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Predictors of Stress Among Caribbean Community College Students

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Walden University
2016

Abstract

Predictors of Stress Among Caribbean Community College Students

by

Jean Da Silva

MSc, University of the West Indies, Cave Hill, Barbados, 2009

BSc, University of the West Indies, Mona, Jamaica, 2004

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Clinical Psychology

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July 2016

Abstract

Research on North American and European students have reported moderate to severe levels of stress in more than 90% of students, which has been linked to negative health outcomes. However, there is a paucity of data on the stress of Caribbean students. Higher education in the Caribbean has undergone a transformation with wider access and higher enrollment; thus, it is important that the effects and characteristics of this transformation are researched and documented. Accordingly, the purpose of this quantitative study was to examine the experience of students in 2 year community colleges in the Caribbean. Using the theoretical foundation of Lazarus and Folkman's (1989) appraisal theory of stress, the research questions focused on the predictors of stress, socioeconomic differences in the levels of stress, and coping styles. The undergraduate stress questionnaire, the perceived stress scale, and the brief cope questionnaire assessed 150 students recruited through response to flyers posted on campuses. Data were analyzed using generalized linear model, ANOVA and MANOVA. Results indicated student status and marital status significantly predicted the stress level of students, but significant socioeconomic status differences in stress and coping styles did not. The research contributes to positive social change by helping to inform educators, administrators, and parents on the particular stressors students face, thus contributing to a better understanding of the phenomena of stress and coping among Caribbean students. It also broadens the body of research, extending it to populations outside of the North American and European contexts and providing valuable data for subsequent research.

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Dedication

To my two precious jewels, my son Travéz and daughter Tonya for their unfaltering love,

support and patience during the pursuit of this dissertation.

Thanks to my children for their constant support, love, and encouragement. It has been a long journey, and they never gave up on my ability to achieve this dream.

I look forward to continuing this journey through life with all of you.

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Chapter 1: Introduction to the Study

Numerous studies have focused on stress among students in North America. These investigations presented differential findings regarding rates of stress among different ethnic groups. Of concern are the high levels of stress among university students in comparison to the general population. Factors such as socio-economic difficulties, issues relating to social and family relationships, time demands, new responsibilities, and daily hassles contributed to student stress (Nandamuri & Gowthami, 2011; Davidson & Ireland, 2010; Brougham, Zail, Mendoza, & Miller, 2009). Although the research conducted with North American students is informative and worthwhile, a limited amount of research has been done on the West Indian population and particularly among students in the Caribbean (Plummer-Rognmo, 2012) and even less on students in St Vincent and the Grenadines. Research on high school students in the Caribbean suggests that the findings of research in North America and Europe may not easily be applied to the Caribbean context or directly applied to the Vincentian social context (Jules, 2010).

This study was conducted to examine the stress that affected students who transitioned from high school to two year community colleges by zeroing on the stressors these students perceived. The proposed study took a unique perspective as it focused on the experience of students in a Caribbean setting. Its main focus was to identify the factors contributing to stress among Caribbean students and the coping mechanisms that these students used to manage their stress.

Two year community colleges have become one of the largest and fastest growing segments of higher education worldwide (Snyder & Dillow, 2011). They serve and provide open access to post-secondary education for traditional and nontraditional students across age, income, and ethnic spectrums. They prepare students for transition to four year learning institutions, provide workforce development, vocational preparation, skills building and retraining, and offer community enrichment programs and activities (Knapp, Kelly-Reid, & Ginder, 2011). However, from inception, one of the main focuses of community colleges is academic preparation and the instructional needs of its students (Snyder & Dillow, 2011). In order to maintain optimum academic environments conducive to better learning, tailored specifically to the students' personal needs, it is important that community colleges focus greater effort on developing more comprehensive, multifaceted, and cohesive approaches to addressing barriers to learning. Community colleges can be more effective in meeting the needs of its student population if greater efforts are put into understanding the factors contributing to students' stress and the coping systems their students use.

The findings from this research will present several implications for positive social change. First students, parents, guardians, and school administrators can be more aware as to the status of stress associated with college life. Community college faculty, health educators, and counselors will have greater awareness on the phenomenon of student stress so that they can focus and direct more efforts in the planning of measures to reduce stress. Students will obtain valuable information related to stress so that they can

avoid stress from the beginning. Useful information will be provided about students who may be at high risks for physical, mental, emotional and social health outcomes. Colleges will profit from investigating how they can more prepare students for entrance to college so they are not at an increased risk of the negative effects of stress. Administrators also might profit from examining their institutions so as to find out what factors might contribute to the stress levels of students. College administrators and counselors can use the information obtain from this study to provide additional information to high school students on college life. They can also use the information to provide stress education to students prior to the students entering college.

Problem Statement

The pursuit of a college education is a challenging experience for young adults (Davidson & Ireland, 2010). For many students, stress plays a major role in the transition from high school to college (Friedlander, Reid, Shupak, & Cribbie, 2010). Studies have shown that 90% of college students are moderately to severely stressed (National College Health Assessment, 2011; Friedlander et al., 2010; Thurber & Walton, 2012). College students experience high stress due to academic commitments, social and family relationships, finances, daily hassles, lack of time management, time demands, and new responsibilities (Aselton, 2012; Jdaitawi, 2011). The stress that students experience leads to cognitive deficits, illness, depression, anxiety, and decreased life satisfaction (Bertha & Balázs, 2013; Kreitner & Kinicki, 2010). Personal characteristics, family

characteristics, lifestyle behaviors, and life events affect the ability of students to adequately adapt to this internal and external environment of change.

High levels of stress affect students' health. Ansari, Oskrochi, and Stock (2013) revealed the negative association between stress and mental, emotional, and physical morbidity. Mc Pherson (2012), Thurber and Walton (2012), and Kreitner and Kinicki (2010) found cognitive deficits, illness, depression, anxiety, and lower life satisfaction relate to college students' high stress levels. College students who come from lower socioeconomic status are more likely to have mental health problems (Evans & Kim, 2010). Attrition in higher education has been linked to socioeconomic status (referred to as family income, parental education, and academic achievement) (Thurber & Walton, 2012). Hill, Morris, Gennetian, Wolf, and Tubbs (2012), and Gennetian, Castells and Morris (2010) found that low socioeconomic status undergraduate students are less likely than high socioeconomic status students to complete 4 years of college or university education. However, this research did not show whether socioeconomic status is related to the level of perceived stress in college students. Although research indicates that college students experience stress over financial difficulties, scant research shows whether socioeconomic status is a significant factor for students finding it difficult to transition and fully integrate into their academic community.

College students use different coping strategies to deal with high levels of stress. Sontag and Graber (2010) reported that students use positive and negative responses to cope with stress. Good coping styles students use include the use of a cognitive activity

such as seeing the positive side of a situation or exercise. Bad coping styles include blaming themselves or exhibiting negative behaviors such as engaging in substance abuse or avoiding people. Abdullah, Elias, Uli and Mahyuddin (2010) investigated first year undergraduate students' adjustment and academic achievement and coping behaviors. They found that students' overall adjustment and academic achievement were significantly predicted by the kind of coping strategies they used. Also there were significant and positive relationships between students' coping and university, academic, social, and personal-emotional adjustment, students' attachment to the university, and academic achievement.

Research examining the issue of stress among students has been conducted in four year colleges. These studies mainly centered on students residing in the Western countries particularly in the United States and Canada. Studies in two year community colleges are lacking. Further, the role of culture in the experience and influence of stress is not factored into these studies. Culture is one of the fundamental aspects of society that influences and shapes both the person and the environment (Mitchell, 2013). Each culture produces its own unique set of stressors. There are cultural differences in stress levels, reactions to stress and the coping mechanisms employed. Culture further influences how families cope with stress (Mitchell, 2013).

As the demand for higher education increases in the developing world, there is an increasing enrollment of students in colleges. Each year in the Caribbean, two thirds of the students leaving senior high schools chose to attend community colleges (Plummer-

Rognmo, 2012). Although their motivation to pursue higher education varies, many students are seeking ways to enhance their earning potential and job marketability (Pragg, 2014). These institutions have risen to the educational challenges of a diverse and complex learning population (Plummer-Rognmo, 2012).

As demonstrated by the literature reviewed above, there is a profusion of research on stress among college students. However, most of this research has been conducted in the United States. Caribbean college students have been neglected. Counselors, educators, and other professionals reported knowing very little about the Caribbean culture and even less about the historical, social, and cultural peculiarities of the people and how these influence their mental health, and their physical and emotional wellbeing.

The Caribbean environment is distinct from western cultures. A study in a Caribbean context such as St Vincent and the Grenadines is essential as a large number of students are currently embarking their studies in these territories (Plummer-Rognmo, 2012). A distinct Caribbean perspective could provide useful insights to parents, counselors, and educators in the Caribbean in identifying measures and remedies to help students that are suffering from a high level of stressors. The results of the study could also contribute towards the psychological literature since limited studies have been conducted in the Caribbean context.

Purpose of the Study

The purpose of this study was to find out the factors contributing to high stress levels among community college students in the Caribbean. The goal was to find out whether students' stress is predicted by personal characteristics, family dynamics, health characteristics, lifestyle behaviors and life events. It also sought to determine if low socioeconomic status students experience different amounts of stress than high socioeconomic status students and whether there was a difference in the perception of stress for low socioeconomic status students and high socioeconomic status students in Caribbean community colleges. Finally, the study sought to find out the type of coping strategies students in the Caribbean used to deal with stress.

Nature of the Study

In this research, the quantitative approach was used to study student stress. Surveys were used to collect data from participants. The independent variables were personal characteristics, family dynamics, health characteristics, and environmental factors. Personal characteristics included age, gender, student status, and marital status. Family dynamics included family income and parental education. Health characteristics included general health, physical illness and medical diagnosis. Environmental factors included positive or negative life events.

The first dependent variable was stress which was measured using the Undergraduate Stress Questionnaire (USQ). The USQ measures stress among college students based on life-events they have experienced in the past semester. The USQ

assesses whether particular stress-invoking life events have happened to students (Crandall, Preisler & Aussprung, 1992).

The second dependent variable was the perception of stress between low socioeconomic status students and high socioeconomic status students which was analyzed through the perceived stress scale. The third variable assessed was coping as a mediator of stress in students using the Brief COPE Questionnaire.

Research Questions and Hypotheses

Q1: Does the age of Caribbean community college students predict levels of stress as measured by the Undergraduate Stress Questionnaire?

$H_0 1$: Age will not significantly predict the stress level of community college students.

$H_1 1$: Age will significantly predict the stress level of community college students.

Q2: Does the gender of Caribbean community college students predict levels of stress as measured by the Undergraduate Stress Questionnaire?

$H_0 2$: Gender will not significantly predict the stress level of community college students.

$H_1 2$: Gender will significantly predict the stress level of community college students.

Q3: Does marital status predict levels of stress in Caribbean community college students as measured by the Undergraduate Stress Questionnaire?

$H_0 3$: Marital status will not significantly predict the stress level of community college students.

$H_1 3$: Marital status will significantly predict the stress level of community college students.

Q4: Does the status of students predict levels of stress in Caribbean community college students as measured by the Undergraduate Stress Questionnaire?

H_04: Student status will not significantly predict the stress level of community college students.

H_14: Student status will significantly predict the stress level of community college students.

Q5: Do low socioeconomic status students experience different amounts of stress as measured by the Perceived Stress Scale than students who have a high socioeconomic status?

H_05 There is no significant difference in the level of stress as measured by the Perceived Stress Scale among low socioeconomic status students and high socioeconomic status students attending Caribbean community colleges.

H_15: There is a significant difference in the level of stress as measured by the Perceived Stress Scale among low socioeconomic status students and high socioeconomic status students attending Caribbean community colleges.

Q6: Are coping styles different between high socioeconomic status students and low socioeconomic status students in Caribbean community colleges?

H_06: There are no significant differences in the types of coping strategies used between high socioeconomic status students and low socioeconomic status students in Caribbean community colleges, as determined by the Brief COPE Questionnaire.

$H_1$6: There are significant differences in the types of coping strategies used between high socioeconomic status students and low socioeconomic status students in Caribbean community colleges, as determined by the Brief COPE Questionnaire.

Theoretical Base

This study used Lazarus and Folkman's (1989) appraisal theory of stress. This theory offers an ecological perspective which includes interaction between environmental stressors, cognitive appraisal and internal physiological response. This approach views stress as a transaction where the person evaluates environmental stressors (Lazarus & Folkman, 1989).

The appraisal theory explains how individual events may cause different degrees of distress to persons experiencing the same life event at the same time. This theory also explains how highly similar events can trigger different distress levels in the same individual experiencing the event at different times (Pfaff, 2012). Appraisal theory emphasizes that the appraisal of an event is highly subjective and is dependent on the perceived goals, values, and coping ability of the individual. This theory also explains how individuals manage stressors or adjust their behaviors and cognitions through coping (Lazarus & Folkman, 1989). Many studies use the appraisal theory to explain college students' subjective appraisal of events (MacCann, Fogarty, Zeidner, & Roberts, 2011; Por, Barriball, Fitzpatrick, & Roberts, 2011; Peetz, Wilson, & Strahan, 2009). These studies also suggest differences across cultures in the experience of emotional reactions, in the frequency of particular events, in the relative importance of particular events, in the

definition of self-identity, and in the nature of cultural value systems. Thus, the cognitive appraisal theory is used as the theoretical background of the testing instrument focusing on coping response of students. According to Lazarus and Folkman (1989), individuals used primary appraisals to immediately evaluate the personal significance of events and secondary appraisals to evaluate the disparate options for coping with events. The cognitive and behavioral processes that college students used to manage distressing life events are assessed using the Carver (1997) Brief COPE Questionnaire.

Definitions

Avoidant focused coping: stress management approach that involves using strategies such as withdrawal, escape, or denial (Eaton & Bradley, 2008).

Community college: a local post-secondary learning institution that offers two years of studies (Snyder & Dillow, 2011).

Community college student: a young male or female transitioning from high school to two year higher learning institution (Arnett, 2007).

Coping strategies: physical, psychological, social, or material factors which help students overcome stressors (Grant et al., 2003).

Emotion focused coping: expressive approach strategy to manage the emotions related to stress (Lazarus & Folkman, 1984).

Problem focused coping: active and deliberate approach to deal with a stressor (Lazarus & Folkman, 1984).

Socioeconomic status: social structure position based on family income, family member's occupation, parental level of education, and wealth (Gennetian, Castells, & Morris, 2010).

Stress: the relationship between the individual and the environment that is appraised by the person as taxing or exceeding their resources, and endangering their well-being (Lazarus & Folkman, 1984).

Stressor: real or perceived discrepancy between environmental demands and the resources of the person to adapt to these requirements (Lazarus & Folkman, 1984).

Assumptions and Limitations

It was assumed that all students participating in the research were attending two year community colleges. It was also assumed that the students would answer the questionnaires honestly, truthfully and according to instructions. It was further assumed that the instruments used would be effective in eliciting appropriate responses about stress in college students. The study also assumed that the sample of students used was representative of the Caribbean.

A limitation of this study was that it depended on the self-report of participants. Participants may have given socially desirable or acceptable responses or may have exaggerated or misrepresented information. There was also no way to verify that the students' responses were correct, accurate and truthful. According to Creswell (2009), participants may respond to surveys in ways that will make them look a particular way. They may have responded according to how they thought the researcher wanted them to

respond or what they perceived was the right answer. They may also have given neutral responses that may or may not have been accurate. Thus, the findings and data were based on the types of responses participants gave and were only valid as the responses were truthful. If the respondents did not answer the surveys truthfully, then the results of the study would not be valid or reliable. Further research should not rely solely on self-reports but also use other stress evaluation measures including the measurement of stress hormones.

A further limitation was that the survey instrument may not have covered all possible aspects of predictors of students' stress. Therefore, the findings might not include other relevant predictors of students' stress. Further research should extend the range of predictors to include more factors. An additional limitation of this study was the sample of college students use might not be representative of the general population of college students. Thus, the results might be limited to the sample of students who participated in the study. Future studies should focus on different Caribbean community colleges, both governmental and private.

Scope of Study and Delimitations

This study used a descriptive cross-sectional design to investigate the differences in the perception of stressors and reactions to stressors of Caribbean community college students. This type of design was useful for collecting information from a sample of individuals through their self-report responses to questions. However, this type of design may not explain the exact reasons for the responses. The study did not propose any

danger or harmful effects to its participants. Anonymity and confidentiality was preserved. The investigator's biases had no direct influence on the data. However, the type of data collected could be problematic as the investigator had no control on the accuracy and honesty of the participants' reports.

Participants in this study were full time and part time students attending two year higher education institutions in the Caribbean. The results of this study would not necessarily be generalizable to other geographic regions outside of the Caribbean region.

Significance of Study

This study focused on an under-researched area of higher education that is expanding worldwide among students entering two year community colleges (Plummer-Rognmo, 2012). It provided a unique view of stress in college students by examining different student and family characteristics and lifestyle behaviors on the psychological adjustment of students to higher education. It attempted to provide an in-depth presentation of students' stress and further highlighted factors that were predictive of higher levels of stress. Investigation of stress in Caribbean community colleges would provide useful information on a subgroup of college students who might be at high risks for physical, mental, emotional and social health outcomes. Additionally, research done on Caribbean students would contribute to the body of knowledge on the factors predicting stress in emerging adults by extending the research to West Indian populations outside of the North American and European contexts. These results would broaden the body of research relating to student life stressors and provide valuable data for

subsequent research. It would provide useful insights to community college faculty,

health educators, and counselors on the phenomenon of student stress and also help focus

and direct efforts in the planning of measures to reduce stress. Students would obtain

valuable information related to stress so that they could avoid stress from the beginning.

Summary and Transition

The last three decades had seen an increase in the number of students entering

colleges from high school. The transition from senior high school to tertiary level

education was a major life change in students' life that can be especially stressful due to

the academic, social, personal and emotional demands placed on students (Bertha &

Balázs, 2013). Numerous researchers had characterized the college transition life period

as being a stressful one (Kreitner & Kinicki, 2010). Data collected for the development

of the American College Health Association (2011) showed that high stress levels may

have negative effects on both cognitive functioning and comprehension of college

students. Stressors may also have associated negative consequences on the mental and

physical health of students (Shashi, 2013). Data collected for the "Healthy Campus

2010" plan revealed that college students had higher levels of stress than persons in the

same age group who did not attend college (Kwan, Cairney, Faulkner, & Pullenayegum,

2012). Many students also reported dropping out of college due to high levels of stress

(American College Health Association, 2011). Research also indicated that students use

different coping strategies to deal with stress (Kwan et al., 2012). Although the body of

research regarding the development and management of stress among middle and late

adolescence and adult population had increased, the emphasis had often been on college students in general and the North American context in particular, without emphasis on students from other countries. Thus, it behooved researchers to explore the nature of stress and the coping process in students in different cultural contexts.

Chapter 2 reviewed the literature on stress and coping among students. It presented the unique developmental challenges and stresses that were present during the college experience, their effects on college students, and the coping mechanisms students use. The theoretical model developed by Lazarus and Folkman (1987) was also reviewed. It also explored the origins and development of community colleges in the Caribbean in order to provide a context for the discussion on stress and management of stress among Caribbean students. This chapter also addressed research relating the learner to the community college setting and the factors that shaped the context of this environment.

Chapter 3 presented the research questions, research design, the participants, testing measures, and the statistical analyses to be performed. It also included ethical considerations including the steps taken to protect participants and informed consent. Chapter 4 presented the data collection process and the results of the statistical analyses. Chapter 5 provided a summary and interpretation of the findings, limitations of the study, recommendations for further research, and implications for social change.

Chapter 2: Review of Literature

This chapter provides an overview of stress, and the characteristics that influence students' behavior. It includes a description of research relating to stress and coping among students. It also describes research related to the community college learning environment, its development in the Caribbean, and factors that shape the context of its learning environment. The review of literature centers on concepts that are relevant to this quantitative, descriptive study and comprises relevant research from various sources.

Literature Search

Searches were conducted using Walden University Library, University of the West Indies Library, Caribbean Reference Libraries, and West Indies Libraries for publications related to the development of community colleges in the Caribbean. Searches for college students and stress research were completed through the following databases: PsycINFO, PsycArticles, PsycBOOKS, Academic Search Premier, SocINDEX, Google Scholar, Education Research Complete, ERIC, MEDLINE, Primary Search, Health Source, West Indian Medical Journal, Caribbean Medical Journal, BBC Caribbean Archives, BIREME, Caribbean Digital Library, Caribbean Search, Caribbean Educational Research, MORD-Mona Online Research Database, and MEDCARIB.

Search words and phrases included stress, stressors, perceived stress, stress level, predictor of stress, high stress, coping, stress response, coping style, coping skills, coping techniques, college student, community college, higher education, tertiary education,

post-secondary education, first year college student. Research on these terms and articles commenced in January 2010 and continued to October 2014.

Introduction

There is an academic revolution taking place in higher education. More students have access to higher education and enrollment has increased. Globally, there are 150.6 million tertiary students (National Student Clearinghouse Research Center, 2014). Enrollment of students in colleges has been growing steadily in the last decades and constitutes a significant proportion of higher education. Statistics regarding post-secondary education in the United States show college enrollment increased by 11 % between 1991 and 2001. Between 2001 and 2011, enrollment increased 32 %, from 15.9 million to 21.0 million (National Student Clearinghouse Research Center, 2014).

It is difficult to determine an actual number of college students in the Caribbean because there are no consistencies in education tracking. In 1998, the number of students from Caribbean countries studying at higher institutions was estimated at 93, 550 students (UNESCO Institute of Statistics, 2001). In 2012 and 2013, the estimated number tripled to between 226, 500 and 332, 900 students respectively (UNESCO Institute of Statistics, 2014). Although it is difficult to accurately track the number of Caribbean students accessing tertiary level education, research is consistently showing a growing demand among Caribbean citizens for higher education. An increasing number of students are now deciding to lengthen their academic careers by making a direct transition from the secondary to tertiary academic gateways (Schuetze & Slowey, 2012).

An increasing number of working adults who have not previously obtained tertiary

certification are now seeking such qualifications (Plummer-Rognmo, 2012). Caribbean

governments, in an effort to advance their nations against an international backdrop of

concurrent extensive incentives for higher education, are seeking to widen access to such

educational opportunities (Pragg, 2014).

Higher education in the Caribbean has undergone a transformation (Plummer-

Rognmo, 2012). The education system has expanded from a limited provider to a

multiplicity of private education institutions. There is also a great transition, from an

elite system of higher education services to a mass system of higher education services

(Schuetze & Slowey, 2012). Middle class and working families now have more access to

higher education services than previously. Higher education is no longer relegated to the

privileged few within society.

While around the world and even within the Caribbean region, a growing number

of students are embarking on extending their academic careers by accessing higher

education, more information is needed on the kinds of stressors they experience and the

challenges students encounter in their quest for higher education. An understanding of the

dynamics of the contemporary higher education student body requires an investigation into

the challenges faced by today's students.

In North America, Asia and Europe where higher educational opportunities are

more accessible, many students are enrolled in higher education. Numerous

investigations are conducted among their students. Scant research is conducted in

Caribbean contexts. As more Caribbean students enter college, it becomes necessary to

understand their experience and reaction to stressors. More information is needed on the kinds of stressors they experience in order to better meet their specific educational needs.

The Caribbean itself is a geographically diverse region populated by a diverse polyglot of peoples. These differences are manifested in language differences, religion, different political systems, economies, and customs. Widespread poverty, unemployment and income inequality undermine the region as a whole. Caribbean territories have double digit unemployment rates, marked income inequality and a high proportion of the population live in absolute poverty. In Haiti 65 % of the population live in abject poverty, over 40 % in Guyana and Suriname, and between 20 and 40 % in the other countries. The economic, social and political elements of development in the Caribbean affect the well-being of people. However, not much information is available on how Caribbean people react and deal with the varying stressors in life.

While around the world and even within the Caribbean region, students are enrolling in tertiary establishments, little is known about the stresses and challenges students encounter in their quest for higher education. The experiences of students, therefore, need to be at the forefront of future research. Quality education can only be provided once the needs of the tertiary learners are adequately understood (Sockalingam, 2012).

An understanding of the population dynamics of the contemporary higher education student body requires an investigation into the challenges faced by today's students. Higher education in the Caribbean has undergone a transformation (Plummer-Rognmo, 2012). Students are accessing higher education in large numbers and Caribbean governments are

seeking to widen access to such educational opportunities. It is important that the effects and characteristics of this transformation be researched and documented (Schuetze & Slowey, 2012).

Stress among College Students

Stress is a common experience in human life. Students, in general, are more vulnerable to stress as a result of the challenges of the educational environment (Wiesman, 2012; Thurber & Walton, 2012; Dawes & Larson, 2011). The American College Health Association (ACHA) reported the major impediment to students' academic performance is stress (ACHA, 2011). Further, levels of perceived stress have increased from previous years among college students (ACHA, 2012). Investigations in community colleges show 85% of students experience stress in their daily lives (Associate Press, 2013). A study of 54 community colleges across 28 states in the United State of America reported the most common presenting problem among students is stress and depression (American Counseling Association, 2011).

Stress is elicited by a wide variety of psychosocial stimuli. Four broad categories are personal, social/familial, work, and the environment. Students experience chronic stresses relating to personal characteristics such as students' perceptions and past or current life experiences; family characteristics such as family support, family income, and family size; health-related behaviors including chronic illness, sleep difficulties, excessive drinking, lack of exercise, and inappropriate eating; environmental characteristics such as the type of campus, the geographic location of school, the size of the institution, the type of resources available, the actual size of the classes, the age of

students, the type of courses offered, the ratio of male to female students, the gender of instructor, the teaching style of the faculty, and technology (Sawatsky, Ratner, Richardson, Washburn, Sudmant, & Mirwaldt, 2012). Investigating the sources of stress among 2,253 undergraduate students aged 18 to 24; Presnell (2010) found the primary sources of stress included financial problems, family problems, relationship, and extracurricular activities.

The impact of stress on society is enormous. Twenty five percent to 50 % of students attending U.S. colleges who are seen in college health and counseling centers take antidepressant drugs as a result of stressors that are specific to the college population (Shirazi, Rasekhnia & Ajdary, 2011). Research has shown increasing mental health problems among students in institutions of higher education (Ansari, Oskrochi, & Stock, 2013; Thurber & Walton, 2012; Friedlander et al., 2010). The National College Health Assessment (ACHA, 2011) in a study of 105,781 students at 129 colleges and universities found that 36% of women and 30% of men experience such level of depression that it was difficult to conduct daily activities. They also found that 60% of women and 43% of men reported high levels of anxiety and feeling overwhelmed.

According to the 2011 National College Health Assessment (ACHA, 2011), the most commonly reported concerns of college students are depression and anxiety. Thirty percent of men and 36% of women experienced mental health issues relating to depression at least once during the year. In addition, 43% of men and almost 60% of women reported experiencing anxiety within the last 12 months. The American College

Health Association conducted a study on the risks of stress among students using a sample of 27, 774 students. They found that 81% reported feeling exhausted, 30% felt depressed, and 1 % attempted suicide (ACHA, 2012).

Stress also has a multidimensional influence on the individual. Studies on Post-traumatic Stress Disorder (PTSD) among Caribbean Blacks indicated that Caribbean Blacks who experienced anxiety disorders were more likely to experience severe mental illness than whites (Himle, Baser, Taylor, Campbell, & Jackson, 2009). Torres and Jackson (2008) found that Caribbean Blacks students were more likely to meet the criteria for overall substance disorder. Himle et al. (2010) examined Obsessive-compulsive Disorder (OCD) and rates of co-occurring psychiatric disorder among Caribbean Blacks and found high levels of overall mental illness severity and functional impairment. Seaton, Caldwell, Sellers, and Jackson (2010) found increases in depressive symptoms and decreases in self-esteem and life satisfaction among Caribbean Black youth.

In sum, several investigations have been conducted on stress among students. These studies confirm that many factors contribute to the stress of students including personal, family, health and environmental factors. The most prevalent stressors among college students involve intrapersonal, environmental and academic factors. The stressors increase the students' risks of developing physical, psychological, social, emotional, and health outcomes. Stress is characterized according to western perspectives. Limited research focused on the experience of different cultures. Cultures differ in terms of physical, economic and social environments. What events are perceived as stressful, the coping strategies used in a particular society, and the

institutional mechanisms individuals use for assistance are dependent on the social environment. Learning about cultural differences is important in understanding how each person responds to stress. The Caribbean perspective to stress needs to be examined to increase knowledge about stress and how stress can be effectively managed given the constraints imposed upon the individual by the existing values in a particular culture.

The Concept of Stress

Stress is multidimensional. Physically, stress threatens the physiologic homeostasis of the person (Contrada & Baum, 2010). Socially, stress alters interpersonal relationships (Kidger, Araya, Donovan, & Gunnell, 2012). Emotionally, stress causes negative feelings about the self (Wiesman, 2012). Psychologically, stress makes persons more prone to anxiety, depression and other mental health conditions (Roddenberry & Renk, 2010). Intellectually, stress affects the problem- solving and perceptual abilities of a person (Chorba, Was & Isaacson, 2012).

Stress is conceptualized differently. In the medical model, stress is defined as the physiological response of an organism to external stimuli (Seaward, 2012). In the environmental model, stress is external to the organism and includes aversive environmental conditions (Sterling, 2011). In the psychological model, stress is described as an interaction between the person and the environment (Khoozani & Hadzic, 2010). Stress is also defined as a physical, emotional, or psychological reaction to change (Contrada & Baum, 2012). In research, the term stress is used to refer to the reaction to stimuli and the stimuli that cause the reaction (Ganzel, Morris, & Wethington,

2010). Stress can also be negative and positive stimuli (Sontag & Graber (2010), chronic

or acute (Khoozani & Hadzic, 2010), controllable or uncontrollable (Contrada & Baum,

2012).

The concept of stress dates back to the nineteenth century (Suldo et al., 2010).

Claude Bernard initially recognized the modern concept of stress and stress responses.

He asserted that within the human body are responses that maintain life in spite of

changes in the external environment (Contrada & Baum, 2012). Walter Cannon

expanded Bernard's concept and labeled the process as homeostasis which he described

as "maintaining internal stability in the face of environmental change" (Contrada &

Baum, 2012, p. 34). Walter Cannon first used the word *stress* to refer to the body's

response to external challenges (Contrada & Baum, 2012). Under challenging demands,

the autonomic nervous system activates the fight-or-flight response. It sends out alarm

signals and stress hormones that forces the organism to either confront the stimuli (fight)

or run and avoid it (flight) (Seaward, 2012).

Hans Selye pioneered stress research. He formulated the stress response pattern

termed the general adaptation syndrome (Seaward, 2012). The general adaptation

syndrome, or GAS, describes the body's short-term and long-term reactions to stress

(Selye, 1976). According to Selye, the mechanism of stress is an internal, external

demand made upon the body (Selye, 1976). The GAS consists of three-phases: alarm,

resistance, and exhaustion. In the alarm phase, the body's defense system responds to the

stressor by trying to deal with it. In the resistance phase, the body adapts to the stressor

through physiological processes such as increasing blood pressure, tensing the muscles or producing more epinephrine. In the exhaustion phase, the body's ability to resist the stressor is depleted under severe stress and is exhausted. The body is thus prone to illnesses such as depression and anxiety (Seaward, 2012).

Hans Selye suggested four interactions of the body with stressors: eustress or good stress, distress or bad stress, overstress or hyperstress and understress or hypostress. According to Selye, the goal of behavior is to achieve as far as possible homeostasis between the negative influences of stress and eustress (Selye, 1979).

Stress is perceived as four distinct categories: external situations, evaluation of situations, a relationship between individuals and environmental needs and a relationship between an individual's handling of situations and the needs of the environment (Lin & Chen, 2009, p. 158). Stress is also construed as life events consisting of different categories including chronic stress that occurs over an extended period of time, acute time limited stress caused by specific life events, and stress sequences caused by a series of life events.

Ganzel et al. (2010) defined stress as a composite of both neurological and biological processes. Stress is the process through which the brain and the body work in tandem to maintain allostasis. Allostasis denotes the biological processes that maintain homeostasis in cultural, social, and physical contexts (Bush, Obradovic, Adler & Boyce, 2011). The brain and the body work together to mediate environmental factors defined as allostatic load (Ganzel et al., 2010). Allostatic load promotes adaptative or protective

functions in the short term or overload or pathophysiology in the long term (Seeman, Gruenwald, Karlamangla, Sidney, Liu & Mc Ewen, 2010). According to Ganzel, et al. (2010), the brain responds continuously to stress through physiological and psychological processes. This causes the structure and functioning of the brain to change to accommodate the stress. The body also responds physiologically in order to adapt to the stress. As allostatic load increases, it decreases the body's ability to make allostatic accommodations leading to increased vulnerability to illnesses, diseases, new stresses and ultimately to impaired health (Ganzel et al., 2010).

Stress is also described as mental and bodily tensions of chronic proportions exceeding a person's capacity to cope (Anders, Frazier, & Shallcross, 2012). In this description, stress is a reaction to environmental stimuli termed stressors. Stressors include life changes, daily life events and hassles, and catastrophic events (Ansari et al., 2013).

Outcomes of Stress

Stress has different effects. A meta-analysis of 293 independent studies linked stress to the immune system (Denson, Spanovic, & Miller, 2009). The results of the combined studies revealed an association between stressful life events and immune system changes. Chronic stress was correlated with immune suppression. Also, stress and immune functions were inversely correlated, as the stress duration increased, the more the immune functions decreased (Denson et al., 2009).

Cohen (2005) investigated the association between stress and the common cold in a study spanning 20 years. In one study, Cohen exposed participants to one measure of stress then exposed them to different viruses for the common cold. Cohen found significant positive correlations for all viruses. Cohen found that participants with higher perceived stress levels were more susceptible to developing a clinical cold after being exposed to the viruses more often than participants who reported lower stress levels (Cohen, Tyrrell, & Smith, 2007). The correlation was unrelated to all mediators, including diet, season, body mass index, age, smoking, immunoglobulin levels, and white blood cell count. Previous studies conducted by Cohen (1996) showed significant correlation between the type and duration of stressful life event and susceptibility to the common cold. His study showed that as stressful life events increased so does the susceptibility to the common cold. Factors contributing to increased susceptibility to the common cold included interpersonal difficulties, family problems, and work related difficulties.

Stress is also related to physical and health problems. Ansari et al. (2013) found the most common short term effects of stress among college students were concentration difficulties, fatigue, headache, and somatic complaints. The American College Health Association surveyed over 40, 000 college students and found the second highest factor affecting students' academic performance was cold, flu, and sore throat (ACHA, 2012). In another study of 846 college students, Anders et al. (2012) found that higher levels of stress were associated with symptoms of post-traumatic stress disorder (PTSD), health

problems and lower grade point averages. Several studies reported that college students who experience daily hassles are more likely to develop psychological symptoms such as depression, anxiety, insomnia, and obsessive-compulsive disorders (Weiner & Carton, 2012; Aselton, 2012; Por et al., 2011; MacCann, Fogarty, Zeidner, & Roberts, 2011).

Students who experience chronic stress find it difficult to complete their academic programs, develop poor study habits, and sometimes drop out (Anders et al., 2012). The ACHA (2012) reported an increased in the number of students reporting symptoms of depression and anxiety from 11% in 2008 to 12% in 2012 and from 18% in 2008 to 20% in 2012, respectively. A meta-analytic study examining psychopathology among different student populations found generational differences between today's student population compared with those from the 1930s and 1940s (Twenge, Konrath, Foster, Campbell, & Bushman, 2010). In another study, students who reported being significantly depressed experienced lower grade point averages and missed more classes than student who were not depressed (Pettit & DeBarr, 2011). In an investigation of the relationship among stress, anxiety and academic achievement among students, Ansari et al. (2013) found that 20% of students experienced negative life experiences including depression, anxiety and lack of essential necessities as a direct result of limited or insufficient financial resources. According to their report, students who experienced both depression and financial difficulties obtained lower grades than students who did not experience these symptoms. Further, the more stressors students experienced the more negative the impact on their physical and mental wellbeing.

Analysis of the preceding literature underscores the impact of stress on student experiences within the tertiary realm of academia. Higher education in the Caribbean has undergone a 'paradigm shift' (Plumer-Rognmo, 2012, p.12). Contemporary tertiary students are very different from the tertiary students to which the region has become accustomed. For instance, the student population no longer consists of students only from middle to upper socioeconomic backgrounds. Students from the lower social classes now have access to higher education. The contemporary college student faces a myriad of challenges. Thus, to obtain an understanding of today's tertiary students of the region research should investigate the various forms of stress these students face throughout their academic career. As the Caribbean's higher education sector continues to expand, a more student-centered thrust in Caribbean research is needed.

Stress in Caribbean Students

Not much research is done in the Caribbean using Caribbean students. Thus the research available is sparse and not well documented. One study that attempted to document the state of students in a Caribbean context is Lowe and Lipps (2007). They investigated depressive symptoms among 690 students (483 females and 207 males) attending the University of the West Indies, in Mona Jamaica. The participants were first and second semesters students enrolled in Foundation courses during the 2005-2006 academic year. Students were enrolled in the Faculty of Humanities and Education (43%), the Faculty of Social Sciences (40%), the Faculty of Pure and Applied Sciences (6%), the Faculty of Medical Sciences (4%), and the Faculty of Law (1%). The Beck Depression Inventory – II (BDI – II) was utilized as a measure of depression. This

measure was never validated in the Caribbean (Lowe & Lipps, 2007). The researchers found that the features of depression differed according to the stream of high school the student attended.

Streaming is a method of grouping students by ability. Students in similar ability range are grouped together as a class. In the educational context in Jamaica, students are streamed according to the high school they are attending and among other high schools in Jamaica (Evans, 2001). Streaming occurs according to their parents' level of education (educational attainment) and social class. High streamed students are educated using the prescribed curriculum while students in the low streams are given different classroom instructional conditions and a tailored curriculum (Gamoran, 2011).

Lowe and Lipps (2007) found the depression scores of high streamed students appeared similar to North American high school students. In contrast, low streamed students had higher depression scores than high streamed students. Further, no gender differences existed in depression among low streamed students. However, high streamed female students reported being significantly more depressed than high streamed male colleagues. In comparing the results with international students, the researchers reported more male students experiencing depressions than females.

Another study conducted in the Caribbean was an investigation of stress among dental students in Trinidad and Tobago (Rahul, Adams, Simeon, & Persad, 2002). This study investigated the potential sources of stress and psychological disturbance of undergraduate students in all five years in the dental program in Trinidad. The Dental

Environment Stress questionnaire (DES) and the Brief Symptom Inventory (BSI) were used to measure stress in students. Students rated the level of stress they experience on a scale of 0 (not stressful) to 5 (highly stressful). The results showed significant high levels of stress between the preclinical and clinical phases of the program. Further, significant differences were shown across all five years of study and particular stressors. Specific stressors included clinical requirements (70%), examinations (97%), shortage of allocated clinical time (97%), difficulty in managing difficult cases (88%), lack of co-operation by the patient (88%) amount of coursework(85%), difficulty of coursework (86%), lack of input in decision making/receiving criticism about academic and clinical work (82%), expectation versus reality of the dental college (79%), rules and regulations (76%), competition for grades (76%), and fear of catching up if left behind and an uncertainty of the future (76%) (Rahul et al., 2002).

The results of the Global Severity Index of the BSI showed clinical significant range in 55% of males and 44% females suggestive of significant psychological disturbance (Rahul et al., 2002). Psychological disturbance was significantly correlated with levels of stress for male students ($r = 0.56$; $p < 0.001$), and not significant for female students. The researchers indicated that further development of dental educational programs is needed to enhance the psychosocial well-being of students (Rahul et al., 2002). No other studies were done in the Caribbean.

The present research sheds light on the notion that more research is needed investigating the experiences of tertiary students in the Caribbean. The purpose of research is to describe, explain and explore phenomenon within societies (Bernard & Ryan, 2010).

However, Caribbean research is yet to explore the new dynamics of tertiary education. As the region tries to charter a new course toward social and economic development by strengthening of its populace, research within the area of higher education should be expanded. It is thus necessary that research is conducted at the tertiary level institutions particularly in community colleges, so that information specific to these institutions are available and more holistic understanding of the region's tertiary student body is provided.

Appraisal Theory of Stress

The Cognitive Appraisal theory (CAS) highlights the transactional nature of stress. It provides a framework for evaluating the processes of coping with stressful events. The CAS emphasizes the interaction between the internal components of an individual and external stimulus. The environment creates the sources of stress. An external event causes physiological reactions of the body that exceeds a person's emotional and behavioral repertoire. The individual seeks out ways of coping with these stressors. The individual negates the harmful effects of external stressors and develops resources such as coping, to deal with the external stress (Krypel & Henderson-King, 2010). However, the transaction is dependent on the impact of the external stressor (Lazaurus & Folkman, 1984).

In the cognitive appraisal model, coping is defined as a way of managing specific demands of an appraised stressful event (Folkman, 1992). Within this model, cognitive appraisals help the person determine whether a specific person-environment encounter is perceived as stressful. Lazarus and Folkman (1984) conceptualized stress as an individual's cognitive appraisal that they do not possess the resources to cope with past,

current or future perceived situations (Krypel & Henderson-King, 2010). Stress occurs as a direct result of the imbalance between environmental demands and having the ability to meet those demands (MacCann et al., 2011). A stressor is thus, the particular taxing situation (Krypel & Henderson-King, 2010).

Lazarus and Folkman (1987) viewed stress as a dynamic interplay of variables leading to specific outcomes. Personal characteristics and environmental antecedents mediate processes and outcomes. Personal characteristics refer to the individual's belief systems and goals. Environmental antecedents include resources, demands and constraints. According to Lazarus and Folkman (1987), stress results from a conjunction between a specific type of environment and a specific kind of person leading to the appraisal (Lazarus, 1991c, p.3). Thus, stress encompasses cognitive, affective and coping factors.

Lazarus and Folkman (1987) contended that stress occurs as a result of an individual's appraisal of situations. When an individual experiences distress, according to the GAS theory, the person evaluates the potential threat of the situation (Lazarus, 1999). This the GAS refers to as a primary appraisal. Primary appraisals are individual judgments about the significance of an event as positive, stressful, controllable, challenging, or insignificant. The individual evaluates the effects of demands and resources on their functioning. If situational demands outweigh available resources, the individual may evaluate the situation as potentially threatening or harmful, that actual harm has occurred or there is potential benefit (Lazarus, 1994).

Secondary appraisals involves focusing on the coping options for changing a harmful or threatening situation in order to create a more positive environment.

Secondary appraisals relates to what a person can do about the situation (Krypel & Henderson-King, 2010). The focus is on altering the harm, loss, threat or challenge (Folkman & Lazarus, 1985). The individual's coping response is determined by his perceptions of ability to take control over the stressful situation.

Reappraisal refers to the feedback the individual receives when both primary and secondary appraisal changes occur as a result of the individual's reaction and the environmental counter-reactions. The person and environmental reactions are appraised by the individual leading to reappraisals of the person-environment relationship (Lazarus, 1993, 1994).

The transactional theory also focuses on the cognitive and behavioral efforts to manage taxing demands or those which exceed the resources of the person (Lazarus & Folkman, 1984, p. 141). The person uses strategies to tolerate, accept, minimize, or change situational demands in an effort to manage his environment. As a result of individual differences in response to major life events, Lazarus and Folkman (1984) suggested measuring a person's stress through their experience of cataclysmic events or daily hassles. Global cataclysmic events include such events as natural disasters and war. Individualized cataclysmic events include events such as illness, death, and divorce. Daily hassles refer to personal, individual, everyday events such as new responsibilities, transitions, and changes. According to Lazarus and Folkman (1984) individuals experience different number and frequency of daily hassles. If individuals experience increase amounts of daily hassles, their stress management resources will decrease and

the person may use unhealthy coping strategies to manage the stress (MacCann et al., 2011).

In Lazarus and Folkman's (1984) model, stress leads to health-related outcomes. They associate persistent exposure to chronic stress as leading to decrease physical, emotional, behavioral, and psychological functioning (MacCann et al., 2011; Por et al., 2011). Persistent exposure to chronic stress influences susceptibility to disease and are a major source of negative outcomes pertaining to morbidity and mortality. A study of the relationship between psychological stress and disease by Cohen et al. (2007) showed high associations between stress and disease. They reported the primary disorders and diseases related to stress to include depression, infectious diseases, autoimmune diseases, and many types of cancer (Aselton, 2012; Cohen et al., 2007). Other conditions resulting from stress include anxiety, sleep problems, lack of energy, impaired memory, headaches, loss of appetite, gastrointestinal problems, and emotional distress (Ansari et al., 2013; Mahmoud et al., 2012; Zhang, Wang, Xia, Liu, & Jung, 2012). Physiological responses include such conditions such as increased heart rate, high blood pressure, respiration, and high blood glucose levels (Contrada & Baum, 2012). Stressful life events have also been associated with depressive symptoms and depressive disorders. Individuals who experience a major life event or exposed to persistent extreme stressors are more likely to develop depression (Aselton, 2012). Cohen et al. (2007) found that 50-80% of persons who experienced depression also experienced a major life event 3-6 months before the onset of the depression.

Coping

When experiencing stress, individuals use different coping strategies to manage or reduce the distressing situation or to change the nature of the situation (MacCann et al., 2011). Coping strategies are physical, psychological, social, or material factors which help the individual overcome stressors (MacCann et al., 2011). Lazarus and Folkman (1984) described the coping process as homeostatic or stabilizing. It assists the person in maintaining psychological and social adaptation during stressful situations. Coping involves both behavioral and cognitive attempts to respond to internal and external demands. Coping also involves efforts to master harmful, stressful, threatening or challenging conditions when automatic and routine responses are unavailable (Por et al., 2011).

Some approaches to coping include problem-focused coping, emotion-focused coping and avoidance (Zhang et al., 2012; MacCann et al., 2011; Weiner & Carton, 2012). Problem-focused coping involves using active and deliberate attempts to deal with stressors (Zhang et al., 2012). The individual considers multiple options in dealing with distressing situation and uses solution-focused strategies to confront difficult problems (Por et al., 2011). The individual attempts to solve, minimize or re-conceptualize the effects of a stressful situation (Alarcon, Edwards & Menke, 2011). Emotion focused coping is an expressive approach strategy to manage the emotions related to stress (Lazarus & Folkman, 1984). It involves using strategies to reduce unpleasant emotions emanating from the stressor and includes using conscious activities

such as self-preoccupation, self-blame, accepting responsibility, venting emotions, and fantasy (Aselton, 2012). Avoidant focused coping is a stress management approach that involves using person-oriented and task-oriented strategies to deal with stress. Strategies associated with this approach include withdrawal, escape, denial, social diversion or distraction (MacCann et al., 2011).

Lazarus and Folkman (1987) conceptualized coping in two ways: as emotion-focused coping and problem-focused coping. Coping is described as how the individual views and manages the problem and regulates their emotions (Folkman, 1992). According to Folkman and Lazarus (1987), the function of coping is to alter the nature of the environment creating the stress or to regulate stressful emotions. Folkman and Lazarus (1987) identified the alteration of the environmental stimuli causing stress as problem-focused coping and the regulation of emotions as emotion-focused coping.

In a study of more than 1,000 different stressful encounters, Folkman and Lazarus (1980) investigated the use of both problem-focused and emotion-focused coping strategies. They found the use of a specific coping strategy is dependent on the nature of the stress and the cognitive appraisal of the stressful event at the particular time. To explain the quantity and intensity of a person's emotion, Folkman and Lazarus (1985) proposed that a person first appraises a stressful event. Emotions depend on the person's appraisal of the event. For example, if a person appraises a situation as threatening, anxiety can result. If a person appraises a situation as challenging, excitement can be

elicited. If a person appraises a situation as harmful, anger may be elicited. If a person appraises a situation as beneficial, happiness or relief may be elicited.

Folkman and Lazarus (1987) studied this theory of emotion and coping in students attending university during three phases of a psychology midterm examination. The findings of their study showed that in the first phase, students utilized more problem-solving and emotion-focused coping strategies prior to taking the examination. In the second phase of the exam, prior to the announcement of their grades students used more problem-solving coping. There was an increased in the emotion-focused strategy of distancing. The findings of this study suggest that individuals may turn to this type of coping strategy in situations when the only option is to wait. In the final stage of the examination, following the posting of their grades students who obtained low grades used more emotion-focused coping to manage the distress associated with their performance. In all three phases more than 90% of students used both problem-focused and emotion focused coping. This result was consistent with earlier studies that suggested that people use both types of coping strategies in stressful situations. The results of the study also show significant changes in the type of emotions students felt during the different stages of the exam. For example, students experienced more threatening and challenging emotions such as anxiety in the first and second phases of the exam but this decreased during the last stage. Students experienced more harmful and beneficial emotions during the first and second phases of the examination and this was maintained to the last phase. The results of this study show that coping, especially among students in college is a

dynamic and complex process. Students' emotions are mediated by several factors including appraisal of the situation and the type of coping strategies they utilize.

Research examining the particular mechanisms individuals used to manage stress began when Folkman and Lazarus (1987) first developed the Ways of Coping Checklist which assesses the thought and actions persons used to manage stress. They later revised this instrument to the Ways of Coping Questionnaire. Folkman and Lazarus (1988) examined coping in mediating emotion utilizing the revised Ways of Coping Questionnaire. They examined two different samples. One sample consisted of younger participants (85 married couples) and another sample consisted of older persons (161 persons with an average age of 68 years). The researchers found that problem-solving coping was associated with more positive emotion. Confrontive coping was related more to negative emotions in the young sample. Positive appraisal was associated with positive emotions in the younger age group but negative emotions in the older group. Distancing contributed to the worse emotional state in both older and younger participants. This research supports the role of coping as a mediator of emotion in stressful events.

This description explains the different processes involved in coping. A person utilizes different levels of appraisal in selecting coping responses to particular stressors. Individuals and groups differ in their interpretations and reactions to stressors. Individuals do not respond to the same stressful event in the same manner. Individual experiences and appraisal affect their ability to manage the stress response.

Gender Differences in Coping Behaviors

Each individual has different experiences with particular situations and events and thus uses different coping strategies (Folkman & Moskowitz, 2004). Research investigating relative coping showed that men were more likely to use problem-focused coping and women were more likely to use emotion-focused coping or avoidant strategies (Martin et al, 2013; Huan, Yeo, Ang & Chong, 2012; Kaiseler, Polman & Nichols, 2012). Huan et al. (2012) investigated the moderating role of gender on coping selection among 1,791 intellectually gifted adolescent students. They found that gifted girls utilized more negative coping compared to boys. Dumoit (2012) found that women employed negative emotional coping such as withdrawal more than men. Martin et al. (2013) investigated the relationship between gender, coping styles and lifestyle behaviors on cardiovascular risks in a sample of 297 college students. Their findings indicated that men endorsed more avoidant style of coping than women.

In another study, Bouchard and Shih (2013) found that during their college years, females experience higher levels of stress and have more stress-related problems than males. Men experienced more stressors related to legal and work-related events, and women experienced more stress related to academic and interpersonal challenges (Lindsey, Reed, Lyons, Hendricks, Mead, & Butler, 2011). Further, men are more likely to confront problems directly or to deny or avoid their existence. Women, on the other hand, have a more emotional response to stress and prefer to seek social support from friends and family (Lindsey et al., 2011). The differences in coping behaviors used by

both males and females may be due to differences in stress exposure or appraisal of stress situations (Bouchard & Shih, 2013). Rice and Van Arsdale (2010) reported that that women use maladaptive coping technique early in adulthood than men. They found a stronger association between stress and drinking for female college students than for males. Bell and D'Zurilla (2009) indicated that when both males and females experienced increased stress levels they tended to use avoidant coping style and internalized and externalized their feelings. Whereas women would internalize their negative feelings and mediate their attitude with a positive outlook, men would adopt a persistent negative attitude. In regards to age and gender on coping, Morales-Rodriguez,Trianes-Torres, and Paez (2012) found that females scored higher on active/problem-solving coping, while males scored higher on negative coping (aggressive behaviors).

The literature presented above shows gender influences coping or reactions to stressors. Both males and females react differently to stressors and use adaptive and maladaptive coping strategies.

Factors Influencing Coping

Different factors influence coping. According Roohafza (2009), coping techniques are significantly influenced by life-style factors and socioeconomic status. To study the coping strategies of students, Roohafza (2009) used socio-demographic characteristics such as age, years of education, occupation, marital status, and life-style behaviors, including leisure time physical activity and smoking status. Roohafza (2009)

found low socioeconomic status was indirectly correlated with poor mental health outcomes due to the inability of students to adopt appropriate coping styles. Roohafza (2009) also found emotional distress, low income and low educational level, were associated with maladaptive coping styles. The study indicated negative association between adaptive and maladaptive coping skills in women (r = -0.308, $P < 0.001$) and men (r = -0.302, $P < 0.001$). Further, significant predictors of using appropriate adaptive coping skills in women were high educational level, being a non-smoker, and more leisure time physical activity. In men, predictors were non-manual job, higher education level, not smoking, and more leisure time physical activity (Roohafza, 2009).

Techniques Students Use to Cope with Stress

College students use different coping strategies. Examples of problem-focused coping students utilized while in college involve moving out of a stressful roommate situation, and making study plans for an impending exam. According to Aselton (2012), male students are more likely to endorse problem-focused coping strategies which tend to be associated with greater improvements in functioning such as reduced levels of depression. Examples of emotion-focused coping strategies utilized by students involved ignoring offensive roommates, controlling emotions while studying for an exam, and seeking family support during a crisis situation.

Examples of avoidant coping strategies students utilized include using alcohol or drugs, denial, or disengagement (Iwamoto & Lui, 2010). MacCann et al. (2011) stated that avoidant coping strategies can be mental or behavioral. Mental avoidant-focused

coping include daydreaming, or trying to distract self by watching television. Behavioral avoidant-focused coping involves having a specific goal in mind to decrease stress but not taking active steps to achieve the goal. Avoidant coping is maladaptive; students avoid the stressor without trying to change the problem or their response to it (MacCann et al., 2011; Por et al., 2011).

There is a positive association between using avoidant coping strategies and depression. Carton (2012) indicated that students who used avoidant coping strategies were more likely to report depressive symptoms, test anxiety and poor academic performance. In a study by Sun, Kosberg, Kaufman, and Leeper (2010), individuals who used avoidance-focused coping tended to be in worse health than persons who use emotion-focused and task-focused coping. Mahmoud, Staten, Hall, and Lennie (2012) found avoidance-focused coping the single strongest predictor of depression, anxiety and stress.

College women utilized more emotion-focused coping strategies such as expressing feelings, seeking emotional support, denial, acceptance, and positive reframing than college men (Por et al., 2011). College men reported more use of some types of emotion focused strategies such as mental disengagement through the use of alcohol than college women (MacCann et al., 2011).

Research has reported that college students who use more avoidant-focused coping use more alcohol as a coping strategy (Davidson & Ireland, 2009). In a study among college students, Rice and Van Arsdale (2010) found that college students who

used avoidant-focused coping used alcohol as a coping mechanism. They also found a positive correlation among students who used avoidant-focused coping with negative alcohol-related consequences such as fighting, delinquent behaviors, psychological deficits in functioning, and physical problems. The use of alcohol as a coping strategy is viewed as emotion- focused (Lazarus & Folkman, 1984) and is also a form of withdrawal (Mahmoud et al. (2012). Besser and Zeigler-Hill (2014) indicated that students who used avoidant coping were less likely to successfully adjust to college, while students who used more active coping had a greater chance of successfully adjusting to college. Students advancing through their first semester of college experienced significant distress and functional impairment (Besser & Zeigler-Hill, 2014).

Coping and the Caribbean

All cultures have developed ways to cope. The research indicates that ethnic groups form their own culturally-bound coping methods which correspond to the unique history and situation of group. While there are variations in coping methods with respect to race/ethnicity, other factors influence coping mechanisms such as gender, nationality, country of origin, and socioeconomic status.

In the Caribbean, a number of factors may influence coping and psychological adjustment. These factors include socio-economic status, age, ethnicity, gender, religious affiliation, and general religiousness (Taylor & Chatters, 2010). An integral part of the coping process in the Caribbean region is religion. It is involved in the methods, outcomes, events and appraisals of coping. In a study on "Coping with Stress in the 21st Century", Taylor and Chatters (2010) found that 90% of Caribbean Blacks reported that both religion

and spirituality played significant roles when coping with stress role and 86% indicated that prayer was very significant. Participants in this study also indicated looking to God for strength, guidance, and support. The study showed that Caribbean Blacks had greater levels of religious participation than whites. They also showed higher levels of service attendance, private prayer, reading religious materials, and self-reported religiosity and religious activities (Taylor & Chatters, 2010).

A comparison of the use of religious coping among African Americans, Caribbean Blacks and Non-Hispanic Whites Chatters, Taylor, Jackson, and Lincoln (2012) found African Americans and Caribbean Blacks reported greater endorsement of religious coping than Whites. In both African Americans and Caribbean Blacks, females were more likely to use religious coping than males, and married participants were more likely to use prayer to deal with a stressful life situations than those who were not married. Also, in both groups, higher education levels were associated with less reliance on prayer when dealing with stressful situations. To capture the issue of religious coping among Caribbean community college, students will report on the type of coping they use.

In another study Coultress (2013) found that although men and women use a variety of strategies to cope with stress, there are gender differences in their choice and frequency of use. For instance, to deal with some situations individuals may sometimes utilize avoidance techniques such as not talking about the problem or fantasize about the outcome to deal with others. At other times individuals may share their feelings with others during a specific stress experience and engage in active problem-solving at other times.

Coping plays a crucial role in determining the relation between stressful events and psychological outcomes. Coultress (2013) studied three groups of stakeholders in the Caribbean island of Guyana: suicide attempters, religious leaders, and mental health professionals. She found that suicide in Guyana is interconnected to poor coping skills associated with a cycle of violence that includes murder-suicide, interpersonal violence, corporal punishment, and child sexual abuse. Coultress (2013) indicated that poor coping skills of Caribbean people, particularly males and suicide are inextricably linked. They fuel one another, and are intensified by existing notions of masculinity, family dysfunction, sexual inequality and alcohol abuse. Further, the depressed economy of the Caribbean region hinders some men in maintaining employment and providing for the family. This fosters maladaptive coping skill. In the absence of suitable coping skills, the result is conflicts, violent expressions and alcohol abuse.

Coping is also described as a moderator of the association between stress and psychological outcomes. In a study of 143 Haitian immigrants (80 men, 63 women) from New York and Miami, Belizaire and Fuertes (2011) found that coping moderated the effects of stress on psychological outcomes. Their findings indicated a negative relationship between adaptive coping and stress and a positive relationship between adaptive coping and quality of life. They also found a positive relationship between maladaptive coping and stress, and a negative relationship between maladaptive coping and quality of life. Previous research on stress and coping may not apply in the Caribbean because of evidence of maladaptive coping in the Caribbean. To investigate the process of dealing with stressful life events among Caribbean students the Brief COPE

questionnaire will be used to assess religious coping and the roles religion serves in the process of dealing with crisis, trauma, and transition.

Summary

The review of the studies on the coping strategies college students used suggests that it is an important factor in predicting levels of stress. Particularly, the types of coping strategies college students used can contribute to the increase or decrease in the level of stress among students. Further, social roles are relevant in the experience of and reaction to stressors. Men and women not only differ in the range of stressful experiences but also in the chance of exposure to stressors. Because individuals perceive and react to stressors differently, it was important for this study to also explore the coping strategies that college students use to manage stress levels. The review of literature showed stress is universal. It is a part of the human experience. However, stress reaction and coping is specific to different factors including, personal, social, cultural, religious, and economic (Besser & Zeigler-Hill, 2014). This information is relevant in this study because Caribbean community college students may experience the same types of stressors as other students studied in other locations in the college environment but Caribbean community college students may experience different reactions in response to those stressors. Because of the aforementioned differences, it is worthwhile to investigate the differences and reactions to stressors among Caribbean community college.

Chapter 3: Methodology

This chapter described the methodology of the study and the appropriateness of the methods used. This chapter began with a description of the research design, participants, settings, and procedures that were used in the study. It then explained the different testing instruments that were utilized to measure the variables in the study and the processes for calculating the test scores. The chapter concluded with descriptions of the procedures, data collection and analysis, and ethical considerations.

The purpose of this study was to find out the sources of stress among students, the coping strategies students used, and the differences in the perception and amounts of stress for low socioeconomic status students and high socioeconomic status students in a Caribbean community college. The independent variables were personal characteristics, family dynamics, health characteristics, and environmental factors. There were three dependent variables. The first dependent variable was severity of stress which was measured using the Undergraduate Students' Questionnaire (USQ). The second dependent variable was the perception of stress which was measured using the Perception of Stress Questionnaire (PSS). The third dependent variable was the types of coping strategies used which was assessed using the Brief COPE Questionnaire.

Research Design

This research used a quantitative approach. It is the approach most often used when researching the topic of stress. Quantitative research uses surveys to produce self-report data. It is an efficient method for systematically collecting data from a broad spectrum of individuals, settings and variables (Edmonds & Kennedy, 2010). It allows

the research to be more objective and accurate, eliminates personal biases, involves the use of few variables and many cases, and utilizes specific procedures to ensure validity and reliability. By using specific standards and procedures, quantitative research is replicable and is easy to analyze. Participants answer anonymously and one person can administer the entire survey. Quantitative methods allow the summarization of extensive sources of information and facilitate comparisons with other studies over time (Edmonds & Kennedy, 2010).

This research utilized a descriptive cross-sectional design to identify the perception and reaction of stressors in Caribbean college students. It attempted to describe and explain the condition of stress and stress reaction among students using questionnaires. This design was an appropriate method as the purpose of the study was to detect characteristics of a population at one point in time. The participants completed a survey consisting of self-administered questionnaires and questions designed to collect relevant demographic information.

Participants and Settings

This study was conducted at three 2-year community colleges in the Caribbean. These colleges are located in St Vincent and the Grenadines (College #1), Grenada (College #2), and St Lucia (College #3). Students attending these colleges were from diverse backgrounds. Table 1 shows the characteristics of students attending these colleges.

Table 1

Characteristics of Students Attending Community Colleges in the Caribbean

Characteristics	College #1 %	College #2 %	College #3 %
Full time	81.8	83.5	69.4
Part time	18.1	16.5	30.6
Females	63	70	68.9
Males	36.9	30	30.9
Under 25 years	73	71	67
Over 25 years	27	19	32.9

Note. St Vincent and the Grenadines (College #1), Grenada (College #2), St Lucia (College #3)

Instrumentation

This study consisted of a demographic form and three instruments. The demographic information included questions on age, gender, marital status, student status, family income, and parental education (Appendix A). The testing instruments were the Perceived Stress Scale (PSS), the Undergraduate Stress Questionnaire (USQ), and the Brief COPE Questionnaire. The USQ measured the participants' major life events and daily life events and changes occurring in the past year in order to determine the severity and intensity of perceived stress. The coping scale measured how often

participants use each type of coping strategy. Each testing instrument is explained in detail in the following section.

The Undergraduate Stress Questionnaire

The Undergraduate Stress Questionnaire is a measure of stress developed by Crandall, Preisler and Aussprung (1992). The instrument measures stress among college students based on life-events they have experienced in the past semester. The USQ assesses whether particular stress-invoking life events have happened to students. This measure includes student ratings of the severity, frequency and occurrence of stress. The measure consists of 83 potential stressors that have been used widely among college students. The stress questionnaire is on a Likert type response format, which asks the respondents to indicate, on a 4-point scale (0 = not stressful, 1 = slightly stressful, 2 = stressful, 3 = most stressful) stressors that had affected them. Actual scores range from 0 to 249. Higher scores indicate higher levels of stressors. The measure is among the more psychometrically sound measures of student stress.

The USQ has been reported to be a reliable and valid measure of stress in college population in North American countries, with a Cronbach alpha coefficient of .96 (Fabricatore, Handal, & Rubio, 2004). The measure has not been used before with Caribbean countries. The USQ has adequate psychometric properties. The internal consistency of the Undergraduate Stress Questionnaire was 0.80. Split-half reliability was 0.71, and test-retest reliability over the course of a 6-week summer semester was 0.59 (Crandal et al., 1992). The scores on the instrument closely match subjective reports

of stress during the course and final exam week (Fabricatore et al., 2004). The USQ

correlates well with other stress inventories. With the Subjective Distress Scale,

correlation was r = .79 and with the Objective Stressor Scale correlation was r =

.97(Fabricatore et al., 2004). The USQ has been found to correlate positively with

physical symptoms and negatively with mood (Crandall et al., 1992). A unique element

of the USQ is the number of items related to the daily stressors of undergraduate

university life. Twenty-one items (25%) are considered directly related to college, fifty-

one (61 %) of the items are not related, and 11 (13%) can be considered in between

(Crandall et al., 1992).

Each check mark is tallied for a total score on the USQ. It takes 3-5 minutes to

complete (Crandall et al., 1992). The checklist includes life events such as "death of a

family member or friend", "victim of a crime," "working while in school," "had a lot of

tests," and "lack of money" (Crandall et al., 1992).

The Perceived Stress Scale

The Perceived Stress Scale (PSS) is a common tool for measuring psychological

stress. It is a self-reported questionnaire that was designed to measure the degree to

which individuals appraise life situations as stressful (Cohen, Kamarch, & Mermelstein,

1983). The Perceived Stress Scale assesses how controllable and unpredictable people

viewed their lives (Cohen et al., 1983, p. 385). The Perceived Stress Scale consists of 14

items that ask respondents to rate their stress over the past month, with seven items

negatively stated and seven items positively stated. The negative items assess lack of

control and negative affective reactions, while the positive items measure the degree of ability to cope with existing stressors. Each item is rated on a five-point scale from 0 = 'never' to 4 = 'very often'. Questions that ask about negative events are scored in the reverse direction. The PSS generates a score between 0 and 56. Higher scores reflect higher levels of perceived stress (Cohen *et al.*, 1983). Norms from a United States probability sample were 19.62, for the 14-items. There are no norms from a Caribbean sample.

Cronbach's alpha is a measure of internal consistency reliability, with a value >.70 considered a minimum measure of internal consistency (Terwee et al., 2007). Cronbach's alpha of the PSS-14 was .75. The test-retest reliability for the PSS-14 was assessed in three studies. It was evaluated after a 6-week interval, between 2 days and 4 weeks (Cohen et al., 1983). The PSS-14 showed test-retest reliability of .85 after two days, .55 after six weeks and .73 test-retest reliability after two weeks (Terwee et al., 2007).

In Cohen's original validation study, factor analyses of the 14-item form showed that two-factor model was the best model for the data. Cohen advised that for purposes of measuring stress, the distinction between the two factors was irrelevant. The first factor contains negatively stated items such as unable to control important things and has been termed "Stress", "Negative stress", and "Perceived Helplessness". The second factor contains positively stated items such as things were going your way and has been termed "Counter-stress", "Positive stress", and "Perceived Self-efficacy".

Remor and Carrobles (2006) analyzed the cultural adaptation of the European Spanish version of the Perceived Stress Scale with Spanish Caribbean samples. The researchers analyzed internal consistency and compared the factor structure of the Spanish version of the PSS with the English version. Internal consistency was adequate (.83) and confirmatory factor analysis corroborated the factor structure. Factor 1 explained 42.8% of the variance and Factor 2 accounted for 53.2%. The goodness-of-fit measures also revealed an adequate fit. The cultural adaptation of the PSS was also evaluated with satisfactory results.

González (2006) conducted exploratory and confirmatory factor analysis of the Spanish version of the PSS using a sample of 283 females from Mexico. Gonzalez confirmed the factor structure reported by Cohen and Williamson (1988) with the exploratory factor analysis producing two factors that collectively accounted for 48.5% of the variance. In the confirmatory factor analysis, an estimated variance of 50% was found for Factor 1, and of 70% for Factor 2, including adequate goodness-of-fit statistics. The distribution of the PSS items in both factors matched the initial outline of positive or negative items (González, 2006).

The Brief COPE Questionnaire (BCQ)

The Brief COPE Questionnaire (BCQ**)** is a multidimensional coping inventory that is used to assess the different ways in which individuals respond to stress (Carver, 1997). The measure was created from Lazarus and Folkman (1984) concepts of coping. The inventory consists of four composite or category scales and 14 subscales. The

composite scales include emotion-focused coping, problem-focused coping, adaptive

coping mechanisms, and maladaptive coping. The fourteen subscales include active

coping, planning, positive reframing, acceptance, humor, religion, using emotional

support, using instrumental support, self-distraction, denial, venting, substance use,

behavioral disengagement, and self-blame (Carver, 1997). Table 2 presents the

composite and subscale.

Table 2.

The Brief COPE Questionnaire showing Subscales

Coping Subscale
Problem-Focused Coping
Active Coping
Planning
Using Instrumental Support
Emotion-Focused Coping
Using Emotional Support
Positive Reframing
Religion
Other Coping Probably Adaptive
Acceptance
Humor
Other Coping Probably Maladaptive
Venting
Behavioral Disengagement
Self-Distraction
Self-Blame
Substance Use
Denial

Active coping involves taking active steps to eliminate the stressor or recognizing

its effects (Carver, 1997). Planning includes giving thought on how to confront the

stressor or thinking about, one's active coping efforts. Seeking instrumental social

support involves seeking advice, information or assistance on how to react to the stressor. Seeking emotional social support refers to getting sympathy or emotional support from others. Suppression of competing activities involves focusing attention on dealing with the stressor and ignoring other activities. Religion entails engaging in religious activities. Positive reinterpretation and growth involves obtaining insight, growing from the situation, making the best of the situation or seeing it in a more positive light. Restraint coping entails withholding coping attempts until ready to use (Carver, 1997). Resignation/Acceptance involves acknowledging that the stressful event has occurred and is real. Focus on and venting of emotions involves becoming aware of one's emotional distress, and being able to ventilate or discharge those feelings. Denial entails attempting to reject the reality of the stressful event. Mental disengagement involves psychologically disengaging from the stressor through daydreaming, sleep, or self-distraction. Behavioral disengagement entails withdrawal or giving up. Alcohol/Drug use involves using alcohol or other drugs to disengage from the stressor, and humor involves making jokes about the stressor (Carver, 1997).

Problem-focused coping refers to using action or task oriented strategies. Emotion-focused coping involves using cognitions to change situations or assigning new meaning (Krypel & Henderson-King, 2010). Adaptive coping describes the degree to which individuals coped psychologically, socially, and physiologically with their stressors (Aselton, 2012). Maladaptive refers to the degree to which individuals were unable to cope.

The Brief COPE was adapted from the original COPE. Each of the 14 scales consists of two items. Responses are made on 4-point scales of 1 (I haven't been doing this at all) to 4 (I've been doing this a lot). Scores are obtained by summing the responses in each subscale to obtain a score for that particular coping strategy. Each coping strategy indicates to what extent that strategy is used and represents a separate dependent variable. Coping is the sum of the 14 scales. High scores indicate more frequent use of that coping style.

The psychometric characteristics of the Brief COPE were obtained from sample of 168 adults who experienced a major hurricane. The measure showed a complex factor structure, with nine factors accounting for 72.4% of the variance (Carver, 1997). The previously reported 9-factor structure of the Brief COPE was tested by using confirmatory factor analysis followed by exploratory factor analysis. The Cronbach α was computed for both the original subscales and those derived from exploratory factor analysis. The confirmatory factor analysis provided a less than satisfactory fit for the 9-factor model. However, the exploratory factor analysis was very similar to that of the original scale, the reliability of some derived subscales was low (Valvano & Stepleman, 2013).

Internal consistency coefficients of the scale indicated a high Cronbach's alpha values for some domains such as religion ($\alpha=0.82$) and substance use ($\alpha=0.90$). Other domains indicated acceptable values of Cronbach's alpha. They are active coping ($\alpha=0.68$), planning ($\alpha=0.73$), positive reframing ($\alpha=0.64$), acceptance ($\alpha=0.57$), humor

(α=0.73), using emotional support (α=0.71), using instrumental support (α=0.64), self-distraction (α=0.71), denial (α=0.54), venting (α=0.50), behavioral disengagement (α=0.65) and self-blame (α=0.69) (Carver, 1997).

The Brief COPE is a flexible instrument as adjustments can be made to fit the researchers' needs (Valvano & Stepleman, 2013). Researchers may choose those scales most appropriate for their research and instructions and item language may be adjusted to fit the researchers' needs. The measure is available in English, Spanish, French, Greek, and Korean. It is a flexible tool. Some subscales of the Brief COPE have less support than others. While the Brief COPE subscales have been combined in some studies to create broader categories of coping styles, further research is needed to adequately evaluate the psychometric properties of these scales (Valvano & Stepleman, 2013).

The BCQ is used extensively in research. The BCQ has been used with samples in Jamaica which broadens its clinical utility. However, psychometric validation of the BCQ in other Caribbean samples is minimal. This indicates the scarcity of published research on the stress reactions in the Caribbean in spite of increasing public awareness of the negative outcome of stress in the region and strong advocacy for rigorous research and improved practice (Plummer-Rognmo, 2012). Further, editorials in the *West Indian Medical Journal* have called for more validation of measures to facilitate epidemiological studies in the Anglophone Caribbean.

Procedures

Permission and approval for the study was sought from the Institutional Review Board (IRB) at Walden University and the community college boards. Upon approval, a letter was sent to the deans of the colleges, outlining the purpose of the study and soliciting their support and assistance in gathering the data. The researcher contacted the lecturers to explain the purpose of the study and to obtain permission on the most appropriate times to enter their classes to administer the questionnaires.

Flyers were posted on all three campuses inviting students to participate in the research study. Interested students were directed to contact the researcher by e-mail or phone to participate in the study. Participants were selected randomly from the list of responses of students who were interested. Power analysis was conducted to determine the number of participants needed in this study. This analysis was conducted with G Power. The power analysis showed that 150 participants (total N) was necessary to detect a medium sized effect when employing the traditional .05 criterion of statistical significance and power = .80 (Hager, 2010).

All participants in the study were asked to assemble as a group in a specific location on campus. On the day of data collection, the researcher made introductions to the participants and explained the nature and purpose of the study. The researcher also explained the data collection procedures, potential risks and benefits of the study and confidentiality. The researcher also informed the participants that their participation was voluntary, anonymous and that they could withdraw or terminate their participation

without prejudice or penalty. The researcher answered any questions the students had.

The questionnaires were then distributed. All questionnaires were collected immediately

upon completion.

Data Analysis

The questionnaires collected from all participants were first checked for errors

and sorted in preparation for data entry in the SPSS 19.0 data analysis software.

Variables were coded and the data obtained from the three instruments were entered in

the SPSS 21.0 data analysis software. Coding of the variables is presented in Table 3.

Table 3
Independent Variables

Age
    Under 20 years
    21-25 years
    26-30 years
    31-35 years
    36-40 years
    41-45 years
    46-50 years
    Over 50 years
Academic Status
    Full-Time
    Part-Time
Marital Status
    Single
    Currently Married
    Widowed
    Divorced
    Separated
Gender
    Female
    Male

(continued)

Household Income
        $21,000-$25,000
        $26,000-$30,000
        $31,000-$35,000
        $36,000-$40,000
        $41,000-$45,000
        $46,000-$50.000
        Over$50,000
Parent's level of education
        No Schooling
        Primary School (Elementary School)
        Secondary School
        Technical Vocational Schooling
        Community College
        University

Missing data were checked by running frequencies on the data. The values that appeared in the columns in the data set were scrutinized one at a time to check for errors such as mistyping and the use of extreme values. Before the hypotheses were examined, the data set was reviewed to identify potential outliers and determine whether or not each variable met the assumptions for analysis.

To identify outliers, summary statistics such as the means and standard deviation were used. Outliers were dealt with using least trimmed squares (LTS) and the least median of squares (LMS) which was calculated by temporarily eliminating extreme observations at both ends of the sample (Gravetter & Wallnau, 2013).

Cases that were missing data on any of the variables used in the analysis were deleted from the data analyzed. Any variable that was missing data on many cases were also deleted. To detect univariate outliers which are scores which are 3.29 standard

deviations from the mean in either direction (Gravetter & Wallnau, 2013), box and whiskers plot were used. The raw data was checked to verify that the scores were correctly entered into the data file. Outliers were set missing by changing the bad score to a missing value code.

The mean scores were computed for the Undergraduate Student Stress Questionnaire, Perceived Stress Scale Questionnaire and the Brief COPE Questionnaire. Q1: Does the age of Caribbean community college students predict levels of stress as measured by the Undergraduate Stress Questionnaire?

$H_0 1$: Age will not significantly predict the stress level of community college students.

$H_1 1$: Age will significantly predict the stress level of community college students.

Q2: Does the gender of Caribbean community college students predict levels of stress as measured by the Undergraduate Stress Questionnaire?

$H_0 2$: Gender will not significantly predict the stress level of community college students.

$H_1 2$: Gender will significantly predict the stress level of community college students.

Q3: Does marital status predict levels of stress in Caribbean community college students as measured by the Undergraduate Stress Questionnaire?

$H_0 3$: Marital status will not significantly predict the stress level of community college students.

$H_1 3$: Marital status will significantly predict the stress level of community college students.

Q4: Does the status of students predict levels of stress in Caribbean community college students as measured by the Undergraduate Stress Questionnaire?

$H_0 4$: Student status will not significantly predict the stress level of community college students.

$H_1 4$: Student status will significantly predict the stress level of community college students.

Analysis 1: To examine Hypotheses 1-4, generalized linear model was used to determine the significant predictors of stress among community college students. The generalized linear model (GLZ) specifies the linear and non-linear relationship of continuous and categorical predictor variables on a discrete or continuous dependent variable. It allows response variables that have arbitrary distributions other than normal distributions. It also allows for arbitrary function of response variables (the link function) to vary linearly with the predicted values instead of assuming that the response itself must vary linearly (Shedden, 2014). The generalized linear model is more flexible than multiple linear regressions. It uses virtually any scale of measurement for the predictor variable and the response variable.

In generalized linear models the cases are independent. The dependent variable does not have to be normally distributed. A linear relationship between the dependent variable and the independent variables does not have to be assumed. However, it does assume linear relationship between the transformed response in terms of the link function and the explanatory variables. Independent (explanatory) variables can

be even the power terms or some other nonlinear transformations of the original

independent variables (Agresti, 2013).

The homogeneity of variance does not have to be satisfied. Errors need to be

independent but not normally distributed. Generalized linear models use maximum

likelihood estimation (MLE) rather than ordinary least squares (OLS) to estimate the

parameters, and thus rely on large-sample approximations. Goodness-of-fit measures

rely on sufficiently large samples, where a heuristic rule is that not more than 20% of the

expected cells counts are less than 5 (Agresti, 2013).

Generalized linear model analysis was done with the stress scale score and socio-

demographic variables of age, gender, marital status, student status, family income, and

parental education. All categorical data were dummy coded. Academic status was

dummy coded into two groups (1 = full time, 0 = part time), marital status was dummy coded

into five groups: single (coded as 1), married (coded as 2), divorced (coded as 3), widowed

(coded as 4) and separated (coded as 5). Similarly, parental education was dummy coded

into three groups: no schooling (coded as 1), secondary (coded as 2) and university (coded as

3).

Research Question 5: Do low socioeconomic status students experience different

amounts of stress as measured by the Perceived Stress Scale than students who have a

high socioeconomic status?

$H_0 5$: There is no significant difference in the level of stress among low socioeconomic

status students and high socioeconomic status students.

$H_1 5$: There is a significant difference in the level of perceived stress among low socioeconomic status students and high socioeconomic status students.

  Analysis 2: To examine Hypothesis 5, ANOVA was used to compare the severity of stress according to socioeconomic status. A two-way between-subjects ANOVA of household income (low, medium, high) and parental education (no schooling, secondary, university) was conducted.

Research Question 6: Are coping styles different between high socioeconomic status students and low socioeconomic status students in Caribbean community colleges?

$H_0 6$: There are no significant differences in the types of coping strategies used between high socioeconomic status students and low socioeconomic status students in Caribbean community colleges, as determined by the Brief COPE Questionnaire.

$H_1 6$: There are significant differences in the types of coping strategies used between high socioeconomic status students and low socioeconomic status students in Caribbean community colleges, as determined by the Brief COPE Questionnaire.

  Analysis 3: To examine Research Question 3, MANOVA was used to assess differences in coping according to socioeconomic status. Because two outcome measures were tested against two hypothesized predictors, a Bonferroni-adjusted was calculated to account for the increased possibility of type-I error.

Assumptions

 In generalized linear models, the values for the predictors and the response have a distribution that can be normal, binomial, Poisson, gamma, or inverse Gaussian. The

parameters allow the linear model to be related to the response variable through a nonlinear link function. Each measurement's magnitude of variance is a function of its predicted value.

The assumptions of ANOVA statistical procedure are homogeneity of variances of the dependent variables across the groups, normal distribution of the dependent variable as described by the levels of the independent variable; independence of the score for test variable, the expected values of the errors are zero, the variances of all errors are equal to each other (Green & Salkind, 2005). To test the assumptions of ANOVA, Levene's test for homogeneity of variances was conducted for all dependent variables. To test the assumption of normality, a normal probability plots and histogram were used for each variable. To test the assumption of independence, the Durbin-Watson test was used (Shannon & Davenport, 2011).

Ethical Considerations

In conducting the study, the researcher was guided by the ethical principles of research. The researcher fully informed the participants about the nature, purpose, and benefits of the study. The researcher informed prospective participants of their rights to voluntarily participate in the study, their rights to refuse participation and their rights to withdraw participation in the study. The rights of the prospective participants to refuse or participate voluntarily in the study were respected by the researcher. The researcher assured prospective participants of the anonymity of their responses and confidentiality of the data.

Participants were told to not include their names or any identifying information such as identification numbers when completing the questionnaires. Completed questionnaires were stored in a locked filed and access only by the researcher. Once data had been entered into SPSS, it was password protected with access only by the researcher.

Summary

This chapter presented information about the participants, instruments, procedures, research design, and data analysis that were used in this study with the purpose of describing stress and coping among students attending community colleges in the Caribbean. The six research questions were identified. The next chapter would present the results.

Chapter 4: Results

This chapter presents the methods used to analyze data as well as the results of the

statistical analyses as delineated in the preceding chapters regarding assessment of the

level of stress and coping strategies among community college students in the Caribbean.

This chapter is arranged in three sections: preliminary analyses; main analyses; and

summary. The preliminary analyses section summarizes the descriptive statistics for all

continuous variables which includes age, stress composite score, stress subscale scores,

and coping strategy scores. Frequencies are reported for all categorical variables, which

include gender, marital status, student status, socioeconomic status, and parental

education. The main analyses section reports the results of the generalized linear model

and ANOVA. Inferential statistics are used to test the null hypothesis for each of the

research questions. All statistical analyses were performed using SPSS 21. A summary

of the results is reported in the final section of this chapter.

Preliminary Analyses

Participants for the study were solicited through flyers posted on three community

college campuses in the Caribbean. Interested students contacted the researcher by e-

mail and phone to participate in the study. Participants were randomly selected from the

list of responses of students who were interested. Participants were asked to assemble in

a specific location on each campus. On the day of data collection, the researcher made

introductions to the participants; explained the nature and purpose of the study, the data

collection procedures, potential risks and benefits of the study and confidentiality. The

researcher also informed participants that their participation was voluntary, anonymous and they could withdraw or terminate their participation without prejudice or penalty. All questions students had were answered. The questionnaires were distributed and collected immediately upon completion.

In this study, 168 surveys were distributed to students on three Caribbean campuses and 166 were returned. Out of 166 surveys returned 16 were unusable because the participants did not complete all assessment tools. Six students only completed the first item for each of the three surveys. Five students did not attempt any of the items in the surveys. Five of the surveys had incomplete information. The final sample size total was 150.

The questionnaires were first checked for errors and sorted in preparation for data entry in the SPSS 19.0 data analysis software. Variables were coded and the data obtained from the three instruments were entered in the SPSS 21 data analysis software. Coding of the variables is presented in Table 3. Missing data were checked by running frequencies on the data. The values that appear in the columns in the data set were scrutinized one at a time to check for errors such as mistyping and the use of extreme values. The raw data was checked to verify that the scores were correctly entered into the data file. Before the hypotheses were examined, the data set was reviewed to identify potential outliers and determine whether or not each variable met the assumptions for analysis. To identify outliers, summary statistics such as the means and standard deviation were used. To detect univariate outliers which are scores that are 3.29 standard

deviations from the mean in either direction (Gravetter & Wallnau, 2013), box plots were used.

The demographic data were determined from the self-report demographic measure that each participant completed. The majority of the participants were females, under 20 years, single, and full time students. Most of the participants were in the second year of study, attended college one year after leaving high school and worked full time. The highest level of education obtained by the participants' parents was primary and secondary. For most of the participants their household income was under $20,000. Tables 4 and 5 present these demographic data.

Table 4

Frequency Distribution for Age, Student Status, Relationship Status, Employment Status,
and Year of College for Students

Variable	Percent
Age	
Under 20 years	46.7
21-25 years	13.3
26-30 years	13.3
31-35 years	8.7
36-40 years	10.7
41-45 years	4.0
46-50 years	0.7
Over 50 years	2.7
Student Status	
Full Time	56
Part Time	44
Relationship Status	
Single	71.3
Currently Married	21.3
Divorced	4.7
Widowed	1.3
Separated	1.3
Employment Status	
Full Time	38
Part Time	20
Unemployed	22.7
Never Worked Before	19.3
Year of College	
1 year	58
2 years	13.3
3 years	3.3
4 years	4.7
5 years	1.3
More than 5 years	19.3

Note. N=150

Table 5

Frequency Distribution for Parental Education and Household Income

Variable	Percent
Parental Education	
No Schooling	8
Primary School	28
Secondary School	28.7
Technical Vocational	9.3
Community College	8.7
University	17.3
Household Income	
Less than $20,000	44.7
$21,000-$25,000	12.7
$26,000-$30,000	10.7
$31,000-$35,000	7.3
$36,000-$40,000	6
$41,000-$45,000	4
$46,000-$50,000	4
Over $50,000	10.7

Note. N=150

The Undergraduate Stress Questionnaire

The Undergraduate Stress Questionnaire (See instrument in Appendix B) consists of 82 questions. It assesses what types of stressors students attending community colleges experience. All raw data were initially entered and coded using SPSS version 21 (SPSS Inc., 2010). Items were assigned a value of "1" if they were endorsed as stressors or "0" if they were not endorsed. Seven categories of stressors were created which included academic stressors, finance/work, relationships, other, commuting, health, and time management. Table 6 shows the total number of items in each category of stressors.

Table 6

Summary of the Categories of Stressors on the Undergraduate Stress Questionnaire

Type of Stressor	No. of Items	Example of Item
Academic	22	Did badly on a test
Other	19	Victim of Crime
Relationship	16	Fought with boyfriend
Finance and Work	10	Lack of money
Time Management	6	Erratic schedule
Health	5	Sick/injury
Commuting	4	Car broke down
Total	82	

Frequency counts were created within each category of stressors and the counts were summed. More than half of the students reported experiencing stressors related to school and assignments. A number of students also reported experiencing other life stressors such as being the victim of a crime or the death of a loved one. Students also reported experiencing relationship stressors, work and financial stressors, time management and organization stressors. A small percentage of students reported experiencing health-related stressors. A small number of students sampled reported commuting to be a stressor (See Table 7).

Table 7

Number of Students Reporting Stressors in the Undergraduate Stress Questionnaire

Type of Stressor	Percent of Students
Academic	56.23
Other	27
Relationship	22.36
Finance and Work	17.25
Time Management	14.52
Health	9.6
Commuting	3.1

Note. N=150

The study sample consisted of 150 participants with a mean USQ score of 21.09 (*SD* = 13.65). The means and standard deviations for the Undergraduate Stress Questionnaire by age ranges, gender, student status, academic status, and relational status are presented in Table 8.

Table 8

Means and Standard Deviations for the Undergraduate Stress Questionnaire by Age, Gender, Student Status, and Relationship Status of Students

Variable	n	M	SD
Age			
Under 20 years	70	23.06	14.66
21-25 years	20	20.55	11.42
26-30 years	20	19.85	12.04
31-35 years	13	21.92	17.45
36-40 years	16	17.25	10.99
41-45 years	6	16	15.48
Over 50 years	4	17.50	8.7
Gender			
Male	54	18.48	12.89
Female	96	17.56	13.91
Student Status			
Full Time	84	23.86	14.15
Part Time	66	17.56	12.20
Relationship Status			
Single	107	20.92	14.16
Currently Married	32	23.22	12.74
Divorced	7	19	12.18
Widowed	2	17.50	7.78
Separated	2	7.78	7.78

Note. N=150

The Perceived Stress Scale

The Perceived Stress Scale (see instrument in Appendix C) had 14 questions and summative scores were obtained by reversing the scores on the seven positive items, e.g., 0=4, 1=3, 2=2, etc., and then summing across all 14 items. Items 4, 5, 6, 7, 9, 10, and 13 are the positively stated items. Scores ranged from 0 to 56, with higher scores indicating greater stress.

The overall mean PSS score was 28.65 (*SD* = 7.30). The means and standard deviations for the Perceived Stress Scale by age ranges, gender, student status, academic status, and relational status are presented in Table 9.

Table 9

Means and Standard Deviations for the Perceived Stress Scale

Variable	n	M	SD
Age			
Under 20 years	70	30.84	6.31
21-25 years	20	29.80	8.20
26-30 years	20	25.80	6.91
31-35 years	13	28.15	5.46
36-40 years	16	26.94	8.07
41-45 years	6	20.67	8.09
Over 50 years	4	22.50	5.74
Gender	54	28.65	7.10
Male	96	28.66	7.45
Female			
Student Status			
Full Time	84	30.52	6.46
Part Time	66	26.27	7.65
Academic Status			
First Year	50	30.60	5.78
Second Year	100	27.68	7.80
Relationship Status			
Single	107	29.15	7.54
Currently Married	232	28.78	5.68
Divorced	7	26.00	8.52
Widowed	2	18.50	3.54
Separated	2	19.50	3.54

Brief COPE

The Brief COPE (see instrument in Appendix D) had 28 questions with 14 coping strategy subscales and four overall coping scales. Each coping strategy subscale

consisted of two questions. Scores were obtained by adding the two responses to give a

score for that particular coping strategy. The coping strategy subscales include self-

distraction, using instrumental support, active coping, denial, substance use, self-blame,

humor, planning, using emotional support, behavioral disengagement, positive reframing,

venting, acceptance, and religion. The four overall coping scales include problem-

focused coping, emotion-focused coping, adaptive coping, and maladaptive coping. The

Brief COPE does not use cutoff scores, and the maximum score for each of the 14

subscales was 8. Frequencies and percentages for the Brief COPE by scales are

presented in Table 10.

Table 10

Mean Percentage of Respondents who were Classified in each Category of the Brief COPE

Coping Style	Percent
Problem- Focused	
Not at all	22.5
A little bit	31.5
A medium amount	22.2
A lot	23.8
Emotion-Focused	
Not at all	19.8
A little bit	35.3
A medium amount	19.3
A lot	25.6
Adaptive	
Not at all	18.3
A little bit	38
A medium amount	19.4
A lot	24.3
Maladaptive	
Not at all	16
A little bit	42.7
A medium amount	20.4
A lot	20.4

In this study, about 90% of Caribbean community college students identified themselves as using healthy forms of coping to handle their stress. The most common category of coping used by students was emotion-focused coping and the specific strategies used were positive reframing and using emotional support. The next most common category of coping used by students was problem-focused coping, and the specific strategies used were using instrumental support and active coping. The least common category of coping used by students was adaptive coping. The most common unhealthy (maladaptive) coping strategy students reported was behavioral disengagement. The least common unhealthy (maladaptive) coping strategy students reported was substance use. Means and standard deviations for the Brief COPE by scales and subscales are presented in Table 11.

Table 11

Means and Standard Deviations for the Brief COPE by Scales and Subscales

Coping Scales	M	SD
Problem-Focused	7.31	1.08
Active Coping	2.44	1.06
Planning	2.39	1.09
Instrumental Support	2.48	1.09
Emotion-Focused Coping	7.52	1.08
Emotional Support	2.51	1.09
Positive Reframing	2.62	1.06
Religion	2.39	1.09
Adaptive Coping	4.99	1.05
Acceptance	2.47	1.07
Humor	2.52	1.03
Maladaptive Coping	14.77	1.00
Venting	2.55	1.01
Behavior Disengagement	2.63	.95
Self-Blame	2.35	1.11
Substance Use	2.29	.81
Denial	2.41	.98
Self-Distraction	2.51	1.06
Negative Coping	14.77	1.00
Positive Coping	19.82	1.28

Examination of the means for the Undergraduate Stress Questionnaire showed higher mean scores for females on more negative/maladaptive coping than males. Females had higher mean scores for behavioral disengagement, substance use, denial, and self-distraction. Males however had higher mean scores for venting and self-blame. Males had higher mean scores for more positive coping skills than females. Males had higher mean scores for active coping, planning, instrumental support, positive reframing,

religion, and humor. Females had higher mean scores for emotional support and

acceptance. Table 12 presents the coping responses of students by gender.

Table 12

Scales and Subscales Scores for the Brief COPE by Gender

Coping Scale	M		SD	
	Male	Female	Male	Female
Problem-Focused				
Active Coping	2.62	2.34	1.11	1.02
Planning	2.51	2.32	1.37	1.07
Instrumental Support	2.51	2.45	1.10	1.06
Emotion-Focused				
Emotional Support	2.47	2.52	1.01	1.12
Positive Reframing	2.70	2.58	1.03	1.08
Religion	2.45	2.36	1.08	1.10
Adaptive Coping				
Acceptance	2.32	2.55	1.11	1.06
Humor	2.60	2.47	1.10	1.50
Maladaptive Coping				
Venting	2.74	2.43	.98	1.02
Beh. Disengagement	2.57	2.66	1.01	.92
Self-Blame	2.58	2.21	1.10	1.09
Substance Use	2.21	2.33	.84	.79
Denial	2.08	2.49	1.02	.95
Self-Distraction	2.34	2.60	1.02	1.08

Note. N= 150

Test of Hypotheses

Hypothesis 1: Age will not significantly predict the stress level of community college students.

A generalized linear model was used to investigate this hypothesis. This model is more flexible than linear multiple regression. This model utilizes virtually any scale of measurement for the predictor variable and the response variable. The predictor variables used in this study were both categorical and continuous.

Generalized linear model is a mathematical extension of traditional linear models that allows non-linearity and non-constant variance structures in the data (Hastie & Tibshirani, 2012). It is based on an assumed relationship (called a link function) between the mean of the response variable and the linear combination of the explanatory variables. The mean of a population depends on a linear predictor through a nonlinear link function. The response probability distribution can be any member of an exponential family of distributions. The generalized linear model provides a straightforward way of modeling non-normal data. The two key ingredients for a generalized linear model are a link function and a variance function. The link function relates the means of the observations to predictors. The variance function relates the means to the variances. Fitted generalized linear models can be summarized through statistics such as parameter estimates, their standard errors, and goodness-of-fit statistics. Statistical inferences about the parameters can also be made using confidence intervals and hypothesis tests.

Generalized linear model using a linear scale response with identity link function and a robust estimator was performed to assess whether the predictor variable age independently predicted the stress level of students. The variable age was inserted as the factor in the analysis and the overall stress score for the Undergraduate Stress Questionnaire as criterion. The main effect was included in the model. The null hypothesis was not rejected for the predictor variable age. The age of students did not significantly predict stress level. Table 13 shows the results.

Hypotheses 2: Gender will not significantly predict the stress level of community college students.

Generalized linear model using a linear scale response with identity link function and robust estimator was performed to assess whether the predictor variable gender independently predicted the stress level of students. The variable gender was inserted as the factor in the analysis and the overall stress score for the Undergraduate Stress Questionnaire as criterion. Gender was dummy coded as 1 = male and 2 = female. The main effect was included in the model. The null hypothesis was not rejected for the predictor variable gender. Being a male student did not significantly predict stress level ($B = -4.07$, $p = .08$).

Hypotheses 3: Marital status will not significantly predict the stress level of community college students.

Generalized linear model using a linear scale response with identity link function and robust estimator was performed to assess whether the predictor variable marital status

independently predicted the stress level of students. The variable marital status was inserted as the factor in the analysis and the overall stress score for the Undergraduate Stress Questionnaire as criterion. Marital status was dummy coded as 1 = single, 2 = married, 3 = divorced, 4= widowed, 5 = separated. The main effect was included in the model. The null hypothesis was rejected for the predictor variable marital status. Being single did not significantly predict the stress level of students (B = 6.42, p = .51). Being currently married significantly predicted stress level (B = 8.72, p = .05). Being divorced did not significantly predict stress level (B = 4.50, p = .68). Being widowed did not significantly predict stress level (B = -4.50, p = .74).

Hypotheses 4: Student status will not significantly predict the stress level of community college students.

Generalized linear model using a linear scale response with identity link function and robust estimator was performed to assess whether the predictor variable student status independently predicted the stress level of students. The variable student status was inserted as the factor in the analysis and the overall stress score for the Undergraduate Stress Questionnaire as criterion. Student status was dummy coded as 1 = full- time and 2 = part- time. The main effect was included in the model. The null hypothesis was rejected for the predictor variable student status. Full- time student status significantly predicted the stress level of students (B = 6.30, p = .00).

Table 13

Generalized Linear Model (criterion: USQ Overall Score).

Parameter	B	95% CI		p
		LL	UL	
Under 20 years	5.56 (6.89)	-7.95	19.06	.42
21-25 years	3.05 (7.34)	-11.34	17.44	.68
26-30 years	2.35 (7.34)	-12.04	16.74	.75
31-35 years	4.42(7.66)	-10.60	19.44	.56
36-40 years	-.25 (7.49)	-14.94	14.44	.97
41-45 years	-1.50 (8.65)	-18.46	15.46	.86
Over 50 years	-3.50 (14.99)	-32.87	25.87	.82
Single	6.42 (9.62)	-4.18	25.27	.51
Currently Married	8.72 (9.82)	-12.44	27.97	.05*
Divorced	4.50 (10.81)	-10.54	25.68	.68
Widowed	-4.50 (13.48)	-16.68	21.92	.74
Full Time	6.30 (2.18)	2.03	10.57	.003*
Female	-4.07(2.29)	-8.56	.42	.08

Note. Standard errors are in parentheses. CI = confidence interval; LL = lower limit; UL

= upper limit. USQ = Undergraduate Stress Questionnaire

* $p < 0.05$

Hypothesis 5: There is no significant difference in the level of stress among low

socioeconomic status students and high socioeconomic status students.

A two-way - between-subjects factorial analysis of variance was conducted to

evaluate the severity of stress between low socioeconomic status and high socioeconomic

status students. The independent variable was socioeconomic status. The dependent

variable was the stress score using the Perceived Stress Scale. Socioeconomic status

included two factors income and parental education. Income consisted of 3 levels (low,

medium and high) and parental education consisted of three levels (no schooling,

secondary and university).

The assumptions of ANOVA statistical procedure are homogeneity of variances

of the dependent variables across the groups, normal distribution of the dependent

variable as described by the levels of the independent variable, and independence of the

test variable scores (Green & Salkind, 2005). To test the first ANOVA assumption,

Levene's test for homogeneity of variances was conducted for the dependent variable.

No violations of homogeneity of variance were found.

To test the second ANOVA assumption of normal distribution of the variables, a

normal probability plot and histogram were used for each variable. The histogram

containing a superimposed normal curve gives a visual illustration of the extent to which

the variable data follows the normal distribution shape. The histogram also highlights the

means and standard deviations for all variables. The normal probability plot also gives a

visual illustration of the degree to which scores clusters about a straight line. A perfect

normal distribution of scores would neatly follow a perfect straight line (Shannon &

Davenport, 2011). No violations of normality of variance were found. The results of the

histogram for the dependent variable revealed a normal distribution (M=0, SD=1). The

normal probability plots showed lines that appeared not to depart far from the normal

distribution straight line. See Figure 1 and 2 for histogram and normal probability plot
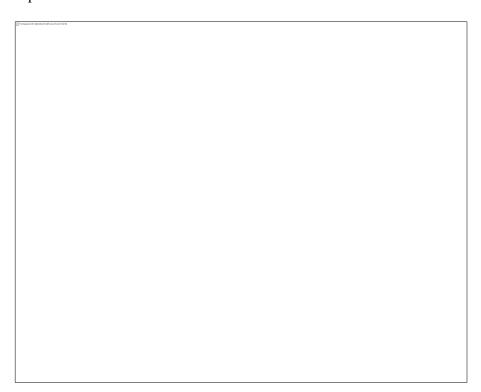
for the dependent variable.

Figure 1. The histogram with a superimposed normal curve showing the variable
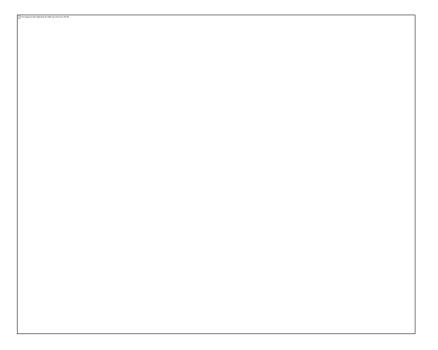conforms to the shape of a normal distribution.

Figure 2. Normal probability plot showing the distribution of scores

To test the third ANOVA assumption of independence, the Durbin-Watson test was conducted, which is a serial correlation among the residuals and tests for independence of the variable scores. Scores close to 0 signify there is a positive correlation; scores close to 4 signify a negative correlation, and scores in the range of 1.5-2.5 signify there is no correlation among the variables (Shannon & Davenport, 2011). No violations of independence were found. The result of the Durbin-Watson test was 1.68, signifying there is no correlation among the variables supporting the assumption of independence.

The two factor analysis of variance involving income and parental education did not show a statistically significant main effect for income, $F_{(2, 142)} = 2.382$, $p = .10$, $\eta 2 = .002$, a less than small effect size. The main effect for education groups was not

statistically significant, F (2, 142) = 1.338, p =.27 (η^2=.001), a less than small effect size.

The interaction between income and education groups was not statistically significant, F

(3, 142) = .715, p =.55 (η^2= 8.683). Thus, there was no interaction between income and

education (Table 14). The null hypothesis was not rejected for income and parental

education because it was not significant. The null hypothesis was not rejected for the

interaction because it was not significant. The means and standard deviations are

reported in Table 15.

Table 14

Two-Way ANOVA for Stress Level

Socioeconomic Status	SS	df	MS	F	p	η^2	Observed Power
Income	251.91	2	126.46	2.38	.10	.002	.48
Education	142.08	2	71.04	1.34	.27	.001	.29
Income*Education	113.84	3	37.95	.72	.55	8.68	.20
Error	7539.63	142	53.10				

Table 15

Means and Standard Deviations for the Perceived Stress Scale by Income and Education Level

Education Groups	Income					
	Low		Medium		High	
	n	M (SD)	n	M (SD)	n	M (SD)
No Schooling	10	27.80 (6.56)	2	21 (9.90)	12	26.67 (7.15)
Secondary	50	29.72 (7.48)	45	29.20 (6.10)	112	28.92 (7.49)
University	7	31.14 (6.52)	8	27.13 (5.10)	26	28.42 (6.63)
Total	67	29.58 (7.22)	55	28.60 (6.98)	150	28.65 (7.30)

Hypothesis 6: There are no significant differences in the types of coping strategies used between high socioeconomic status students and low socioeconomic status students in Caribbean community colleges, as determined by the Brief COPE Questionnaire.

A one way MANOVA was conducted to assess differences in coping according to socioeconomic status. Socioeconomic status was the independent variable. The 14 coping styles were the dependent variables. Socioeconomic status included one factor income with three levels (low, medium and high). The one-way MANOVA was used to determine whether there were any differences between independent groups on more than one continuous dependent variable.

The assumptions of MANOVA are two or more dependent variables should be measured at the interval or ratio level. The independent variable should consist of two or more categorical, independent groups. There is independence of observations, which means that there is no relationship between the observations in each group or between the groups themselves. The sample size is adequate. There are no univariate or multivariate outliers. There is multivariate normality. There is a linear relationship between each pair of dependent variables for each group of the independent variable. There is homogeneity of variance-covariance matrices and there is no multicollinearity.

All assumptions of the one-way MANOVA were satisfied. The one way MANOVA did not yield statistically significant effect for the coping styles, $F (28, 268) = .72$, $p = .85$; Wilk's $\Lambda = 0.87$, partial $\eta2 = .07$. The null hypothesis of no difference between the means was not rejected. The MANOVA summary table is provided in Table 16.

Table 16

MANOVA of Coping Styles

Source	SS	df	MS	F	p
Active Coping	2.64	2	1.32	1.18	.31
Planning	.60	2	.30	.25	.78
Instrumental Support	1.28	2	.64	.55	.58
Emotional Support	.65	2	.32	.27	.76
Positive Reframing	.25	2	.12	.11	.90
Religion	.55	2	.28	.23	.79
Acceptance	2.39	2	1.20	1.04	.36
Humor	.90	2	.45	.42	.66
Venting	2.90	2	1.45	1.42	.25
Beh. Disengagement	3.81	2	1.91	2.17	.12
Self-Blame	2.46	2	1.23	.99	.37
Substance Abuse	1.08	2	.54	.83	.44
Denial	.67	2	.34	.35	.70
Self-Distraction	1.19	2	.60	.53	.59

Note. Beh. Disengagement = Behavioral Disengagement

The mean scores for all 14 coping styles were not statistically significantly different between low and high income groups. Low socioeconomic status students had higher means for humor, acceptance, emotional support, self-distraction, active coping, substance use, behavior disengagement, venting, positive reframing and planning. High socioeconomic status students had higher means for denial, instrumental support, religion and self-blame. Table 17 shows these results.

Table 17
Means for Coping Styles by Income Groups

Dependent Variable	Income Groups	Mean	95% CI	
			LL	UL
Active Coping	Low	2.58 (.13)	2.33	2.84
	High	2.39 (.20)	2.00	2.79
Planning	Low	2.46 (.13)	2.20	2.73
	High	2.35 (.21)	1.95	2.77
Instrumental Support	Low	2.49 (.13)	2.23	2.75
	High	2.64 (.21)	2.24	3.05
Emotional Support	Low	2.58 (.13)	2.32	2.85
	High	2.50 (.21)	2.09	2.91
Positive Reframing	Low	2.64 (.13)	2.38	2.90
	High	2.53 (.21)	2.14	2.93
Religion	Low	2.34 (.13)	2.08	2.61
	High	2.35 (.21)	1.95	2.77
Acceptance	Low	2.61 (.13)	2.35	2.87
	High	2.32 (.21)	1.92	2.72

Humor	Low	2.58 (.13)	2.33	2.83
	High	2.57 (.20)	2.18	2.96
Venting	Low	2.69 (.12)	2.44	2.93
	High	2.32 (.19)	1.94	2.70
Beh. Disengagement	Low	2.79 (.12)	2.57	3.02
	High	2.60 (.12)	2.26	2.96
Self-Blame	Low	2.22 (.14)	1.96	2.49
	High	2.36 (.21)	1.94	2.77
Substance Use	Low	2.36 (.10)	2.16	2.55
	High	2.36 (.15)	2.06	2.66
Denial	Low	2.43 (.12)	2.20	2.67
	High	2.57 (.19)	2.21	2.94
Self-Distraction	Low	2.60 (.13)	2.34	2.85
	High	2.54 (.20)	2.14	2.93

Note. Standard errors are in parentheses. CI = confidence interval; LL = lower limit; UL = upper limit.

Summary and Transition

There was a higher participation of females in this study. Most students worked while attending community colleges in the Caribbean and were also full time students at the various colleges. Most students attended college one year after leaving high school. The education level for the parents of most of the students was secondary and primary.

The most common form of stressors students experienced related to academics. Other stressors students identified related to 'other' which include stressors such as having their property stolen, relationship issues, finance and work, and time management. Students did not highly endorse stressors relating to health and commuting.

More than 90% of students attending community colleges in the Caribbean use healthy coping styles to handle stress. The most common category of coping used by students was emotion-focused coping with the use of specific strategies of positive reframing and emotional support. Students used more emotion-focused coping than problem-focused coping. The least common category of coping used by students was adaptive coping. The most common maladaptive coping students used was behavioral disengagement and the least common category of maladaptive coping was substance use. Females used more maladaptive coping styles than males. Males used more positive coping skills, such as active coping, planning, instrumental support, positive reframing, and humor. Females used more emotional support and acceptance.

Age and gender were not independently associated with high stress level among students. Students who were under 20 years, married and were full time students experienced higher stress levels.

No significant difference was found in the level of stress between high and low socioeconomic status students. However, the mean scores for low socioeconomic status students were higher for perceived stress. There was no significant difference between each coping style and high and low socio-economic status. Low socioeconomic status students used more coping styles than high socioeconomic status students.

This chapter presented the data collection process and the results of the statistical analyses. The next chapter provides a summary and interpretation of the findings, limitations of the study, implications for social change, and suggestions for further

research. The paper concludes with recommendations for readers on how to utilize the

results.

Chapter 5: Discussion

The purpose of this study was to find out the predictors of high stress levels among community college students in the Caribbean. The goal was to find out whether students' stress was predicted by personal characteristics, family dynamics, health characteristics, lifestyle behaviors and life events. The study also examined the perception and experience of stress in low socioeconomic status students and high socioeconomic status students and the type of coping strategies students use to deal with stress in Caribbean community colleges.

The results showed students attending community colleges in the Caribbean experience several stressors. College students experience high stress due to academic commitments, social and family relationships, finances and work, lack of time management, time demands, and new responsibilities. The age and gender of students did not predict the stress levels of students. Marital status and student status predicted the stress level of community college students. Students who were currently married and were full time students experienced higher stress levels. There was no significant difference in the level of stress as measured by the Perceived Stress Scale among low socioeconomic status students and high socioeconomic status students attending Caribbean community colleges. There was no statistically significant main effect for income level and parental education and no statistically significant interaction between income groups and education groups. There were no significant differences in the types of coping strategies used between high socioeconomic status students and low

socioeconomic status students in Caribbean community colleges, as determined by the

Brief COPE Questionnaire. Students attending community colleges in the Caribbean use

more emotion-focused coping.

Perceived Stress

Overall, the study revealed several stressors that are common to students

attending Caribbean community colleges. Students experienced stressors related to

academic issues, finance and work, relationship issues, health, commuting, and time

management. Students most frequently reported stressors related to academic issues,

"other" which included events such as the death of a family member or friend or property

stolen, interpersonal relationships, finances and work, and time management and

organization. These categories of stressors were reported by both males and females.

Other stressors, such as health and commuting were also experienced by students. These

results confirm that many factors contribute to the stress of students including personal,

family, health and environmental factors. The results are consistent with prior research

that indicated that the most prevalent stressors among college students in North America

involved intrapersonal, environmental and academic factors (Presnell, 2010).

Research indicates the primary sources of stress college students in North

America face related to finances, relationships, tests and assignments, family problems

and extracurricular activities (Besser & Zeigler-Hill, 2014). It is not surprising that,

community college students in the Caribbean experience financial stressors. More than

half of the students sampled (67%) had a household income of under $20,000. Fifty-

seven percent of students worked full- time. This suggests that students may have to work while in school to subsidize and support themselves, to pay for school tuition, and take care of their families. In the Caribbean, students are responsible for their own tuition and fees. Financial aid is not available in this region and scholarships are not available in this type of institution. These responsibilities may contribute to the stress the students experienced.

This study explored the experience of stress among Caribbean community college students. It was hypothesized that age, gender, marital status, and student status would independently predict the stress level of community college students. The results of this study were inconsistent with prior studies that showed a linear relationship between age and stress with higher levels of stress among younger or older- age groups or a U-shaped relationship between age and stress with the middle age groups experiencing significantly less stress than their younger and older counterparts (Schieman, Van Gundy & Taylor, 2011). Some studies posited that younger students are more vulnerable to stress (Korten & Henderson, 2010). There are several factors that may explain why the hypotheses for age and gender were not supported in this study. Most Caribbean students enter college directly after leaving high/secondary school. Thus, the student population accessing education is young and growing and the current students do not yet have many responsibilities or stressors such as having a family, employment, marriage pressures and economic factors. In most Caribbean islands, community college is the highest and only form of higher education. The job markets require persons with higher education

qualification. Thus, students have no other option but to continue their education directly after leaving high school.

The results of this study did not show that gender predicted the stress level of students at Caribbean community colleges. This finding was not consistent with previous research that showed that in North America, Asia and Europe females experience higher levels of stress and have more stress-related problems than males during their college years (Bouchard & Shih, 2013).

This study found that student status was a significant factor of stress for Caribbean community college students. The results of the generalized linear model showed that being a full-time student was a significant predictor of stress. One possible explanation of this finding is that full-time students may have more responsibilities and challenges than students enrolled part-time that cause them to have stress. Lusk and Miller (2010) identified full-time students as being more vulnerable to stress due to intense time and course schedule that put them in a uniquely stressful situation.

This study found that marital status was a significant factor of stress for Caribbean community college students. This result is consistent with previous research which indicated that married students experience higher stress levels than other students. Terrell (2011) indicated that married students experience more stress because they feel guilty about not being home for their children, are concerned about quality and expense of childcare, feel responsible for maintaining their role within the family, make compromises in careers due to family considerations, have minimal individual free time,

perceive a lack of credibility while in school, and receive insufficient support from family.

The study explored coping as a mediator of stress in students. It was hypothesized that there would be no differences in the types of coping strategies used between low and high socioeconomic status students. The results did not show significant differences in coping between low and high socioeconomic status students. This finding is not consistent with previous research that shows socioeconomic differences in coping and frequency of use of different coping styles. According to Roohafza (2009) low income and low education level were associated with maladaptive coping styles in North America. A number of factors may explain why no differences were found among Caribbean students. The household income of most of the students sampled was under $20,000. Many households do not have a regular income and struggle to make ends meet and support their family. Caribbean economies are depressed and hinder persons in maintaining employment and providing for the family. Poverty is widespread. Unemployment and income inequality undermine the region as a whole. Employment rates in Caribbean territories are at double digit. These factors may contribute to the stress the students experience and foster maladaptive coping skill.

Further, different factors influence coping. Coping techniques are significantly influenced by other factors such as life-style and lived experiences (Roohafza, 2009). The Caribbean culture is completely different to North American and European nations. Comparative differences exist in terms of the size of the institutions students attend, the

actual size of the classes, the type of resources available, the age of students, the ratio of male to female students, the gender of instructor, the teaching style of the faculty, the type of courses offered, and technology. This could account for why there were no differences in coping found among Caribbean students.

The research indicates that Caribbean has its own culturally-bound coping methods which correspond to the unique history and situation of the group. Its people use problem-focused, emotional-focused, support-seeking and avoidance coping. Problem-focused coping involves addressing the problem causing distress by making a plan of action or concentrating on the next step. Emotional-focused coping is aimed at ameliorating the negative emotions associated with the problem by engaging in distracting activities; for example, using alcohol, fighting, seeking emotional support, using abusive language, physical violence and emotional aggression when they felt that the situation merited it. Support-seeking coping engages the help of significant persons in alleviating personal distress. Avoidance coping represents a cognitive mechanism that enables an individual to disregard or ignore the element of threat inherent in the other's behavior (Ben-Zur & Reshef-Kfir, 2013). This description explains the different processes involved in coping. A person utilizes different levels of appraisal in selecting coping responses to particular stressors. Individuals and groups differ in their interpretations and reactions to stressors. In this research there were no differences in the types of coping strategies used between low and high socioeconomic status students. This result is consistent with previous research which indicated that individuals do not

respond to the same stressful event in the same manner. Individual experiences and appraisal affect their ability to manage the stress response.

In the present study, socioeconomic status did not play a significant role in the coping strategies that students used. The results did not show significant differences in the use of coping skills. Overall, there were no significant variations in reported use of coping strategies among Caribbean students. According to Taylor and Chatters, 2010), religion is an integral part of the coping process in the Caribbean region, and is involved in the methods, outcomes, events and appraisals of coping. In previous research, 90% of Caribbean Blacks reported the significant roles of religion and spirituality when coping with stress role and 86% indicated the significance of prayers, and looking to God for strength, guidance, and support. The results of this study did not show great levels of religious participation among Caribbean students in dealing with stress. It was quite surprising that only a small number of students reported using this strategy when coping with stress.

 In this study, no differences were found between low and high socio-economic status students regarding substance use as a coping mechanism. The results are not consistent with the literature in that previous research showed college students from low socio-economic backgrounds reacted to emotional distress by turning to substance use in the absence of other, more adaptive coping mechanisms (Bianchini, Roncone, & Casacchia, 2013).

Limitations of the Current Study

Although this study's results make important contributions to the field of college stress and coping, there are several limitations. First, the study utilized a cross-sectional

design to examine stress and coping among college students. As a result no causal-effect statements can be attributed to the findings.

The findings of the study should be interpreted with caution. The sample of participants used in this study came from only three Caribbean islands. Thus, the generalizability of the results derived from this study may be limited. Participants were recruited from one college on each island. The results obtained may be unique to each college and do not relate in any way to other colleges on each island or in the Caribbean.

Finally, this study provided a cross-sectional view of stress and coping. The nature of stress is dynamic and the process of coping which affects stress levels is complex and fluid. A longitudinal study would better capture the different personal characteristics, family dynamics, health characteristics, and environmental factors related to stress and coping.

The experience of stress is unique to the individual. It can occur at discrete times over the course of the year. Data was collected during the last weeks of the semester when students were engaged in testing and when many assignments and projects were due. Students' responses may be limited to their experience at this particular point in time in their lives. Collecting data at one point in time may not be truly reflective of the students' entire college experience. Therefore, future studies should seek to administer questionnaires more than at a single point in time.

Another limitation of this study involves the sample size and the sampling procedures employed. Students were recruited to participate in the study at a time when

most colleges were having exams. Students may have been too stressed to read the notice

boards to respond to the flyers or participate in the study. Further, having exams at the

same time the surveys were distributed may have caused more stress for students.

Students who may have completed an examination may respond different to those who

take the survey just before entering their examinations. The reliability of students'

responses may be based on their motivation and willingness to respond.

The stress scales asked students to respond according to the extent to which they

have experienced stress in the past month not just the day of the survey. Students may

have overlooked this requirement and may have responded according to their present

situation.

Students who might have been experiencing high stress levels may have been

absent when data was collected and thus not included in the study. Students who

withdrew from the institutions during the semester because of academic or personal

difficulties were excluded due to the timing of data collection. The lower participation of

part-time students may not be representative of other part-time students or the student

body in other colleges as a whole. Therefore, the results should not be generalized to

students outside of the colleges examined. Although the measures used in the study were

standardized questionnaires, other factors such as culture or work experience could affect

the reliability and validity of these instruments.

The study relied on the self-report of participants. A limitation is that participants

may have given socially desirable or acceptable responses or may have exaggerated or

misrepresented information. There is also no way to verify that the students' responses were correct, accurate and truthful. Further, participants may have responded to the surveys in ways that made them look a particular way. Participants may have responded according to how they thought the researcher wanted them to respond or what they perceived was the right answer. They may have also given neutral responses that may or may not be accurate. Thus, the findings and data are based on the types of responses participants gave and are only valid as the responses are truthful. If the respondents did not answer the surveys truthfully, then the results of the study would not be valid or reliable. A further limitation is that the survey instrument may not cover all possible aspects of predictors of students' stress. Therefore, the findings may not include other relevant predictors of students' stress. Further research should extend the range of predictors to include more factors. An additional limitation of this study is the sample of college students use may not be representative of the general population of college students. Thus, the results may be limited to the sample of students who participate in the study.

Recommendations

Although stress and differences in coping have been widely studied in college students, the impact of such variables has not been widely researched on Caribbean college students. The present study was the first to explore these factors as they relate to students who reside in the Caribbean. The findings suggest that students experience academic, financial, work, and relationship stressors and students use varying coping

styles to deal with stress. Given that students experience high levels of stress, stress prevention programs are crucial for college students. College counselors and campus wellness centers can use this information to help students transition to college. Stress prevention programs should target these academic, financial, and interpersonal stressors in particular and teach students healthy ways to cope with stress. The use of problem and emotion-focused strategies is recommended including as well as the support provided by family and spiritual outlets. Students should rely less on maladaptive strategies to cope with academic stressors. Given the findings of this study that different student and family characteristics and lifestyle behaviors are predictive of levels of stress, community college faculty, health educators, and counselors should focus and direct efforts in the planning of measures to reduce stress.

It is evident that Caribbean college students face many stressors, particularly related to academic work, finances, and relationships. In addition to helping college students handle these specific stressors, more emphasis could be placed on positive and functional appraisals of the stressors. For example, having students perceive that they have a sense of control over the situation can affect their perception of stress. Research has shown that perceived sense of control, even if it is not actual control, is a crucial factor in reducing a person's perception of stress (Lazarus, 1999).

In light of the findings of the study, an important goal of college administrators should be to implement stress management programs and workshops in community colleges. The aims of these programs should be to help students manage and reduce

stress and improve their skills. Such programs can be used to help students practice skills

such as meditation and deep breathing to reduce stress. Cognitive-behavioral strategies

can be used to help students identify and change maladaptive thinking such as

catastrophizing and overgeneralization (Meichenbaum, 2010). An essential component

of stress management program should be to have students come together and share their

feelings, thoughts and experiences. The results of this study and other research indicated

that support, emotional, social and instrumental, can act as a buffer against the negative

effects of stress. Psycho-education should also play an important part in stress reduction.

Finally, to increase students' knowledge about stress and the cognitive, behavioral,

physiological, and emotional, effects of stress, colleges should disseminate information

around campuses to students. Colleges should also have information packets available

for prospective students so that students are made aware of possible stressors in college

and the effects they can have on students.

The findings of this study suggest that it would be advantageous to identify

college students with many stressors and high stress levels so that students can be made

knowledgeable about the different effects of stress. Making students aware of this

information may help to decrease the number of stressors students experience, reduce

their stress and encourage the use of healthy coping strategies. Hampel, Meir, and

Kiimmel (2010) investigated the effectiveness of school based programs that engage in

training students on how to cope with stress in a positive way. They found that students

who completed some educational programs exhibited a healthy perspective with different

examples of coping, self-efficiency, and recovery competence. Their findings revealed that having school-based programs for students helped to promote a number of positive prevention strategies that assist students in strengthening their coping techniques.

The findings of this study suggest that the majority of stress experienced by community college students stems from academic obligations, personal relationships, financial and work issues, and other stressors. Colleges should put specific programs in place to help to alleviate stress in student, with emphasis on addressing these concerns. For example, to alleviate academic concerns students should have access to college advisement centers that can assist and teach students time management skills, study skills, timely submission of assignments, studying, communicating and working with instructors. Counseling centers should regularly hold workshops that teach students how to build healthy relationships and effective communication skills. Financial workshops could also be offered that teach students how to manage their finances. Dillon and Swinbourne (2011) found that schools that implemented intervention programs, specifically in the form of school based support programs for students helped in significantly reducing stress for their students. They reported that school based support programs have affected students in a positive way, helping students to improve and maintain their sense of well-being. Westwood and Barker (2010) found that participation in advising programs increased students' academic achievement and lowered their drop-out rates.

Future Research

This study examined stress and coping in only a few community colleges. Future studies should focus on different Caribbean community colleges, both governmental and private. Also, a larger sample size should be considered that would be more representative of the Caribbean.

The present study examined the differences in the levels of stress and coping among varying socioeconomic status students. However, the specific make-up of a student's family may have a differential effect on stress levels and coping. Factors such as family size, family support, health-related behaviors including chronic illness and excessive drinking, environmental characteristics such as the type of campus, the geographic location of school, the size of the institution, the type of resources available, the actual size of the classes, the age of students, the type of courses offered, the ratio of male to female students, the gender of instructor, the teaching style of the faculty, and technology can impact results (Sawatsky, Ratner, Richardson, Washburn, Sudmant & Mirwaldt, 2012). Further studies should explore some of these variables.

The unique focus of this study on Caribbean students is perhaps one of this study's largest contributions to the psychology field. To examine the extent of student differences, comparative studies should be conducted among non-Caribbean colleges or Caribbean students in non-Caribbean institutions. For example, comparative studies could be conducted with students attending colleges in North America, Asia and Europe. Other studies could be done investigating the incidence of stress among Caribbean

students attending colleges in these territories to assess whether students experience the same types of stressors as students living in the Caribbean.

In addition to exploring stress level and perception of stress as dependent variables, other outcome measures such as health, wellbeing or the negative effects of stress can be examined within the framework of this study. This would allow more meaningful and thorough information about this student population.

Implications for Positive Social Change

The findings of this study present several implications for positive social change. It presents greater awareness to community college faculty, health educators, and counselors on the phenomenon of student stress so that they can focus and direct more efforts in the planning of measures to reduce stress. The findings of this study help to bring a better understanding to the particular stressors faced by students attending community colleges in the Caribbean and how these students perceive and moderate stress. By identifying key stressors among this population, this study will enable postsecondary institutions and counseling personnel to better serve their students. New data is provided regarding students who may be at high risks for physical, mental, emotional and social health outcomes as a result of high stress. Colleges might benefit from looking at how they can better prepare the students for entering college life so they are not at an increased risk of high stress. College administrators and counselors can use the information obtained from this study to provide additional information to high school students on college life. They can also use the information to provide stress education to

students prior to the students entering college. College administrators also might profit from examining their institutions so as to identify any predisposing factors that might contribute to the stress level of students.

Students, parents, guardians, and school administrators can be more aware as to the status of stress associated with college life. Students will obtain valuable information related to stress so that they can avoid stress from the beginning.

Conclusion

In sum, the results of the present study showed that students attending community colleges in the Caribbean experienced various stressors related to academics, relationship issues, finance and work, time management, and other stressors such as having their property stolen. Also, female students, students under 20 years, full time students, first year students and students who were married experience more stressors and have higher perceived stress. Low socioeconomic status students experienced higher stress than low socioeconomic status students and used more coping styles to manage their stress. These findings provide new insights into the dynamic process of stress and coping among Caribbean students. This study demonstrated the importance of assessing student stressors, levels of stress, and coping strategies in students within the context of the Caribbean. Low stress levels and more effective coping strategies may enhance the educational transition of students to higher education.

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Appendix A: Demographic Data Questionnaire

This section solicits personal demographic information about you as a student at community college. Please check the response that pertains to you.

1. What is your gender?
   - ☐ Male
   - ☐ Female

2. How old were you at your last birthday?

   - ☐ Under 20 years
   - ☐ 21-25
   - ☐ 26-30
   - ☐ 31-35
   - ☐ 36-40
   - ☐ 41-45
   - ☐ 46-50
   - ☐ 51 or over

3. What is your current relationship status

   - ☐ Single
   - ☐ Currently Married
   - ☐ Widowed
   - ☐ Divorced
   - ☐ Separated

4. What is your academic status?

   - ☐ Full time student
   - ☐ Part time student

5. What is your student status?

   - ☐ First year student
   - ☐ Second year student

6. When did you attend college?

  ☐ 1 year after leaving high school
  ☐ 2 years after leaving high school
  ☐ 3 years after leaving high school
  ☐ 4 years after leaving high school
  ☐ 5 years after leaving high school
  ☐ More than 5 years after leaving high school

7. What is your employment status?

  ☐ Full-time [40 hours per week or more]
  ☐ Part-time
  ☐ Unemployed
  ☐ Never worked before

8. What is your household Income?
  ☐ Less than $20,000
  ☐ $21,000 - $25,000
  ☐ $26,000- $30,000
  ☐ $31,000-$35,000
  ☐ $36,000-$40,000
  ☐ $41,000-$45,000
  ☐ $46,000-$50,000
  ☐ Over $50,000

9. What is your parent's education level?
  ☐ No schooling
  ☐ Primary school (Elementary school)
  ☐ Secondary school
  ☐ Technical Vocational schooling
  ☐ Community college
  ☐ University

Appendix B: The Undergraduate Stress Questionnaire (USQ)

This section focuses on stressors you may have encountered over the past month. Please place a check next to the corresponding stressors that most closely represents the extent to which you have experienced stress in the past month.

- ☐ 1. Death (family member or friend)
- ☐ 2. Had a lot of tests
- ☐ 3. It's finals week
- ☐ 4. Applying to higher education
- ☐ 5. Victim of a crime
- ☐ 6. Assignments in all classes due the same day
- ☐ 7. Breaking up with boy/girlfriend
- ☐ 8. Found out boy/girlfriend cheated on you
- ☐ 9. Lots of deadlines to meet
- ☐ 10. Property stolen
- ☐ 11. You have a hard upcoming week
- ☐ 12. Went into a test unprepared
- ☐ 13. Lost something (especially wallet)
- ☐ 14. Death of a pet
- ☐ 15. Did worse than expected on test
- ☐ 16. Had an interview
- ☐ 17. Had projects, research papers due
- ☐ 18. Did badly on a test
- ☐ 19. Parents getting divorce
- ☐ 20. Dependent on other people
- ☐ 21. Having roommate conflicts
- ☐ 22. Car/bike broke down, flat tire
- ☐ 23. Got a traffic ticket
- ☐ 24. Missed your period and waiting
- ☐ 25. Thoughts about future
- ☐ 28. Lack of money
- ☐ 27. Dealt with incompetence at the Register's Office
- ☐ 28. Thought about unfinished work
- ☐ 29. No sleep
- ☐ 30. Sick, Injury
- ☐ 31. Had a class presentation
- ☐ 32. Applying for a job
- ☐ 33. Fought with boy/girlfriend
- ☐ 34. Working while in school
- ☐ 35. Arguments, conflicts of values with friend
- ☐ 36. Bothered by having no social support of family
- ☐ 37. Performed poorly at a task

- ☐ 38. Can't finish everything you needed to do
- ☐ 39. Heard bad news
- ☐ 40. Had confrontation with an authority figure
- ☐ 41. Maintaining a long-distance boy/girlfriend
- ☐ 42. Crammed for a test
- ☐ 43. Feel unorganized
- ☐ 44. Trying to decide on major
- ☐ 45. Feel isolated
- ☐ 46. Parents controlling with money
- ☐ 47. Couldn't find a parking space
- ☐ 48. Noise disturbed you while trying to study
- ☐ 49. Someone borrowed something without permission
- ☐ 50. Had to ask for money
- ☐ 51. Ran out of toner while printing
- ☐ 52. Erratic schedule
- ☐ 53. Can't understand your professor
- ☐ 54. Trying to get into your major or college
- ☐ 55. Registration for classes
- ☐ 56. Stayed up late writing a paper
- ☐ 57. Someone you expected to call did not
- ☐ 58. Someone broke a promise
- ☐ 59. Can't concentrate
- ☐ 60. Someone did a "pet peeve" of yours
- ☐ 61. Living with boy/girlfriend
- ☐ 62. Felt need for transportation
- ☐ 63. Bad haircut today
- ☐ 64. Job requirements changed
- ☐ 65. No time to eat
- ☐ 68. Felt some peer pressure
- ☐ 67. You have a hangover
- ☐ 68. Problems with your computer
- ☐ 69. Problem getting home from bar when drunk
- ☐ 70. Used a fake ID
- ☐ 71. No sex in a while
- ☐ 72. Someone cut ahead of you in line
- ☐ 73. Checkbook didn't balance
- ☐ 74. Visit from a relative and entertaining them
- ☐ 75. Decision to have sex on your mind
- ☐ 76. Spoke with a professor
- ☐ 77. Change of environment (new doctor, dentist, etc.)
- ☐ 78. Exposed to upsetting TV show, book, or movie
- ☐ 79. Got to class late

- ☐ 80. Holiday
- ☐ 81. Sat through a boring class
- ☐ 82. Favorite sporting team lost

Appendix C: The Perceived Stress Scale

This section assesses the degree of stress. Please circle the response that most closely represents the extent to which you have experienced stress in the past month.

0= Never   1= Almost Never   2= Sometimes   3= Fairly Often   4= Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? ……………………………………………………….…………..0 1 2 3 4

2. In the last month, how often have you felt that you were unable to control the important things in your life? ……………………………………………….…………..0 1 2 3 4

3. In the last month, how often have you felt nervous and "stressed"?
    ……………………………………………………………………….0 1 2 3 4

4. In the last month, how often have you dealt successfully with day to day problems and annoyances? ……………………………………………………….…………...0 1 2 3 4

5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
    ……………………………………………………………………….0 1 2 3 4

6. In the last month, how often have you felt confident about your ability to handle your personal problems? …………………………………………………….…………..0 1 2 3 4

7. In the last month, how often have you felt that things were going your way?
    …………………………………………………….……………….0 1 2 3 4

8. In the last month, how often have you found that you could not cope with all the things that you had to do? …………………………………………………….………..0 1 2 3 4

9. In the last month, how often have you been able to control irritations in your life?
    ………………..……………………………….…………….…… 0 1 2 3 4

10. In the last month, how often have you felt that you were on top of things?
    ……………………………………………………….…………..0 1 2 3 4

11. In the last month, how often have you been angered because of things that happened that were outside of your control?…………………………….…………….0 1 2 3 4

12. In the last month, how often have you found yourself thinking about things that you have to accomplish? …………………………………………….…………….0 1 2 3 4

13. In the last month, how often have you been able to control the way you spend your time? …….…………………………………………………….…………….0 1 2 3 4

14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? …………………………………….…………….0 1 2 3 4

Appendix D: The Brief COPE Questionnaire

This section focuses on how you cope with stress. Indicate **YOU USUALLY DO** when **YOU** experience a stressful event using the response choices listed just below. Try to rate each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true FOR YOU as you can. Please answer every item.

 1 = I haven't been doing this at all
 2 = I've been doing this a little bit
 3 = I've been doing this a medium amount
 4 = I've been doing this a lot

1. I've been turning to work or other activities to take my mind off things.   1 2 3 4
2. I've been concentrating my efforts on doing something about the situation I'm in.   1 2 3 4
3. I've been saying to myself "this isn't real."   1 2 3 4
4. I've been using alcohol or other drugs to make myself feel better.   1 2 3 4
5. I've been getting emotional support from others.   1 2 3 4
6. I've been giving up trying to deal with it.   1 2 3 4
7. I've been taking action to try to make the situation better.   1 2 3 4
8. I've been refusing to believe that it has happened.   1 2 3 4
9. I've been saying things to let my unpleasant feelings escape.   1 2 3 4
10. I've been getting help and advice from other people.   1 2 3 4
11. I've been using alcohol or other drugs to help me get through it.   1 2 3 4
12. I've been trying to see it in a different light, to make it seem more positive.   1 2 3 4
13. I've been criticizing myself.   1 2 3 4
14. I've been trying to come up with a strategy about what to do.   1 2 3 4
15. I've been getting comfort and understanding from someone.   1 2 3 4
16. I've been giving up the attempt to cope.   1 2 3 4
17. I've been looking for something good in what is happening.   1 2 3 4
18. I've been making jokes about it.   1 2 3 4
19. I've been doing something to think about it less, such as going to movies,   1 2 3 4
watching TV, reading, daydreaming, sleeping, or shopping.
20. I've been accepting the reality of the fact that it has happened.   1 2 3 4
21. I've been expressing my negative feelings.   1 2 3 4
22. I've been trying to find comfort in my religion or spiritual beliefs.   1 2 3 4
23. I've been trying to get advice or help from other people about what
to do.
24. I've been learning to live with it.   1 2 3 4
25. I've been thinking hard about what steps to take.   1 2 3 4
26. I've been blaming myself for things that happened.   1 2 3 4
27. I've been praying or meditating.   1 2 3 4
28. I've been making fun of the situation.   1 2 3 4

Appendix E: IRB Approval Letter

Dear Mr. Da Silva,

This email is to notify you that the Institutional Review Board (IRB) has approved your application for the study entitled, "Predictors of Stress among Caribbean Community College Students."

Your approval # is 07-21-15-0261341. You will need to reference this number in your dissertation and in any future funding or publication submissions. Also attached to this e-mail is the IRB approved consent form. Please note, if this is already in an on-line format, you will need to update that consent document to include the IRB approval number and expiration date.

Your IRB approval expires on July 20, 2016. One month before this expiration date, you will be sent a Continuing Review Form, which must be submitted if you wish to collect data beyond the approval expiration date.

Your IRB approval is contingent upon your adherence to the exact procedures described in the final version of the IRB application document that has been submitted as of this date. This includes maintaining your current status with the university. Your IRB approval is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, your IRB approval is suspended. Absolutely NO participant recruitment or data collection may occur while a student is not actively enrolled.

If you need to make any changes to your research staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 1 week of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB application, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the IRB section of the Walden website: http://academicguides.waldenu.edu/researchcenter/orec

Researchers are expected to keep detailed records of their research activities (i.e., participant log sheets, completed consent forms, etc.) for the same period of time they retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Both students and faculty are invited to provide feedback on this IRB experience at the link below:

http://www.surveymonkey.com/s.aspx?sm=qHBJzkJMUx43pZegKlmdiQ_3d_3d

Sincerely,
Libby Munson
Research Ethics Support Specialist
Office of Research Ethics and Compliance
Email: irb@waldenu.edu
Fax: 626-605-0472
Phone: 612-312-1283

Office address for Walden University:
100 Washington Avenue South, Suite 900
Minneapolis, MN 55401

Information about the Walden University Institutional Review Board, including instructions for application, may be found at this link: http://academicguides.waldenu.edu/researchcenter/orec

Appendix F: Invitation to Students

My name is Jean Da Silva. I am a doctoral student in the School of Psychology at Walden University currently doing research to find out more about the students attending community college. I am interested in learning what stress students have and how they are dealing with it. This study is being done for my Walden dissertation.

I am soliciting your participation in this study. Participation in the study would involve completion of surveys. If you would like more information or are interested in being a participant, please email the researcher at jean.dasilva@ waldenu.edu.

Appendix A: Informed Consent

You are invited to participate in a research study of stress and coping among community college students.

This study is being conducted by Jean Da Silva, a doctoral student in the School of Psychology at Walden University and a teacher at the St Vincent and the Grenadines community college. However, my role as an instructor/lecturer is separate from this study.

Purpose of Research

To find out the factors contributing to high levels of stress among students and the type of coping strategies students in the Caribbean use to deal with stress.

Through this study I hope to gain a better understanding of Caribbean students' experience of stress thus extending the research to West Indian populations outside of the North American and European contexts.

Procedures

This study is open to students over the age of 18 years who are attending two year higher learning institutions in the Caribbean. As a participant in this study, you will be asked to complete some questionnaires which will take about 30 minutes to complete. Your responses will be kept confidential.

Risks

There are minimal risks for participating in this study. Similar studies conducted in the past have shown little or no risks to participants. In the event that you experience distress while participating in the study you may terminate your participation at any time. You do not have to answer any questions which you consider to be stressful in nature or invasive. In the event that you feel any stress or anxiety while answering the items, you can contact the campus counselor.

Your participation in this study is strictly voluntary and you have the right to refuse to participate or terminate your participation at any time. Your decision whether or not to participate will not affect your current or future status as a student at the college.

Confidentiality

Participation in this study is anonymous. The records and the results of the study will be kept private and confidential. No none will know your answers and no information will be used to make it possible to identify you as a participant. Only the researcher will have exclusive access to the information you provide and your information will only be used for academic purposes.

Benefits

There is no monetary benefit for participating in the study. You may not receive a direct benefit from the information you provided in this study but a better understanding of the issues facing community college students will aid other students.

The expectation is that this study will provide a better understanding of Caribbean students and will broaden the body of research relating to this student population.

Compensation

No compensation will be provided

In order to protect your privacy, signatures are not being collected and your completion of the survey would indicate your consent, if you choose to participate. You will receive a copy of this form from the researcher.

Subject's Permission

I have read and understood the description of the study presented above. I acknowledge the above and herby give my voluntary consent to participate in this study. I also understand that if I have any questions regarding this research or the conduct of this research, I can contact the persons identified below.
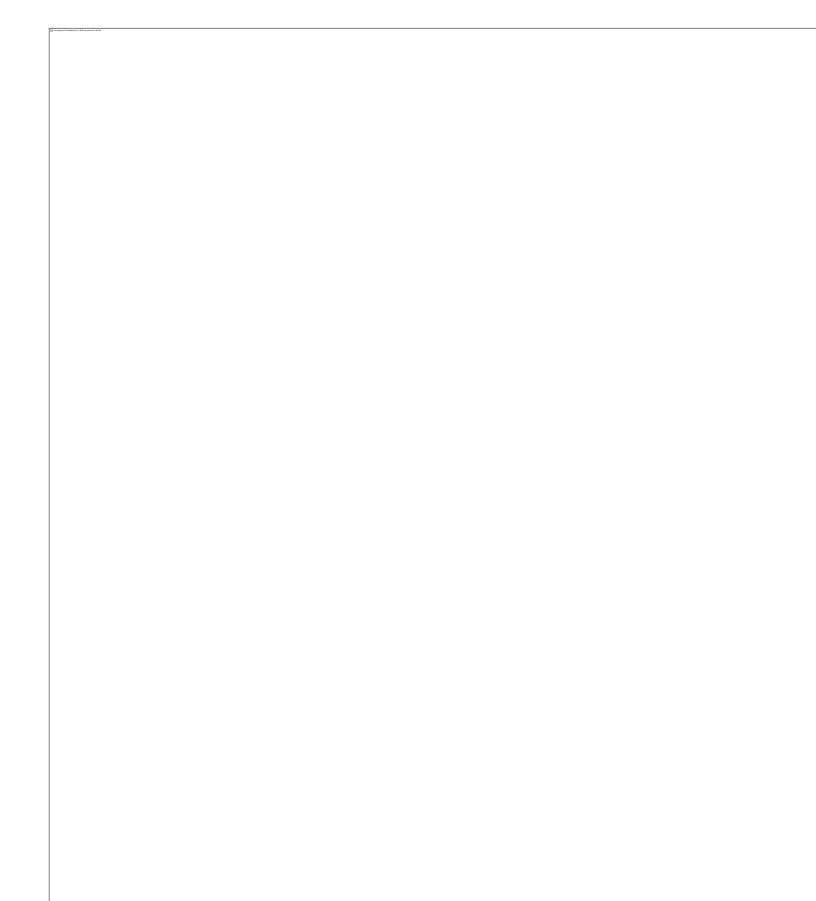
Researcher: Jean Da Silva, Phone: (784) 4956317, Email: jean.dasilva@waldenu.edu
Faculty Advisor: Dr Bernadette Dorr, Phone: (618) 057638, Email:
bernadette.dorr@waldenu.edu.
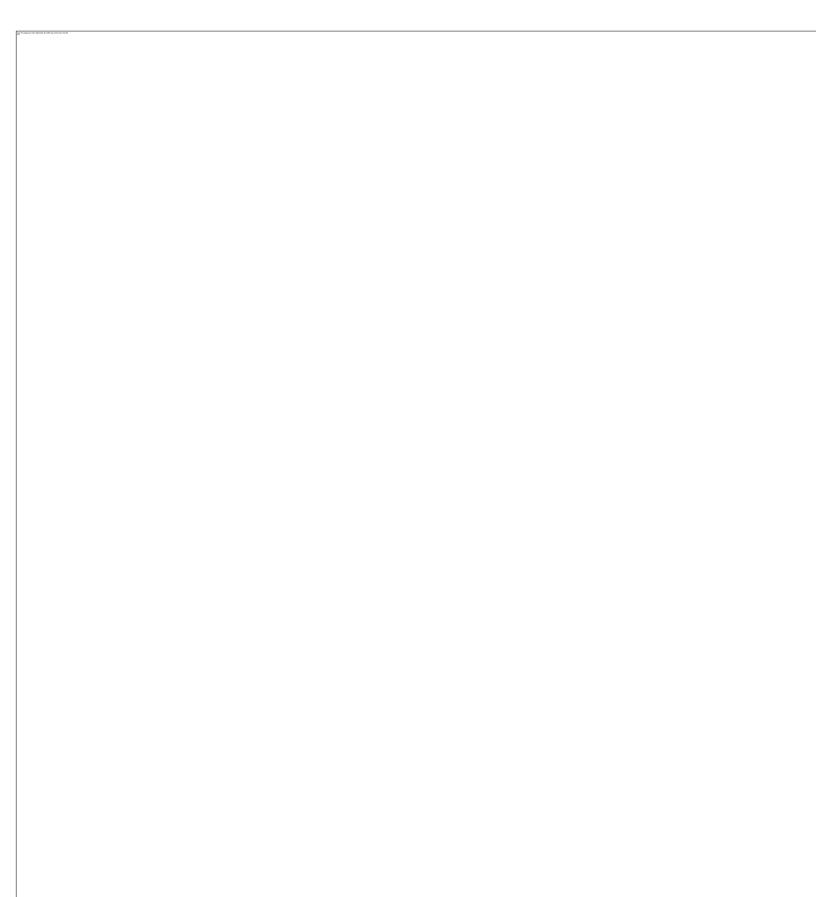If you have questions regarding your rights as participants you can contact +1-612-312-1210 or irb@waldenu.edu
.
Thanks for your time and assistance in this project.
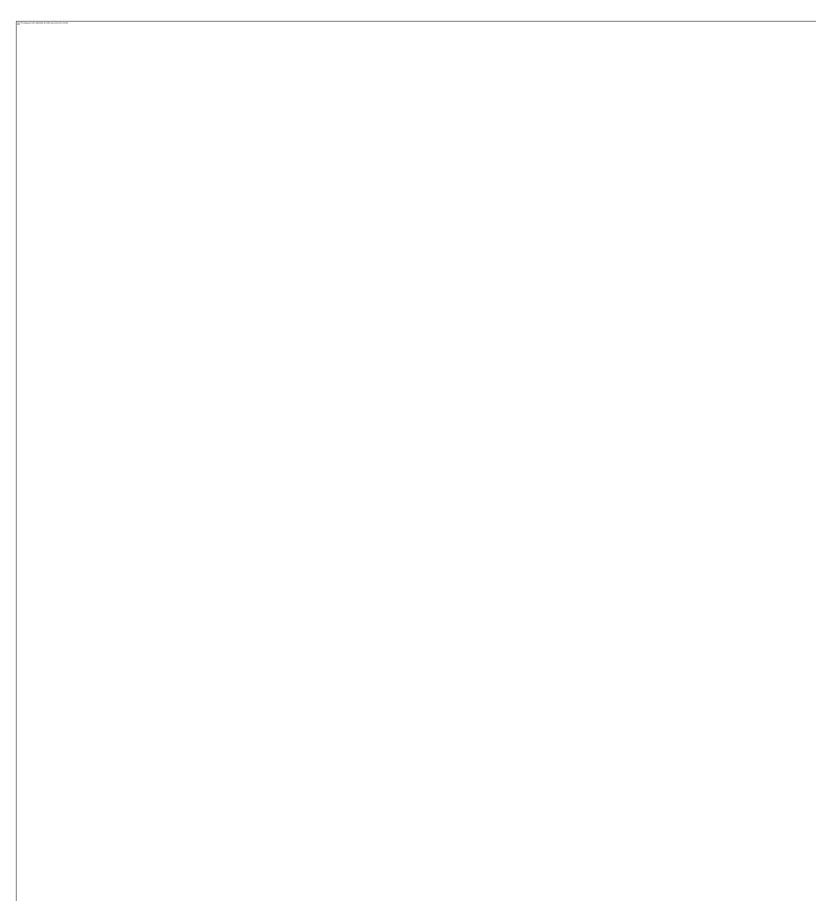
With kind regards,
Jean Da Silva

Appendix G: Letter of Co-operation

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Appendix H: Letter of Co-operation

The image part with relationship ID rId3 was not found in the file.

Appendix I: Letter of Co-operation

Curriculum Vitae

Jean Merle Da Silva

**FairHall,
Kingstown P. O.,
(784) 495 6317**
jeandas69@yahoo.com

Education:

Doctor of Philosophy – Clinical Psychology
Walden University, Minneapolis, Minnesota

Master of Science – Applied Psychology   2008
University of the West Indies, Cave Hill, Barbados
Thesis topic: Factors contributing to crime and violence in secondary schools in St Vincent and the Grenadines

Bachelor of Science – Psychology and Spanish (Double Major)   2004
University of the West Indies, Mona, Jamaica

Certificate in Teacher Training   1994
 St Vincent Teachers College, St. Vincent

Certificate in Family Life Education   1993
University of the West Indies, Faculty of Education

 Work Experience:
 Counselor
 St Vincent and the Grenadines Community College, Villa, St Vincent
 September 2015

 Teaching Assistant (Walden University, Minnesota, Minneapolis
 Summer 2013

 Psychology Instructor/Lecturer/Department Head
 2004- 2015

Community College, Glen, St Vincent

- Develop curriculum,
- Serve as Psychology Head of department
- Supervise, mentor and train others
- Instructor/Lecturer
- Preparation of Year 1 and 2 students for a course of study in Cambridge International Exams (CIE).
- Teach Associate Degree in Psychology
- Teach students in Bachelors in Education, Bachelor in Guidance and Counseling, and Bachelor in Social Work.

Special Educational Needs Coordinator (SENCO)
2009- 2013
Summit School, Glen, St Vincent
Work with children with learning disabilities, behavioral problems, assessments, counseling

Psychologist
2004- Present
Community College, Glen, St Vincent
Counsel students

Spanish Teacher
2009-present
Summit School, Glen, St Vincent
Teach Spanish as a second language to students

Trained Teacher
1988-2003
Taught Spanish, English Language and English Literature to students in high/secondary school

Other Experience:

Psychology Intern
 ADHD & Autism Psychological Services and Advocacy, New York Mills, New York

June 2014 – December 2014 (6months)

Psychology Practicum
ADHD & Autism Psychological Services and Advocacy, New York Mills, New York
December 2013 – May 2014 (6 months)

Psychology Practicum/Trainee psychologist
Mico University College Child Assessment and Research in Education Centre (MICO CARE Center), Jamaica
June – August 2008
Training in the diagnosis and assessment of children with learning difficulties. Work in psychological testing, preparation of psychological evaluation, case reports for educational institutions and the court system, conduct case conferences.

Counselor in Training
Mico University College Child Assessment and Research in Education Centre (MICO CARE Center), Jamaica
January 2004-June 2004
Expert training in the elements of counseling and psychotherapy

Teaching Experience:

Introduction to Psychology, Bachelor in Guidance and Counseling, Jamaica Theological Seminary, Jamaica- 2015
Introduction to Psychology, Bachelor in Education, University of the West Indies (UWI), Cave Hill, Barbados, 2010
Introduction to Psychology, Bachelor in Social Work, Jamaica Theological Seminary, Jamaica- 2011
Principles of Social Psychology, Bachelor in Education, UWI, Cave Hill, Barbados, 2012
Abnormal Psychology, Bachelor in Social Work, Jamaica Theological Seminary, Jamaica, 2012;
Abnormal Psychology, Associate Degree Program, St Vincent Community College, 2012
Developmental Psychology, Bachelor in Social Work, Jamaica Theological Seminary, Jamaica, 2012
Theories of Personality, Associate Degree Program, St Vincent Community College, 2012
Cognitive Psychology, Associate Degree Program, St Vincent Community College, 2012
Experimental Psychology, Associate Degree Program, St Vincent Community College, 2011
Skills in Counseling, Associate Degree Program, St Vincent Community College 2012

Developmental Psychology, Associate Degree Program, St Vincent Community College 2012

Seminar Research Paper, Associate Degree Program, St Vincent Community College 2012, 2013

Research Skills in Psychology, Associate Degree Program, St Vincent Community College 2013

Educational Psychology, Associate Degree Program, St Vincent Community College 2012

Spanish, Summit School, Glen, St Vincent, 2009-2013,

Spanish, St Vincent Girls' High School, 1998-2000

English Language, St Vincent Girls' High School, 1998-2000

English Literature, St Vincent Girls' High School, 1998-2000

Curriculum Developed
Associate Degree in Psychology

Major Projects
St Benedict's Project – Spearhead the donation of clothes, toiletries, money.
The Mental Health Centre Initiative – donation of clothes, toiletries
Louis Punnett Home project - looking after the elderly, offer services such as grooming, singing, taking patients for walks, make donations.

International travel
Houston, Texas, Teaching Assistant, Walden University, June 2013
Jamaica, MICO University College Child Assessment and Research in Education Centre. 2008
Jamaica, Training in the elements of counseling and psychotherapy 2004

Specialized skills
Psychological testing, preparation of psychological evaluation, case reports for educational institutions and the court system, conduct case conferences, knowledge of various tests used to evaluate students and the administration of these tests. Proficient in Spanish as a second language. Knowledge of SPSS Statistical Programming,

Professional Affiliations:
Ps Chi
Member, American Psychological Association, APA
Member, Division 2, Society for the Teaching of Psychology
Member, Division 12, Society of Clinical Psychology
Member, Division 53, Society of Pediatric Psychology
Member, Division 54, Society of Clinical Child and Adolescent Psychology

Honors and Awards
Walden's Psi Chi Chapter
Caribbean Development Bank CDB Scholarship: 2007- 2008 to pursue Masters in
Psychology

Languages

English, Spanish