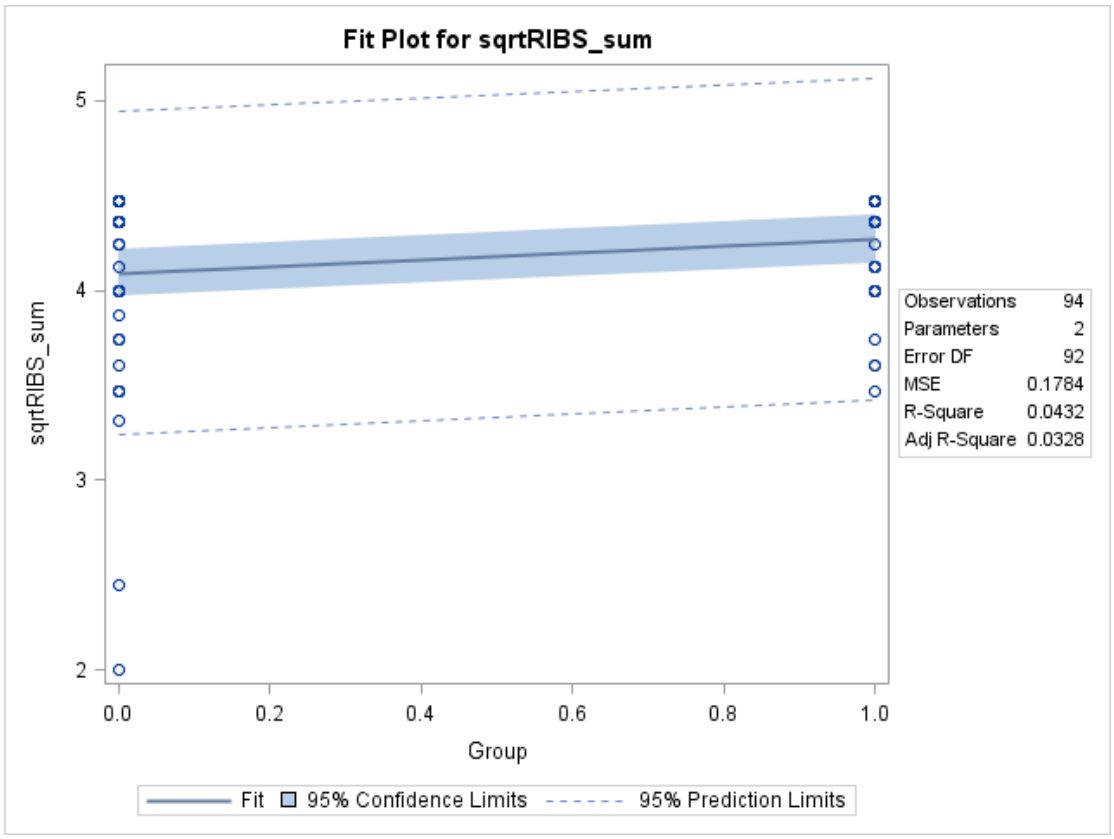
The REG Procedure

Model: MODEL1

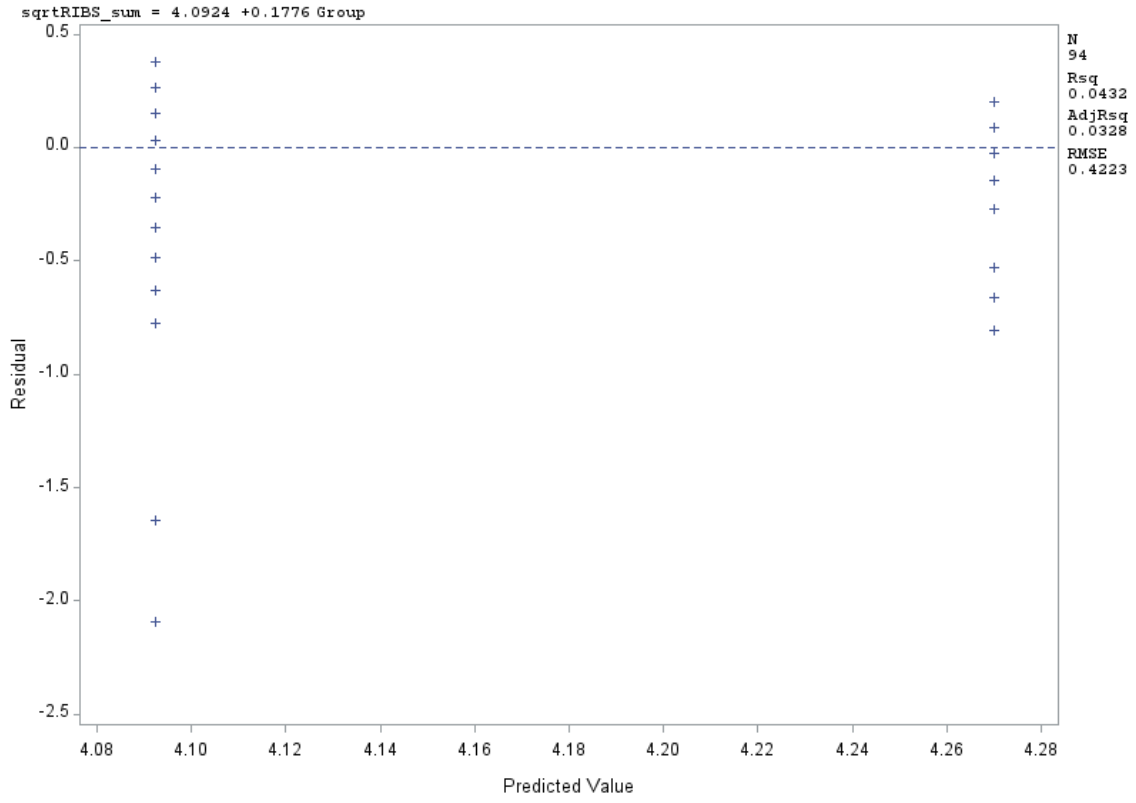
Dependent Variable: sqrtRIBS_sum



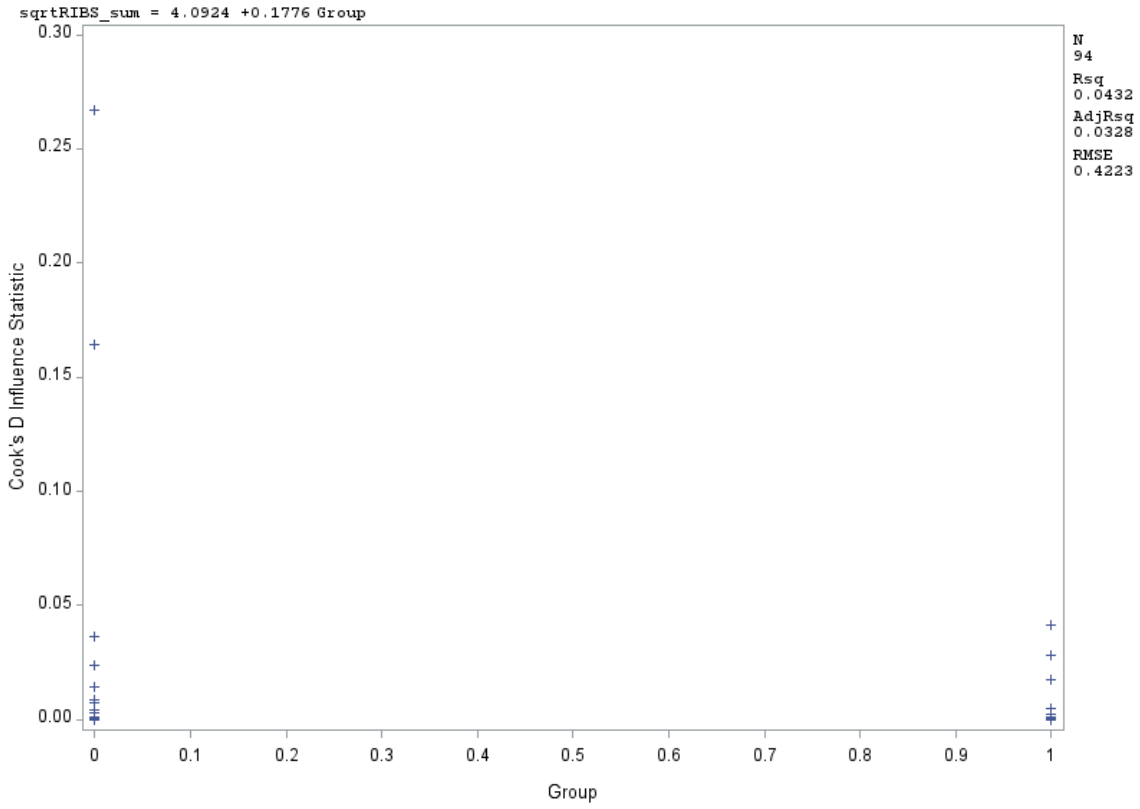

Residuals for sqrtRIBS_sum
Residual
0.5
0.0
-0.5
-1.0
-1.5
-2.0
0.0
0.2
0.4
0.6
0.8
1.0
Group


Fit Plot for sqrtRIBS_sum
sqrtRIBS_sum
5
4
3
2
0.0
0.2
0.4
0.6
0.8
1.0
Group
Observations 94
Parameters 2
Error DF 92
MSE 0.1784
R-Square 0.0432
Adj R-Square 0.0328
Fit
95% Confidence Limits
95% Prediction Limits

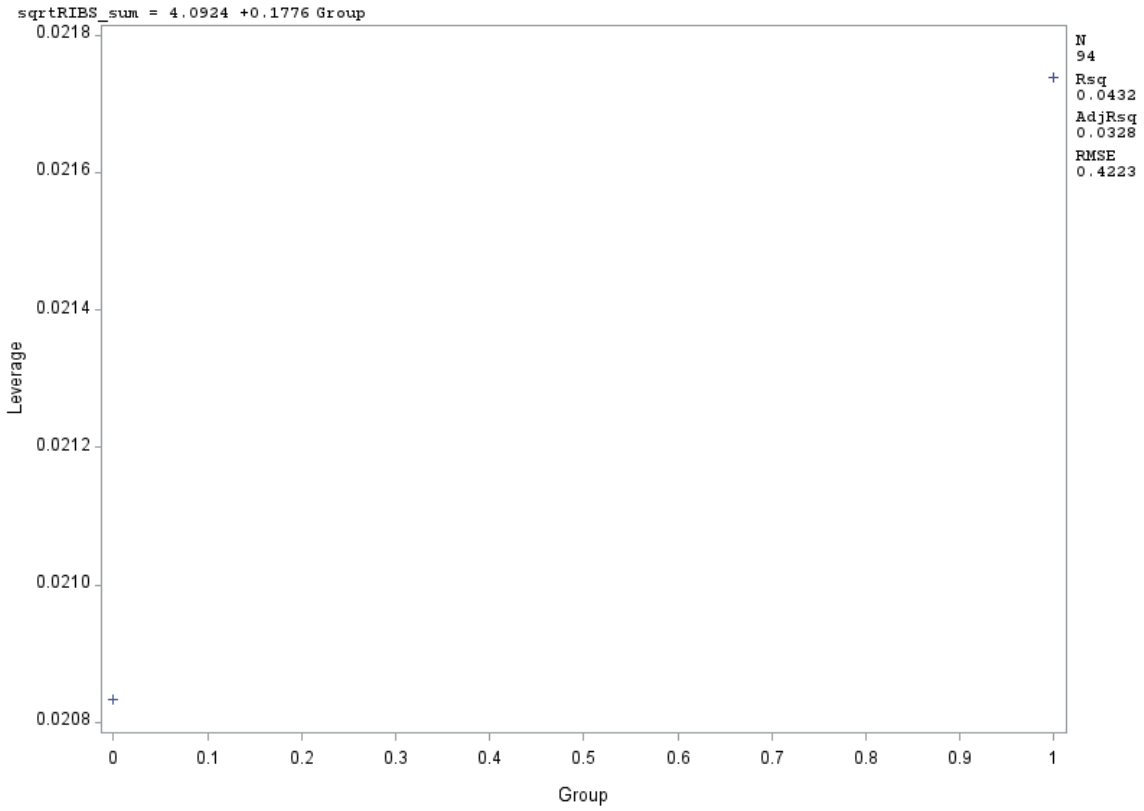
The REG Procedure



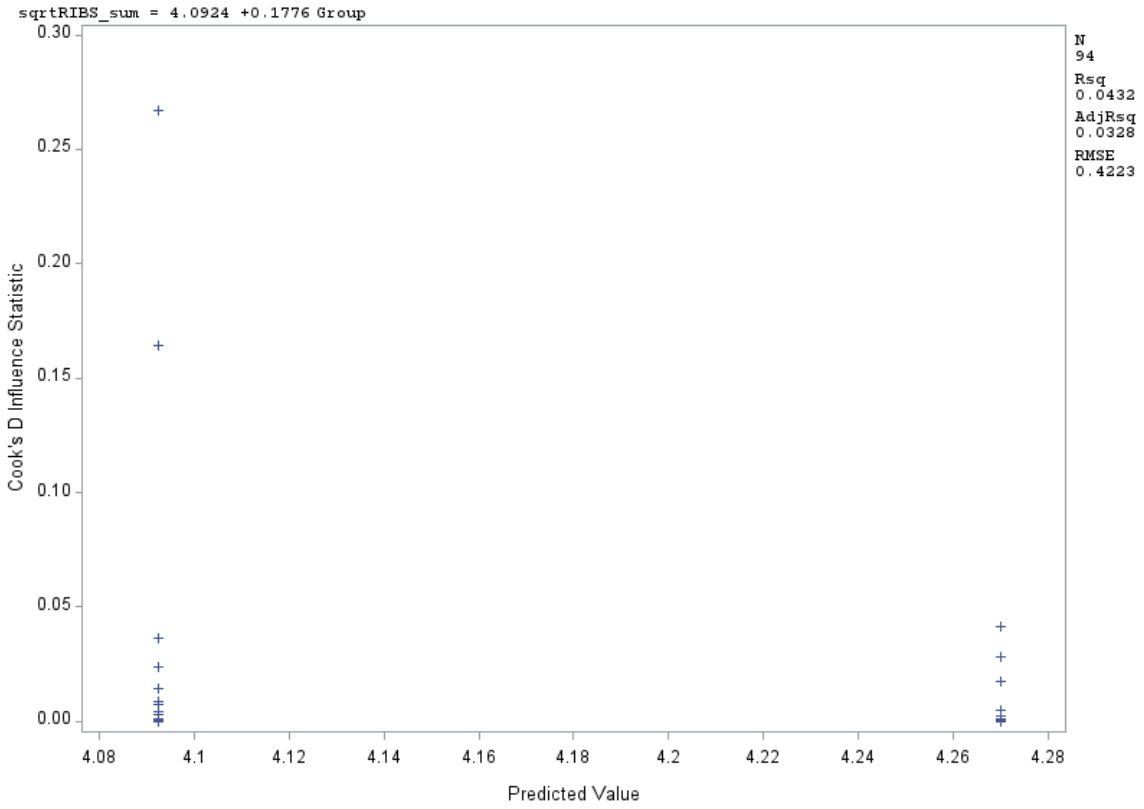
The REG Procedure



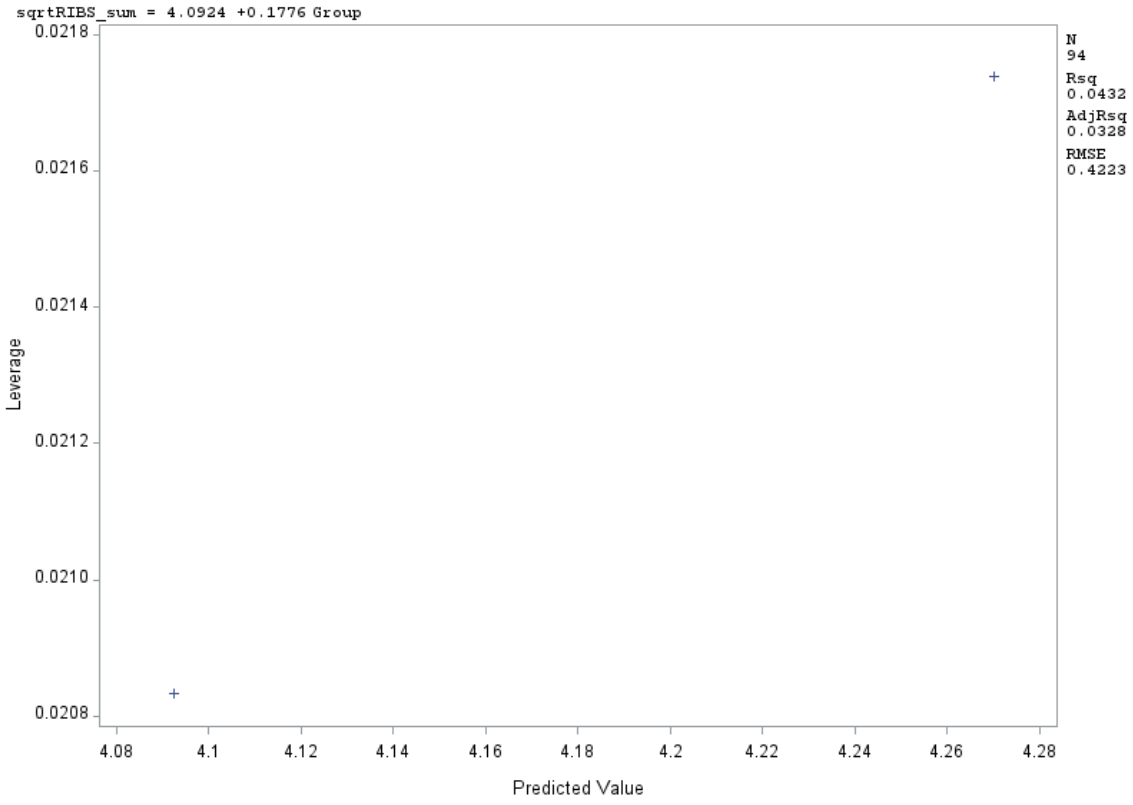
The REG Procedure

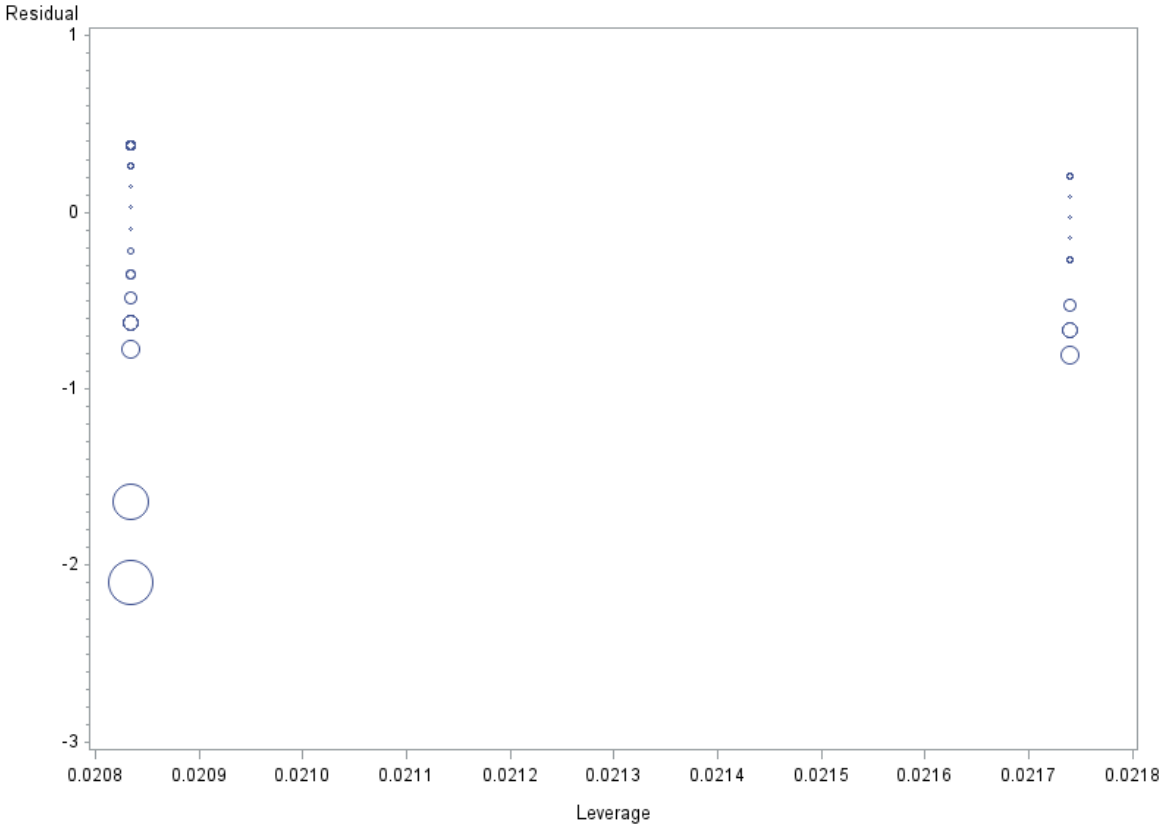


The REG Procedure



The REG Procedure




Residual
1
0
-1
-2
-3
0.0208
0.0209
0.0210
0.0211
0.0212
0.0213
0.0214
0.0215
0.0216
0.0217
0.0218
Leverage

Log RIBS Total Scale Score

The SAS System

The TTEST Procedure

Variable: logRIBS_sum

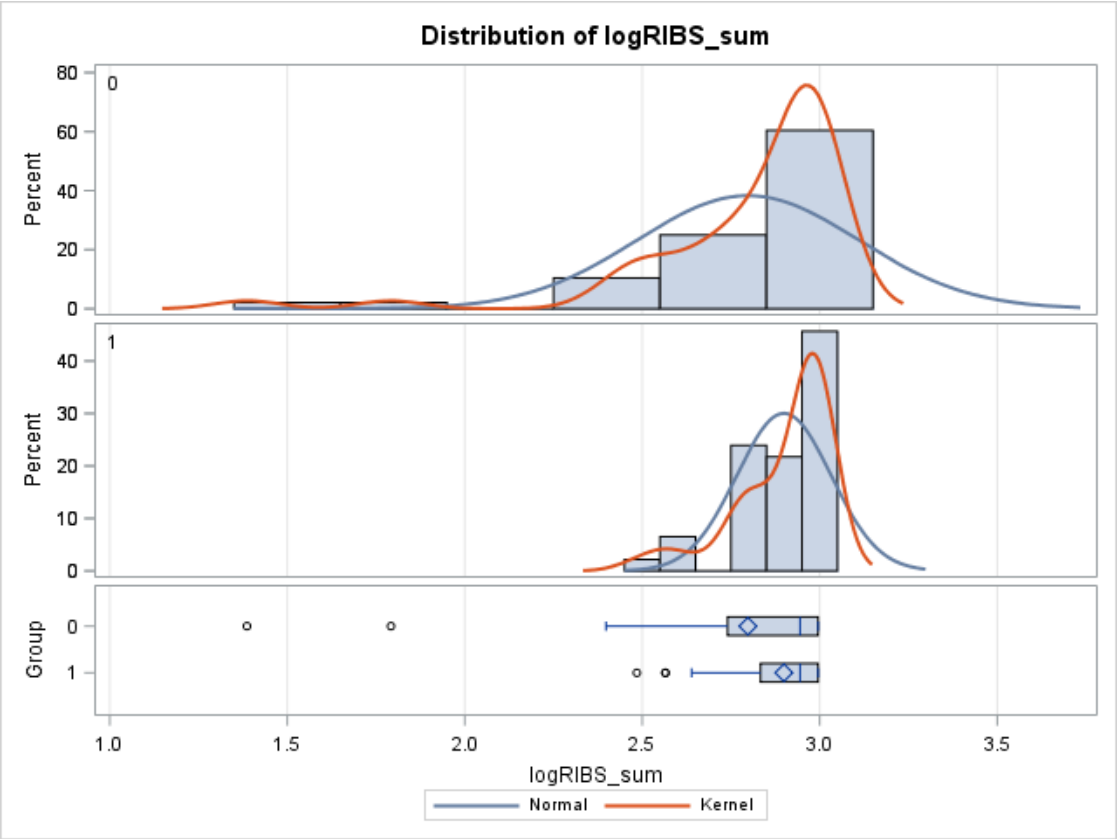
Group	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	48	2.7974	0.3123	0.0451	1.3863	2.9957
1	46	2.8990	0.1329	0.0196	2.4849	2.9957
Diff (1-2)		-0.1017	0.2418	0.0499		

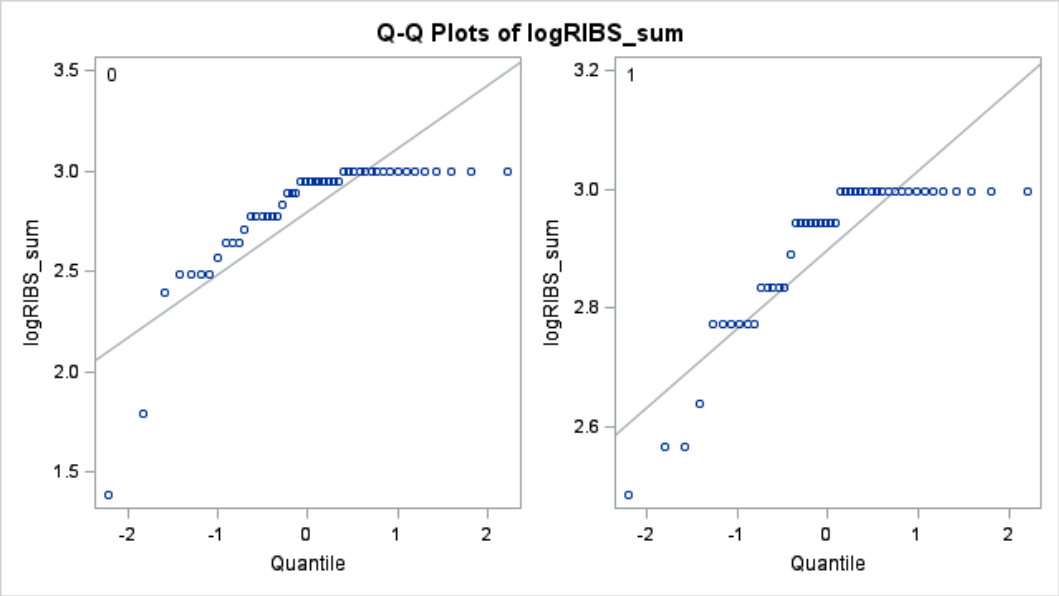
Group	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		2.7974	2.7067	2.8880	0.3123	0.2600	0.3912
1		2.8990	2.8596	2.9385	0.1329	0.1102	0.1674
Diff (1-2)	**Pooled**	-0.1017	-0.2008	-0.00260	0.2418	0.2113	0.2826
Diff (1-2)	**Satterthwaite**	-0.1017	-0.1999	-0.00350			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	92	-2.04	0.0444
Satterthwaite	Unequal	64.054	-2.07	0.0426

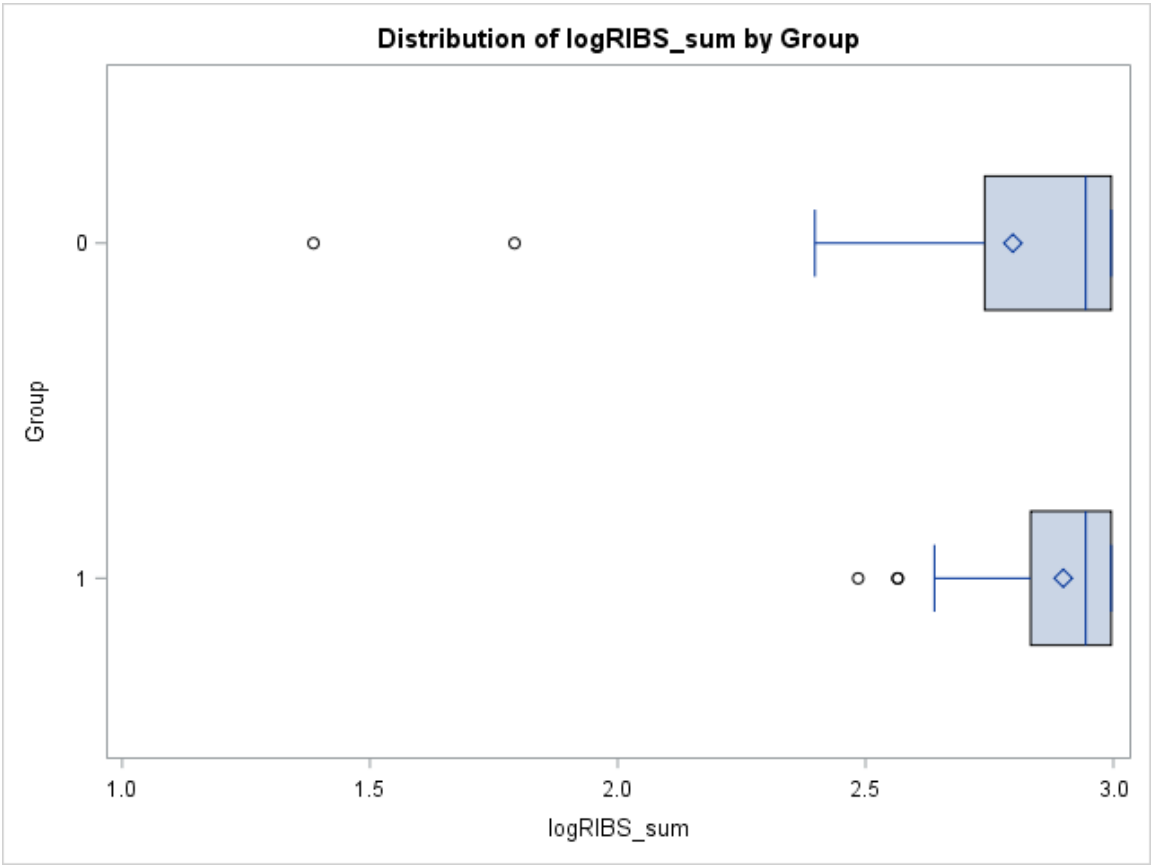
Equality of Variances

Method	Num DF	Den DF	F Value	Pr > F
Folded F	47	45	5.52	<.0001




Q-Q Plots of logRIBS_sum
0
1
logRIBS_sum
Quantile
3.5
3.0
2.5
2.0
1.5
3.2
2.8
2.6
-2
-1
0
1
2

The SAS System



The SAS System

The REG Procedure

Model: MODEL1

Dependent Variable: logRIBS_sum

Number of Observations Read	94
Number of Observations Used	94

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	0.24291	0.24291	4.15	0.0444
Error	92	5.37907	0.05847		
Corrected Total	93	5.62199			

Root MSE	0.24180	**R-Square**	0.0432
Dependent Mean	2.84712	**Adj R-Sq**	0.0328
Coeff Var	8.49287		

Parameter Estimates

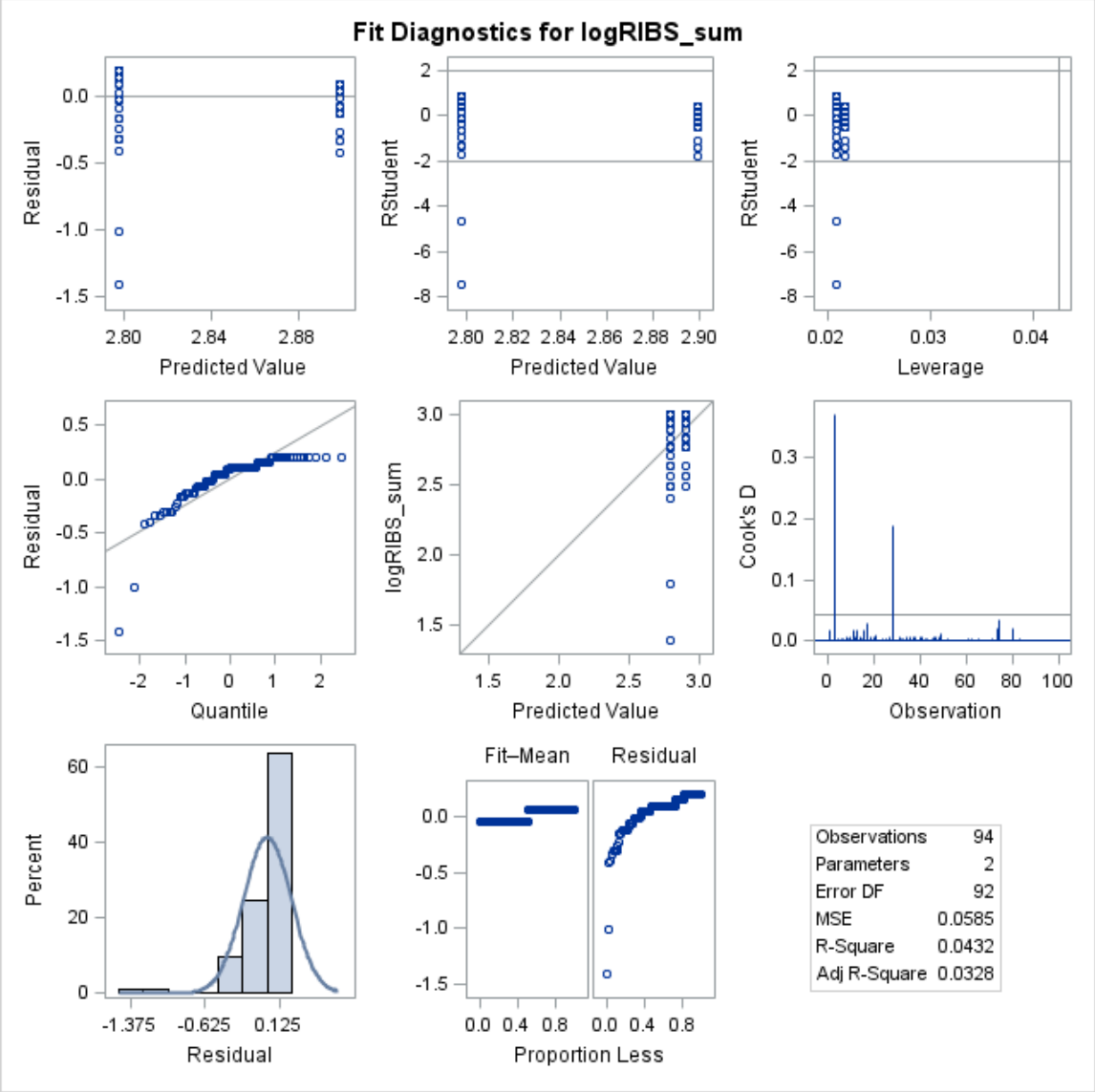
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	**1**	2.79735	0.03490	80.15	<.0001	2.72804	2.86667
Group	**1**	0.10169	0.04989	2.04	0.0444	0.00260	0.20078

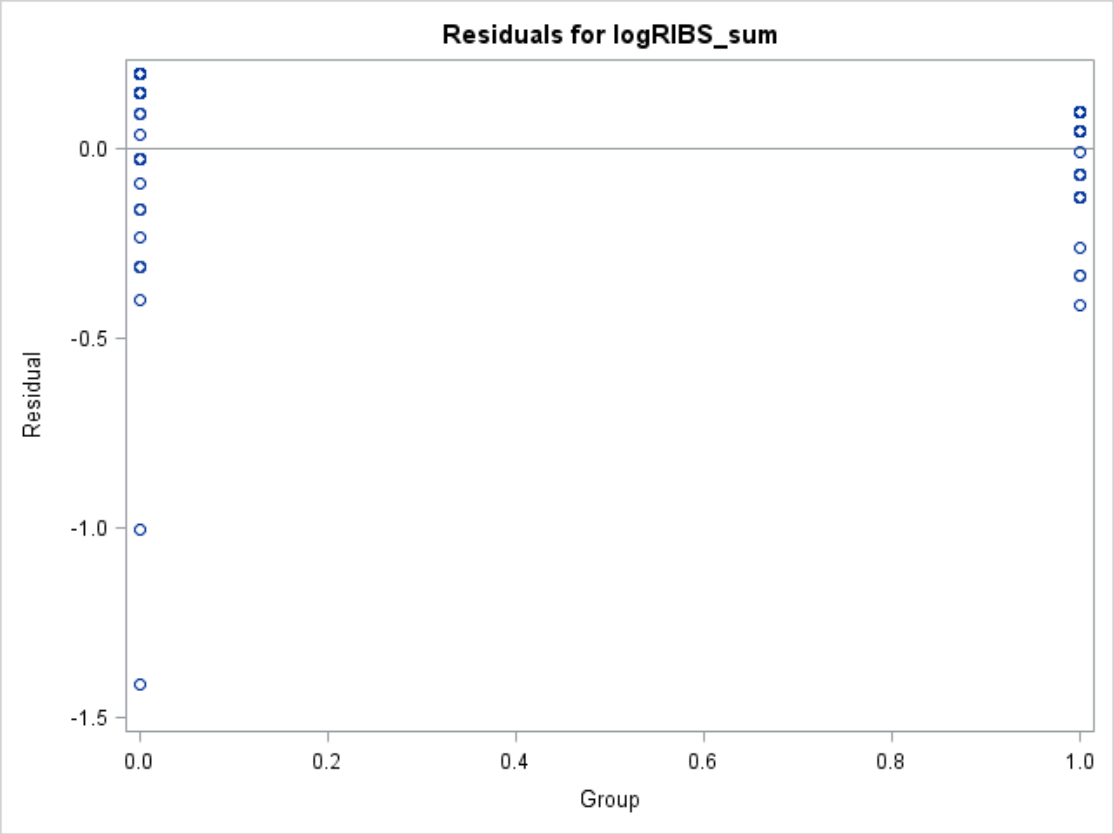
The SAS System

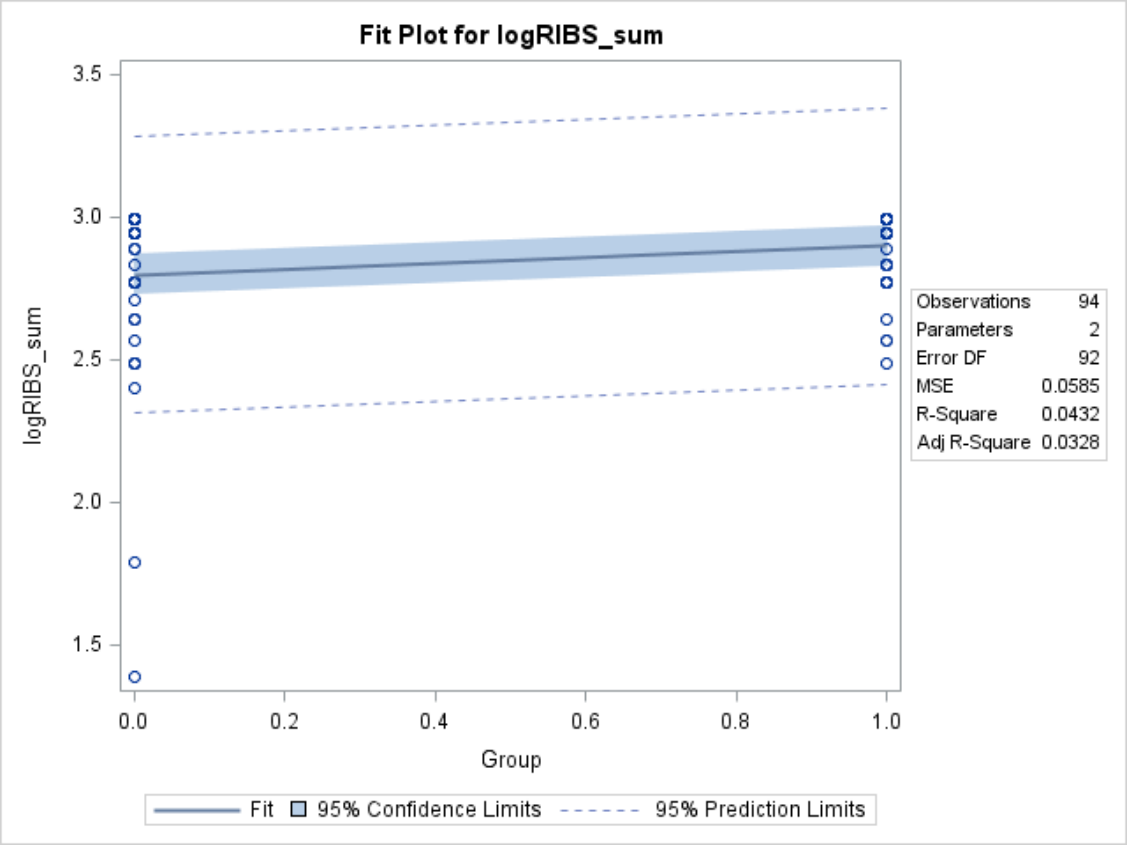
The REG Procedure

Model: MODEL1

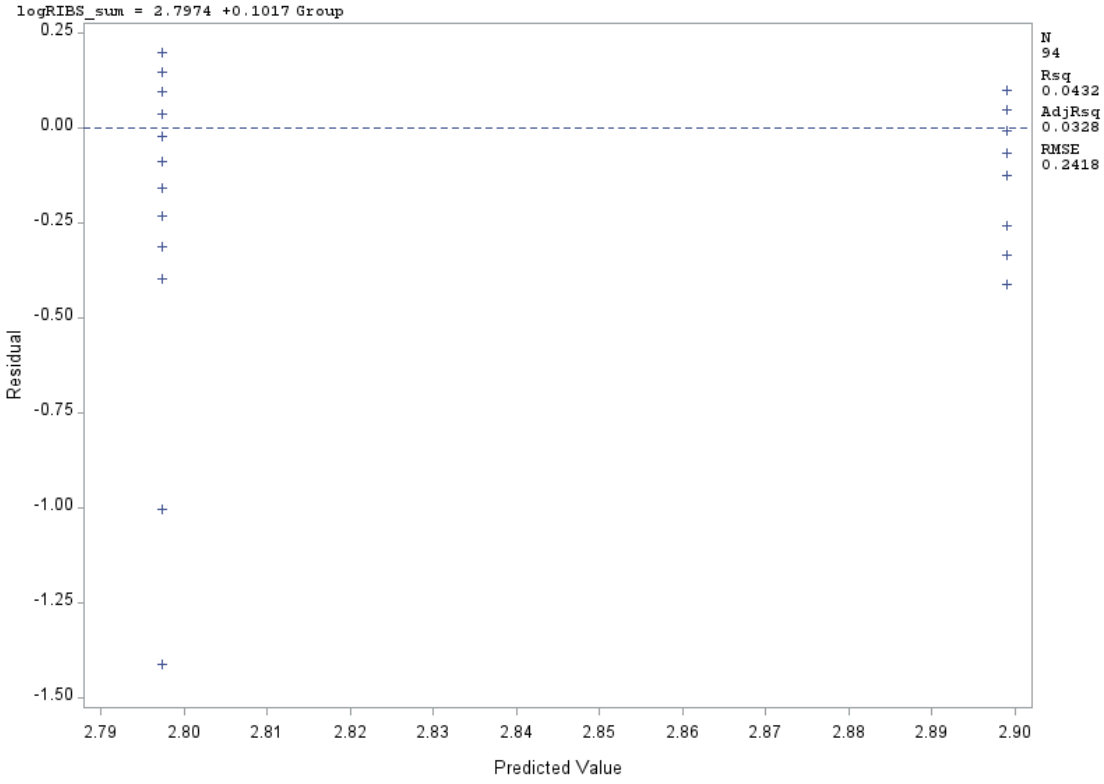
Dependent Variable: logRIBS_sum



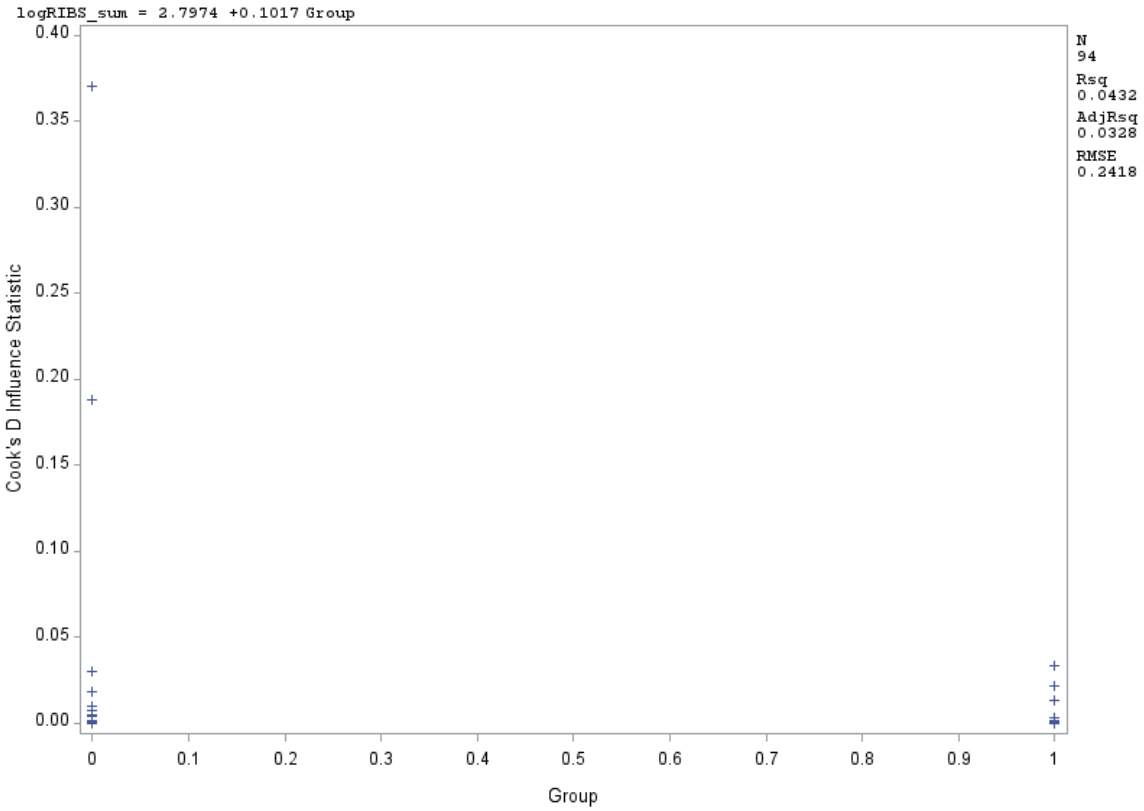

Residuals for logRIBS_sum
Residual
0.0
-0.5
-1.0
-1.5
0.0
0.2
0.4
0.6
0.8
1.0
Group


Fit Plot for logRIBS_sum
logRIBS_sum
3.5
3.0
2.5
2.0
1.5
0.0
0.2
0.4
0.6
0.8
1.0
Group
Observations 94
Parameters 2
Error DF 92
MSE 0.0585
R-Square 0.0432
Adj R-Square 0.0328
Fit
95% Confidence Limits
95% Prediction Limits

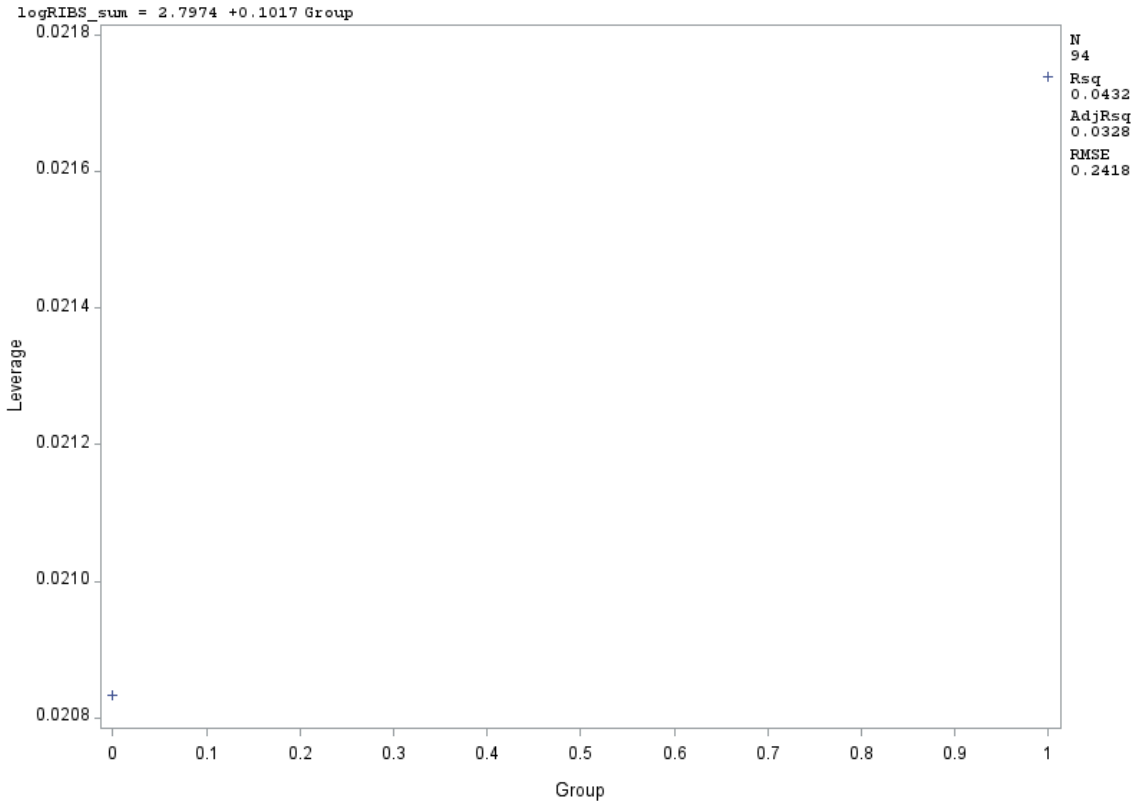
The REG Procedure



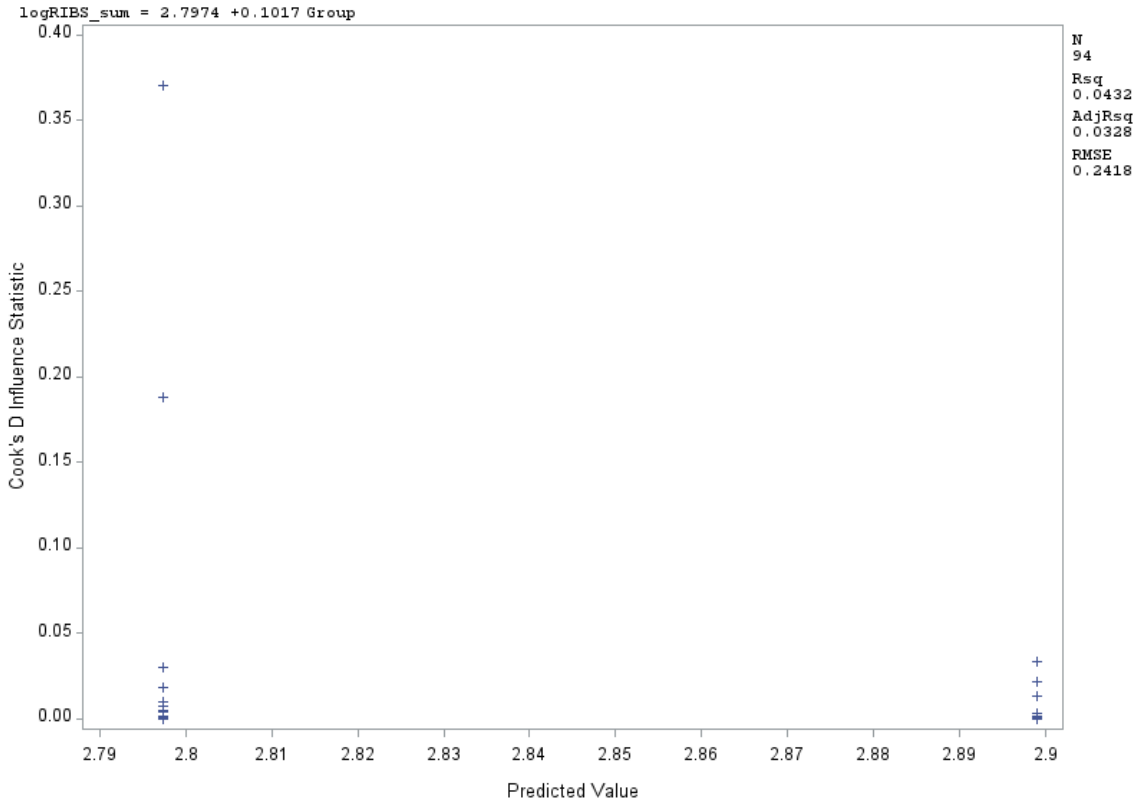
The REG Procedure



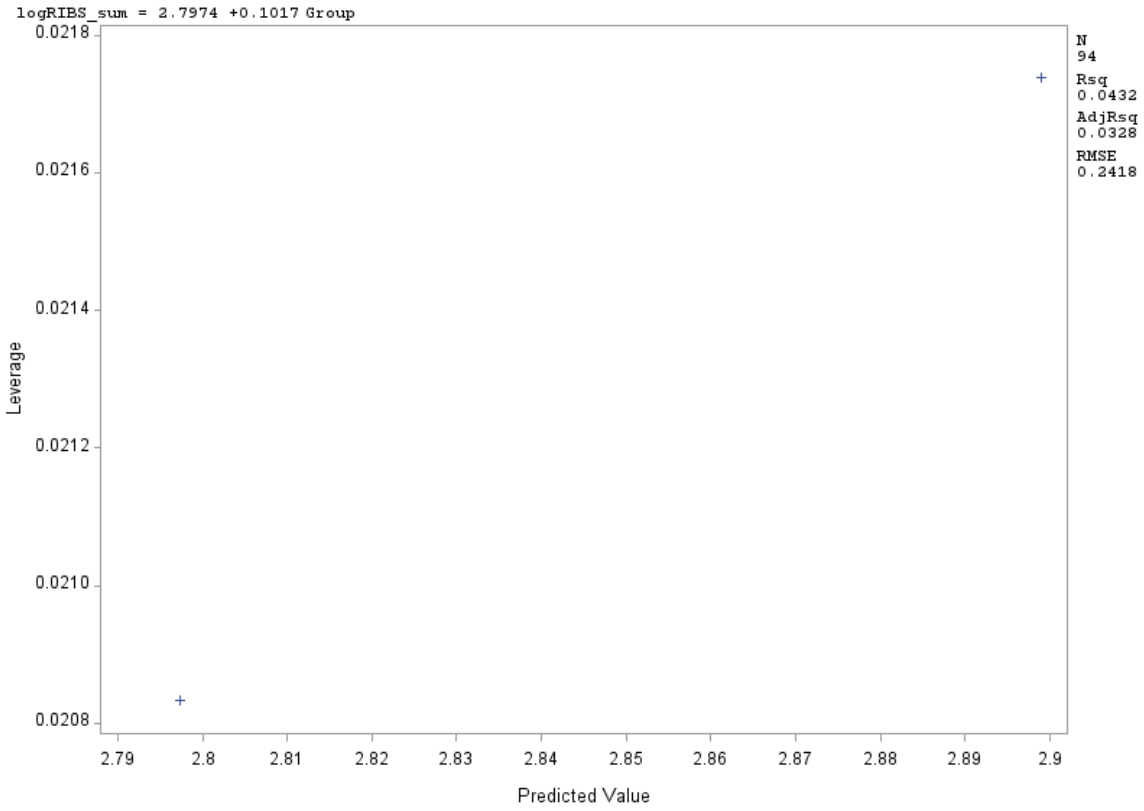
The REG Procedure

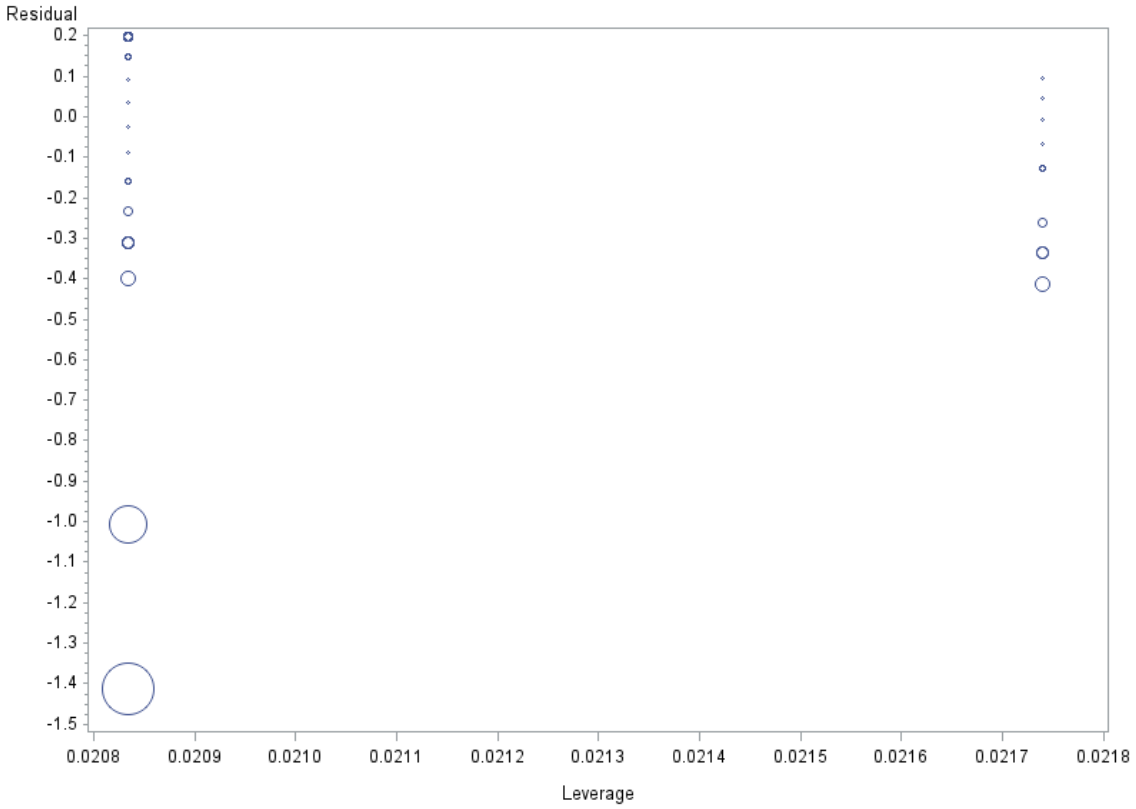


The REG Procedure



The REG Procedure




Residual
0.2
0.1
0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1.0
-1.1
-1.2
-1.3
-1.4
-1.5
0.0208
0.0209
0.0210
0.0211
0.0212
0.0213
0.0214
0.0215
0.0216
0.0217
0.0218
Leverage

RIBS Total Scale Score Without Outliers

The SAS System

The TTEST Procedure

Variable: RIBS_sum_mod

Group	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	46	17.5435	2.8574	0.4213	11.0000	20.0000
1	46	18.3043	2.2098	0.3258	12.0000	20.0000
Diff (1-2)		-0.7609	2.5542	0.5326		

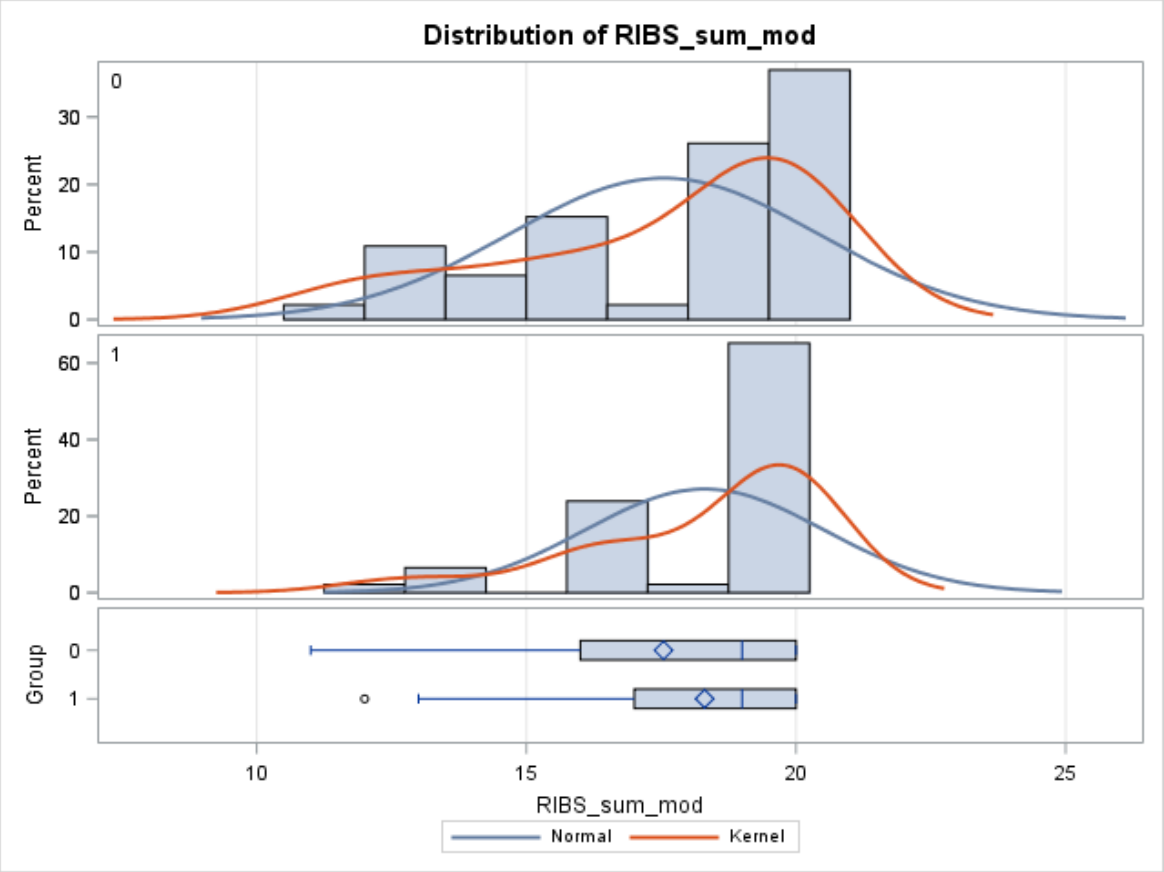
Group	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		17.5435	16.6949	18.3920	2.8574	2.3700	3.5990
1		18.3043	17.6481	18.9606	2.2098	1.8329	2.7833
Diff (1-2)	**Pooled**	-0.7609	-1.8189	0.2972	2.5542	2.2294	2.9907
Diff (1-2)	**Satterthwaite**	-0.7609	-1.8199	0.2981			

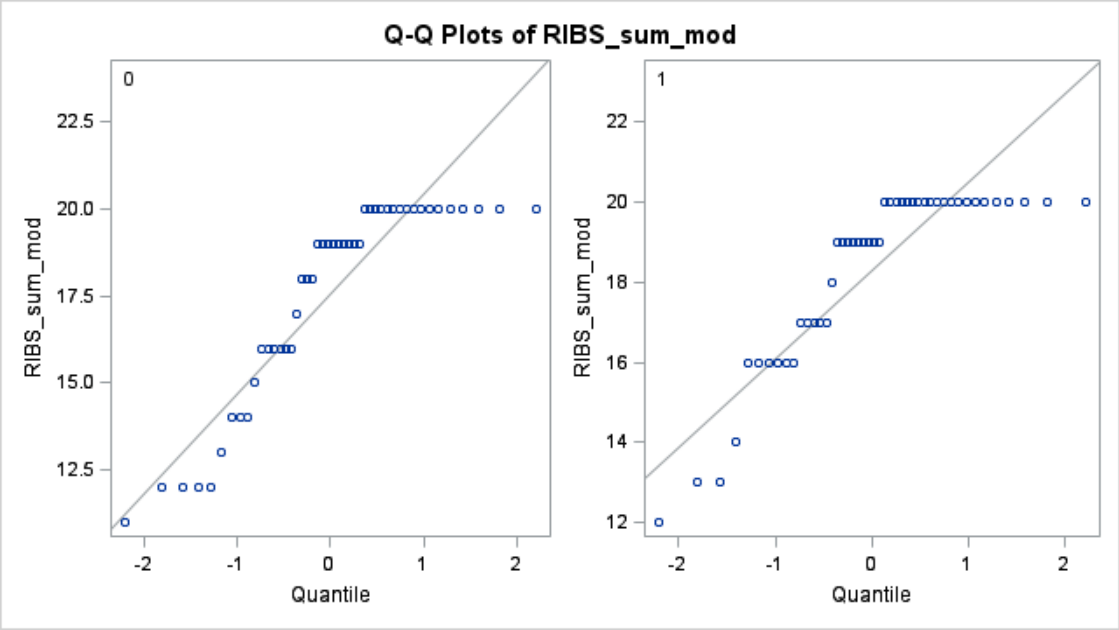
Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	90	-1.43	0.1566

Method	Variances	DF	t Value	Pr > |t|
Satterthwaite	Unequal	84.646	-1.43	0.1568

Equality of Variances

Method	Num DF	Den DF	F Value	Pr > F
Folded F	45	45	1.67	0.0881





GHSQ Total Scale Score

The SAS System

The TTEST Procedure

Variable: GHSQ_total_edit

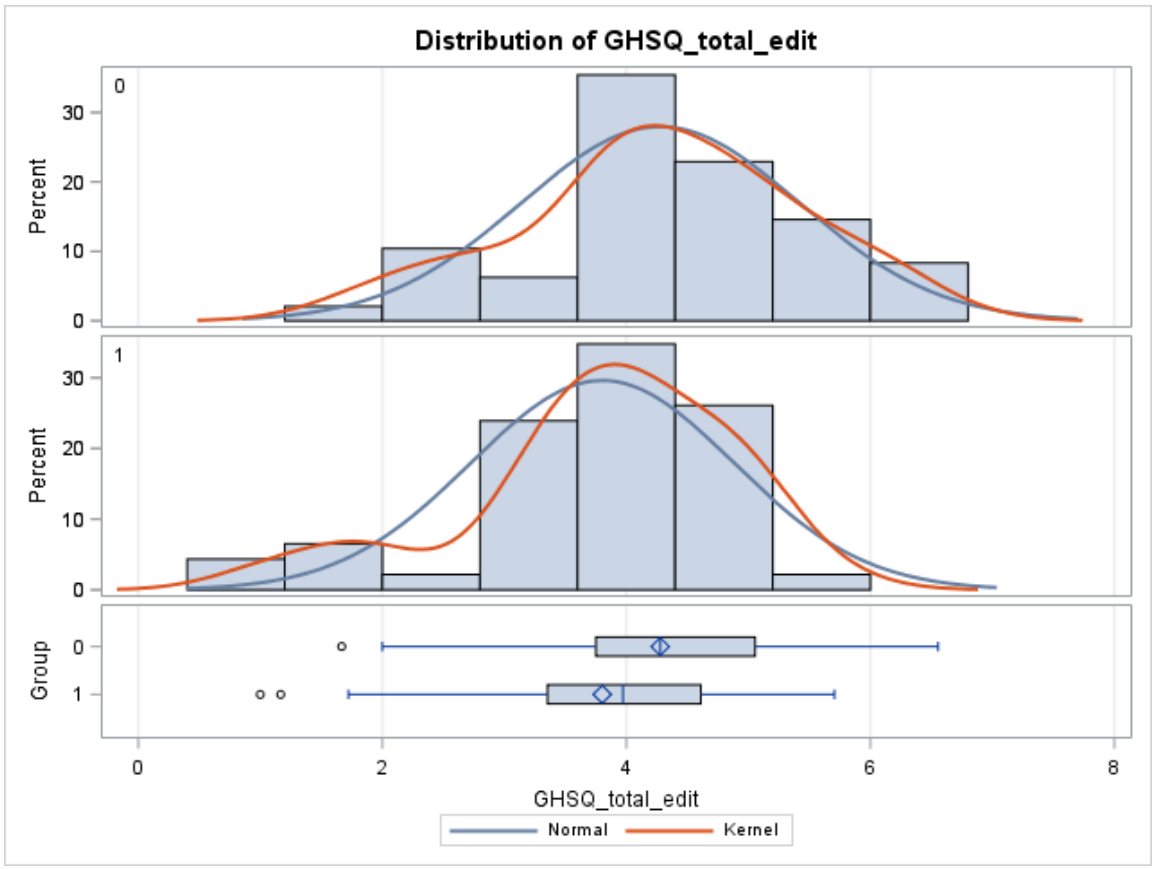
Group	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	48	4.2773	1.1408	0.1647	1.6667	6.5556
1	46	3.8025	1.0775	0.1589	1.0000	5.7059
Diff (1-2)		0.4748	1.1103	0.2291		

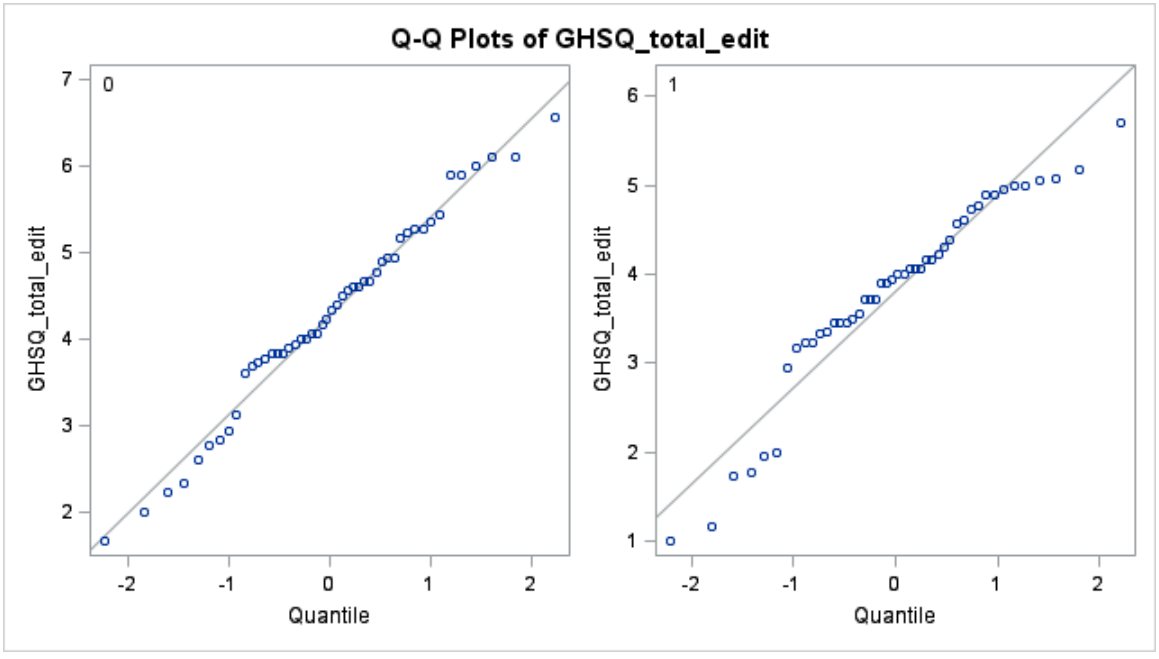
Group	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		4.2773	3.9461	4.6086	1.1408	0.9497	1.4289
1		3.8025	3.4825	4.1225	1.0775	0.8937	1.3572
Diff (1-2)	**Pooled**	0.4748	0.0198	0.9298	1.1103	0.9704	1.2976
Diff (1-2)	**Satterthwaite**	0.4748	0.0204	0.9292			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	92	2.07	0.0410
Satterthwaite	Unequal	91.982	2.08	0.0408

Equality of Variances

Method	Num DF	Den DF	F Value	Pr > F
Folded F	47	45	1.12	0.7022


Distribution of GHSQ_total_edit
0
1
Percent
Group
GHSQ_total_edit
Normal
Kernel


Q-Q Plots of GHSQ_total_edit
0
1
GHSQ_total_edit
Quantile

The SAS System

The UNIVARIATE Procedure

Variable: GHSQ_total_edit

Moments

N	94	**Sum Weights**	94
Mean	4.0449669	**Sum Observations**	380.226889
Std Deviation	1.1297947	**Variance**	1.27643605
Skewness	-0.4531196	**Kurtosis**	0.2679148
Uncorrected SS	1656.71373	**Corrected SS**	118.708553
Coeff Variation	27.9308761	**Std Error Mean**	0.11652943

Basic Statistical Measures

Location		**Variability**	
Mean	4.044967	**Std Deviation**	1.12979
Median	4.055556	**Variance**	1.27644
Mode	3.722222	**Range**	5.55556
		Interquartile Range	1.44444

Note: The mode displayed is the smallest of 3 modes with a count of 4.

Tests for Location: Mu0=0

Test		Statistic		p Value
Student's t	**t**	34.71198	**Pr > |t|**	<.0001
Sign	**M**	47	**Pr >= |M|**	<.0001
Signed Rank	**S**	2232.5	**Pr >= |S|**	<.0001

Quantiles (Definition 5)

Level	Quantile
100% Max	6.55556
99%	6.55556
95%	5.88889
90%	5.27778
75% Q3	4.88889
50% Median	4.05556
25% Q1	3.44444
10%	2.33333
5%	1.77778

Quantiles (Definition 5)

Level	Quantile
1%	1.00000
0% Min	1.00000

Extreme Observations

Lowest		Highest	
Value	**Obs**	**Value**	**Obs**
1.00000	86	5.88889	41
1.16667	87	6.00000	11
1.66667	14	6.11111	4
1.72222	79	6.11111	22
1.77778	80	6.55556	3

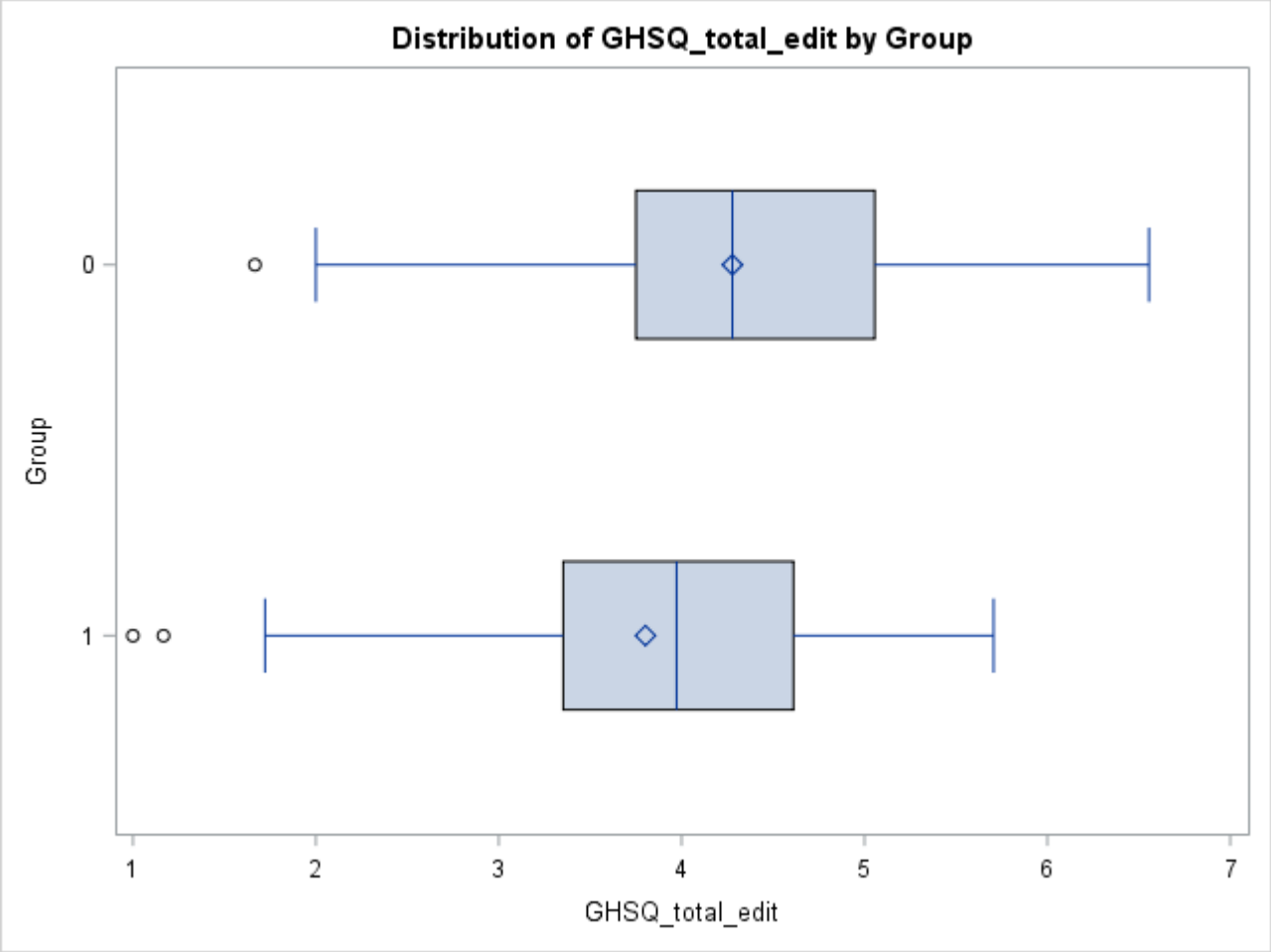
The SAS System

The MEANS Procedure

Analysis Variable : GHSQ_total_edit

N	Mean	Std Dev	Minimum	Maximum
94	4.0449669	1.1297947	1.0000000	6.5555556

The SAS System



The SAS System

The REG Procedure

Model: MODEL1

Dependent Variable: GHSQ_total_edit

Number of Observations Read 94

Number of Observations Used 94

Analysis of Variance

Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	1	5.29564	5.29564	4.30	0.0410
Error	92	113.41292	1.23275		
Corrected Total	93	118.70855			

Root MSE	1.11029	**R-Square**	0.0446
Dependent Mean	4.04497	**Adj R-Sq**	0.0342
Coeff Var	27.44874		

Parameter Estimates

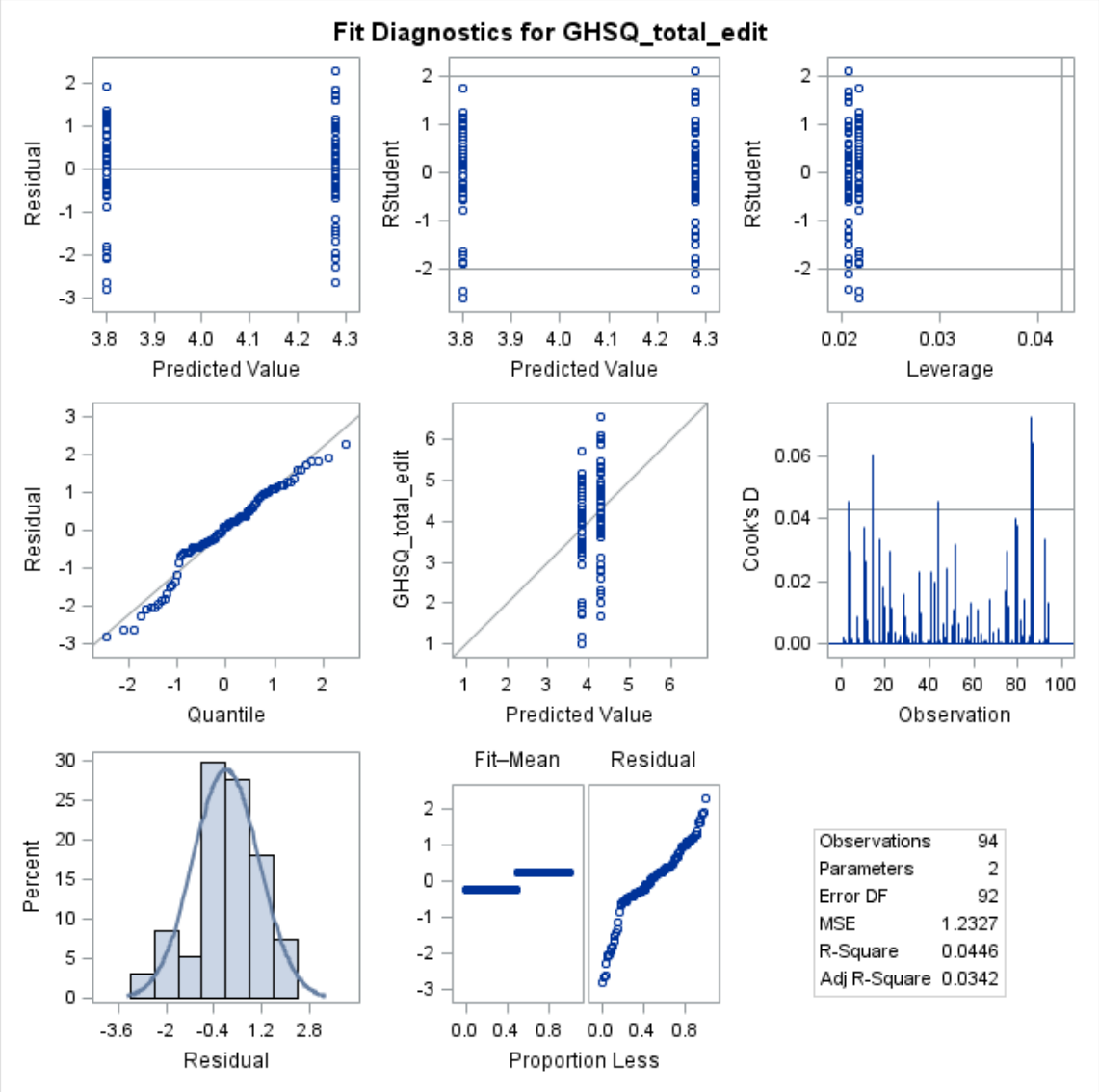
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	**1**	4.27732	0.16026	26.69	<.0001	3.95904	4.59561
Group	**1**	-0.47481	0.22909	-2.07	0.0410	-0.92980	-0.01983

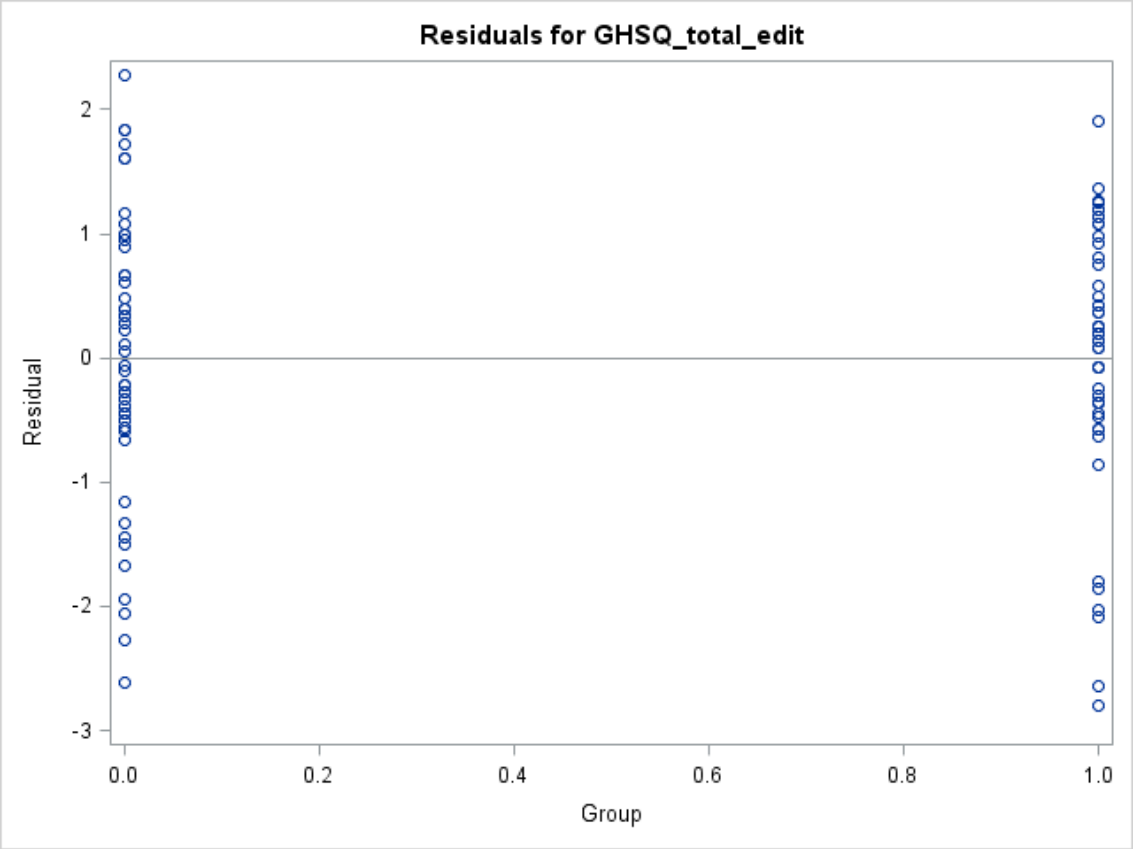
The SAS System

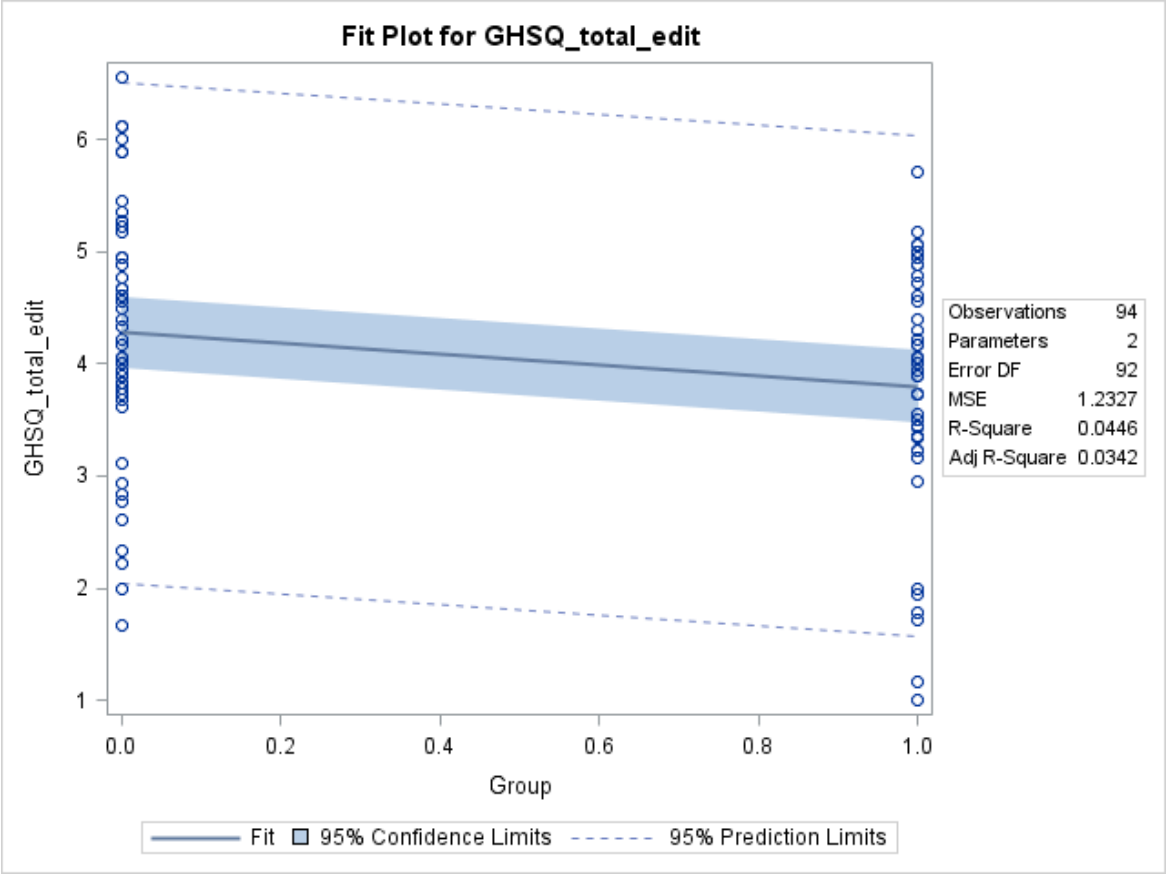
The REG Procedure

Model: MODEL1

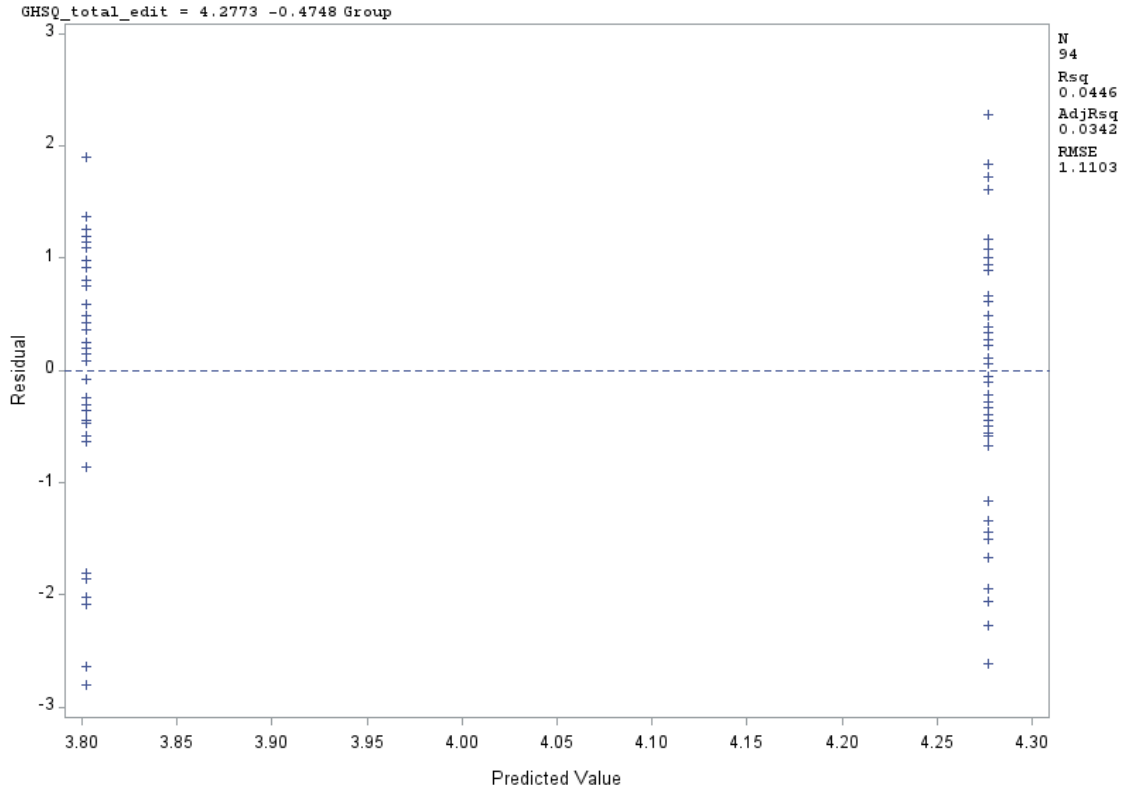
Dependent Variable: GHSQ_total_edit



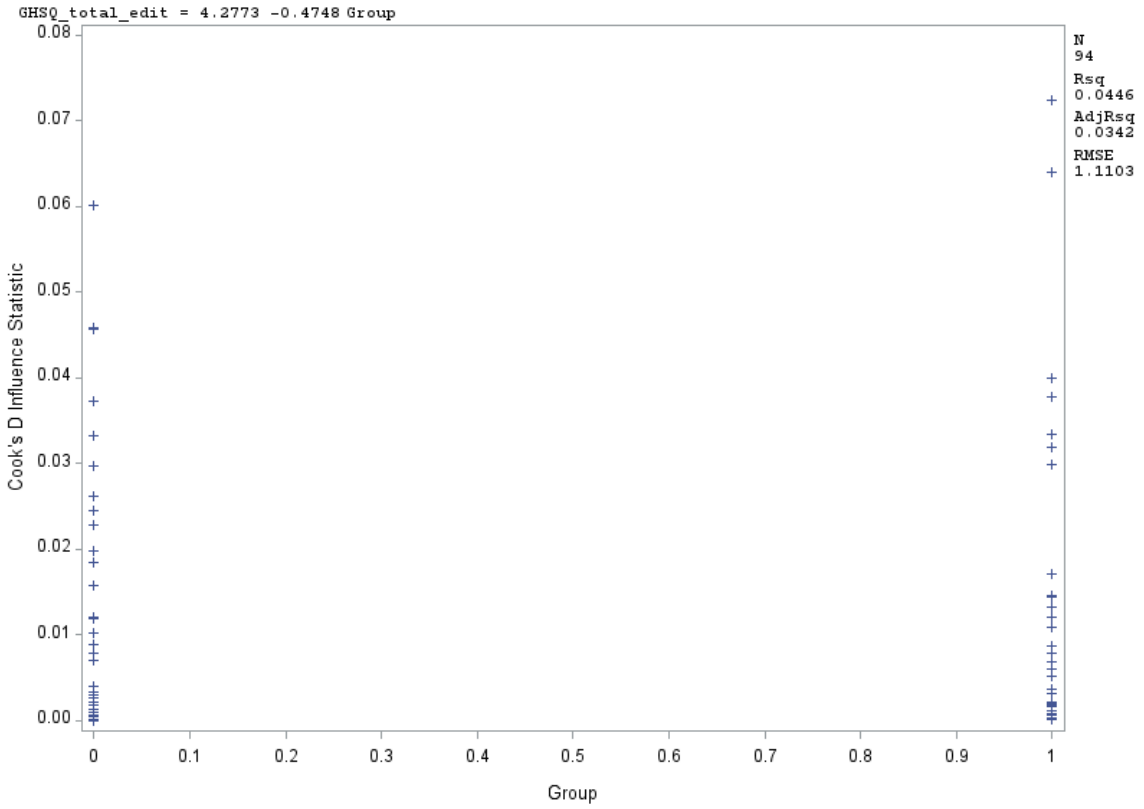

Residuals for GHSQ_total_edit
Residual
2
1
0
-1
-2
-3
0.0
0.2
0.4
0.6
0.8
1.0
Group


Fit Plot for GHSQ_total_edit
GHSQ_total_edit
Group
0.0
0.2
0.4
0.6
0.8
1.0
1
2
3
4
5
6
Observations 94
Parameters 2
Error DF 92
MSE 1.2327
R-Square 0.0446
Adj R-Square 0.0342
Fit
95% Confidence Limits
95% Prediction Limits

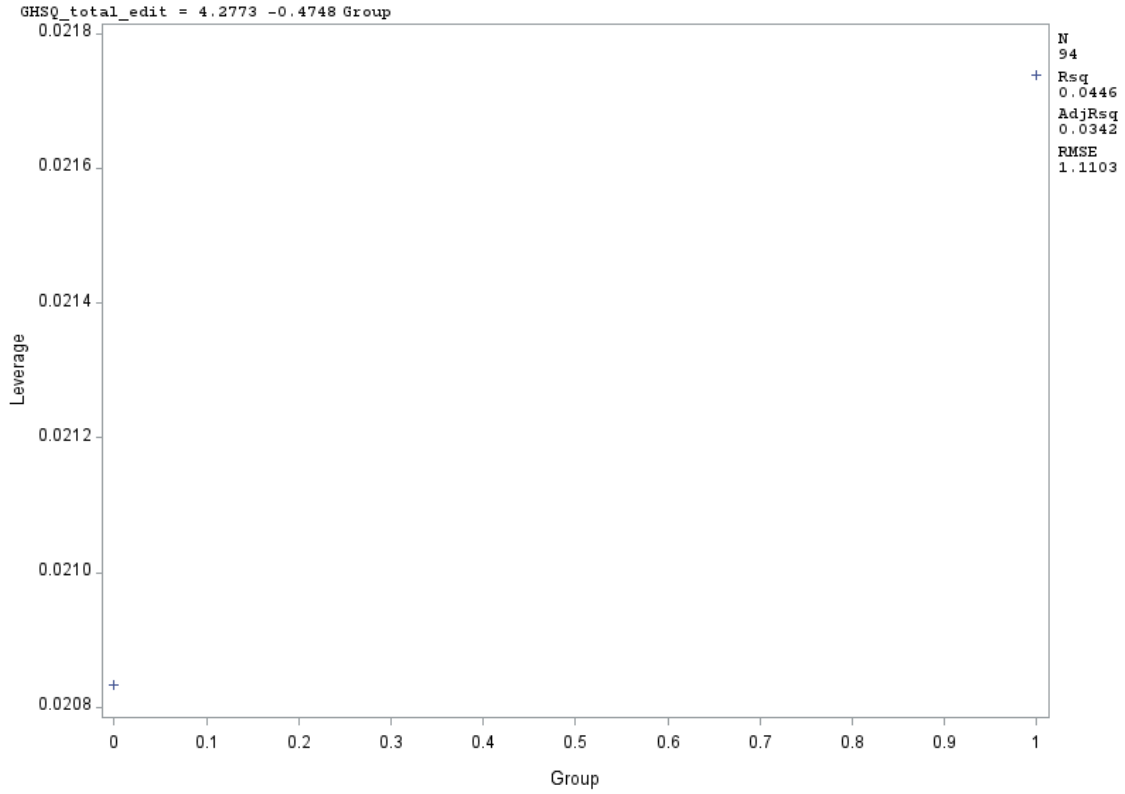
The REG Procedure



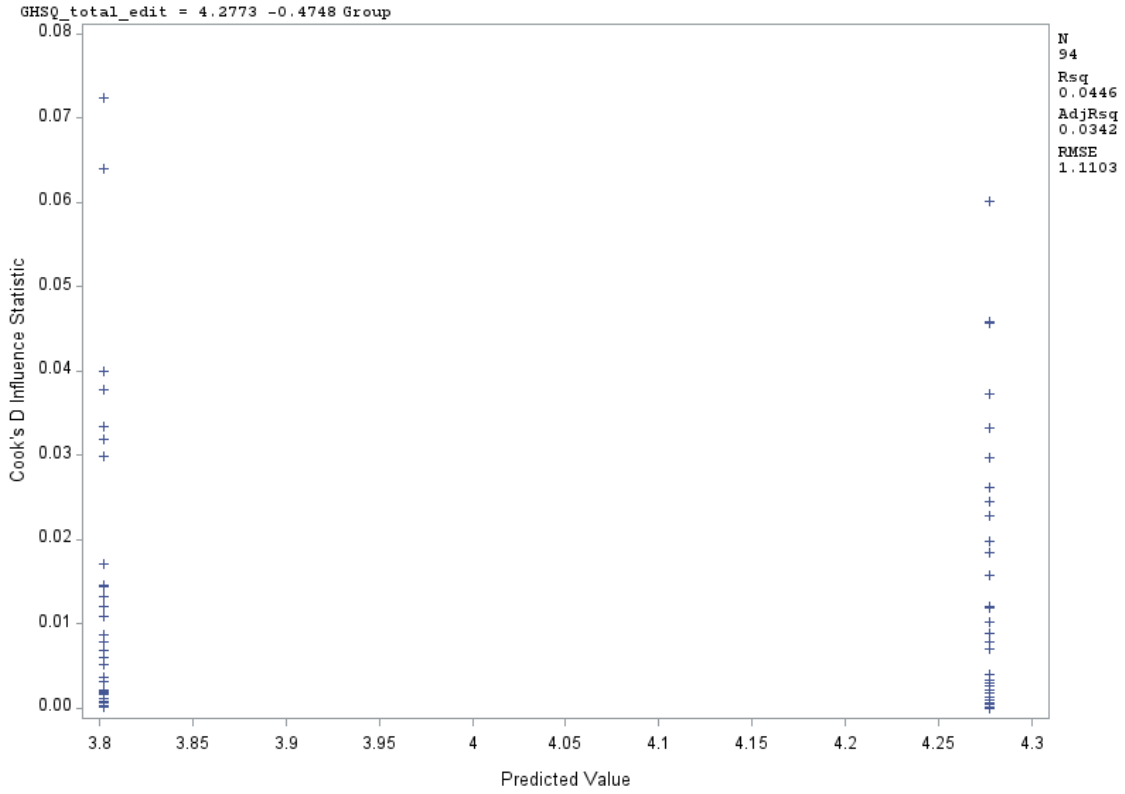
The REG Procedure



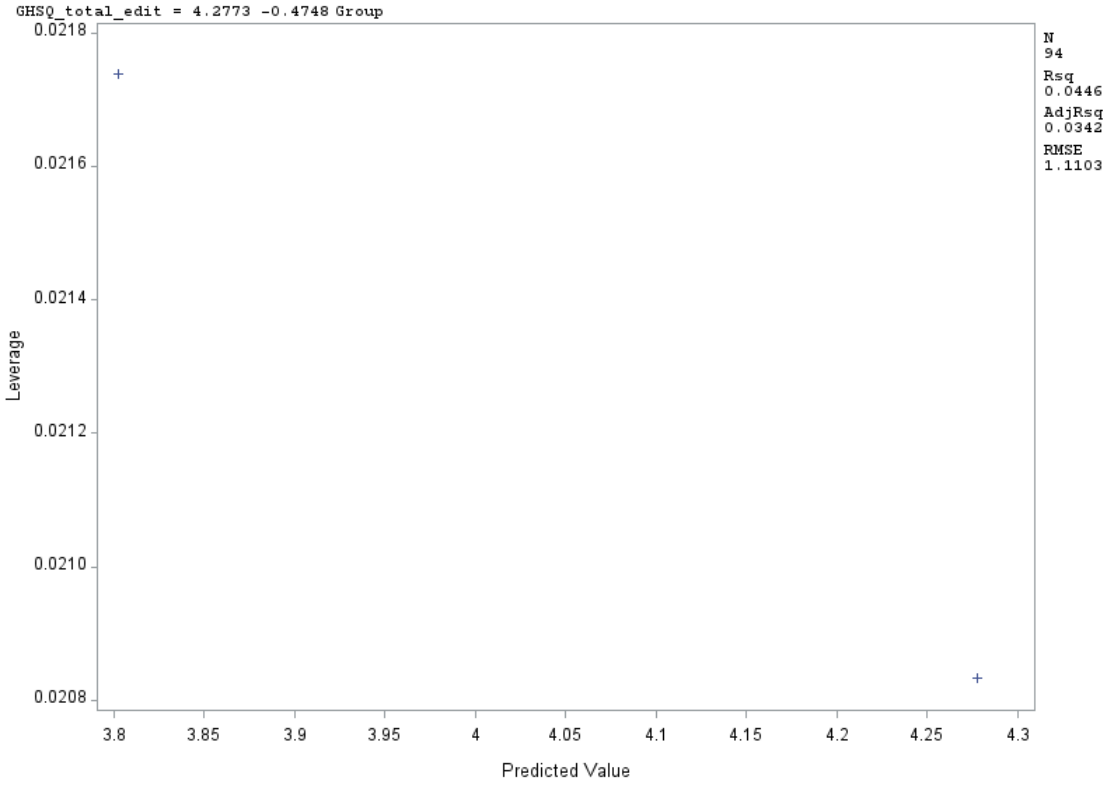
The REG Procedure

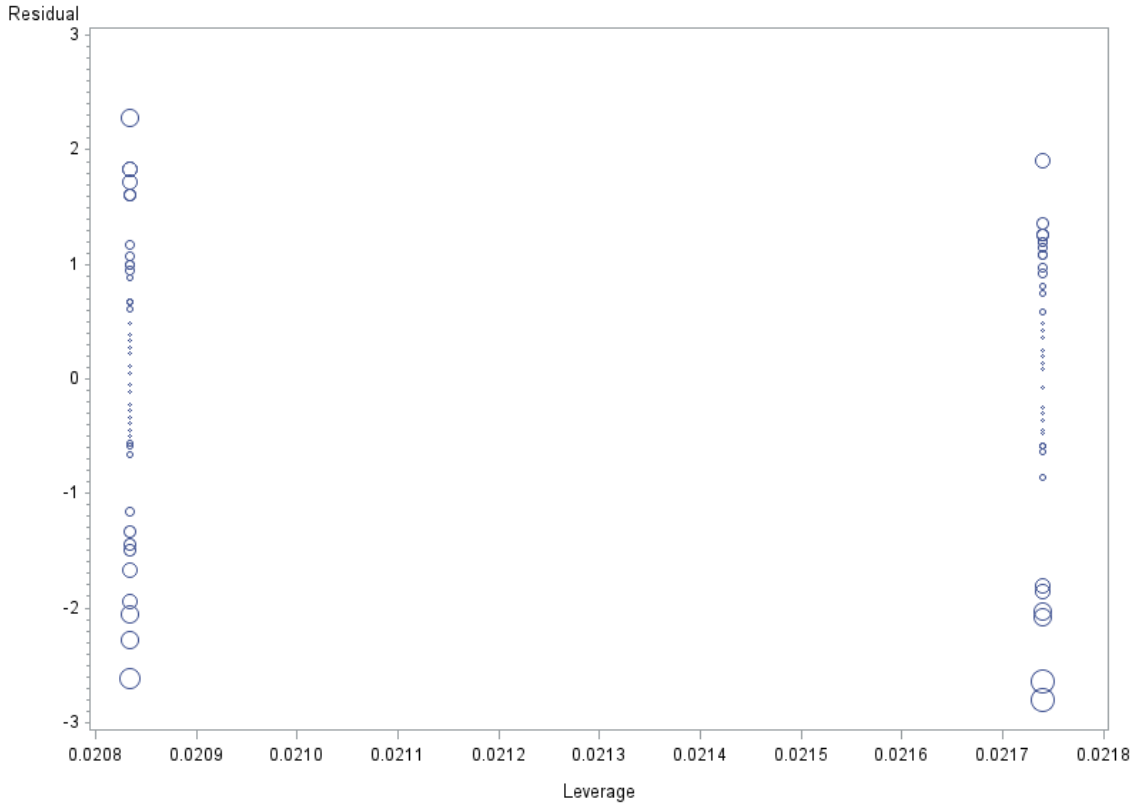


The REG Procedure



The REG Procedure




Residual
3
2
1
0
-1
-2
-3
0.0208
0.0209
0.0210
0.0211
0.0212
0.0213
0.0214
0.0215
0.0216
0.0217
0.0218
Leverage

The SAS System

The MEANS Procedure

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
cookd	**Cook's D**	94	0.0108559	0.0154377	0.000026758	0.0723639
leverage	**Influence Statistic Leverage**	94	0.0212766	0.000455224	0.0208333	0.0217391

GHSQ Personal/Emotional Total Subscale Score

The SAS System

The TTEST Procedure

Variable: GHSQ_pemot_total_edit

Group	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	48	4.2486	1.1998	0.1732	1.6667	7.0000
1	46	3.9221	1.0264	0.1513	1.0000	5.2500

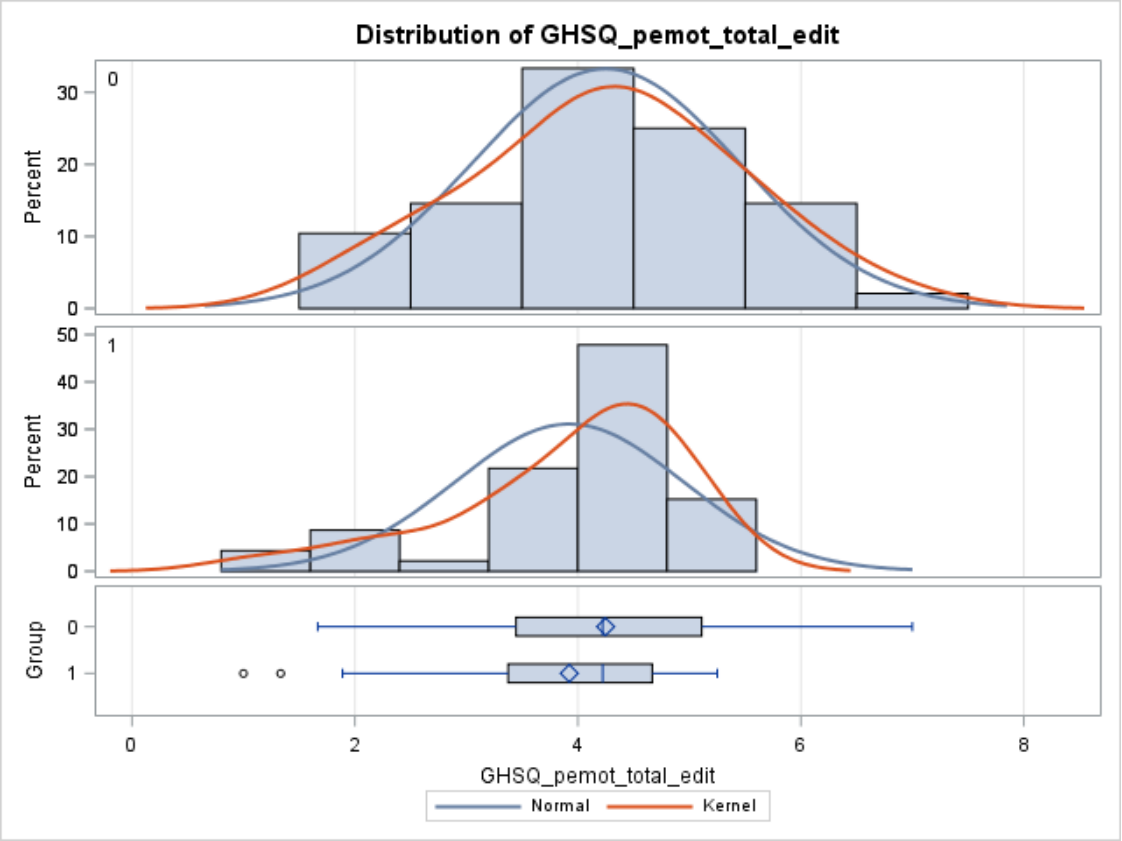
Group	N	Mean	Std Dev	Std Err	Minimum	Maximum
Diff (1-2)		0.3265	1.1184	0.2308		

Group	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		4.2486	3.9002	4.5969	1.1998	0.9988	1.5029
1		3.9221	3.6173	4.2269	1.0264	0.8513	1.2928
Diff (1-2)	**Pooled**	0.3265	-0.1318	0.7847	1.1184	0.9775	1.3070
Diff (1-2)	**Satterthwaite**	0.3265	-0.1304	0.7833			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	92	1.41	0.1605
Satterthwaite	Unequal	90.853	1.42	0.1592

Equality of Variances

Method	Num DF	Den DF	F Value	Pr > F
Folded F	47	45	1.37	0.2948


Distribution of GHSQ_pemot_total_edit
0
1
Percent
Group
GHSQ_pemot_total_edit
Normal
Kernel


Q-Q Plots of GHSQ_pemot_total_edit
0
1
GHSQ_pemot_total_edit
Quantile

The SAS System

The UNIVARIATE Procedure

Variable: GHSQ_pemot_total_edit

Moments

N	94	**Sum Weights**	94
Mean	4.08879941	**Sum Observations**	384.347144
Std Deviation	1.1243654	**Variance**	1.26419756
Skewness	-0.3718101	**Kurtosis**	0.34056022
Uncorrected SS	1689.08875	**Corrected SS**	117.570373
Coeff Variation	27.4986687	**Std Error Mean**	0.11596944

Basic Statistical Measures

Location		**Variability**	
Mean	4.088799	**Std Deviation**	1.12437
Median	4.222222	**Variance**	1.26420
Mode	4.000000	**Range**	6.00000
		Interquartile Range	1.40278

Note: The mode displayed is the smallest of 2 modes with a count of 6.

Tests for Location: Mu0=0

Test		Statistic		p Value
Student's t	**t**	35.25756	**Pr > |t|**	<.0001
Sign	**M**	47	**Pr >= |M|**	<.0001
Signed Rank	**S**	2232.5	**Pr >= |S|**	<.0001

Quantiles (Definition 5)

Level	Quantile
100% Max	7.00000
99%	7.00000
95%	5.88889
90%	5.33333
75% Q3	4.77778
50% Median	4.22222
25% Q1	3.37500
10%	2.33333
5%	2.00000

Quantiles (Definition 5)

Level	Quantile
1%	1.00000
0% Min	1.00000

Extreme Observations

Lowest		Highest	
Value	**Obs**	**Value**	**Obs**
1.00000	86	5.88889	35
1.33333	87	6.00000	11
1.66667	14	6.11111	3
1.88889	79	6.44444	4
2.00000	17	7.00000	22

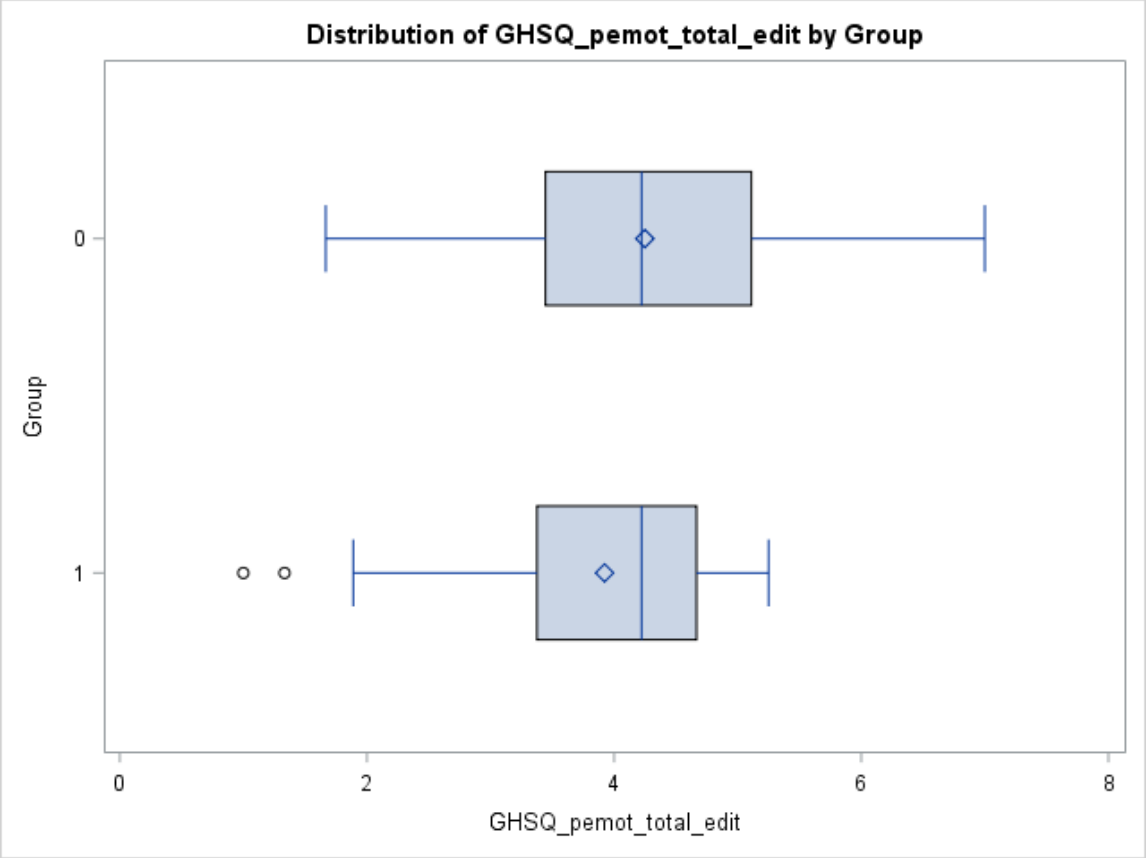
The SAS System

The MEANS Procedure

Analysis Variable : GHSQ_pemot_total_edit

N	Mean	Std Dev	Minimum	Maximum
94	4.0887994	1.1243654	1.0000000	7.0000000

The SAS System



The SAS System

The REG Procedure

Model: MODEL1

Dependent Variable: GHSQ_pemot_total_edit

Number of Observations Read	94
Number of Observations Used	94

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	2.50328	2.50328	2.00	0.1605
Error	92	115.06709	1.25073		
Corrected Total	93	117.57037			

Root MSE	1.11836	**R-Square**	0.0213
Dependent Mean	4.08880	**Adj R-Sq**	0.0107
Coeff Var	27.35180		

Parameter Estimates

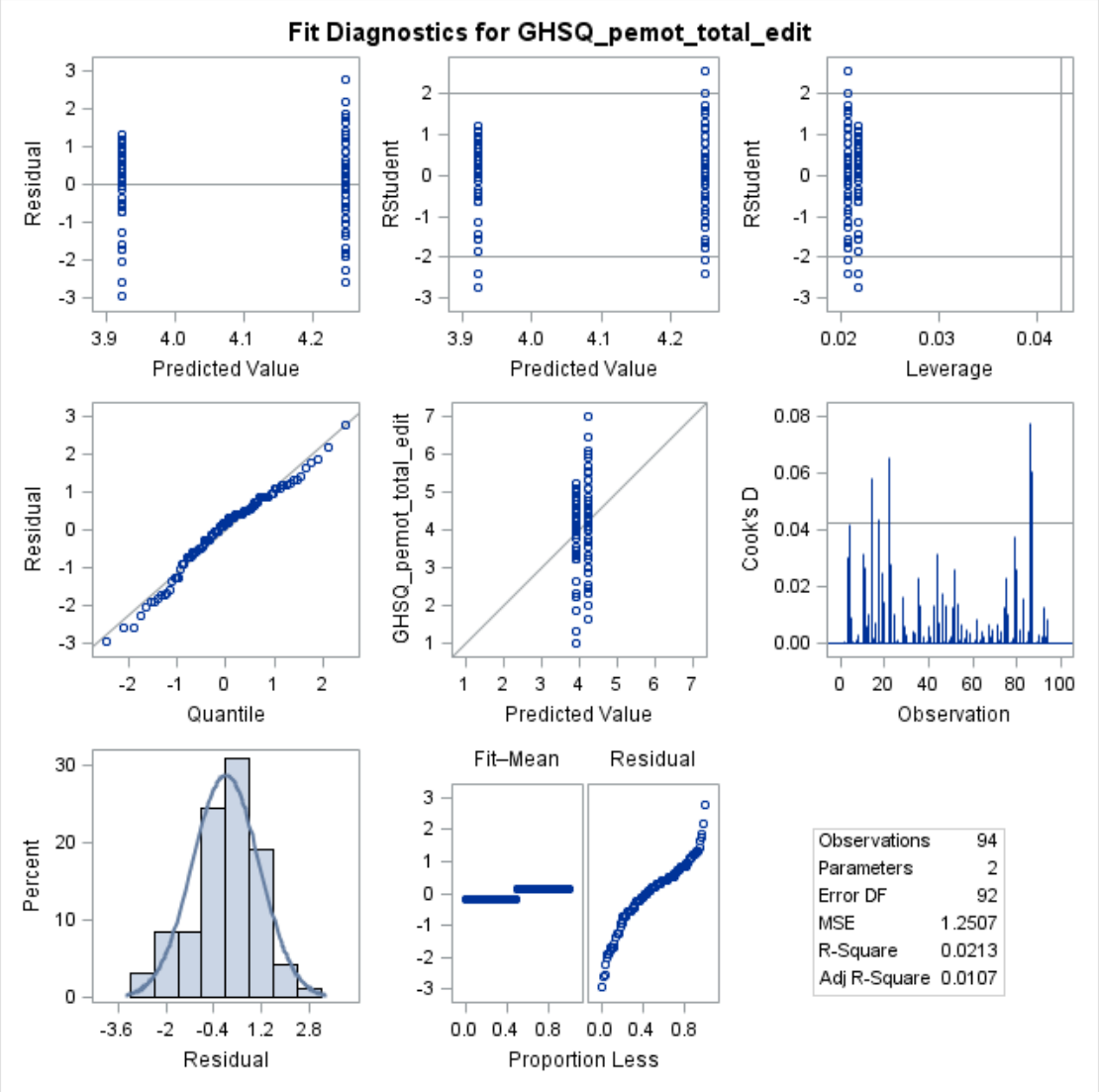
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	**1**	4.24855	0.16142	26.32	<.0001	3.92796	4.56915
Group	**1**	-0.32645	0.23075	-1.41	0.1605	-0.78475	0.13184

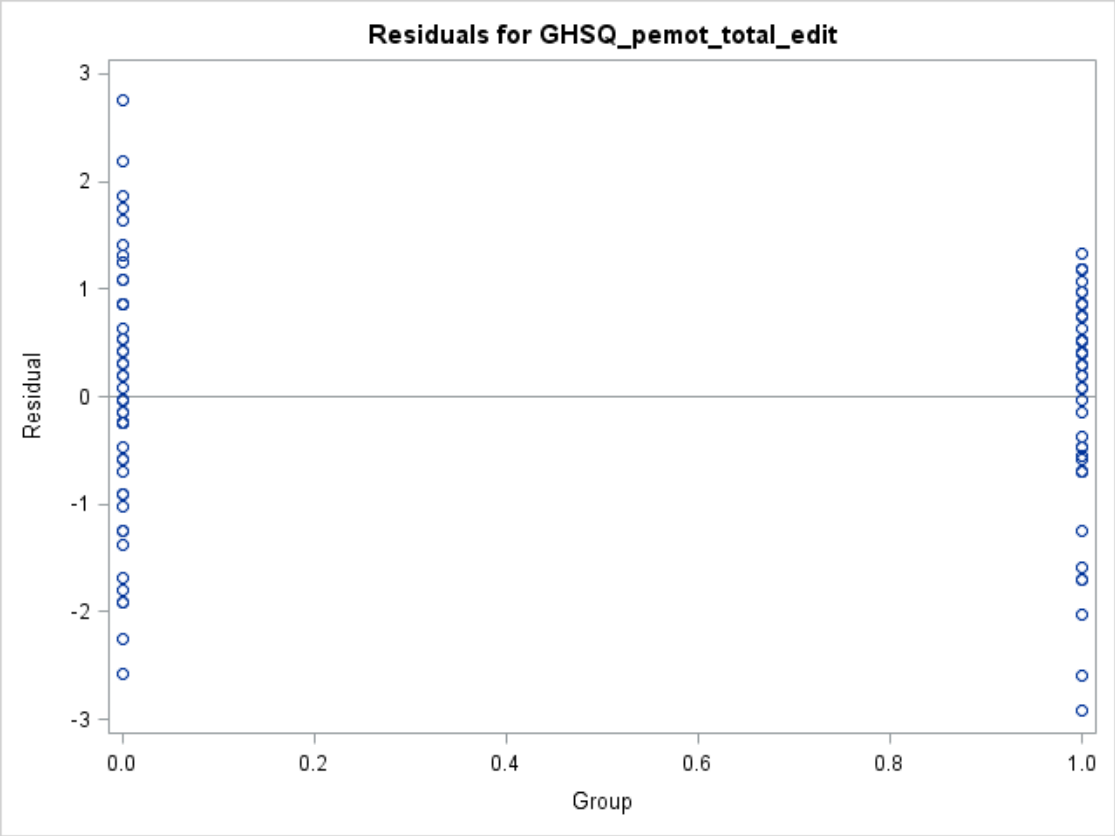
The SAS System

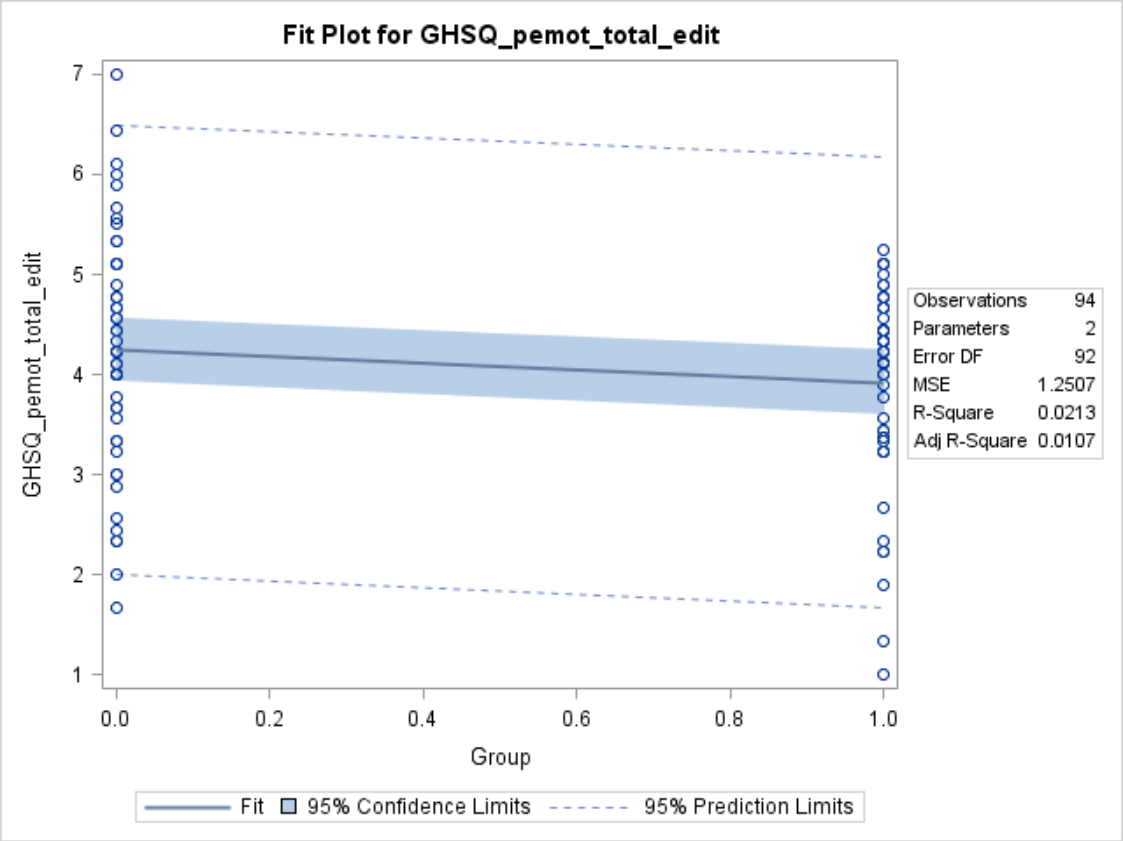
The REG Procedure

Model: MODEL1

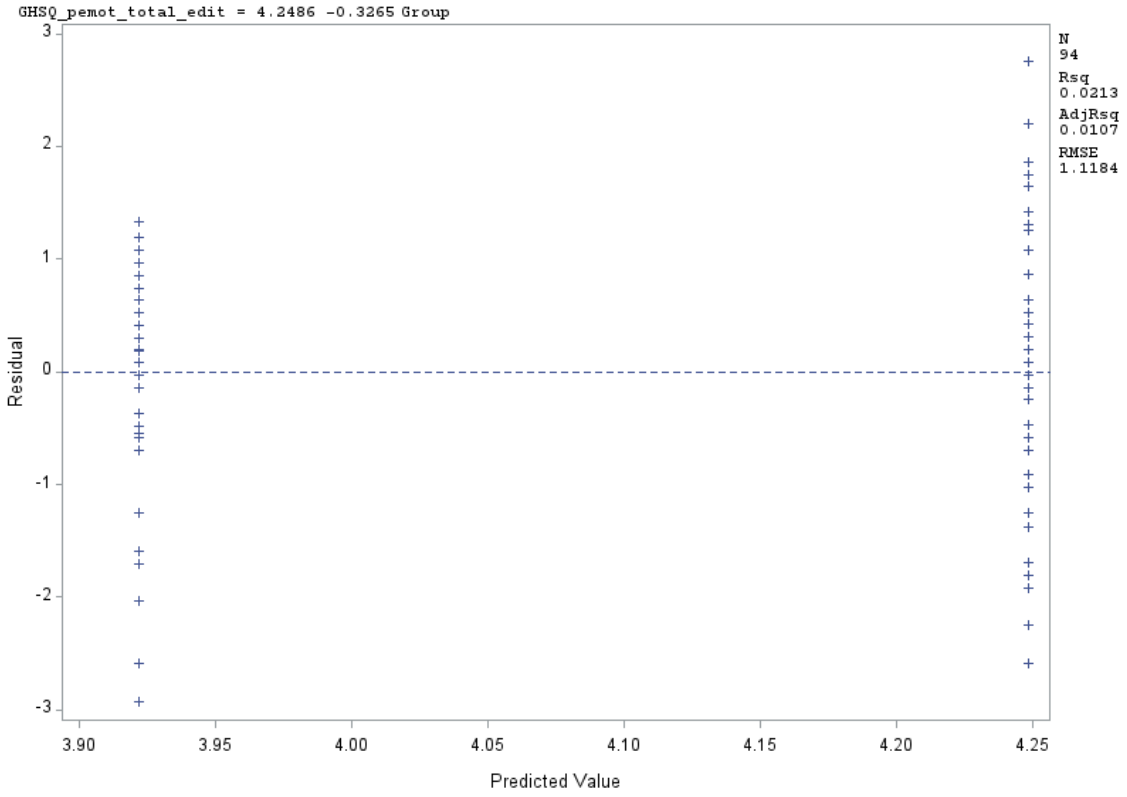
Dependent Variable: GHSQ_pemot_total_edit



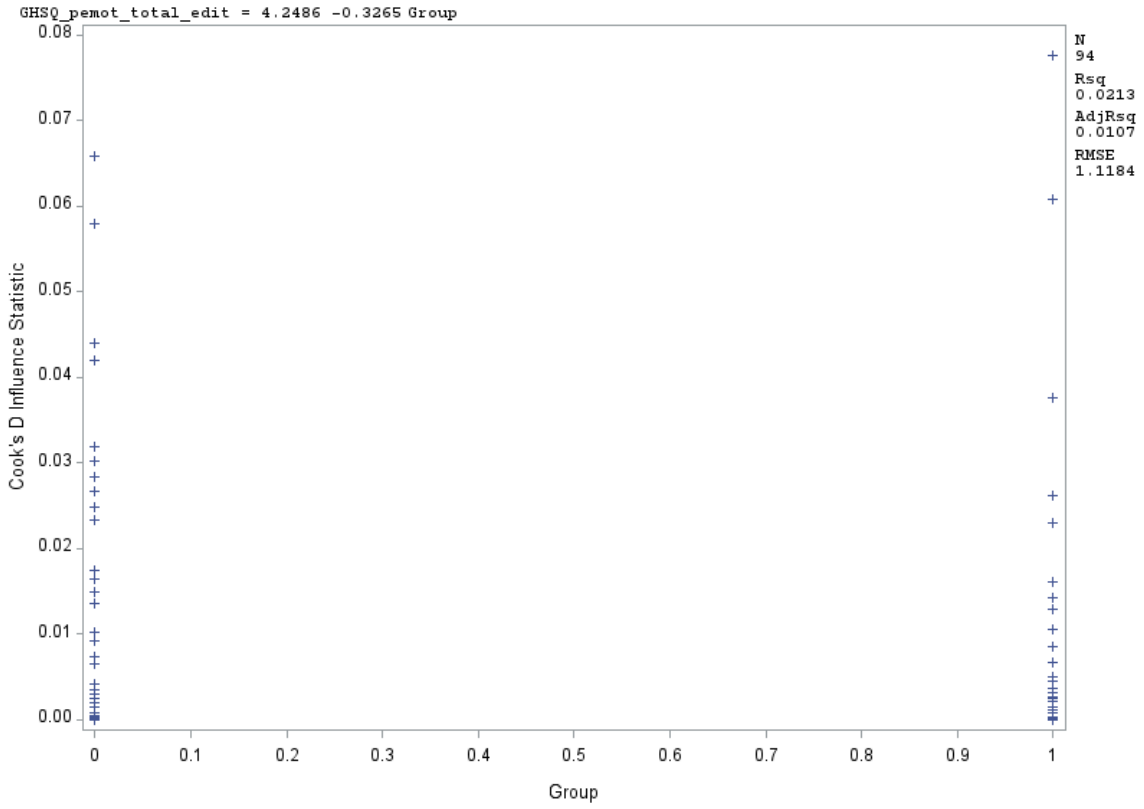

Residuals for GHSQ_pemot_total_edit
Residual
3
2
1
0
-1
-2
-3
0.0
0.2
0.4
0.6
0.8
1.0
Group


Fit Plot for GHSQ_pemot_total_edit
GHSQ_pemot_total_edit
7
6
5
4
3
2
1
0.0
0.2
0.4
0.6
0.8
1.0
Group
Observations 94
Parameters 2
Error DF 92
MSE 1.2507
R-Square 0.0213
Adj R-Square 0.0107
Fit
95% Confidence Limits
95% Prediction Limits

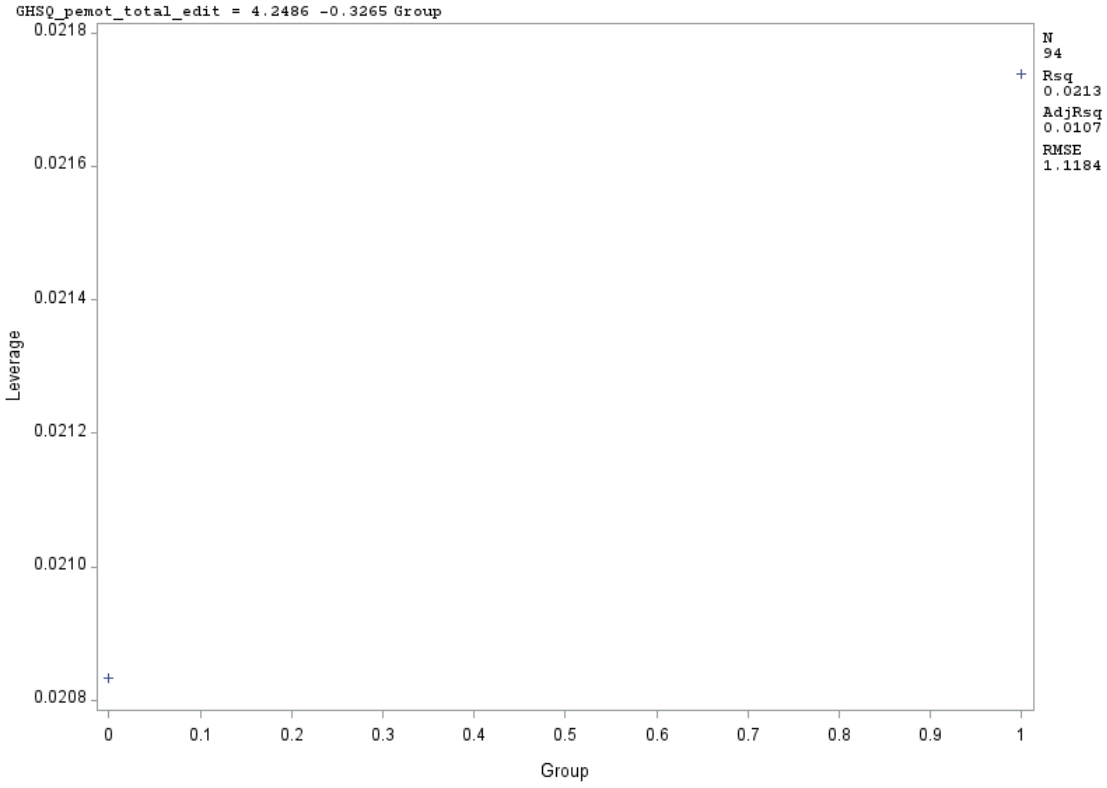
The REG Procedure



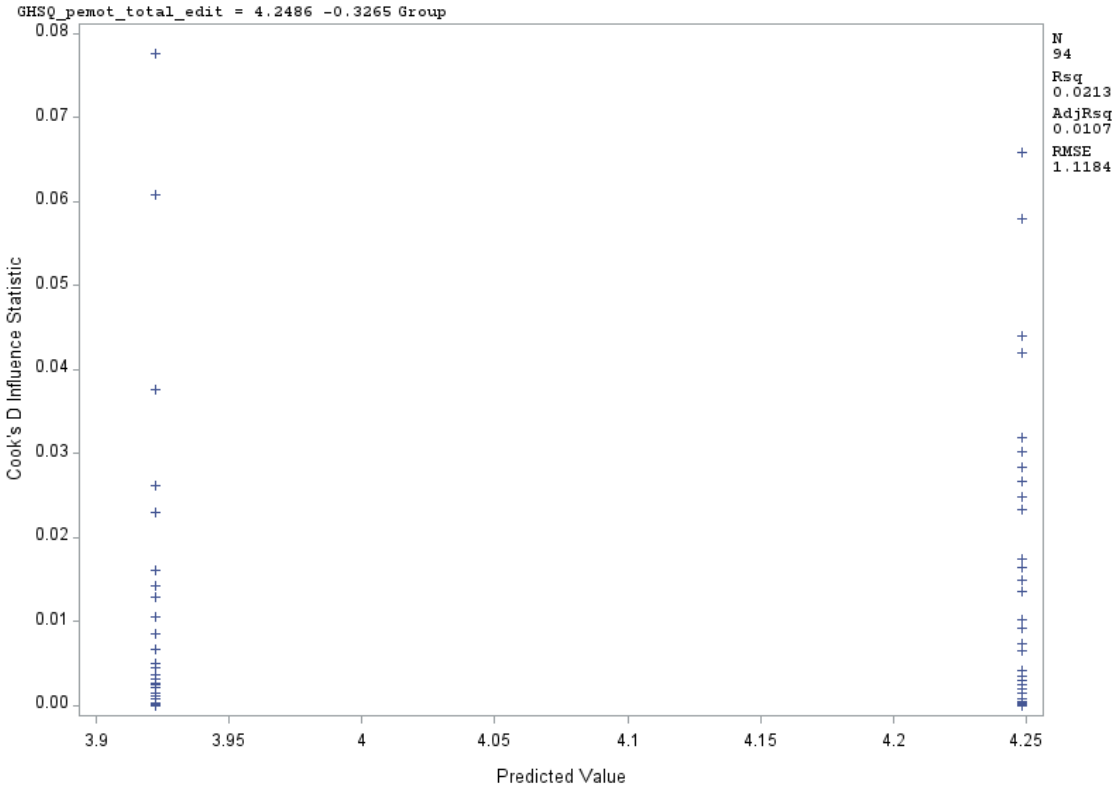
The REG Procedure



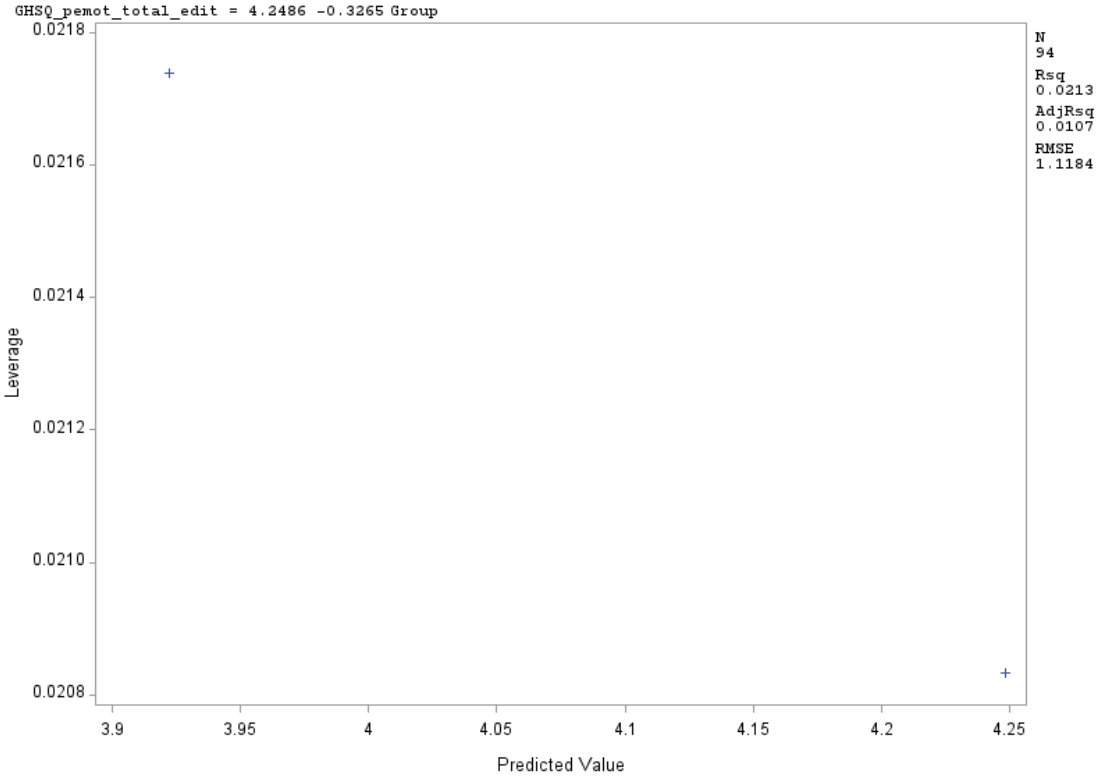
The REG Procedure

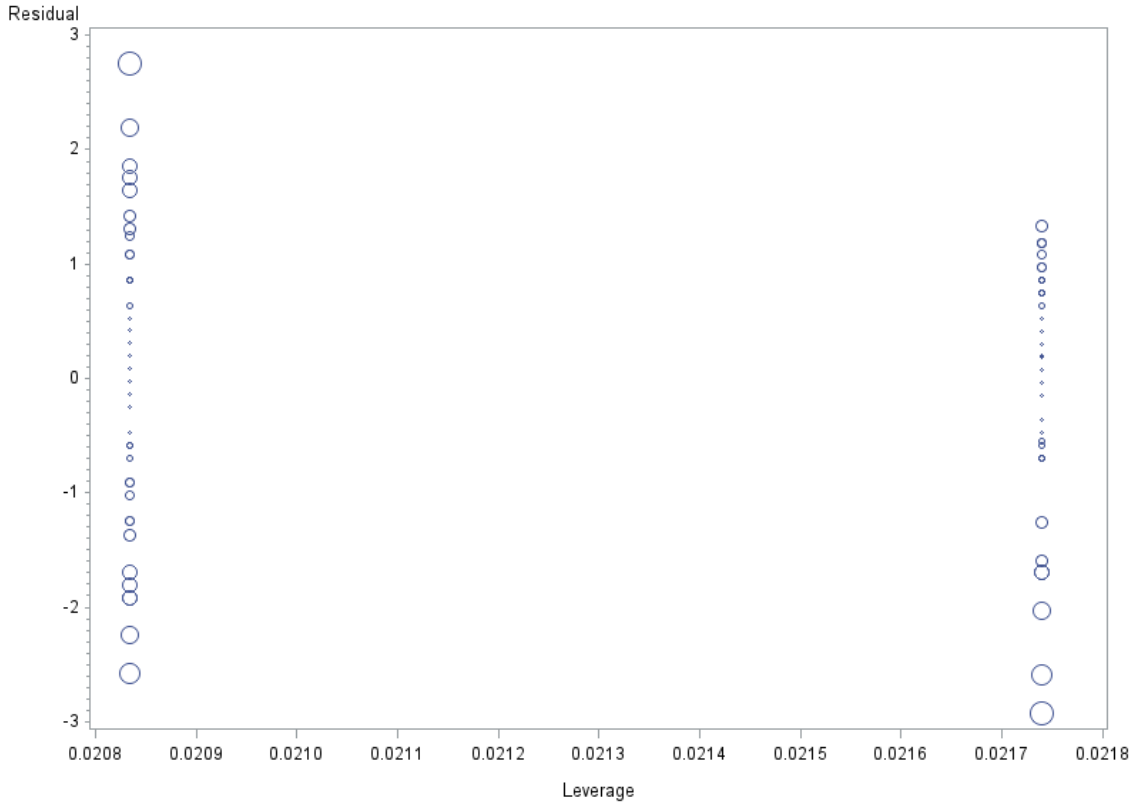


The REG Procedure



The REG Procedure





The SAS System

The MEANS Procedure

Variable	Label	N	Mean	Std Dev	Minimum	Maximum

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
cookd	**Cook's D**	94	0.0108324	0.0155439	6.0223312E-6	0.0775407
leverage	**Influence Statistic Leverage**	94	0.0212766	0.000455224	0.0208333	0.0217391

GHSQ Suicidal Thoughts Subscale Total Score

The SAS System

The TTEST Procedure

Variable: GHSQ_suic_tot_edit

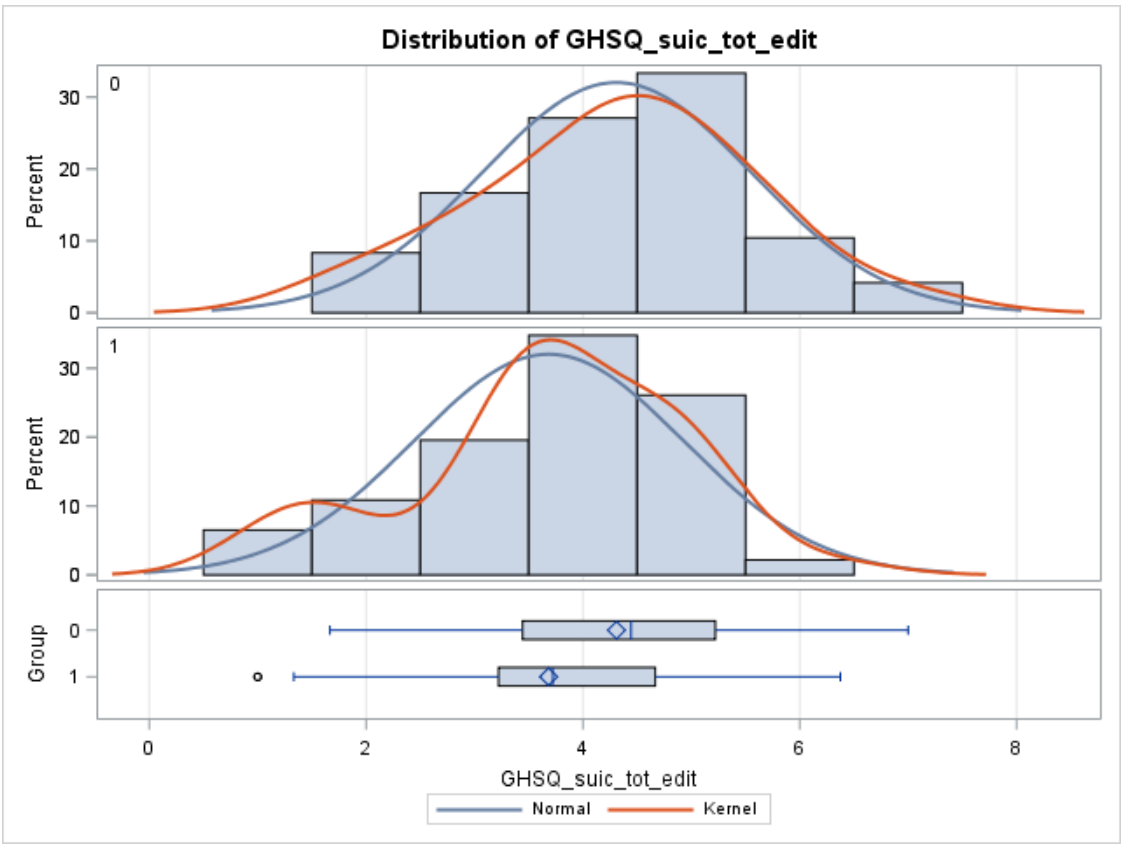
Group	N	Mean	Std Dev	Std Err	Minimum	Maximum
0	48	4.3094	1.2455	0.1798	1.6667	7.0000
1	46	3.6833	1.2454	0.1836	1.0000	6.3750
Diff (1-2)		0.6262	1.2455	0.2570		

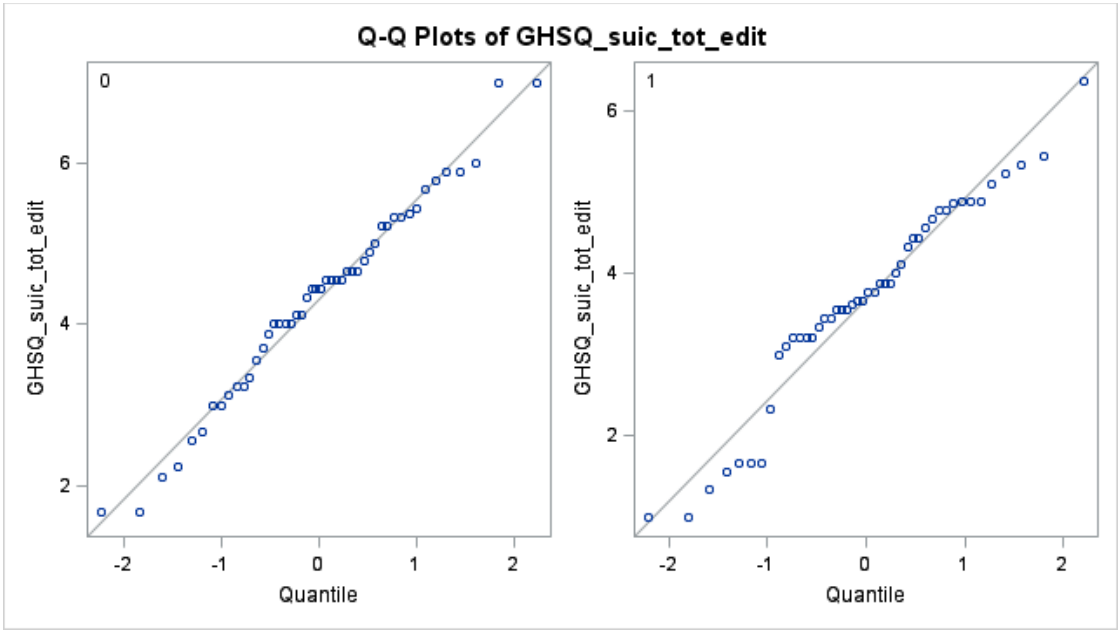
Group	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		4.3094	3.9478	4.6711	1.2455	1.0368	1.5601
1		3.6833	3.3134	4.0531	1.2454	1.0330	1.5686
Diff (1-2)	**Pooled**	0.6262	0.1158	1.1365	1.2455	1.0886	1.4556
Diff (1-2)	**Satterthwaite**	0.6262	0.1158	1.1366			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	92	2.44	0.0167
Satterthwaite	Unequal	91.831	2.44	0.0168

Equality of Variances

Method	Num DF	Den DF	F Value	Pr > F
Folded F	47	45	1.00	1.0000


Distribution of GHSQ_suic_tot_edit
0
1
Percent
Group
GHSQ_suic_tot_edit
Normal
Kernel


Q-Q Plots of GHSQ_suic_tot_edit
0
1
GHSQ_suic_tot_edit
Quantile

The SAS System

The UNIVARIATE Procedure

Variable: GHSQ_suic_tot_edit

Moments

N	94	**Sum Weights**	94
Mean	4.00301738	**Sum Observations**	376.283633
Std Deviation	1.27808895	**Variance**	1.63351137
Skewness	-0.2808279	**Kurtosis**	0.04682052
Uncorrected SS	1658.18648	**Corrected SS**	151.916558
Coeff Variation	31.9281391	**Std Error Mean**	0.13182481

Basic Statistical Measures

Location		**Variability**	
Mean	4.003017	**Std Deviation**	1.27809
Median	4.000000	**Variance**	1.63351
Mode	3.222222	**Range**	6.00000
		Interquartile Range	1.65278

Tests for Location: Mu0=0

Test		Statistic		p Value
Student's t	**t**	30.36619	**Pr > |t|**	<.0001
Sign	**M**	47	**Pr >= |M|**	<.0001
Signed Rank	**S**	2232.5	**Pr >= |S|**	<.0001

Quantiles (Definition 5)

Level	Quantile
100% Max	7.00000
99%	7.00000
95%	5.88889
90%	5.44444
75% Q3	4.87500
50% Median	4.00000
25% Q1	3.22222
10%	2.11111
5%	1.66667
1%	1.00000

Quantiles (Definition 5)

Level	Quantile
0% Min	1.00000

Extreme Observations

Lowest		Highest	
Value	**Obs**	**Value**	**Obs**
1.00000	87	5.88889	35
1.00000	86	6.00000	11
1.33333	80	6.37500	92
1.55556	79	7.00000	3
1.66667	75	7.00000	41

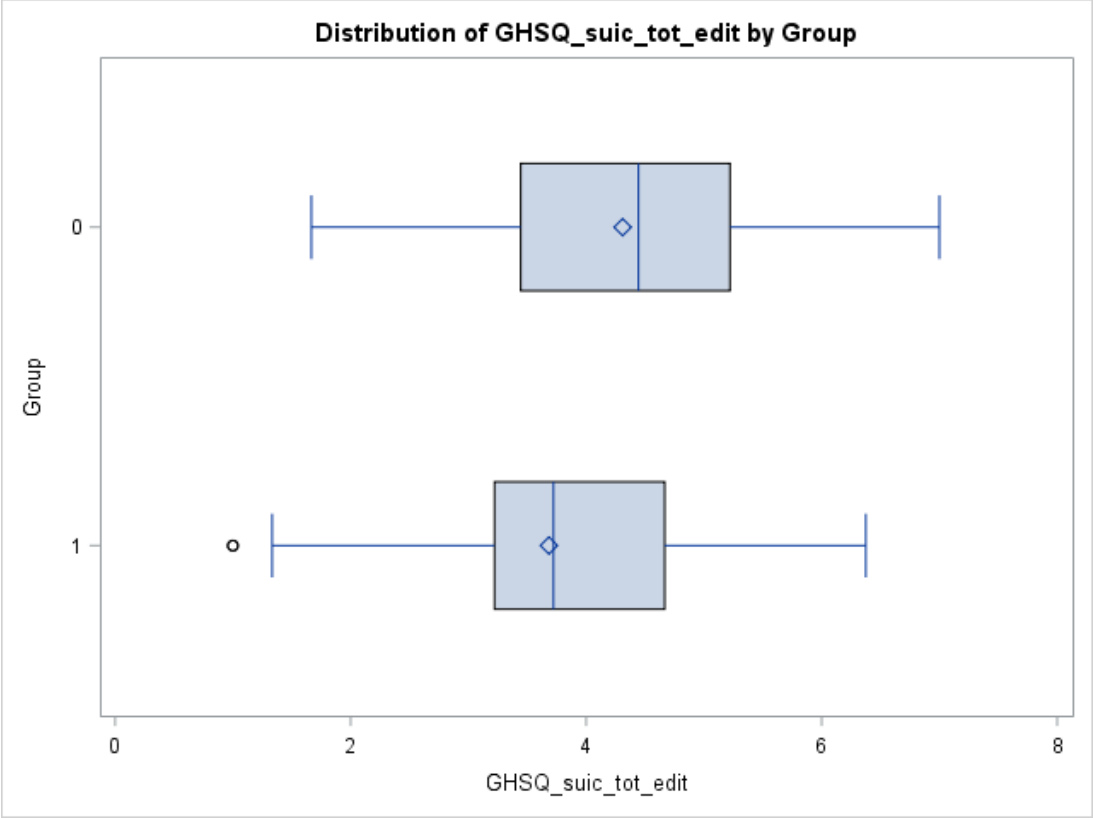
The SAS System

The MEANS Procedure

Analysis Variable : GHSQ_suic_tot_edit

N	Mean	Std Dev	Minimum	Maximum
94	4.0030174	1.2780890	1.0000000	7.0000000

The SAS System



The SAS System

The REG Procedure

Model: MODEL1

Dependent Variable: GHSQ_suic_tot_edit

Number of Observations Read 94

Number of Observations Used 94

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	9.20990	9.20990	5.94	0.0167
Error	92	142.70666	1.55116		
Corrected Total	93	151.91656			

Root MSE	1.24546	**R-Square**	0.0606
Dependent Mean	4.00302	**Adj R-Sq**	0.0504
Coeff Var	31.11292		

Parameter Estimates

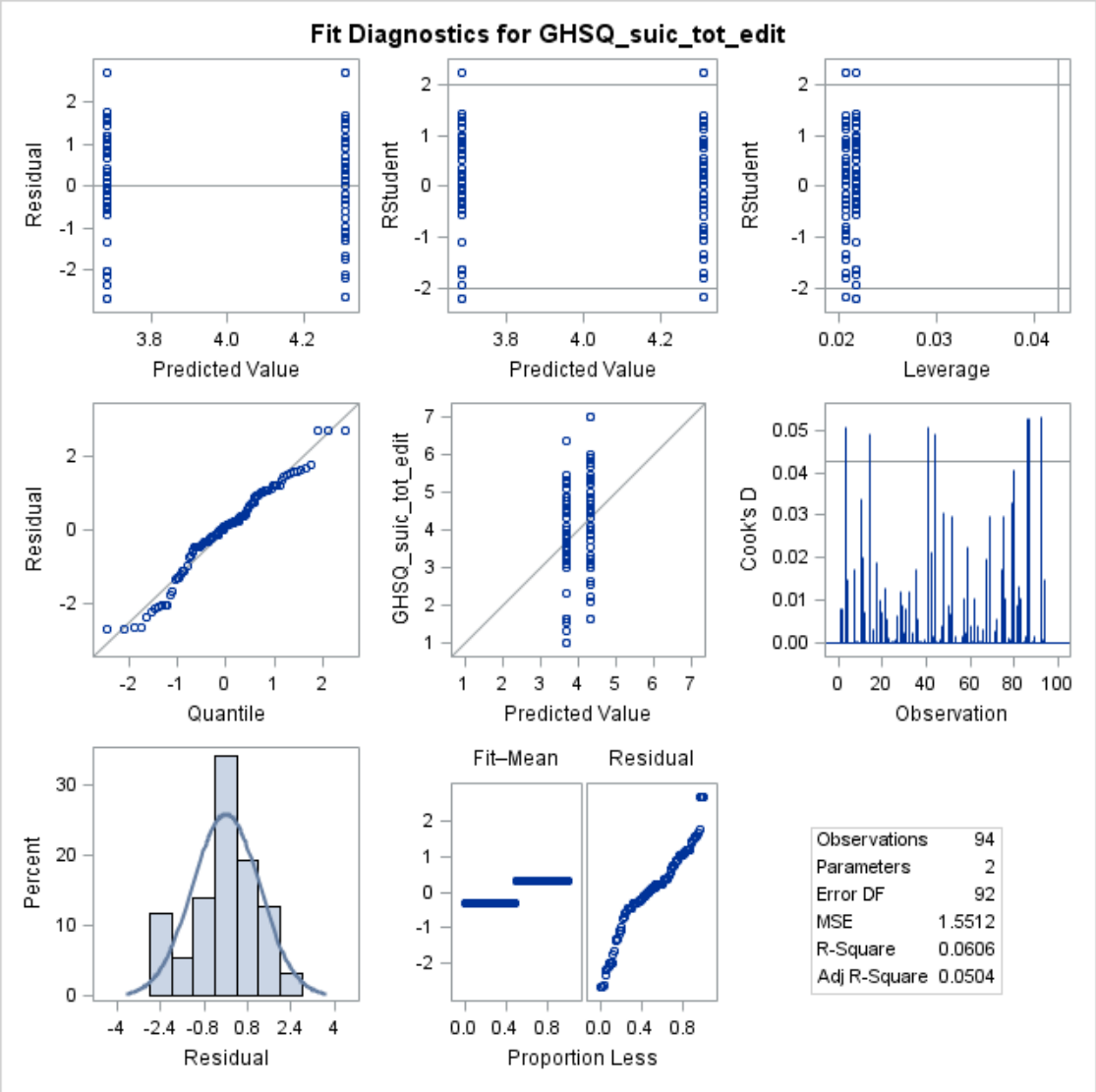
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	**1**	4.30944	0.17977	23.97	<.0001	3.95241	4.66647
Group	**1**	-0.62617	0.25698	-2.44	0.0167	-1.13655	-0.11579

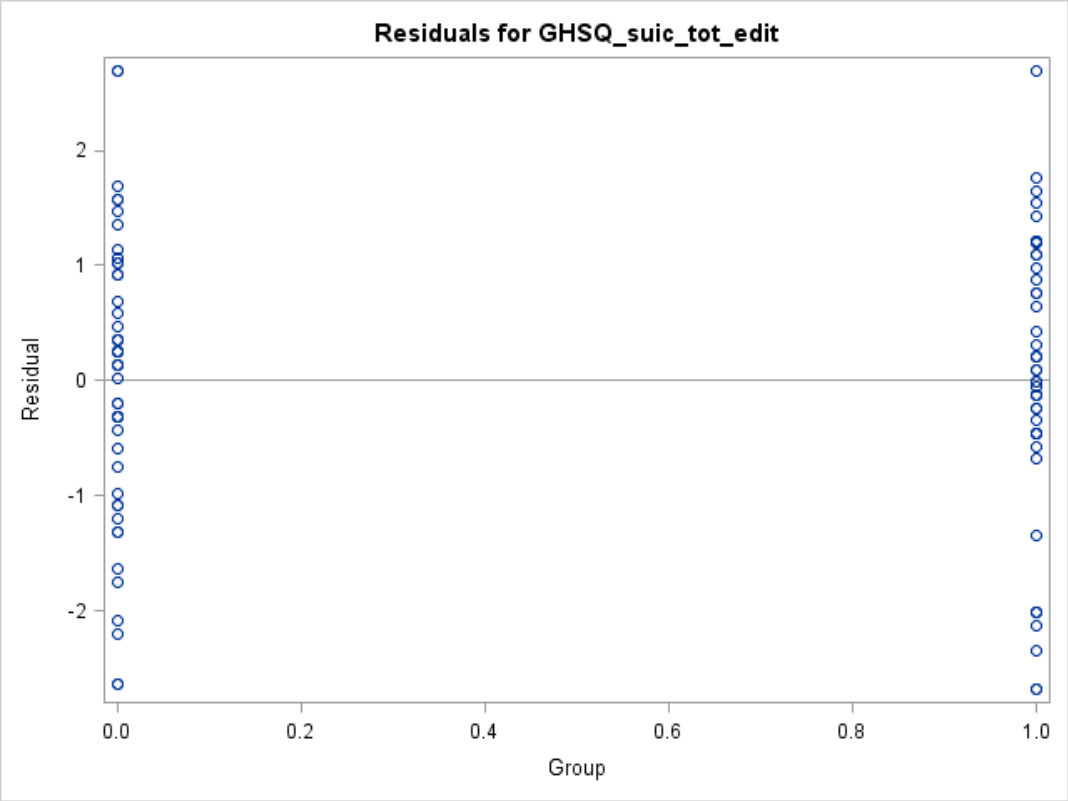
The SAS System

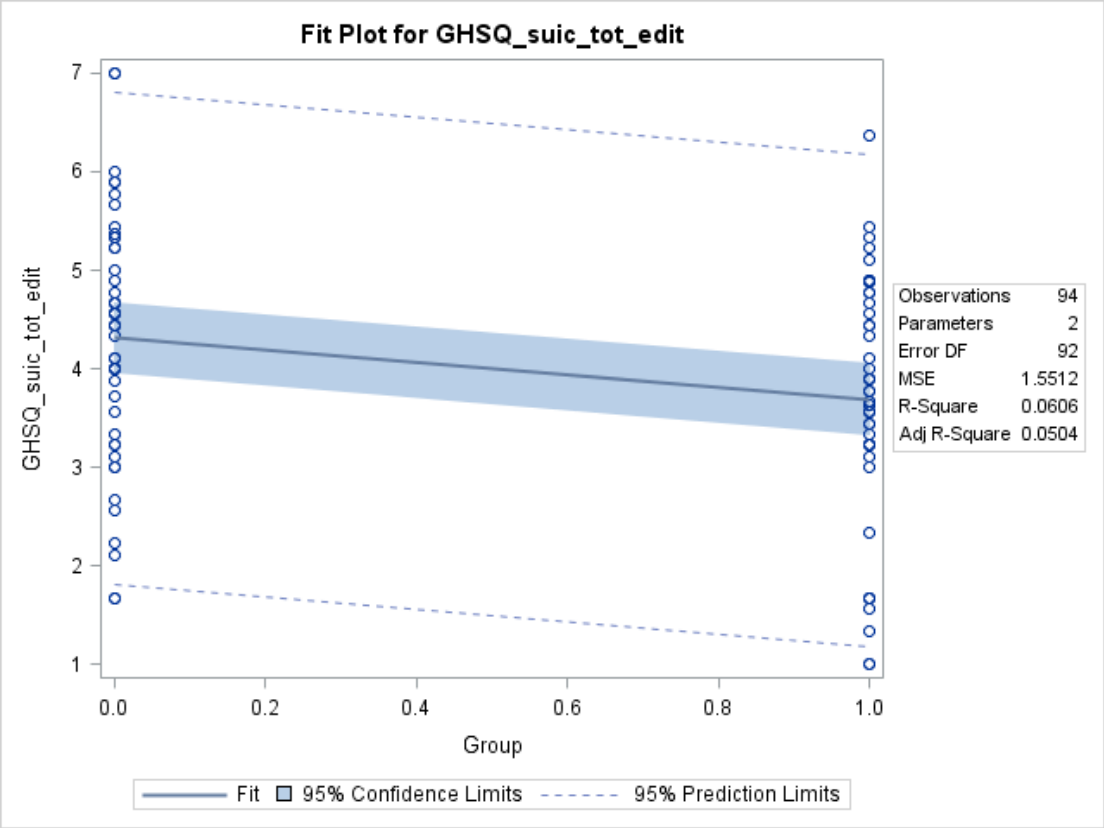
The REG Procedure

Model: MODEL1

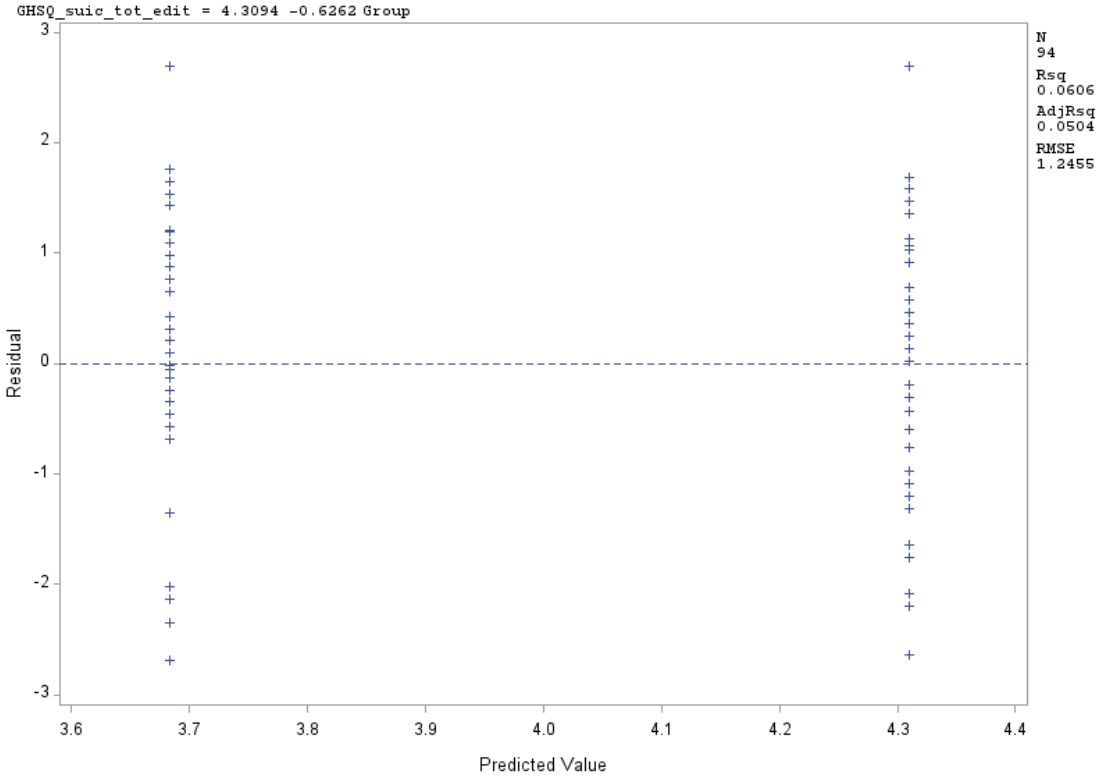
Dependent Variable: GHSQ_suic_tot_edit




Residuals for GHSQ_suic_tot_edit
Residual
2
1
0
-1
-2
0.0
0.2
0.4
0.6
0.8
1.0
Group


Fit Plot for GHSQ_suic_tot_edit
GHSQ_suic_tot_edit
7
6
5
4
3
2
1
0.0
0.2
0.4
0.6
0.8
1.0
Group
Observations 94
Parameters 2
Error DF 92
MSE 1.5512
R-Square 0.0606
Adj R-Square 0.0504
Fit
95% Confidence Limits
95% Prediction Limits

The REG Procedure



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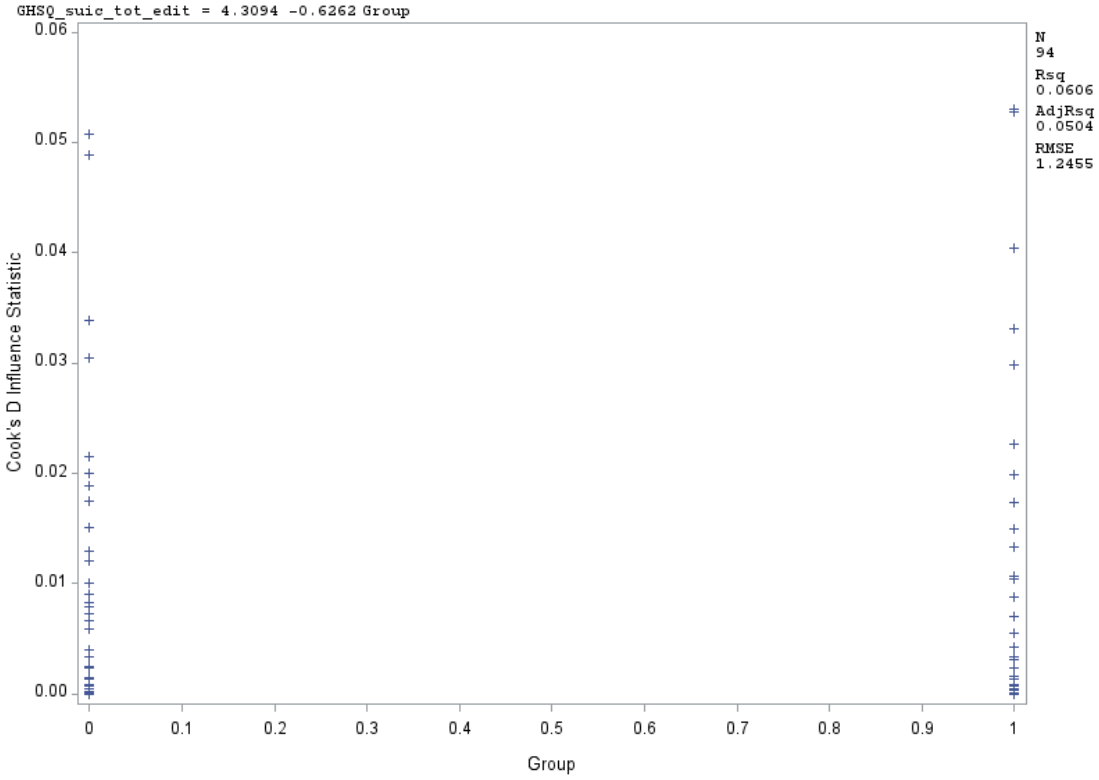

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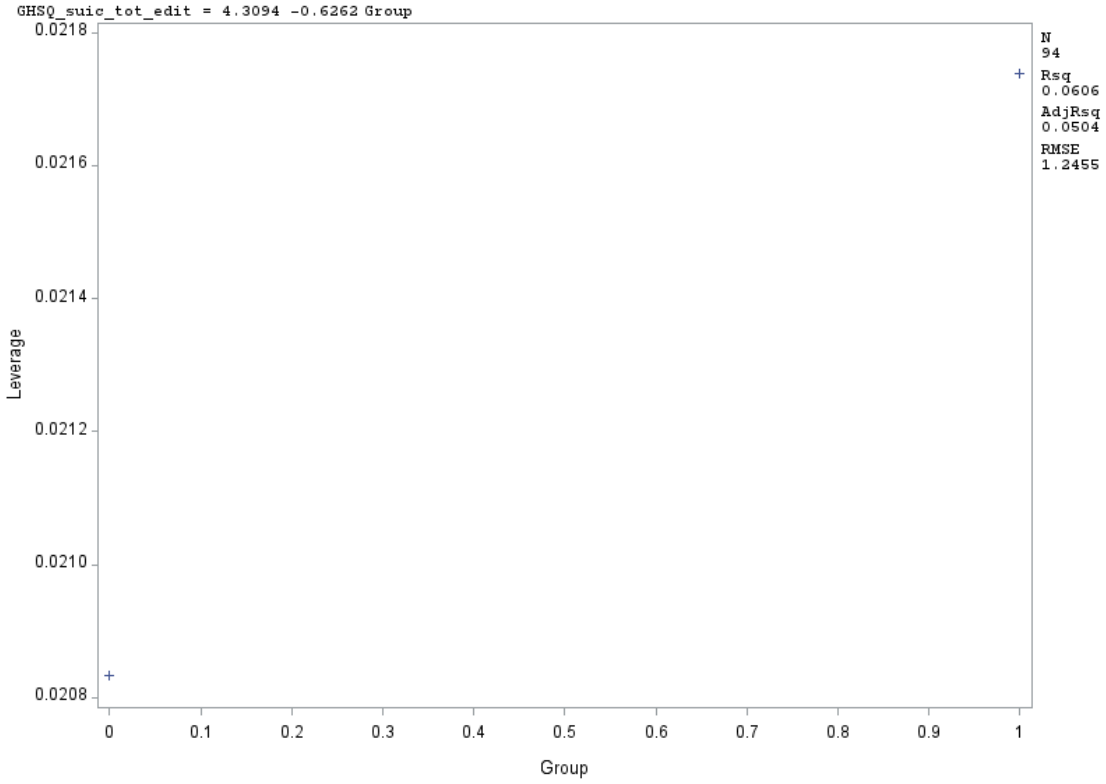

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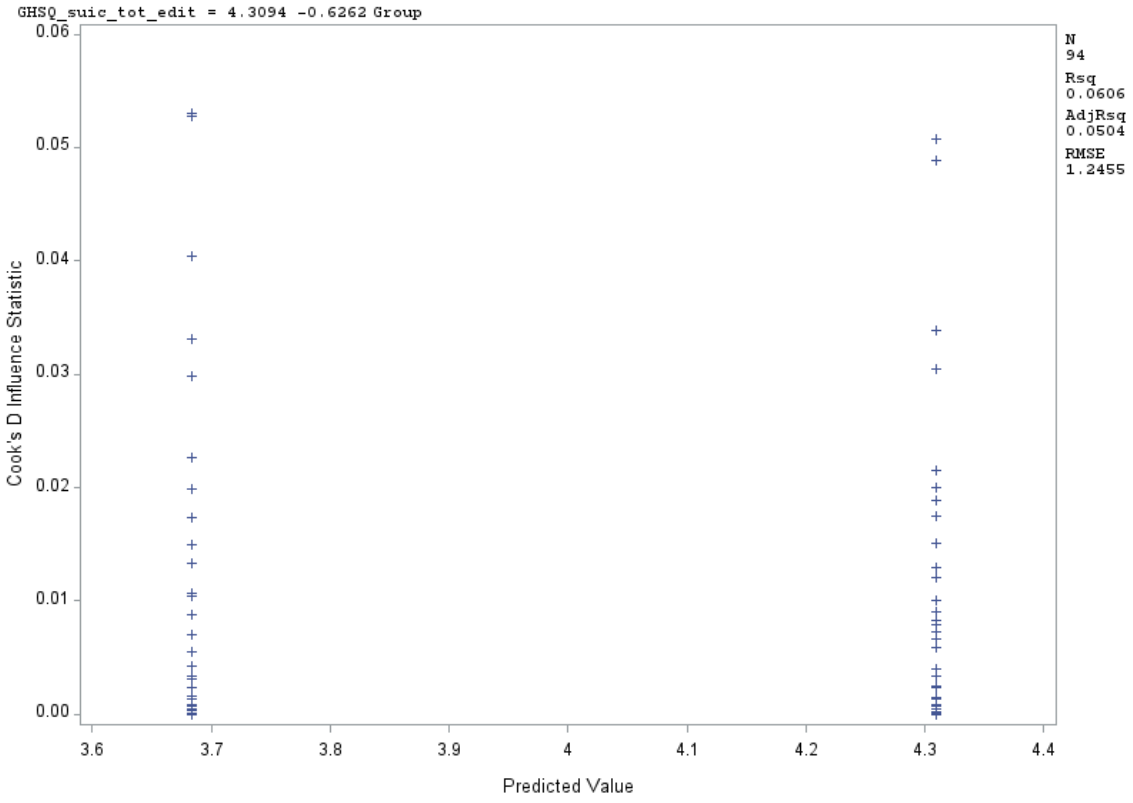

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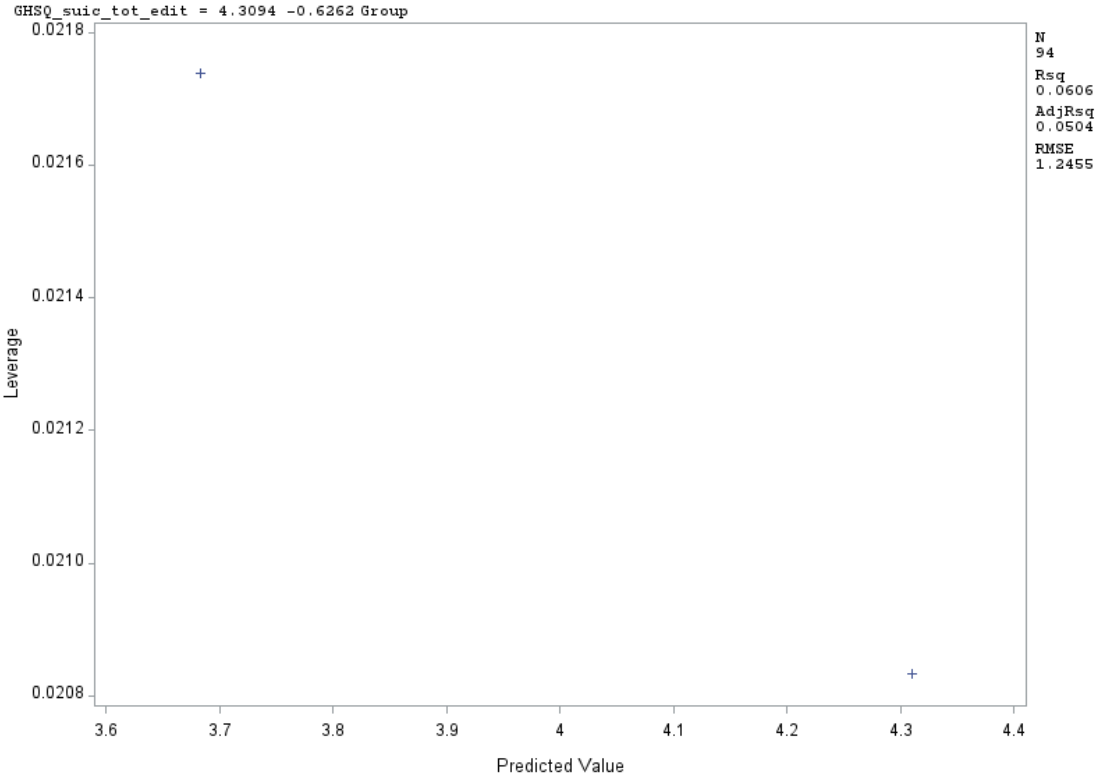

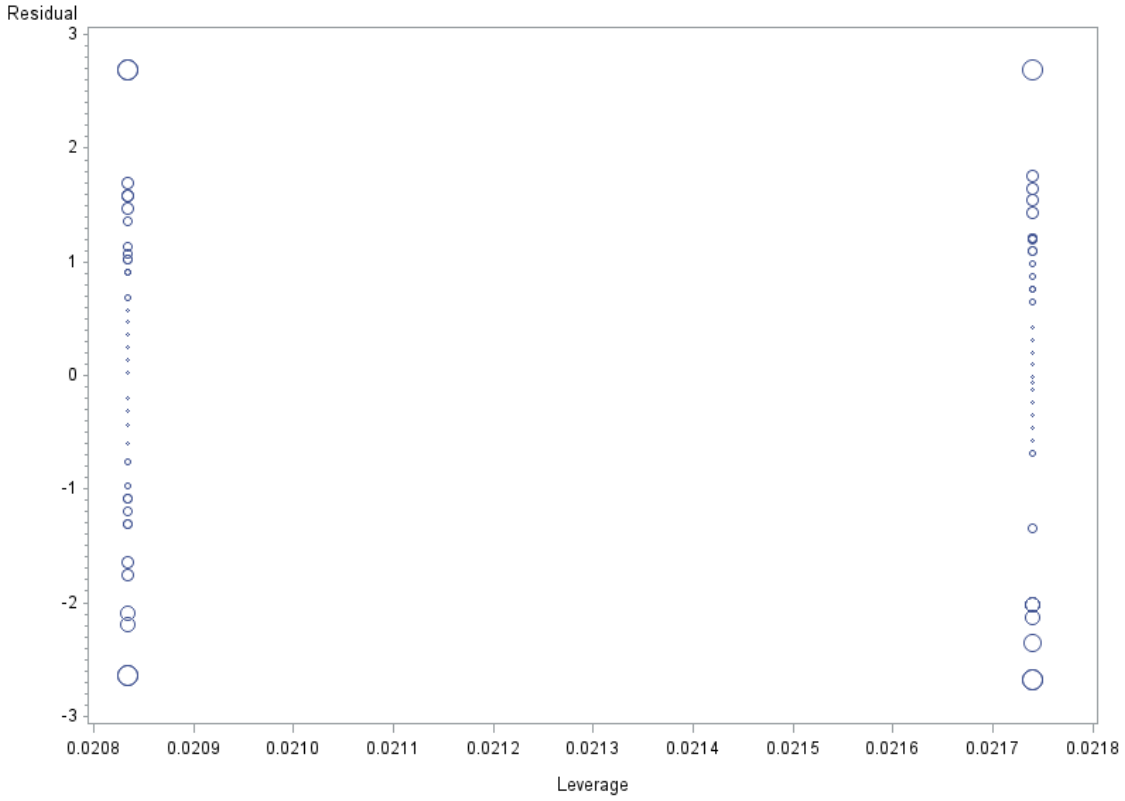

The SAS System

The MEANS Procedure

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
cookd	**Cook's D**	94	0.0108697	0.0147407	2.0188437E-6	0.0530529
leverage	**Influence Statistic Leverage**	94	0.0212766	0.000455224	0.0208333	0.0217391

Appendix C: Strength of the Association Between Stigma and Help-seeking Intentions Using the Pearson (r_p) and Spearman (r_s) Correlation Coefficients

	Stigma	
	r_p	r_s
Help-seeking	--	--
Total score	-0.12	-0.10
Personal/emotional problems	-0.06	-0.03
Suicidal thoughts	-0.16	-0.13

*$p < .05$.

Appendix D: MAKS Modified Scale Extra Questions—

Protecting Against Ceiling Effect

Q9. Anxiety disorders are the most common mental health disorders. They can affect children as well as adults. What are the signs and symptoms of an anxiety disorder? Answer: All of the above.

Answers were coded as correct ("all of the above") or incorrect ("rapid heart rate", "anger and nausea", and "irritability and problem focusing"). As demonstrated in Table 5, there were no significant differences between the experimental and control conditions on the proportion of correct versus incorrect answers for the supplemental anxiety disorder question (p=0.6739). Participants in both the experimental (93.5%) and control (95.8%) conditions had comparable proportions of correct answers.

Q10. What percentage of mental health problems and illnesses have their onset during adolescence? Answer: 70%.

Answers were coded as correct ("70%") or incorrect ("10%", "20%", and "50%"). There were no significant differences between conditions on the supplemental mental health problems and illnesses question (p=0.6113). As shown in Table 5, the proportion of correct and incorrect answers for the supplemental adolescent onset of mental health problems and illnesses question was comparable between the experimental (41.3% and 58.7%, respectively) and control (35.4% and 62.5%, respectively) conditions.

Q11. Is a mental illness attributed to what factors? Answer: Combination of genes, environmental, and personal experiences.

Answers were coded as correct ("combination of genes, environmental, and personal experiences") or incorrect ("genes" or "environmental experiences"). There were no significant differences between conditions on the supplemental mental health factors questions (p=0.2130). The proportion of correct versus incorrect responses for the supplemental mental health factors question was comparable between the experimental (80.4% and 19.6%, respectively) and control (89.6% and 10.4%, respectively) conditions.

Table D1

Modified MAKS questionnaire with extra questions to reduce ceiling effect

	Is It Just Me?	Control			
	M (*SD*)	*M* (*SD*)	*df*	*T*	*p*
MH stigma	--	--	--	--	--
Total score with outliers	18.30 (2.21)	17.02 (3.78)	76.38[a]	-2.02	0.047*
Square root MH stigma	4.27 (0.27)	4.09 (0.53)	70.66[a]	-2.06	0.043*
Log MH stigma	2.90 (0.13)	2.80 (0.31)	64.05[a]	-2.07	0.043*
Total score no outliers	18.30 (2.21)	17.54 (2.86)	90	-1.43	0.157

	Is It Just Me?			Control		
	n (%)			*n* (%)		
	Yes	No	Don't know	Yes	No	Don't know
Are you currently living with, or have you ever lived with, someone with a mental health problem?	26 (56.5)	19 (41.3)	1 (2.2)	32 (66.7)	13 (27.1)	3 (6.3)
Are you currently working with, or have you ever worked with, someone with a mental health problem?	31 (67.4)	5 (10.9)	10 (21.7)	32 (66.7)	13 (27.1)	3 (6.3)
Do you currently have, or have you ever had, a neighbour with a mental health problem?	19 (42.2)	7 (15.6)	19 (42.2)	17 (35.4)	11 (22.9)	20 (41.7)
Do you currently have, or have you ever had, a close friend with a mental health problem?	38 (82.6)	6 (13.0)	2 (4.4)	37 (77.1)	8 (16.7)	3 (6.3)

Table D2

Assessment of Mental Health (MH) Knowledge Using Original and Modified Versions of the Mental Health Knowledge Schedule (MAKS): Independent Samples t Tests and Descriptive Statistics

	Is It Just Me?	Control			
	M (*SD*)	*M* (*SD*)	*df*	*t*	*p*
MH knowledge			--	--	--
Original total score	4.08 (0.40)	3.91 (0.55)	85.86[a]	-1.65	0.103
Modified total score	3.93 (0.40)	3.80 (0.50)	92	-1.39	0.169
Condition knowledge			--	--	--
Depression	4.85 (0.42)	4.62 (0.80)	--		
Stress*	2.35 (1.43)	2.59 (1.22)		--	
Schizophrenia	4.91 (0.35)	4.70 (0.66)			-
Bipolar disorder	4.93 (0.25)	4.78 (0.51)			
Drug addiction	4.09 (1.26)	4.00 (1.14)			
Grief*	2.74 (1.47)	2.62 (1.13)			

*Reverse scored.
[a]Unequal variances.

Table D3

Assessment of General Help-seeking Intentions: The General Help-Seeking Questionnaire

	Is It Just Me?	Control			
	M (*SD*)	*M* (*SD*)	*df*	*t*	*p*
Help-seeking			--	--	--
Total score	3.80 (1.08)	4.28 (1.14)	92	2.07	0.041*
Personal/emotional problems	3.92 (1.03)	4.25 (1.20)	92	1.41	0.161
Suicidal thoughts	3.68 (1.25)	4.31 (1.25)	92	2.44	0.017*
Subscale transformations					
Square root personal/emotional problems	1.96 (0.29)	2.04 (0.30)	92	1.31	0.194
Log personal/emotional problems	1.32 (0.35)	1.40 (0.31)	92	1.23	0.222
Square root suicidal thoughts	1.89 (0.36)	2.05 (0.32)	92	2.39	0.019*
Log suicidal thoughts	1.23 (0.44)	1.41 (0.33)	92	2.33	0.022*

Note. Independent samples *t* tests and descriptive statistics for overall (total) help-seeking behaviors, and help-seeking for a personal/emotional problem or suicidal thoughts.
*$p < .05$.

Table D4

Analysis of Supplemental Is It Just Me? Questions: Chi-Square Analyses

	Is It Just Me?	Control			
	n (%)	*n* (%)	*df*	χ^2	*p*
Anxiety disorder			1	0.26[a]	0.6739
Correct	43 (93.5)	46 (95.8)			
Incorrect	3 (6.5)	2 (4.2)			
Adolescent onset			1	0.26	0.6113
Correct	19 (41.3)	17 (35.4)			
Incorrect	27 (58.7)	30 (62.5)			
Missing	0 (0.0)	1 (2.1)			
Mental health factors			1	1.55	0.2130
Correct	37 (80.4)	43 (89.6)			
Incorrect	9 (19.6)	5 (10.4)			

Note. Percentages may exceed 100% due to rounding. Missing categories were excluded from chi-square analyses due to small cell sizes.
[a]Fisher's exact test due to small cell counts.

Table D5

Assessment of Mental Health (MH) Knowledge Using Items on the Mental Health Knowledge Schedule (MAKS): Descriptive Statistics of Items Included in Computation of the MAKS Total Scale Score

	Is It Just Me?	Control
	M (*SD*)	*M* (*SD*)
MH knowledge total score		
Most people with mental health problems want to have paid employment	4.24 (0.92)	4.15 (0.97)
If a friend had a mental health problem, I know what advice to give them to get professional help	3.98 (0.83)	4.00 (0.80)
Medication can be an effective treatment for people with mental health problems	4.26 (0.85)	3.88 (1.00)
Psychotherapy (e.g. counselling or talking therapy) can be an effective treatment for people with mental health problems	4.70 (0.47)	4.50 (0.83)
People with severe mental health problems can fully recover	3.89 (0.95)	3.54 (1.09)
Most people with mental health problems go to a healthcare professional to get help*	3.39 (1.16)	3.38 (1.17)
Do you think clinicians/ researchers know the causes of mental illness?	3.09 (1.11)	3.17 (0.88)

Table D6

Assessment of Mental Health (MH) Stigma Using Items on the Reported and Intended Behaviour Scale (RIBS): Descriptive Statistics of Items Included in Computation of the RIBS Total Scale Score

	Is It Just Me?	Control
	M (*SD*)	*M* (*SD*)
RIBS total score		
In the future, I would be willing to live with someone with a mental health problem.	4.28 (0.86)	4.02 (1.12)
In the future, I would be willing to work with someone with a mental health problem.	4.63 (0.61)	4.38 (1.00)
In the future, I would be willing to live nearby to someone with a mental health problem.	4.67 (0.56)	4.35 (0.96)
In the future, I would be willing to continue a relationship with a friend who developed a mental health problem.	4.72 (0.58)	4.27 (1.11)

Table D7

Assessment of Help-seeking Behaviors Using the General Help-seeking Questionnaire (GHSQ): Descriptive Statistics of Items Included in Computation of the GHSQ Total Scale Score

	Is It Just Me?	Control
	n (%)	n (%)
If you were having a personal or emotional problem, how likely is it that you would seek help from the following people?		
Intimate partner (e.g., girlfriend, boyfriend, husband, wife, de'facto)	5.50 (1.71)	5.67 (1.63)
Friend (not related to you)	4.89 (1.95)	5.06 (1.66)
Parent	4.37 (2.26)	4.68 (1.90)
Other relative/family member	3.72 (1.75)	3.90 (2.10)
Mental health professional (e.g. psychologist, social worker, counsellor)	4.96 (1.78)	4.83 (1.92)
Phone helpline (e.g. Lifeline)	3.11 (2.00)	3.38 (2.27)
Doctor/GP	4.33 (1.93)	4.88 (1.92)
Minister or religious leader (e.g. Priest, Rabbi, Chaplain)	1.80 (1.39)	2.89 (2.13)
I would not seek help from anyone	2.63 (1.87)	2.96 (2.06)
If you were experiencing suicidal thoughts, how likely is it that you would seek help from the following people?		
Intimate partner (e.g., girlfriend, boyfriend, husband, wife, de'facto)	4.80 (2.29)	5.73 (1.67)
Friend (not related to you)	4.54 (2.31)	4.94 (1.83)
Parent	3.96 (2.25)	4.85 (2.22)
Other relative/family member	3.11 (1.96)	4.00 (2.19)
Mental health professional (e.g. psychologist, social worker, counsellor)	4.80 (2.27)	5.42 (1.98)
Phone helpline (e.g. Lifeline)	3.30 (2.14)	3.52 (2.32)
Doctor/GP	4.13 (2.05)	4.68 (2.11)
Minister or religious leader (e.g. Priest, Rabbi, Chaplain)	1.74 (1.58)	2.77 (2.36)
I would not seek help from anyone	2.64 (1.92)	2.90 (2.26)

[a]Unequal variances.
* $p < .05$.