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Stressors and Depression Among Adolescents With Co-rumination as a Moderator

Angela Grosso-Burke
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Walden University

College of Education and Human Sciences

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Angela Grosso-Burke

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Walden University
2023

Abstract

Stressors and Depression Among Adolescents With Co-rumination as a Moderator

by

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MPhil, Walden University, 2021

MSW, Washington University in St. Louis, 2012

BS, University of Kansas, 2007

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Stress, depression, and co-rumination have been a focus of scholars in recent years. Although studies have considered the relationship among stressors, depression, and co-rumination, little is known about the moderating effects of co-rumination. This study aimed to address the gap in the literature by examining moderating effects of co-rumination on relations between stressors and depression, along with further moderating effects of sex, race, and grade. The current study examined mean-level race, sex, and grade differences in the relation among stressors (total, family, peer, physical appearance, sport/physical activity, school) and depressive symptoms in adolescents. Analyses were conducted to determine the relationship between the specified stressors and depressive symptoms, and moderating effects of co-rumination, race, sex, and grade. Results found that each stressor was significantly and positively associated with depression. Black adolescents scored higher than White adolescents for all the stress domains except physical appearance and commonly scored higher than White adolescents in both grades, though that effect was stronger for seventh grade students than 10th. White adolescents coruminated more than Black adolescents, and the effect was more pronounced in 10th grade than in seventh grade. Black adolescents reported greater depressive symptoms than White adolescents. Females reported greater depressive symptoms than males. Tailored intervention efforts that ensure cultural competence for non-White adolescents, targeted gender, and age-specific programming could support adolescent mental health and impact positive social change for future generations.

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Table of Contents

List of Tables	iv
Chapter 1: Introduction to the Study.....	1
Background.....	2
Problem Statement.....	4
Purpose of the Study	5
Research Questions and Hypotheses	5
Theoretical Framework for the Study	8
Stress and Coping	8
Response Style Theory	8
Nature of the Study	8
Definitions.....	10
Assumptions.....	11
Scope and Delimitations	12
Limitations	12
Significance.....	13
Summary	14
Chapter 2: Literature Review	15
Introduction.....	15
Literature Search Strategy.....	16
Theoretical Foundation	17
Stress and Coping	17

Response Styles Theory	18
Literature Review.....	18
Adolescents and the Experience of Depression and Stress.....	18
Stress and Depression: Considering Co-rumination in Friendship as a Moderator.....	21
The Roles of Sex, Race, and Age	22
Summary and Conclusions	24
Chapter 3: Research Method.....	26
Introduction.....	26
Research Design and Rationale	26
Methodology	27
Population	27
Sampling and Sampling Procedures	27
Procedures for Recruitment, Participation, and Data Collection	28
Instrumentation and Operationalization of Constructs	30
Data Analysis Plan.....	32
Sex, Race, and Grade Differences	32
Stressors and Depression	33
Co-rumination as a Moderator of Relations Between Stressors and Depression.....	33
Threats to Validity	34
Ethical Procedures	35

Summary	35
Chapter 4: Results	37
Data Collection	37
Summary	56
Chapter 5: Discussion, Conclusions, and Recommendations	58
Introduction	58
Interpretation of Findings	59
Theoretical Frameworks	63
Stress and Coping	63
Response Style Theory	64
Limitations of the Study.....	64
Recommendations.....	65
Implications.....	66
Conclusion	68
References.....	69
Appendix A: Co-rumination Questionnaire (Rose, 2002)	86
Appendix B: CES-D (Radloff, 1977).....	90
Appendix C: DHQ (DuBois et al., 2002).....	93
Appendix D: CITI Training Through University of Missouri.....	102

List of Tables

Table 1. Characteristics of Sample	38
Table 2. Means, Standard Deviations, and Range of Variables.....	39
Table 3. Means and Standard Deviations for Study Variables by Sex, Race, and Grade. 40	
Table 4. Results Summary From 2 (Grade) X 2 (Sex) X 2 (Race) Between Subjects ANOVA	41
Table 5. Correlations Among Stressors and Depression	46
Table 6. Summary of Regression Analyses Predicting Depressive Symptoms from Stress, Sex, Grade, and Race	48
Table 7. Summary of Regression Analysis Predicting Depressive Symptoms From Stress and Co-rumination	50
Table 8. Summary of Regression Analysis Predicting Depressive Symptoms From Stress, Co-rumination, Sex, Grade, and Race	52
Table 9. Summary of Three-Way Regression Analyses Predicting Depressive Symptoms From Stress X Co-rumination by Race: Black	55
Table 10. Summary of Three-Way Regression Analyses Predicting Depressive Symptoms From Stress X Co-rumination by Race: White	55

Chapter 1: Introduction to the Study

The developmental period of adolescence comes with several psychological, emotional, and social challenges, as a result of increased academic and interpersonal demands. These developmental milestones have also put adolescents at increased risk for depressive symptoms, being diagnosed with depression more than nearly every other age group (Zolot, 2018). Depression is a mood disorder, characterized by several symptoms, including depressed mood, difficulty managing daily activities, sleep and appetite disturbance, and trouble concentrating (U.S. Department of Health and Human Services, n.d.).

Several factors contribute to the prevalence of depressive symptoms among adolescents. The way adolescents identify with their problems and their perception of stress are examples of factors that contribute to adolescent depression (Belea & Calauz, 2019). Experiencing high amounts of stress has also been shown to increase symptoms of depression in adolescents (Burani et al., 2021). Many adolescents have also identified peer support as a protective factor (Belea & Calauz, 2019; Jakobsson et al., 2019). However, this may not always be the case.

The construct of co-rumination is relevant when considering stress, coping, and social support among adolescents. Co-rumination is defined as repeated discussion of problems and revisiting problems with another person that is characterized by speculation about problems and dwelling on negative affect (Rose, 2002). While co-rumination can occur between any relationship partners, it has been studied the most between friends. Co-rumination has often been linked to a sense of emotional closeness (Rose et al.,

2014). Adolescents who coruminate with their peers often experience an increase in symptoms of anxiety and depression (Homa & Chow, 2014; Rose et al., 2014).

Although there is research about the relations between adolescents experiencing stressors and their emotional adjustment, researchers have not yet examined co-rumination as a moderator of these relations and whether the relations are further moderated by sex, race, and age. Understanding the adolescent experience of stressors, depression, and the potential moderating effect of co-rumination could be important for improving mental health resources available for adolescents. Thus, this study is important because understanding the relationship between stressors, depression, and co-rumination could help mitigate the risk of depression for adolescents in the future. Addressing this topic has the potential to foster positive social change by illuminating opportunities for change for adolescents and the way they engage with their peers. This chapter includes the following topics: background, problem statement, purpose, research questions and hypotheses, theoretical framework, nature of the study, definitions, assumptions, delimitations, limitations, and summary.

Background

Depression among adolescents is a growing problem across the country. Research of over 95,000 adolescents ages 12 to 17 years has shown that depression rates have increased steadily over a 12-month period, while the use of behavioral health services has remained the same (Lu, 2019). There are several well-studied factors associated with increased rates of depression in the adolescent population. Lifestyle factors, such as sedentary behavior and poor sleep as well as emotional competence, are variables that

impact the prevalence of depression in the adolescent population (Borowski & Zeman, 2018; Sunderland et al., 2021). Gender differences are also present in the research, demonstrating that females are at higher risk for depression (Borowski & Zeman, 2018).

Stress is also a known predictor of depressive symptoms for adolescents (Carter et al., 2015; Kim, 2021). Though *stress* is a broadly used term, research supports the idea that there are multiple domains of stress. Future career choice, school work, and conflict in parent and peer relationships are all examples of stressors adolescents commonly experience (Kim, 2021; Ulrich et al., 2021). Overall stress, as well as stress in particular domains, has been associated with depression in adolescence (Martinez & Bámaca-Colbert, 2019).

However, the association between stress and depression is not the same for all adolescents. In the current study, I expected that co-rumination would moderate the association between stress and depression such that the association was stronger among adolescents who coruminate. This hypothesis was based on the idea that extensively talking about problems and speculating about problems may make the problems seem worse and more difficult to resolve. In this research, I also examined whether the associations were further moderated by sex, race, and/or grade. Although stress, depression, and co-rumination all play an important role in overall mental well-being, the gap in the literature was that the moderating effects of co-rumination on relations between stress and depression have not been studied.

This study can contribute to positive social change. Teens spend increasing amounts of time with their peers across their adolescence, many engaging in lengthy

conversations and co-rumination that may be negatively impacting their mental health. Understanding the moderating effect of co-rumination on the adolescent experience of stress and depression could provide valuable insight into how to support teens engaging in co-rumination.

Problem Statement

Adolescents are one of the age groups that most commonly receive a depression diagnosis (Zolot, 2018). Stressors and co-rumination between friends are both factors that influence the presence of depressive symptoms (Rose et al., 2016; Spindel et al., 2017). Co-rumination is common among many youths, particularly during adolescence as adolescents begin the individuation process to rely more on peer support than on family support (Tompkins et al., 2011). Understanding the potential moderating effect of co-rumination on the association between stressors and depression allows for a better understanding of the role of co-rumination in adolescent relationships.

In this study, I examined the associations among stressors, depression, and co-rumination among adolescents. The variables that explored included types of stressors (peer, family, school, physical appearance, sports/physical activity, and overall stress [composite score]), and also depression and co-rumination. Mean level sex, race, and grade differences and further moderation of sex, race, and grade were also explored. The data used for the study were collected from 2007 to 2009 by Dr. Amanda Rose (chair of this dissertation committee).

Purpose of the Study

The purpose of this quantitative study was to examine the associations among stressors, depression, and co-rumination among adolescents. The variables that explored included types of stressors (peer, family, school, physical appearance, sports/physical activity, and overall stress [composite score]), depression, and co-rumination. Stress was the independent variable, depression was the dependent variable, and co-rumination was a moderating variable. Sex, grade, and race were considered as additional moderating variables. Analyses with the composite stress score occurred first, followed by analyses of each stress type separately.

To address the problem statement, I used a quantitative approach and secondary analyses of a previously collected dataset. The dataset used for the study was collected by Dr. Amanda Rose between 2007 and 2009. The participants were seventh or 10th grade students, assessed at two time points, roughly 9 months apart. Analyses were completed using SPSS.

Research Questions and Hypotheses

Research Question 1: Are there mean-level sex, race, and/or grade differences in the study variables, stressors (overall composite stress score, peer, family, school, physical appearance, sports/physical activity), co-rumination, and depression?

H1₀: There is not a statistically significant mean-level sex, race, and/or grade difference in the study variables.

H1_a: There is a statistically significant mean-level sex, race, and/or grade difference in the study variables.

Research Question 2a: Is there a relationship between stressors (overall composite stress score, peer, family, school, physical appearance, sports/physical activity stress) and depression?

H2₀: There is not a statistically significant relationship between stressors (overall composite stress score, peer, family, school, physical appearance, sports/physical activity) and depression.

H2_a: There is a statistically significant positive relationship between stressors (overall composite stress score, peer, family, school, physical appearance, sports/physical activity) and depression.

Research Question 2b: Are the relationships between stressors (overall composite stress score, peer, family, school, physical appearance, sports/physical activity), and depression, moderated by sex, race, and/or grade?

H2_{b0}: Sex, race, and/or grade do not statistically significantly moderate relationships between stressors (overall composite stress score, peer, family, school, physical appearance, sports/physical activity), and depression.

H2_{b_a}: Sex, race, and/or grade do statistically significantly moderate the positive relationship between stressors (overall composite stress score, peer, family, school, physical appearance, sports/physical activity), and depression. The relations between stress and depression are expected to be stronger for females than for males, 10th graders than seventh graders, and Black adolescents than White adolescents.

Research Question 3a: Are the relations between stressors, (overall composite stress score, peer, family, school, physical appearance, sports/physical activity), and depression, moderated by co-rumination?

H3a₀: Co-rumination does not statistically significantly moderate relations between stressors, (overall composite stress score, peer, family, school, physical appearance, sports/physical activity), and depression.

H3a_a: There is a statistically significant interaction between the positive relationship between stressors (overall composite stress score, and co-rumination in predicting depressive symptoms, such that the relation between stressors and depressive symptoms is higher for adolescents who engage in high levels of co-rumination than adolescents who engage in low levels of co-rumination.

Research Question 3b: Are the relations among stressors, (overall composite stress score, peer, family, school, physical appearance, sports/physical activity), and depression and co-rumination, further moderated by sex, race, and/or grade?

H3b₀: Sex, race, and/or grade do not statistically significantly further moderate relations between stressors (overall composite stress score, peer, family, school, and physical appearance, sports/physical activity), depression, and co-rumination.

H3b_a: Sex, race, and/or grade do statistically significantly moderate the positive relationships between stressors, (overall composite stress score, peer, family, school, physical appearance, sports/physical activity), depression, and co-rumination. The relations between stress and depression are expected to be stronger for females than for males, 10th graders than seventh graders, and Black adolescents than White adolescents.

Theoretical Framework for the Study

Stress and Coping

A major theory that grounded this study was the theory of stress and coping by Lazarus in 1966 (Lazarus & Folkman, 1984). This theory was developed in an attempt to explain stress as the response to an intersection between person and environment (Walinga, 2008). People with high amounts of stress are more likely to experience depression (Burani et al., 2021), making understanding the relations between stressors and depression essential.

Response Style Theory

Co-rumination is one type of coping adolescents can adopt in response to stress. Co-rumination is typically considered to be a type of emotion-focused coping but also can be problem-focused coping if the conversations include ideas about how to solve problems (Rose, 2021). The construct of co-rumination is based on Nolen-Hoeksema's response style theory. According to response style theory, the way people respond to their symptoms of depression decides the duration and severity of the symptoms (Nolen-Hoeksema, 1991). Co-rumination is a dyadic process between two people talking about problems and thus can be considered a social form of rumination.

Nature of the Study

To address the research questions in this quantitative study, the specific research design was correlational, involving survey data assessing depressive symptoms, co-rumination, and stress. Sex, grade, and race also were assessed with self-reports. In analyses, depression served as the dependent variable. In the first set of analyses, the

stress variables and co-rumination served as independent variables. Interactions between the stress variables and co-rumination were tested to determine whether the relation between stressors and depression was moderated by co-rumination. In additional regression analyses, sex, grade, and race were included as moderators. Three-way interactions among stress variables, co-rumination, and the demographic variables (sex, grade, or race) were tested to determine whether any interactions between stressors and co-rumination were further moderated by sex, grade or race. If any interactions were significant, they were probed using simple slope analyses.

The data collected by Dr. Amanda Rose in 2007 to 2009 were used, with permission from Dr. Rose (committee chair). Descriptions of the dataset can be found in Rose et al. (2012), Rose et al. (2014), and Rose et al. (2016), which addressed different research questions. The dataset included pairs of same-sex friends in seventh grade or 10th grade. For recruitment, names of eligible students were drawn from a public-school roster and then contacted by letters and telephone calls.

The original sample of participants was 628 adolescents in 314 same-sex friend dyads, including 157 seventh grade dyads (80 girl and 77 boy dyads) and 157 10th grade dyads (83 girl and 74 boy dyads). Because the number of participants who identified race outside of Black or White was small ($n = 54$) and consisted of adolescents of several other racial groups, the sample sizes for these other racial groups were not large enough to include in analyses of race differences. In addition, eight participants with missing data were excluded. The final sample of participants included 566 adolescents. The included 285 adolescents in the seventh grade (101 White girls, 93 White boys, 47 Black girls, 44

Black boys) and 281 adolescents in the 10th grade (91 White girls, 101 White boys, 52 Black girls, 37 Black boys).

The data for the study included survey responses provided by the adolescents. In addition to self-reporting demographic data (sex, race, grade), they completed the following surveys: The Co-rumination Questionnaire (Rose, 2002), the Daily Hassles Questionnaire (DHQ; DuBois et al., 2002), and the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). All measures used have demonstrated reliability and validity.

As part of the initial data collection conducted by Dr. Rose (see Rose et al., 2016; Rose et al., 2014 for more information about the dataset), participant consent was obtained from parents and assent was obtained from the adolescent participants. Questionnaire data were kept confidential, with participant names removed and identification numbers associated to protect privacy.

Definitions

Adolescent: People between 10 and 19 years of age (World Health Organization, 2014).

Co-rumination: Repeated discussion of problems and revisiting problems with another person that is characterized by speculation about problems and dwelling on negative affect (Rose, 2002).

Daily hassles: Relatively minor stressors, including discrete events (e.g., “getting lost in school”; DuBois et al., 1994).

Depression: A mood disorder, characterized by several symptoms, including depressed mood, difficulty managing daily activities, sleep and appetite disturbance, and trouble concentrating (U.S. Department of Health and Human Services, n.d.). The symptoms (as opposed to the diagnosable disorder) were considered in the current study.

Gender: The socially constructed roles and behaviors associated with being a man, woman, boy, or girl (World Health Organization, 2021). In the present study, the adolescents self-reported their gender as male or female or did not answer the question.

Grade: Grade is the year in which students are in school, for example, seventh graders and 10th graders were included in the current study.

Sex: Either of the two main categories (male and female) into which humans and most other living things are divided on the basis of their reproductive functions.

Stressors: Any event, force, or condition that results in physical or emotional stress (American Psychological Association, 2020).

Assumptions

The following assumptions were made regarding the study:

- Adolescent participants in pairs identified themselves as best or close friends accurately.
- Adolescent participants represent a larger population (such as same-aged adolescents from similar locations).
- Adolescent participants understood the questions being asked.
- Adolescent participants were honest in the completion of each survey measure (i.e., did not overreport negative or positive responses).

Scope and Delimitations

The research problem involved whether there was a relationship between overall stress, and the specific stressors of peer, family, school, physical appearance, and sports/physical activity, with depression. Additionally, the research problem involved whether co-rumination, sex, race, and/or grade had moderating effect(s) on the relations between stress and depressive symptoms. To prevent against threats to validity, all instrumentation used in the study have been shown to be valid and reliable in past studies. Internal reliability of each measure was also computed in the current study. In consideration of external validity, generalizability to the larger population was considered. The study data were collected in the Midwest, in the community of Columbia, Missouri.

Limitations

This data set was collected between 2007 and 2009 by Dr. Amanda Rose at the University of Missouri, and the IRB application and approval were completed with the University of Missouri prior to data collection. In accordance with the approved application, minor participant assent and parental consent were obtained from all study participants. To ensure confidentiality, participants were referred to with identification numbers to ensure confidentiality. Participants were recruited from the local public school system in Missouri. Participants were sampled from rosters at public schools, where names were selected at random, with exception of oversampling Black youth.

The data were collected from a midwestern part of the country where adolescents may carry different cultural and societal experiences than adolescents in other parts of the

country. As with all research using self-report data, respondents' answers may have been influenced by the interpretation of the words and circumstances that occurred at the time of questionnaire completion. Reasonable measures were taken to address these limitations, such as ensuring measures were reliable and valid prior to administering them and replicating reporting circumstances as best as possible. There are no known biases that would have influenced study outcomes.

Significance

The mission of Walden University (2017) is to foster positive social change for the community. Social change is about human interactions, patterns of behavior, relationships, and the way cultural norms shift over time. This quantitative research study might facilitate social change by furthering knowledge in the field of developmental psychology in terms of adolescents.

Adolescents make up nearly 13% of the population and deal with several developmental changes and challenges during this time (U.S. Census Bureau, 2017). Emotional, physical, and psychological changes are known contributors to stress and depression in adolescents. Untreated depression is also a known contributor to adolescent suicide attempts, and suicide is a leading cause of death for adolescents (Goldstein et al., 2021).

By examining the relationship between stressors and depression and by exploring the implications of the moderating effects of co-rumination, sex, race, and/or grade, more information was obtained to support mental health among adolescents. Programs that support social and emotional health could be developed. Research on school-based stress,

anxiety, and depression prevention programs for adolescents has found that depression interventions reduce depressive symptoms, but stress interventions showed little reduction in stress symptoms (Feiss et al., 2019). Having more knowledge of the effects of co-rumination on the relation between stress and depression could fill a knowledge gap in programming that supports adolescent mental health.

Summary

In this chapter, I provided an introduction to the study regarding adolescents' experience with stressors and depression and the potential role of co-rumination, with sex, race, and grade as moderators. By acknowledging the gap in the literature, in this quantitative study, I considered the relation between overall stress, stressors in five domains (peer, family, school, physical appearance, sports/physical activity), and depression. The moderating effect of co-rumination was analyzed, along with further moderating effects of sex, race, and/or grade. This study was rooted in well-received theoretical frameworks that included the theory of stress and coping and response style theory. The information gathered through this research could contribute to positive social change by providing insight into better preventative and intervention programming for adolescents to support their mental health and overall well-being.

Chapter 2: Literature Review

Introduction

Experiencing stress is an anticipated component of life. Stress can be difficult to operationalize due to its complexity and the need to consider the individual, the circumstances, and the individual's perception of the situation. An influential definition of psychological stress came from Lazarus and Folkman (1984), who defined stress as, "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p. 19). Stress is related to depression, such that experiencing greater stress is related to greater depression (Martinez & Bámaca-Colbert, 2019).

Adolescents are expected to experience stressors because of the amount of physical and social change that occurs during this time. However, some stressful events cause more distress than others, depending on the intensity, duration, and perception of the stressor (Severi Martins et al., 2011). In addition, some youth experience greater depressive symptoms than others in response to the same stressors. Accordingly, it is important to identify factors that moderate the association between stress and depression in adolescence.

To date, researchers have identified a variety of factors that moderate the relation between stress and depression, including social-cognitive and relationship factors. For example, brooding (repetitively thinking about problems and concerns) moderates the relation between stress and depression in adolescence such that the relationship is stronger for youth who brood (Cox et al., 2012). Social support also moderates the

relationship, such that the relation is stronger for individuals with lower levels of social support (Martinez & Bámaca-Colbert, 2019; Wang et al., 2014). Moreover, a systematic review indicated that the association between stress and depression is especially strong for children who experience childhood trauma (Zajkowska et al., 2021). Together, these studies have indicated that the strength of the relations between adolescents' experiences of stress and depression can vary based on a number of factors.

In this study, co-rumination in adolescents' friendships was considered a moderator of relations between stress and depression. Co-rumination is defined as repeated discussion of problems and revisiting problems with another person, characterized by speculation about problems and dwelling on negative effects (Rose, 2002). Co-rumination has primarily been studied in adolescents' friendships. In this study, co-rumination in adolescents' friendships was considered a moderator of relations between different types of stressors (peer relations, family, school, physical appearance, sports/physical activity) and depression.

Literature Search Strategy

Searching through the literature involved using multiple databases such as SAGE Journals, EBSCO, and APA PsycArticles. Parameters included in searching were peer-reviewed journal articles and books from the past 2 decades. The focus was on finding varied types of research that included empirical articles, meta-analysis, and seminal work. The search topics generally revolved around *adolescence*, *depression*, *stress*, and *co-rumination*, with specifiers about *race*, *age*, and *sex*. Search topics expanded over time to include *rumination*, *well-being*, *perception of stress*, and *mental health*.

Theoretical Foundation

Two primary theories were used to guide this study. These theories are detailed in the following sections.

Stress and Coping

Lazarus developed the theory of stress and coping to explain stress as a response to the convergence of people and their environment (Walinga, 2008). As noted, Lazarus and Folkman (1984) defined stress as, “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (p. 19). The term “person” encompasses many systems, such as physiological, neurological, cognitive, psychological, and affective. The degree of threat a person assigns to a stressor then impacts their ability to cope. Individuals with ineffective coping strategies are more likely to experience heightened stress for long periods of time. As discussed previously, stress is a predictor of depression, negatively impacting one’s mental health and well-being.

The concept of coping follows the concept of cognitive appraisal, which is the process a person assigns to stimuli (such as a stressor) in their environment. Coping involves several processes, starting with the degree to which an individual assigns threat to a stressor and the reaction that prompts their coping behavior (Lazarus & Folkman, 1984). Individuals can attempt to change negative responses to a stimulus through problem-focused coping or emotion-focused coping. Problem-focused coping aims to change the external environment, and emotion-focused coping involves trying to reduce

an unwanted emotional state. Both forms of coping are important for effective coping, and there are many factors that influence one's ability to cope.

Response Styles Theory

The response styles theory states that there are a multitude of potential responses to stressful experiences. The main styles considered by this theory are rumination and distraction. Nolen-Hoeksema's (1991) response styles theory posits that rumination involves thinking excessively about one's negative mood and thus contributes to increasing depressive symptoms (as cited in Hilt et al., 2010). The construct of co-rumination builds on this theory. Similar to rumination, co-rumination involves a focus on negative thoughts. Unlike rumination, co-rumination is a dyadic process between two people talking about problems. Because both rumination and co-rumination focus on negative talk regarding personal problems, co-rumination can be expected to be related to depression.

Literature Review

Adolescents and the Experience of Depression and Stress

Adolescence is a unique and challenging developmental period. As described in this section, this age is marked by both changes in depressive symptoms and the experience of stress.

Depression

Adolescents are formally diagnosed with depression more than almost every other age group (Zolot, 2018). Adolescence is a developmental period marked with physical, psychological, social, and emotional changes, contributing to challenges with an

adjustment that can negatively impact mood. Research examining major depressive disorder amongst adolescents found that the probability of major depressive disorder diagnosis peaks at age 16 (Sunderland et al., 2021). Further research has confirmed that subclinical depressive symptoms have increased in youth in recent years (Keyes et al., 2019).

There are additional difficulties associated with depression in adolescence. For adolescents who experience depression, there is an immediate negative effect on sleep, and worse depression often leads to sleep problems into young adulthood (Chang et al., 2017). Higher levels of depression in adolescents also contribute to aggressive behavior toward other peers and siblings (Foody et al., 2020). From a physical health perspective, longitudinal research has demonstrated that adolescents who experience depression have a 70% increased risk of developing obesity later in life (Mannan et al., 2016).

Stress

Stress can be experienced in a variety of domains (Bartlett et al., 2019; Kim, 2021; Martinez & Bámaca-Colbert, 2019; Nishikawa et al., 2018). Daily hassles are considered to be relatively minor stressors, including discrete events (e.g., “getting lost in school”; DuBois et al., 1994). Daily hassles include a wide variety of peer, family, academic, appearance, and sports/physical activity stressors and are significant predictors of increased psychological distress (DuBois et al., 1992).

These stressors can all be experienced during adolescence. Academic stress is an especially strong cause of adolescent stress (Kim, 2021). Relationships with parents, including parental pressure, can also be a key stressor for adolescents (Belea & Calauz,

2019). Peer relationships can be a significant source of stress too, including victimization by peers (Nishikawa et al., 2018). While physical activity plays a positive role in repelling stress, some youth experience stress in the context of organized sports and other activities (Vella et al., 2021). Body dissatisfaction can also be a source of stress in adolescence (Murray et al., 2015).

Relations Between Stress and Depression

Given the significant risks associated with depressive symptoms, better understanding factors that contribute to depressive symptoms is important. Experiencing greater stress overall has been associated with greater depressive symptoms (Burani et al., 2021). In addition, stress in specific domains has also been associated with depression. For example, experiencing stress related to family, peers, and school significantly predicts emotional distress (DuBois et al., 1992) and depressive symptoms (Carter et al., 2015; Griffith et al., 2020).

Adolescent reports of family connectedness are among the most important factors for understanding depressive symptoms (Crandall et al., 2020). Though both sexes can report depressive symptoms in adolescence, females often report higher amounts of stress than males, contributing to reporting more symptoms of depression (Moksnes & Lazarewicz, 2019). Adolescents with disabilities, including mental health diagnoses such as attention deficit hyperactivity disorder, often experience heightened stress and consistently report more depression than neurotypical peers (Garwood & Gage, 2021; Garwood et al., 2017; Van Loan et al., 2019).

Stress and Depression: Considering Co-rumination in Friendship as a Moderator

In this study, I focused on co-rumination in adolescents' friendships as a moderator of the relation between stress and depression. In adolescence, friendships become primary relationships. Adolescence is a period during which youth have less parental support and rely more on close friendships for support (Miller et al., 2020). As adolescents gain autonomy from parents, communication and emotional connection with friends become increasingly essential (Booker & Dunsmore, 2017). Important features of adolescent friendships include self-disclosure and providing emotional support (von Salisch, 2018). Self-disclosure has been found to be associated with closeness in friendships during adolescence (Rose et al., 2014).

Co-rumination in Adolescents' Friendships

Consistent with the increase in disclosure to friends in adolescence, co-rumination between friends also becomes more common during adolescence (Rose, 2002). Co-rumination includes frequently engaging in problem talk, mutual encouragement of problem discussions, speculating about causes and consequences, rehashing problems, and dwelling on negative feelings associated with problems (Rose, 2002).

Co-rumination is related to both positive and negative aspects of adjustment in adolescence. Adolescents do engage in co-rumination as a form of connection (Rose et al., 2016), and these conversations about problems elicit further closeness (Spendelov et al., 2017). In terms of positive adjustment, emotional closeness and positive friendship quality are two of the benefits of co-rumination (Rose et al., 2014). In terms of problematic outcomes, adolescents who coruminate with friends tend to experience an

increase in symptoms of depression (Homa & Chow, 2014; Rose et al., 2014; Stone et al., 2011). This is probably because certain components of co-rumination, such as dwelling on negative affect, contribute to emotional problems (Rose et al., 2014.).

Co-rumination as a Moderator of the Relation Between Stress and Depression

As noted, previous research has indicated that there is variation among adolescents in the strength of the relations between stressors and depression. In this study, I examined whether co-rumination moderates the relations between stress and depression. Considering that co-rumination involves repetitive engagement in problem talk, rehashing, and dwelling on negative feelings associated with problems, it is reasonable to suspect that co-rumination moderates the relation between stress and depression.

As adolescents engage in higher amounts of co-rumination, I expected that the relation between stress and depression was stronger, contributing to increased psychological distress. I also expected that repetitive discussions of problems exacerbate the focus on problems and stressors, contributing to even greater feelings of helplessness and hopelessness, creating an even stronger relation between problems and stressors and depressive symptoms.

The Roles of Sex, Race, and Age

Sex, Age, and Race Differences in the Experience of Stress and Depression

Previous research has indicated that there are sex, race, and age differences in the experience of stress and depression. In terms of sex, there are notable differences between adolescent girls' and boys' experience of stressors and depression. Adolescent

girls often perceive more overall stress than adolescent boys, as well as stress in particular domains (Belea & Calauz, 2019; Jakobsson et al., 2019; Pierkarska, 2020). For example, adolescent girls have reported greater stress associated with school, home life, and romantic relationships (Belea & Calauz, 2019; Moksnes et al., 2010; Simpson et al., 2020). In terms of depression, adolescent girls' well-being disproportionately starts to decline during the adolescent years when compared to boys (Bilbao-Nieva, 2021).

Adolescents' experiences of stress and depression also differ for early adolescents versus middle adolescence. For example, there is a rise in academic pressure during this period (Kulakow et al., 2021). Increases in depressive symptoms with age also have been found (Abdel-Khalek, 2006; Feurer et al., 2020; Keyes et al., 2019; Slavich & Sacher, 2019).

Racism is a significant source of chronic stress among Black individuals (Collins et al., 2004; Taylor & Turner, 2002), which correlates with various stressful experiences (Cavaliere & Wilcox, 2021; Lewis & Van Dyke, 2018; Stevens-Watkins et al., 2014; Wright & Lewis, 2020). Therefore, Black adolescents were expected to report greater stressors than White adolescents in multiple domains. For example, Black youth in predominantly White schools may feel less belonging, associated with lower academic efficacy (Morris et al., 2020), which could contribute to school stress. In fact, Black adolescents have been found to report significantly more symptoms of stress disorders than White adolescents (López et al., 2017), although these findings have not been completely consistent (e.g., Oliver II et al., 2019; Turner & Smith, 2015). In terms of depression, Black youth's symptoms of depression have been found not to vary from

White peers (López et al., 2017), perhaps due to greater resilience as a result the continuous experience of social inequality.

Sex, Age, and Race as Moderators

In addition, whether sex, age, or race moderated the relations between stressors and depressive symptoms were tested. Moreover, whether sex, age, or race further moderated interactions between co-rumination and stressors in predicting depression were considered. If interactions were significant, the relations were expected to be stronger for girls than boys, middle adolescents than early adolescents, and Black adolescents than White adolescents. In terms of sex, girls have increased emotional reactivity to interpersonal events than boys, which could make stressors especially salient and strengthen relations between stress and depression (see Slavich & Sacher, 2019). Age has also been shown to moderate the relation between responses to stress such that relationships are stronger for older adolescents than younger (Feurer et al., 2020). In addition, race has been shown to moderate the relation between stress and that depression such that the relation was stronger for Black adolescents than White adolescents (Elkins et al., 2019).

Summary and Conclusions

Adolescence is a developmental period marked with physical, psychological, social, and emotional change that influence the experience of stress and depressive symptoms. Adolescents experience stress across a variety of domains (Bartlett et al., 2019; Kim, 2021; Martinez & Bámaca-Colbert, 2019; Nishikawa et al., 2018). The more

significant the stress, the more likely adolescents are to experience depressive symptoms (Burani et al., 2021).

This study focused on co-rumination in adolescents' friendships as a moderator of the relation between stress and depression. As adolescents engage in higher amounts of co-rumination, the relation between stress and depression was expected to be stronger, contributing to increased psychological distress. Differences in the experience of stress and depression based on sex, race, and age have been studied and were explored further in this research.

Chapter 3: Research Method

Introduction

The purpose of this quantitative study was to investigate the associations among stressors, depression, and co-rumination among adolescents. I used data collected by Dr. Amanda Rose between the years of 2007 and 2009. Study participants included seventh or 10th grade students. The variables explored included types of stressors (peer, family, school, physical appearance, sports/physical activity), overall stress (composite score across the types of stressors), depressive symptoms, and co-rumination. Co-rumination, sex, grade, and race were considered as moderating variables. Analyses with the composite stress score occurred first, followed by analyses of each stress type separately. All analyses were completed using SPSS.

This chapter includes a detailed description of the research design and methodology used in this study. The procedures used for data collection, measures, and information about population and sampling are detailed below. Potential threats to validity and ethical procedures followed are explained.

Research Design and Rationale

In this study, I used a quantitative, nonexperimental, and correlational design. A quantitative, correlational design is ideal for examining relations among variables that have a priori hypothesis (Hager, 1996). The research questions reflected the exploration of relations among several variables, consistent with previous research designed to advance knowledge in the literature. A quantitative study was appropriate because of the use of survey measures as part of the data collection process. As described by Creswell

and Creswell (2018), it is common to use a quantitative research design when studying relations among variables in the social sciences.

There were time and resource constraints involved in the original research study. The time constraints included recruiting a large number of participants that required obtaining parental consent, due to the participants being minors. The resource constraints in the original research were the space required for adolescents to come for the study and the financial components of making that happen.

The stress variables served as independent variables, depression was the dependent variable, and co-rumination was a moderating variable. Sex, grade, and race were considered as additional moderating variables. I used survey measures that have been used frequently in research exploring stressors, co-rumination, and depression in adolescents. This research design does involve the restraint of not identifying causal relationships among variables.

Methodology

Population

According to the U.S. Census Bureau (2017), there are approximately 42 million adolescents between the ages of 10 and 19 in the United States. The target population for this study was adolescents who identified having a same-sex best friend.

Sampling and Sampling Procedures

The study included U.S adolescent youth who participated in the study with a same-sex best friend. The dataset was collected by Dr. Amanda Rose between 2007 and 2009 and included seventh and 10th grade students from the Midwestern region of the

United States. The inclusion criteria included the ability to come to the lab visit with a same-sex friend (nonrelative) and being a student in seventh or 10th grade. Adolescents were excluded if they did not identify a same-sex friend, were not in the appropriate grade levels, or did not consider the same-sex friend who visited the lab with them to be a best or close friend.

Power analyses were conducted to determine whether the sample size was sufficient power to detect for an experiment to reach the expected effect sizes (see Cohen, 1992). As I used archival data, the final sample size (after various exclusions) had been predetermined as 566 youth participants. An initial power analysis was conducted using G*Power version 3.1 (see Faul et al., 2009). A priori power analysis determined that 343 participants were needed to reach 80% power for detecting a small effect size for a correlation. A priori power analysis was also conducted for *t* tests. ANOVAS to support all of the analyses were completed for each research question. To reach 80% power for *t* tests and the ANOVAS conducted in this study, a sample of 128 participants was needed for a medium effect size. The sample of 566 participants was, therefore, adequate to test the hypothesis.

Procedures for Recruitment, Participation, and Data Collection

Because the data for the study involved a previously collected dataset, collected by Dr. Amanda Rose between 2007 and 2009, recruitment of new participants was not required. Permission was granted by Dr. Rose to use the data, which were collected in Columbia, MO, following IRB approval from the University of Missouri. Dr. Rose then shared that data set for this study via an SPSS file.

Adolescents who were attending public school were recruited for the study. The school shared student rosters, and participant names were selected at random, with exception of the oversampling of Black youth to obtain greater racial diversity. Specifically, letters were sent to 1,771 families, and 937 were contacted via phone (see Rose et al., 2016, Rose et al., 2016). The original sample recruited was 628 youth, including 314 seventh graders and 314 10th graders. The seventh grade participants consisted of 160 girls and 154 boys, and the 10th graders were comprised of 166 girls and 148 boys. The mean ages in years were 13.01 for seventh graders and 16.03 for the 10th graders. The sample included 66.0% White, 26.4% Black, and less than 2% each of American Indian, Pacific Islander, and Asian American, whereas 4.9% indicated more than one race. Of the total sample, 2.7% were Latino/a.

The number of participants who identified as a race other than Black or White ($n = 54$) was not large enough to include as a separate group in analysis. Therefore, listwise deletion was completed to remove these youth who reported a race other than Black or White ($n = 48$) or who had missing data ($n = 8$). The final sample was 566 youth, including 285 seventh graders and 281 10th graders, comprised of 291 girls and 275 boys.

Participants visited a laboratory where youth provided written assent, and parental written consent was also obtained. Participants completed questionnaires, including those described below used in this study.

Instrumentation and Operationalization of Constructs

DHQ (DuBois et al., 2002)

The DHQ is a self-report measure that was modeled after the original Daily Hassles Scale developed with adults (Kanner et al., 1981). The DHQ was revised for use with older children and adolescents. The measure assesses stressors in five targeted domains (i.e., school, family, peer relations, physical appearance, and sports/physical activity; DuBois et al., 1994). For each item representing a common minor stressor (e.g., conflicts with teachers, fights with brothers or sisters, school being hard), participants reported whether each stressor occurred during the last month (scored 1 if it did not happen), and, if it did, to rate the level of hassle on a 4-point scale (e.g., 2 = *not at all a hassle* and 5 = *a very big hassle*).

Scores are computed by taking the mean across the number of items per section. For example, there are 38 items listed in the section assessing school stressors. Therefore, the mean score is determined based on the ratings of all 38 items. This method of scoring is repeated for each section. The total hassle score is determined by taking the mean of each of the item ratings across all domains (i.e., school, family, peer relations, physical appearance, and sports/physical activity). Past work indicated that the measure is internally reliable.

CES-D (Radloff, 1977)

The CES-D is a broadly used 20-item self-report inventory designed to assess depressive symptoms. Sample questions include, “I was bothered by things that didn’t usually bother me” and “I had trouble keeping my mind on what I was doing.”

Participants rate the frequency of how often a feeling has occurred during the past week and rate the feeling on a 4-point scale (e.g., 1 = *rarely or none of the time, less than 1 day*; 4 = *most or all of the time, 5-7 days*). Validity, reliability, and psychometric properties have been supported and replicated in adolescent populations (Radloff, 1977; Roberts et al., 1990). The overall Cronbach's alpha for the CES-D with adolescents has been found to be high (e.g., alpha = .85; Roberts et al., 1990). The mean of the items are computed for a total score.

Co-rumination Questionnaire (Rose, 2002)

The Co-rumination Questionnaire (Rose, 2002) is a 27-item self-report measure that assesses the amount of co-rumination that occurs between participants in same-sex friendships. The 27 items are based on nine content areas (Rose, 2002). The nine content areas include three items each. The content areas are (a) frequency of problem discussion (e.g., "We spend most of our time together talking about problems that my friend or I have"), (b) discussion of problems rather than engaging in other activities (e.g., "If one of us has a problem, we will talk about the problem rather than talking about something else or doing something else"), (c) amount that the primary adolescent encourages their friend to discuss problems (e.g., "When my friend has a problem, I always try really hard to keep my friend talking about it"), (d) encouragement by the friend to continue discussing problems (e.g., "When I have a problem, my friend always tries to get me to tell every detail about what happened"), (e) repeating discussion about the same problem (e.g., "We will keep talking even after we both know all of the details about what happened"), (f) speculation about the cause of the problems (e.g., "We talk for a long

time trying to figure out all the different reasons why the problems might have happened”), (g) estimating the consequences of the problems (e.g., “We talk a lot about all of the different bad things that might happen because of the problem”), (h) hypothesize about the parts of the problem that are not understood (e.g., “We spend a lot of time trying to figure out parts of the problems we can’t understand”, and (i) heightened focus on negative feelings (e.g., “We spend a long time talking about how sad or mad the person with the problem feels”). The study participants rated each item using a 5-point Likert scale: 1 (*not at all true*), 2 (*a little true*), 3 (*somewhat true*), 4 (*mostly true*), and 5 (*really true*). Co-rumination scores are computed using the mean score of all items. Previous internal reliability has proven to be excellent ($\alpha = .96$; Rose, 2002).

The Cronbach’s α were computed for each of the three measures (DHQ, CES-D, CRQ). The Cronbach’s alpha for DHQ and the Co-rumination Questionnaire were both $\alpha = .96$. For the CES-D, $\alpha = .85$. The Cronbach’s alpha for the school stressor is $\alpha = .94$, the family, peer, and appearance stressor is $\alpha = .90$, and the sports stressor is $\alpha = .91$.

Data Analysis Plan

The deidentified data were sent by Dr. Rose for data analysis using IBS SPSS Statistics 25. Descriptive statistics, including means, standard deviations, and ranges were computed for the total sample for all variables. Correlations among all variables were also computed.

Sex, Race, and Grade Differences

For the first research question, regarding if there were mean level differences between sex, race, and/or grade in the sample, (Sex) 2 X (Race) 2 X 2 (Grade) between-

subjects ANOVAs were computed for each variable (Research Question 1). These variables included five stressors (e.g., peer, family, school, physical appearance, sports/physical activity), total stress, co-rumination, and depression. In addition, all 2-way interactions and the 3-way interactions were tested.

Stressors and Depression

The Research Question 2a involved considering relations between stress and depression. Correlational analyses were used to examine each relation between each stressor (i.e., total; peer, family, school, physical appearance, sports/physical activity) and total stress with depressive symptoms.

For Question 2b, which involved determining whether the relations between stressors and depression were moderated by sex, race, and grade, multiple regression analyses were completed. Each stress variable had its own analysis to determine whether relations between stress (i.e., total; peer, family, school, physical appearance, sports/physical activity) and depression were moderated by effects of sex, race, and grade. Depression served as the dependent variable, each stress score was the independent variable, and sex, race, and grade were moderating variables. For these analyses, the interactions of each stressor with sex, with grade, and with race determined whether the relation between the stressor and depression differed across these groups.

Co-rumination as a Moderator of Relations Between Stressors and Depression

For Research Question 3a, whether co-rumination moderated relations between stress and depression, was tested using multiple regression analyses. Co-rumination was included as a predictor, and the interaction between co-rumination and each stress

variable was tested to determine whether co-rumination moderated the relation between the stress variable and depression. This process again involved examining different types of stressors (independent variables) in their relation with depression (dependent variable) in different analyses. Stressors were measured in the following domains: peer, family, school, physical appearance, and sports/physical activity. The total stress score was considered and tested in each analysis.

The final Research Question (3b) added interactions with sex, race, and grade to the multiple regression analyses with co-rumination to test whether possible moderating effects of co-rumination on the relations of types of stressors (independent variables) and depression (dependent variables) were further moderated by sex, race, and grade.

Threats to Validity

Understanding threats to validity is important for avoiding misrepresentation of data. One component of internal validity is internal reliability of survey measures. Low internal reliability can negatively impact the ability to determine the correct information from survey measures (Flannelly et al., 2018). In this study, the survey measures used throughout the study were determined to have good internal reliability in previous studies. Further support for the internal validity of the measures is provided by studies indicating that the measures in the current study are related to other variables in meaningful ways. Other potential threats to validity are the influence of variables related to the predictor and outcome variables that were not controlled in the study.

External validity refers to how well the outcomes of research can generalize to other settings. Threats to external validity occur when the research findings cannot be

accurately generalized to others (Creswell & Creswell, 2018). In this study, the results may be generalized to adolescents of the similar cultural backgrounds and ages in the United States. In discussing the findings, the degree to which the findings may generalize beyond the sample are considered in Chapter 5. The results of this research will not be applied beyond the specific variables assessed.

Ethical Procedures

Because I used archival data collected by Dr. Amanda Rose in 2007 to 2009 (see Rose et al., 2016; Rose et al., 2014 for information on the dataset), the data collection already happened. Prior to the original research, ethical procedures were reviewed and approved through the IRB application process. The IRB approval number for this study is 08-19-22-0727184. Youth assent and parental consent were obtained at the time of the original study. All survey data were kept confidential, with names and identifying information stored apart from the data. For the current study, in place of identifying information, ID numbers were provided. These deidentified data were what was supplied for the data analysis of this study. The data file has been used on a private computer, with password protection.

Summary

Chapter 3 provided a detailed explanation of the research design for the self-report study. Each measure was described in detail, including discussing the reliability and validity when used with youth. The data analysis plan included descriptive statistics and the statistical analyses that were used to answer the research questions. Threats to

validity and ethical procedures were discussed. In Chapter 4, I summarize the previously collected data and the results of each statistical analyses.

Chapter 4: Results

The purpose of this study was to determine the associations among stressors, depression, and co-rumination among adolescents using a dataset collected by Dr. Amanda Rose from 2007 to 2009. The variables included types of stressors (peer, family, school, physical appearance, sports/physical activity) and overall stress (composite score), depression, and co-rumination. Study participants included seventh and 10th grade students. Co-rumination, sex, grade, and race were considered as moderating variables of the associations between the stress variables and depressive symptoms. The following chapter offers demographic information about the participants, descriptive analyses, and tests of hypotheses. The research questions and hypotheses are also presented.

Data Collection

The data collection for this study took place between 2007 and 2009 and was led by Dr. Amanda Rose. Participants completed questionnaires (including demographics, DHQ, CES-D, CRQ). As detailed in Chapter 3, adolescents who were attending public school were recruited for the study. The school shared student rosters, and the names of adolescents to be recruited for the study were selected at random, with exception to the oversampling of Black youth to obtain greater racial diversity. The final number of adolescent participants for this study totaled 566. A priori power analysis determined that 343 participants were needed to reach 80% power for detecting a small effect size using a correlation. A priori power analyses were also conducted for *t* tests and ANOVAS. To reach 80% power for *t* tests and the ANOVAS conducted in this study, a sample of 128 participants was needed for detecting a medium effect.

Table 1 displays demographic information for the 566 participants. The information presented includes the number and percent of adolescent participants by sex, race, and grade. These numbers are similar to the community (Columbia, Missouri) where the participants were recruited but included more Black adolescents due to the oversampling of Blacks (see U.S. Census Bureau, 2020). The results are expected to generalize to adolescents in similar midwestern communities.

Table 1

Characteristics of Sample

Characteristic	<i>N</i>	%
Sex		
Male	275	48.6
Female	291	51.4
Race		
Black	180	31.8
White	386	68.2
Grade		
7 th	285	50.4
10 th	281	49.6

Table 2 provides the means, ranges, and standard deviations for the variables. For all of the stress variables, the mean scores were somewhat below the midpoint of the 1- to 5-point scales. The co-rumination variable demonstrated a mean slightly above the midpoint of the 1- to 5-point scale. The depression variable demonstrated a mean slightly below the midpoint of the 1- to 4-point scale.

Table 2*Means, Standard Deviations, and Range of Variables*

Variable	Range	Minimum	Maximum	Mean	Standard Deviation
Co-rumination	4.00	1.00	5.00	2.88	0.85
Depression	2.40	1.00	3.40	1.56	0.40
Stressors					
Total	3.49	1.03	4.52	1.67	0.49
School	3.49	1.00	4.49	1.70	0.62
Family	4.00	1.00	5.00	1.84	0.60
Appearance	3.41	1.00	4.41	1.74	0.59
Sport/Phys. Activity	3.58	1.00	4.58	1.51	0.54
Peer	4.00	1.00	5.00	1.61	0.51

Table 3 provides the means, standard deviations, and number of participants by sex, race, and grade.

Table 3*Means and Standard Deviations for Study Variables by Sex, Race, and Grade*

	School stressors <i>M</i> (<i>SD</i>)	Family stressors <i>M</i> (<i>SD</i>)	Peer stressors <i>M</i> (<i>SD</i>)	Appearance stressors <i>M</i> (<i>SD</i>)	Sport stressors <i>M</i> (<i>SD</i>)	Total stressors <i>M</i> (<i>SD</i>)	Depression <i>M</i> (<i>SD</i>)	Co-rumination <i>M</i> (<i>SD</i>)
Sex								
Male (n= 275)	1.68 (.61)	1.78 (.64)	1.57 (.52)	1.62 (.59)	1.52 (.57)	1.64 (.52)	1.48 (.34)	2.54 (.82)
Female (n= 291)	1.71 (.63)	1.89 (.57)	1.65 (.50)	1.86 (.58)	1.49 (.51)	1.72 (.46)	1.65 (.44)	3.21 (.75)
Race								
Black (n=180)	1.96 (.70)	2.02 (.73)	1.74 (.65)	1.85 (.67)	1.64 (.69)	1.84 (.61)	1.66 (.44)	2.97 (.90)
White (n=386)	1.58 (.53)	1.75 (.51)	1.55 (.42)	1.69 (.55)	1.45 (.44)	1.60 (.41)	1.52 (.38)	2.84 (.83)
Grade								
7 th (n=285)	1.75 (.68)	1.81 (.68)	1.60 (.59)	1.73 (.66)	1.53 (.60)	1.68 (.57)	1.54 (.40)	2.82 (.86)
10 th (n= 281)	1.65 (.54)	1.85 (.51)	1.63 (.41)	1.76 (.52)	1.49 (.48)	1.67 (.40)	1.59 (.41)	2.95 (.85)

Research Question 1: Are there mean-level sex, race, and/or grade differences in the study variables, stressors (overall composite stress score, peer, family, school, physical appearance, sports/physical activity), co-rumination, and depression?

H1₀: There is not a statistically significant mean-level sex, race, and/or grade differences in the study variables.

H1_a: There is a statistically significant mean-level sex, race, and/or grade difference in the study variables.

Table 4
Results Summary from 2 (Grade) X 2 (Sex) X 2 (Race) Between Subjects ANOVA

Variable	<i>F</i> value Grade	<i>F</i> value Sex	<i>F</i> value Race	<i>F</i> value Grade X Sex	<i>F</i> value Grade X Race	<i>F</i> value Sex X Race	<i>F</i> value Grade X Sex X Race
Total	1.49	1.73	29.65***	.02	7.89**	1.67	3.78
Peer	.10	1.16	17.49***	.29	6.73**	1.75	1.22
Family	.18	2.09	26.07***	.57	9.14***	1.25	2.69
School	8.34*	.02	50.30***	.18	9.47**	.60	3.13
Appearance	.00	15.24***	7.54	.00	2.82	1.82	3.67
Sports	2.09	1.20	16.08***	.27	2.50	.98	.07
Co-Rumination	6.07**	78.78***	2.11	.14	1.08	1.74	1.40
Depressive Symptoms	.70	24.08***	12.97***	3.41	.49	.29	4.46*

* $p < .05$. ** $p < .01$. *** $p < .001$.

In terms of total stress, effects were significant for race and for the Grade X Race interaction. In terms of the main effect of race, Black adolescents scored higher than White adolescents. Regarding the Grade X Race interaction, Black seventh graders reported the highest stress ($M = 1.92$, $SD = .74$), followed by Black 10th graders ($M = 1.76$, $SD = .43$), White 10th graders ($M = 1.64$, $SD = .38$), and White seventh graders ($M = 1.57$, $SD = .43$). To interpret this interaction, two sets of t tests were conducted. First, the grade effect was tested for Black and White adolescents. For Black adolescents, seventh graders scored higher than 10th graders. This difference was not significant, $t(178) = 1.84$, $p = .07$. For White adolescents, seventh graders scored lower than 10th graders. This difference also was not significant, $t(384) = 1.54$, $p = .12$. Next, race differences were tested for seventh graders and for 10th graders. For seventh grade adolescents, Black adolescents scored higher than White adolescents. This difference was

significant, $t(283) = 5.05, p < .001$. For 10th grade adolescents, Black adolescents ($M = 1.76, SD = .43$) scored higher than White adolescents ($M = 1.64, SD = .38$). This difference was significant, $t(279) = 2.37, p = .02$ although the effect was not as strong.

In terms of peer stress, effects were significant for race, and for the Grade X Race interaction. In terms of the main effect for race, Black adolescents reported greater peer stress than White adolescents. In relation to the Grade X Race interaction, Black seventh graders reported the highest stress ($M = 1.81, SD = .79$), followed by Black 10th graders ($M = 1.68, SD = .45$), White 10th graders ($M = 1.60, SD = .39$), and White seventh graders ($M = 1.50, SD = .44$). Two sets of t tests were conducted. First, the grade effect was tested for Black and White adolescents. For Black adolescents, seventh graders scored higher than 10th graders. This difference was not significant, $t(178) = 1.35, p = .18$. For White adolescents, seventh graders, scored lower than 10th graders. This difference was significant, $t(384) = 2.35, p = .02$. Next, race differences were tested for seventh graders and for 10th graders. For seventh grade adolescents, Black adolescents scored higher than White adolescents ($M = 1.50, SD = .44$). This difference was significant, $t(283) = 4.15, p < .001$. For 10th grade adolescents, Black adolescents ($M = 1.68, SD = .45$) scored slightly higher than White adolescents. This difference was not significant, $t(279) = 1.40, p = .16$.

In terms of family stress, effects were significant for race and for the Grade X Race interaction. As can be seen in Table 3, Black adolescents reported greater family stress than White adolescents. Again, Black seventh graders reported the most stress ($M = 2.11, SD = .90$), followed by Black 10th graders ($M = 1.94, SD = .49$), White 10th graders

($M = 1.81$, $SD = .51$), and White seventh graders ($M = 1.68$, $SD = .51$). To interpret the interaction, two sets of t tests were conducted. For Black adolescents, seventh graders scored higher than 10th graders. This difference was not significant, $t(178) = 1.56$, $p = .12$. For White adolescents, seventh graders scored lower than 10th graders. This difference was significant, $t(384) = 2.54$, $p = .01$. Next, race differences were tested for seventh graders and for 10th graders. For seventh grade adolescents, Black adolescents scored higher than White adolescents. This difference was significant, $t(283) = 5.11$, $p < .001$. For 10th grade adolescents, Black adolescents scored higher than White adolescents, but this difference was not significant, $t(279) = 1.92$, $p = .06$.

In terms of school stress, effects were significant for race, for grade, and for the Grade X Race interaction. In terms of the main effects, as can be seen in Table 3, Black adolescents scored higher than White adolescents, and 10th graders scored higher than seventh graders. Black seventh graders reported the most school stress ($M = 2.11$, $SD = .79$), then Black 10th graders ($M = 1.80$, $SD = .57$), White 10th graders ($M = 1.58$, $SD = .51$), and White seventh graders ($M = 1.57$, $SD = .55$). For Black adolescents, seventh graders scored higher than 10th graders. This difference was significant, $t(178) = 3.05$, $p < .01$. For White adolescents, seventh graders scored slightly lower than 10th graders. This difference was not significant, $t(384) = 0.16$, $p = .88$. Next, race differences were tested for seventh graders and for 10th graders. For seventh grade adolescents, Black adolescents ($M = 2.11$, $SD = .79$) scored higher than White adolescents ($M = 1.57$, $SD = .55$). This difference was significant, $t(283) = 6.62$, $p < .001$. For 10th-grade adolescents, Black adolescents ($M = 1.80$, $SD = .57$) scored higher than White adolescents ($M = 1.58$,

$SD = .51$). This difference was significant, $t(279) = 3.16, p < .01$, but not as strong as the effect for seventh graders.

For physical appearance stress, there was a significant main effect for sex, with girls scoring higher than boys. As presented in Table 4, none of the other main effects or interactions were significant.

For sports-related stress, there was a significant main effect of race. As presented in Table 3, Black adolescents reported significantly greater sport-related stress than White adolescents.

For depression, there was a significant main effect of race and sex. As seen in Table 3, Black adolescents reported greater depressive symptoms than White adolescents, and females reported greater depressive symptoms than male adolescents. There was also a significant three-way interaction observed among grade, sex, and race, $F(1,558) = 4.46, p = .04$. The interaction was probed by considering the sex and grade effects for Black and White adolescents. Separately, for Black adolescents and for White adolescents, additional 2 (Sex) x 2 (Grade) ANOVAs conducted for depression.

Among White youth, there was a significant main effect for sex, $F(1,382) = 6.32, p < .001$. Girls reported greater depression than boys. The effect of grade and the interaction were not significant.

Within Black adolescents, there was a significant main effect for sex, $F(1,176) = 4.62, p = .004$, and a significant interaction between grade and sex. Girls reported greater depressive symptoms than boys. Among 10th graders, girls ($M = 1.82, SD = .47$) had significantly greater depressive symptoms than boys ($M = 1.48, SD = .26$) ($t(83) = 4.31$,

$p < .001$). Among 7th graders, there was no significant difference between boys and girls on depressive symptoms ($p > .05$). There was no significant grade difference among Black adolescent males, $t(67) = 1.56, p = .12$, or females $t(97) = -.16, p = .11$.

There was a significant main effect of grade and sex on co-rumination. Tenth grade students reported significantly higher co-rumination than seventh grade students. Female students reported higher co-rumination than male students.

Research Question 2a: Is there a relationship between stressors (overall composite stress score, peer, family, school, physical appearance, sports/physical activity stress) and depression?

H2₀: There is not a statistically significant relationship between stressors (overall composite stress score, peer, family, school, physical appearance, sports/physical activity) and depression.

H2_a: There is a statistically significant positive relationship between stressors (overall composite score, peer, family, school, physical appearance, sports/physical activity) and depression.

Table 5 provides the correlations among variables. The relationship between each stressor and depression was significant and positive ($p < .001$). The stress variables were moderately to highly correlated with one another.

Table 4*Correlations Among Stressors and Depression*

	School stressors	Family hassles	Peer hassles	Appearance hassles	Sport hassles	Total hassles	Depression
School stressors	--	0.64	0.65	0.56	0.60	0.81	0.39
Family hassles	--	--	0.75	0.72	0.69	0.88	0.49
Peer hassles	--	--	--	0.74	0.72	0.89	0.43
Appearance hassles	--	--	--	--	0.69	0.86	0.43
Sport hassles	--	--	--	--	--	0.86	0.23
Total hassles	--	--	--	--	--	--	0.48

Note. All associations were significant at $p < .001$

Research Question 2b: Are the relationships between stressors, (overall stress composite score, peer, family, school, physical appearance, sports/physical activity), and depression, moderated by sex, race, and/or grade?

H2b0: Sex, race, and/or grade do not statistically significantly moderate relationships between the overall stress composite score, peer, family, school, physical appearance, sports/physical activity), and depression.

H2ba: Sex, race, and/or grade do statistically significantly moderate the relationships between the overall stress composite score, peer, family, school, physical appearance, sports/physical activity), and depression. The relations between stress and

depression were expected to be stronger for females than for males, 10th graders than seventh graders, and Black adolescents than White adolescents.

To test whether sex, grade, and race moderated the associations between the stress variables and depression, a series of hierarchical regression analyses was conducted. A separate analysis was conducted for each stress variable. Depression served as the dependent variable in each analysis. In each analysis, the main effects of the demographic variables, sex, grade, and race, were entered on the first step, and the stress variable was entered on the second step. The interactions between the stress variable and sex, the stress variable and grade, and the stress variable and race were entered on the third step. The interactive effects are of primary interest for Research Question 2b. Only the interactive effects are described in the text. All of the results of these analyses are summarized in Table 6.

Table 5

Summary of Regression Analyses Predicting Depressive Symptoms from Stress, Sex, Grade, and Race

Stressors	Total		Peer		Family		School		Appearance		Sport	
	β	<i>p</i> value	β	<i>p</i> value	β	<i>p</i> value	β	<i>p</i> value	β	<i>p</i> value	β	<i>p</i> value
Step 1: Main effects of sex, race, and grade												
Sex	-.21	<.001	-.21	<.001	-.21	<.001	-.21	<.001	-.21	<.001	-.21	<.001
Race	-.15	<.001	-.15	<.001	-.15	<.001	-.15	<.001	-.15	<.001	-.15	<.001
Grade	.06	.18	.06	.18	.06	.18	.06	.18	.06	.18	.06	.18
Step 2: Main effects of stressor												
Stressor	.45	<.001	.40	<.001	.46	<.001	.37	<.001	.41	<.001	.28	<.001
Step 3: Two-way interactions												
Sex X stressor	-.05	.32	-.05	.34	-.07	.21	.02	.77	-.06	.24	.12	.04
Race X stressor	.03	.59	.04	.41	-.01	.89	-.00	.98	-.03	.65	-.05	.39
Grade X stressor	.05	.27	.06	.24	.06	.20	.01	.80	-.01	.91	-.06	.27

The only significant interaction was the Sex X Sports Stress interaction. In order to probe the interaction, follow-up regression analyses were conducted comparing male to female adolescents on sport-related stress. For boys, there was a significant positive effect of sport stress on depressive symptoms, $\beta = .46$, $F(3,271) = 26.60$, $t(558) = 2.67$, $p < .001$. For girls, the positive effect of sports stress on depressive symptoms also was significant for girls, but not as strong, $\beta = .17$, $F(3, 287) = 6.33$, $p = .004$.

Research Question 3a: Are the relations between stressors, (overall stress composite score, peer, family, school, physical appearance, sports/physical activity), and depression, moderated by co-rumination?

H3a₀: Co-rumination does not statistically significantly moderate relations between stressors, (overall stress composite score, peer, family, school, physical appearance, sports/physical activity), and depression.

H3a_a: There is a statistically significant interaction between the positive relationship between stressors, overall stress composite score, peer, family, school, physical appearance, sports/physical activity), and co-rumination in predicting depressive symptoms, such that the relation between stressors and depressive symptoms is higher for adolescents who engage in high levels of co-rumination than adolescents who engage in low levels of co-rumination.

To test whether co-rumination moderated the associations between the stress variables and depression, a series of hierarchical regression analyses was conducted. A separate analysis was conducted for each stress variable. Depression served as the dependent variable in each analysis. In each analysis, the main effects of the stressor and co-rumination were entered on the first step. The interaction between the stress variable and co-rumination was entered on the second step. The results of these analyses are summarized in Table 7. As can be seen in Table 7, co-rumination did not significantly moderate the relationship between any of the stressors and depression.

Table 6*Summary of Regression Analysis Predicting Depressive Symptoms From Stress and Co-rumination*

Stressors	Total		Peer		Family		School		Physical appearance		Sport	
	β	<i>p</i> value	β	<i>p</i> value	β	<i>p</i> value	β	<i>p</i> value	β	<i>p</i> value	β	<i>p</i> value
Step 1: Main effects												
Stress	.45	<.001	.40	<.001	.47	<.001	.36	<.001	.42	<.001	.28	<.001
Co-rumination	.16	<.001	.18	<.001	.16	<.001	.19	<.001	.14	<.001	.22	<.001
Step 2: Two-way interaction												
Stress X co-rumination	.10	.42	.04	.28	.00	.05	.01	.85	.06	.12	-.02	.58

Research Question 3b: Are the relations among stressors, (overall stress composite score, peer, family, school, physical appearance, sports/physical activity), and depression and co-rumination, further moderated by sex, race, and/or grade?

H3b₀: Sex, race, and/or grade do not statistically significantly further moderate relations between stressors, (overall stress composite score, peer, family, school, and physical appearance, sports/physical activity), depression, and co-rumination.

H3b_a: Sex, race, and/or grade do statistically significantly moderate the positive relationships between stressors, (overall stress composite score, peer, family, school, physical appearance, sports/physical activity), depression, and co-rumination. The relations between stress and depression are expected to be stronger for females than for males, 10th graders than seventh graders, and Black adolescents than White adolescents.

To test whether co-rumination moderated the associations between the stress variables and depression, a series of hierarchical regression analyses was conducted. A separate analysis was conducted for each stress variable. Depression served as the

dependent variable in each analysis. In each analysis, the main effects of sex, grade, race, co-rumination, and the stress variable were entered on the first step, the two-way interactions were entered on the second step, and the three-way interactions were entered on the third step. The results of these analyses are summarized in Table 8. The three-way interactions were of primary interest because they are tests of whether sex, grade, or race further moderate interactions between the stress and co-rumination. The results of the three-way interactions are described in the text.

Table 7*Summary of Regression Analysis Predicting Depressive Symptoms From Stress, Co-rumination, Sex, Grade, and Race*

Stressors	Total		Peer		Family		School		Physical appearance		Sport	
	<i>B</i>	<i>p value</i>	β	<i>p value</i>	β	<i>p value</i>	β	<i>p value</i>	<i>B</i>	<i>p value</i>	β	<i>p value</i>
Step 1: Main effects												
Sex	-.14	.001	-.14	.001	-.13	.001	-.16	<.001	-.09	.02	-.16	<.001
Race	-.05	.16	-.08	.03	-.05	.15	-.05	.25	-.11	.01	-.10	.01
Grade	.05	.17	.04	.35	.03	.37	.07	.06	.04	.32	.05	.17
Co-rumination	.10	.01	.12	.00	.11	.01	.12	.00	.10	.01	.14	.001
Stressor	.44	<.001	.39	<.001	.45	<.001	.36	<.001	.39	<.001	.27	<.001
Step 2: Two-way interactions												
Sex X stress	-.03	.59	-.03	.55	-.04	.42	.03	.51	-.04	.45	.13	.02
Race X stress	.02	.64	.04	.45	-.01	.84	.01	.93	-.03	.59	-.05	.40
Grade X stress	.05	.27	.06	.20	.06	.19	.01	.82	-.00	.96	-.04	.38
Sex X co-rumination	-.17	.00	-.17	.00	-.14	.01	-.18	.00	-.17	.00	-.21	<.001
Race X co-rumination	-.00	.95	-.00	.99	.00	.99	-.00	.99	-.04	.57	-.00	.96
Grade X co-rumination	.01	.90	.00	1.00	-.03	.62	-.01	.83	-.00	.96	-.00	.98
Step 3: Three-way interactions												
Stress X co-rumination X sex	-.04	.38	-.07	.06	.01	.73	-.02	.62	-.03	.56	-.03	.60
Stress X co-rumination X race	.09	.05	.12	.02	.08	.10	.02	.69	.13	.01	.05	.31
Stress X co-rumination X grade	.02	.72	.04	.39	.02	.54	.02	.63	-.07	.14	-.02	.69

No significant three-way interactions with co-rumination and stress emerged for sex or grade. Three significant three-way interactions involving race emerged for total stress, appearance stress, and peer stress.

Follow up regression analyses were conducted to probe the significant interactions. Specifically, separate regression analyses were conducted for Black and White adolescents. Of primary interest was whether co-rumination moderate the relation between stress and depression for Black adolescents and for White adolescents. A separate hierarchical regression analyses was conducted for the total peer, and appearance

stress variables for Black adolescents and for White adolescents. Depression served as the dependent variable in each analysis. In each analysis, the main effects of sex, grade, and co-rumination were entered on the first step, the stress variable was entered on the second step, and the interaction between the stressor and co-rumination was entered on the third step. The results of these analyses are summarized in Tables 9 and 10. Only the two-way interactions between stress and co-rumination are discussed in the text.

In terms of total stress, for Black adolescents, the interaction between co-rumination and total stress was not significant in predicting total depression. However, for White adolescents, the interaction between co-rumination and total stress was significant. To probe the interaction for White adolescents, adolescents were classified as high on co-rumination (at or above the sample mean for co-rumination) or low on co-rumination (below the mean). Separate regression analyses were then conducted for White adolescents who were low on co-rumination and White adolescents who were high on co-rumination. In these regression analyses, depression was the dependent variable. The effects of the stress variable are of primary interest and only this effect is discussed in the text.

The total stress was significant for White adolescents who scored both low and high co-rumination. However, White adolescents who coruminate more were more impacted by the total stress variable. For White adolescents high on co-rumination, the effect of stress on depression was $\beta = .46, p < .001$. For White adolescents low on co-rumination, the effect of stress was $\beta = .36, p < .001$.

When assessing the effect of race with appearance-related stress, for Black adolescents, the interaction between co-rumination and appearance stress was not significant in predicting total depression. However, for White adolescents, the interaction between co-rumination and appearance stress was significant. The same follow-up analyses described White adolescents for total stress were conducted for appearance stress. The appearance stress score was significant among those who scored both low and high co-rumination, however, the effect was stronger for adolescents who are coruminating more. For White adolescents high on co-rumination, the effect of stress on depression was $\beta = .46, p < .001$. For White adolescents low on co-rumination, the effect of stress was $\beta = .25, p = .001$.

The same pattern emerged for peer stress. For White adolescents, the interaction between co-rumination and peer stress was significant, but it was not for Black adolescents. The same approach to follow-up analyses conducted for the other stress variable was used for peer stress. The peer stress score was significant among White adolescents who scored both low and high co-rumination. However, the effect was stronger for adolescents who coruminating more, $\beta = .45, p < .001$, than for adolescents low on co-rumination, $\beta = .29, p < .001$.

Table 8

Summary of Three-Way Regression Analyses Predicting Depressive Symptoms From Stress X Co-rumination by Race: Black

Stressors	Total		Peer		Physical appearance	
	<i>B</i>	<i>p value</i>	β	<i>p value</i>	<i>B</i>	<i>p value</i>
Step 1: Main effect						
Sex	-.17	.03	-.17	.03	-.17	.03
Grade	.00	.99	.00	.99	.00	.99
Co-rumination	.17	.03	.17	.03	.17	.03
	.47	<.001	.40	<.001	.41	<.001
Step 2: Stressor						
Step 3: Interactions						
Stressor X co-rumination	-.02	.91	-.01	.95	-.02	.83

Table 9

Summary of Three-Way Regression Analyses Predicting Depressive Symptoms From Stress X Co-rumination by Race: White

Stressors	Total		Peer		Physical appearance	
	<i>B</i>	<i>p value</i>	β	<i>p value</i>	<i>B</i>	<i>p value</i>
Step 1: Main effect						
Sex	-.14	.02	-.14	.02	-.14	.02
Grade	.06	.21	.06	.21	.06	.21
Co-rumination	.17	.01	.17	.01	.17	.01
Step 2: Stressor	.43	<.001	.39	<.001	.39	<.001
Step 3: Interactions						
Stress X co-rumination	.42	.03	.11	.02	.13	.005

Summary

This study involved analyzing a dataset collected from 2007-2009 by Dr. Amanda Rose. Participants were asked for demographic information and completed questionnaires (DHQ, CES-D, CRQ). Mean level sex, race, and grade differences were found in the study variables, stressors (total, peer, family, school, physical appearance, sports/physical activity), co-rumination, and depression.

In terms of the stress scores, Black adolescents reported greater stress than White adolescents for all stressors but appearance-related stress. These race differences, however, were qualified for multiple grade X race interactions. Probing the Grade X Race interactions typically revealed that Black adolescents scored higher than White adolescents in both seventh and 10th grade but that the effects of race were stronger for seventh graders than 10th graders. Consistent with these findings, Black seventh graders typically reported the greatest stress, and White seventh graders typically reported the least stress. Black and White 10th graders scored in between the Black and White seventh graders.

For depressive symptoms, main effect of race was significant as Black adolescents also reported greater depressive symptoms than White adolescents. In addition, females reported greater depressive symptoms than males although this effect was moderated by grade and race. For White adolescents, girls reported greater depression than boys, and this effect was not moderated grade race. For Black adolescents, the sex difference was significant in 10th grade but not seventh grade.

Sex and race main effects emerged for co-rumination. Female adolescents reported significantly more co-rumination than males, and 10th grade adolescents reported more co-rumination than seventh graders. There was no race difference in co-rumination.

Results addressing the second research question indicated that the relationship between each stressor and depression was significantly positively related. Additional questions considered moderators of these associations.

The associations between stress and depression were not moderated by race or grade, and only one interaction with sex was significant (for sports stress). The relation also was not moderated by co-rumination.

However, the interactions among race, some of the stressors (total, appearance, and peer), and co-rumination were significant in predicting depression. Results indicated that the relation between stress and depression was moderated by co-rumination for White adolescents but not Black adolescents. Although scores for total stress and for appearance and peer stress were significant predictors of depression among White adolescents who scored both low and high co-rumination, the effect of stress was strongest for White adolescents who were coruminating at relatively high levels.

In the following chapter, Chapter 5, comparisons of current findings and that of previous research will be discussed. Study limitations will be discussed and recommendations for future research will be provided. Implications for positive social change will also be discussed.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative study was to examine the associations among stressors, depression, and co-rumination among adolescents. To address the research questions, the specific research design was a correlational design, involving survey data assessing depressive symptoms, co-rumination, and stress. Interactions between the stress variables and co-rumination were tested to determine whether the relation between stressors and depression was moderated by co-rumination. In additional regression analyses, sex, grade, and race were included as moderators. Three-way interactions among stress variables, co-rumination, and demographic variables (sex, grade, or race) were tested to determine whether any interactions between stressors and co-rumination were further moderated by sex, grade, or race.

Findings indicated important racial, sex, and grade differences in the degree of stress experienced and also in associations among stress, co-rumination, and depression. Key findings from this research include that, for the majority of the stressors, scores were especially high for Black adolescents, especially Black seventh graders. Another key finding was that, for only White adolescents, co-rumination moderated the relations between some of the stress variables and depression, with relations being strongest for White adolescents who coruminated the most. Associations with previous literature are discussed in detail below.

Interpretation of Findings

The first research question addressed mean-level sex, race, and/or grade differences in the study variables. Race differences emerged for total stress and for stress related to peers, family, school, and sports. In addition, four of these five significant race effects were moderated by grade. Specifically, the effects of race were qualified by grade for total stress and for peer, family, and school stress but not for sports stress.

For the stressors that were moderated by grade, Black adolescents typically reported greater stress than White adolescents, with the effects being stronger for seventh grade students than for 10th grade students. A consistent pattern emerged across stressors in which Black seventh graders reported the most stress, followed by Black 10th graders, White 10th graders, and White seventh graders. In terms of race differences, Black seventh graders reported greater total stress and greater peer, family, and school stress than White seventh graders. These findings fit with previous research on race and stress. For Black students overall, racism is a significant source of chronic stress (Collins et al., 2004) that correlates with various other stressful experiences (Cavalhieri & Wilcox, 2021; Lewis & Van Dyke, 2018; Stevens-Watkins et al., 2014; Wright & Lewis, 2020). The experience of stress may be exacerbated for Black adolescents in seventh grade given that youth also are going through puberty, making this a particularly vulnerable developmental stage.

Black adolescents, however, did not report greater appearance stress than White adolescents. This fits with other research indicating greater acceptance of larger bodies among the Black community (Ali et al., 2013; Aruguete et al., 2004). The finding also fits

with research indicating that Black individuals generally report lower body dissatisfaction as compared to White individuals (Franko & Roehrig, 2011). Additionally, research has demonstrated that Black Americans generally have higher self-esteem than White Americans, which could extend to more positive appearance perceptions (Louie et al., 2022).

In contrast to race differences, few sex and grade differences were found for reports of stress. Only one sex difference emerged; girls reported greater appearance stress than boys. As seen in previous literature, females commonly experience higher stress related to their appearance, as reported through lower body satisfaction, lower perceived attractiveness, and lower self-esteem than males (Murray et al., 2015; Raible-Destan et al., 2022; Zimmer-Gembeck et al., 2022).

Notably, there were no main effects for grade that were not moderated by race. Among White adolescents, 10th graders reported greater peer and family stress than seventh graders. This was hypothesized according to previous research demonstrating that, for White adolescents, stress typically increases with grade (Anniko et al., 2019). Additionally, key findings from past research demonstrate that feelings of peer exclusion increase with grade and are thus associated with greater stress (Giota & Gustafsson, 2021). Family stress has also been shown to increase with grade, commonly peaking in middle adolescence as youth are striving for more independence and autonomy (Hadiwijaya et al., 2017).

In contrast, a different pattern of effects emerged for Black adolescents. Among Black adolescents, seventh graders reported greater total stress and greater peer and

school stress than 10th grade adolescents. As noted, elevated stress among seventh graders may be driven in part by stress due to the biological changes associated with puberty during that seventh grade year. These findings, however, suggest elevated levels of stress is specific to Black early adolescents. A difference between Black and White adolescents is that Black adolescents also are experiencing the chronic stress of racism (Collins et al., 2004; Taylor & Turner, 2002). Early adolescents' coping skills are still developing (Jones et al., 2020), and dealing with chronic racism in addition to the stressors White adolescents experience may challenge early adolescents' coping resources, leading to greater experiences of stress. Also, these findings emerging in the specific domains of peer and school stress suggests that the school context, in which peers are situated, are especially challenging for Black early adolescents. These findings are consistent with research indicating that Black adolescents experience interpersonal racism-related stress at school (see Griffin et al., 2017) and perceive that they are disciplined more harshly than peers because of their race (Cogburn et al., 2011).

The second research question examined the relationship between stressors (overall, peer, family, school, physical appearance, sports/physical activity stress) and depression, and if these relationships were moderated by sex, race, and/or grade. As hypothesized, and fitting with previous research (e.g., Bartlett et al., 2019; Kim, 2021; Martinez & Bámaca-Colbert, 2019; Nishikawa et al., 2018), each stressor was significantly and positively associated with depression.

Additional analyses tested whether the associations between stress and depression were moderated by sex, grade, and/or race. Only one interaction with sex was significant.

Sports-related stress was related to depressive symptoms for both boys and girls, but the effect was stronger for boys. Past research has suggested that boys may have higher sports aspirations than girls. For example, research has shown that while both boys and girls may have aspirations in sports, boys talk more about being professional athletes (Eriksen, 2022). This could contribute to higher levels of perceived pressure to succeed in sports and thus higher sport-related stress.

Of central importance, I also tested whether the relation between stress and depression would be exacerbated by co-rumination. The initial hypothesis was that co-rumination would moderate the relationship between stress and depression. This hypothesis was based on the research indicating that coruminating friends elicit more problem talk (Rose et al., 2014), and that coruminating likely makes problems feel more difficult and harder to resolve (Rose, 2021). However, analyses indicated nonsignificant moderating effects for the full sample.

However, analyses did indicate that co-rumination and race were simultaneous moderators of the relation between stress and depression. Specifically, for White adolescents, co-rumination moderated the associations of total stress and of peer stress and appearance stress with depression. In each case, as expected, the association between stress and depression was strongest for White adolescents who reported higher levels of co-rumination.

Although moderating effects of co-rumination for White adolescents were found for peer stress and appearance stress, the moderating effect did not emerge for other stressors (family, school, sports). Finding the effects specifically for peer stress and

appearance stress may be related to the developmental stage of participants in the study. Adolescence is known to be a period in which the peer context is especially salient (Furman & Rose, 2015). Conflicts in peer relations where the individual holds partial responsibility also contribute to depressive symptoms among adolescents (Hammen, 2005). Moreover, as romantic interests develop, concerns about appearance become more salient as well. As a result, these domains of stress may be the most susceptible to exacerbating the effects of co-rumination.

An additional question is why co-rumination exacerbated the relation between stress and depression for White adolescents but not Black adolescents. This question requires further probing. Past research has indicated that especially high levels of family social support and religiosity among Black Americans than White Americans have been argued to contribute to a sense of resiliency among Black Americans (Louie et al., 2022). These factors may help to explain why Black adolescents may be protected from the risks of co-rumination to a higher degree than White adolescents.

Theoretical Frameworks

Stress and Coping

A key theory that grounded this study is the theory of stress and coping by Lazarus. The theory was developed as an effort to explain stress as the response to how person and environment intersect (Walinga, 2008). People who experience high amounts of stress have an increased likelihood of experiencing depression (Burani et al., 2021). The findings of the present study demonstrated the significant relationship between each stressor (total, peer, family, physical appearance, sports/physical activity, and school) and

depression. Additionally, the findings offered several examples of the relation among stressors and depression and adolescents of different sexes, races, and ages. Unique results emerged depicting variations between person and environment and the response to stress.

Response Style Theory

Response style theory proposes that the way individuals respond to symptoms of depression determines the severity and duration of their symptoms (Nolen-Hoeksema, 1991). Co-rumination is one type of coping adolescents may adopt in response to stress and is based on response style theory. Findings of the present study revealed that White adolescents who coruminated more had stronger associations between stress and depression. Accordingly, the findings of the present study were consistent with theory for White adolescents, but not for Black adolescents. Further exploration is needed to determine inconsistencies between races.

Limitations of the Study

There were some limitations of this study. One notable limitation is that the dataset was collected over 10 years ago, between the years of 2007 and 2009. The date of data collection could impact generalizability to present-day adolescents. To determine if the results remain constant over time, the data could be collected again to see if the results are replicated. Additionally, because this research used archival data, I did not personally participate in running data collection sessions, obtaining consent or assent, or contributing to other aspects of the research.

Another limitation is the unknown impact of the Covid-19 pandemic on the associations among adolescent stress, co-rumination with friends, and depression. As a result of the shelter-in-place orders and the distance learning that took place across the country, many adolescents experienced isolation during this time. This may have decreased the experience of some stressors (e.g., sports/physical activity), and co-rumination may have decreased for some adolescents due to less in-person access to friends. However, other stressors related to virtual learning, increased family interaction, and isolation from friends likely increased and could have served as topics for co-rumination. Therefore, it is unknown whether the associations identified in the study generalize to adolescents' experience during or post the height of the pandemic. A third limitation is the exclusion of other races due to not having enough adolescents of other races to examine these associations.

Recommendations

In the current study, race differences were found between Black and White adolescents in co-rumination, such that White adolescents coruminated more than Black. Future research could aim to understand racial differences in co-rumination. This could include examining what forms of problem talk occur most frequently within racial groups. Using a qualitative approach may serve to identify unique themes in adolescent friends' discussion of problems.

Future research also could explore predictors of co-rumination. Better understanding adolescents' experience of stress is important given the direct relation between and depression; in addition, better understanding co-rumination is important

given that co-rumination can amplify the risk of co-rumination for some adolescents. Previous research has indicated that, within a predominantly White sample, mothers who coruminate were especially likely to have children who coruminate (Rose, 2021), and whether this is also true for Black families could be tested.

Finally, the role of the pandemic could be examined. During this time, youth had fewer opportunities for in-person connection, and many youths communicated with friends over digital mediums. Whether friends' support, and friends' co-rumination, differs over in-person versus digital mediums should be examined. Racial differences in these effects also should be examined.

Future research could investigate the current research questions in a broader population. This could involve including more diverse sample of non-White Americans. More specifically, research could aim to include larger samples of non-White Americans from additional racial/ethnic backgrounds (e.g., Latinx, Native American). Such research could provide information about what effects are related to inclusion in a specific racial/ethnic group versus being in a non-White racial/ethnic group more generally. In addition, the questions could be addressed with a broader age range of participants. Studies with younger and older participants could provide information about whether effects identified are especially relevant for adolescents.

Implications

The present study revealed that Black adolescents reported greater depressive symptoms than White adolescents and higher stress than White adolescents for all stressors but appearance-related stress. These findings could serve as a basis for

understanding how to tailor intervention efforts in ways that ensure cultural competence for working with non-White adolescents. For example, intervention in terms of co-rumination in the context of stress and depression is likely less relevant for Black youth given that co-rumination did not strengthen the effect of stress on depression for Black youth.

However, the study suggests that interventions focused on elevated stress among seventh graders would be especially relevant for Black seventh graders. The findings indicated that Black seventh graders typically reported greater stress than Black 10th graders and White seventh and 10th graders. Intervention efforts provided at a younger age could help Black early adolescents develop strong coping skills, which should promote greater mental health and well-being.

In addition, there are positive social change implications of this study. On the individual level, as discussed, the findings can inform intervention efforts with adolescents. Education efforts could take place within the school systems to reduce mental health issues and support adolescents. Developing stress reduction programs that target domain-based stressors and their impact on well-being could support the development of more effective coping strategies. Intervention efforts, though, also should focus on the family system so that parents can encourage positive coping among their adolescent children. This two-pronged approach would leverage the inclusion of two highly influential systems for adolescents. As the prevalence of stressors and depressive symptoms continue to be a concern among adolescents, systemic policies need to be implemented to assist in prevention, identification, and intervention.

While this study was not designed to specifically facilitate social change at societal levels, there are ancillary benefits of supporting more mental health and well-being among adolescents. Healthy adolescents are likely to grow to be healthier adults, which would contribute to a healthier society. Healthier adults, in turn, can contribute to the development of supportive and productive schools, workplaces, and broader communities.

Conclusion

This study built on existing literature on depression and domain-based stressors by demonstrating that the relationship between stress and depression is significantly positively related and that co-rumination is a moderating factor for White adolescents. The results also illuminate the importance of considering racial, sex, and grade-related differences in stress scores and in associations between stress and depressive symptoms. Whereas Black seventh graders were found to be at particular risk in terms of experiencing stress, the exacerbating influence of co-rumination on the relation between stress and depressive symptoms held only for White adolescents.

Educating adolescents about the role of stress and depression, as well as some of the potential downsides of co-rumination could be valuable. Effective education could promote positive social change by enhancing adolescents' understanding of the importance of building effective coping strategies to manage stress and depressive symptoms. Adolescents with greater mental health and well-being are likely to grow into adults with more effective stress management techniques, which would benefit society more broadly.

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Appendix A: Co-rumination Questionnaire (Rose, 2002)

When We Talk About Our Problems

Think about the way you usually are with your best or closest friends who are girls if you are a girl or who are boys if you are a boy and circle the number for each of the following statements that best describes you.

1. We spend most of our time together talking about problems that my friend or I have.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

2. If one of us has a problem, we will talk about the problem rather than talking about something else or doing something else.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

3. After my friend tells me about a problem, I always try to get my friend to talk more about it later.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

4. When I have a problem, my friend always tries really hard to keep me talking about it.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

5. When one of us has a problem, we talk to each other about it for a long time.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

6. When we see each other, if one of us has a problem, we will talk about the problem even if we had planned to do something else together.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

7. When my friend has a problem, I always try to get my friend to tell me every detail about what happened.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

8. After I've told my friend about a problem, my friend always tries to get me to talk more about it later.

1 2 3 4 5

Not At All True A Little True Somewhat True Mostly True Really True

9. We talk about problems that my friend or I are having almost every time we see each other.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

10. If one of us has a problem, we will spend our time together talking about it, no matter what else we could do instead.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

11. When my friend has a problem, I always try really hard to keep my friend talking about it.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

12. When I have a problem, my friend always tries to get me to tell every detail about what happened.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

When we talk about a problem that one of us has...

1. ... we will keep talking even after we both know all of the details about what happened.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

2. ... we talk for a long time trying to figure out all of the different reasons why the problem might have happened.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

3. ... we try to figure out every one of the bad things that might happen because of the problem.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

4. ... we spend a lot of time trying to figure out parts of the problem that we can't understand.

1 2 3 4 5

- | | | | | | |
|--|-----------------|---------------|---------------|-------------|-------------|
| | Not At All True | A Little True | Somewhat True | Mostly True | Really True |
|--|-----------------|---------------|---------------|-------------|-------------|
5. ... we talk a lot about how bad the person with the problem feels.
- | | | | | | |
|--|-----------------|---------------|---------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| | Not At All True | A Little True | Somewhat True | Mostly True | Really True |
6. ... we'll talk about every part of the problem over and over.
- | | | | | | |
|--|-----------------|---------------|---------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| | Not At All True | A Little True | Somewhat True | Mostly True | Really True |
- When we talk about a problem that one of us has...*
7. ... we talk a lot about the problem in order to understand why it happened.
- | | | | | | |
|--|-----------------|---------------|---------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| | Not At All True | A Little True | Somewhat True | Mostly True | Really True |
8. ... we talk a lot about all of the different bad things that might happen because of the problem.
- | | | | | | |
|--|-----------------|---------------|---------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| | Not At All True | A Little True | Somewhat True | Mostly True | Really True |
9. ... we talk a lot about parts of the problem that don't make sense to us.
- | | | | | | |
|--|-----------------|---------------|---------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| | Not At All True | A Little True | Somewhat True | Mostly True | Really True |
10. ... we talk for a long time about how upset is has made one of us with the problem.
- | | | | | | |
|--|-----------------|---------------|---------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| | Not At All True | A Little True | Somewhat True | Mostly True | Really True |
11. ... we usually talk about that problem every day even if nothing new has happened.
- | | | | | | |
|--|-----------------|---------------|---------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| | Not At All True | A Little True | Somewhat True | Mostly True | Really True |
12. ... we talk about all of the reasons why the problem might have happened.
- | | | | | | |
|--|-----------------|---------------|---------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| | Not At All True | A Little True | Somewhat True | Mostly True | Really True |
13. ... we spend a lot of time talking about what bad things are going to happen because of the problem.
- | | | | | | |
|--|-----------------|---------------|---------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| | Not At All True | A Little True | Somewhat True | Mostly True | Really True |

14. ... we try to figure out everything about the problem, even if there are parts that we may never understand.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

15. ... we spend a long time talking about how sad or mad the person with the problem feels.

1 2 3 4 5
Not At All True A Little True Somewhat True Mostly True Really True

Appendix B: CES-D (Radloff, 1977)

What I Have Been Feeling

Below is a list of ways you might have felt or behaved. Please circle the number that indicates how often you have felt this way during the past week.

1. I was bothered by things that didn't usually bother me.

1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

2. I did not feel like eating; my appetite was poor.

1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

3. I felt that I could not shake off the blues even with help from my family and friends.

1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

4. I felt I was just as good as other people.

1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

5. I had trouble keeping my mind on what I was doing.

1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

6. I felt depressed.

1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

7. I felt that everything I did was an effort.

1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

8. I felt hopeful about the future.

1	2	3	4
Rarely or none	Some or a little	Occasionally or a	Most or all

of the time (less than 1 day)	of the time (1-2 days)	moderate amount of time (3-4 days)	of the time (5-7 days)
9. I thought my life had been a failure.			
1 Rarely or none of the time (less than 1 day)	2 Some or a little of the time (1-2 days)	3 Occasionally or a moderate amount of time (3-4 days)	4 Most or all of the time (5-7 days)
10. I felt fearful.			
1 Rarely or none of the time (less than 1 day)	2 Some or a little of the time (1-2 days)	3 Occasionally or a moderate amount of time (3-4 days)	4 Most or all of the time (5-7 days)
11. My sleep was restless.			
1 Rarely or none of the time (less than 1 day)	2 Some or a little of the time (1-2 days)	3 Occasionally or a moderate amount of time (3-4 days)	4 Most or all of the time (5-7 days)
12. I was happy.			
1 Rarely or none of the time (less than 1 day)	2 Some or a little of the time (1-2 days)	3 Occasionally or a moderate amount of time (3-4 days)	4 Most or all of the time (5-7 days)
13. I talked less than usual.			
1 Rarely or none of the time (less than 1 day)	2 Some or a little of the time (1-2 days)	3 Occasionally or a moderate amount of time (3-4 days)	4 Most or all of the time (5-7 days)
14. I felt lonely.			
1 Rarely or none of the time (less than 1 day)	2 Some or a little of the time (1-2 days)	3 Occasionally or a moderate amount of time (3-4 days)	4 Most or all of the time (5-7 days)
15. People were unfriendly.			
1 Rarely or none of the time (less than 1 day)	2 Some or a little of the time (1-2 days)	3 Occasionally or a moderate amount of time (3-4 days)	4 Most or all of the time (5-7 days)
16. I enjoyed life.			
1 Rarely or none of the time	2 Some or a little of the time	3 Occasionally or a moderate amount of time	4 Most or all of the time

(less than 1 day)	(1-2 days)	(3-4 days)	(5-7 days)
17. I had crying spells.			
1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
18. I felt sad.			
1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
19. I felt that people dislike me.			
1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
20. I could not get "going."			
1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

Appendix C: DHQ (DuBois et al., 2002)

DAILY HASSLES

Below are lists of situations that people your age frequently experience.

If a situation has happened to you in the last month, indicate how much of a hassle (a problem or trouble) it was by circling the appropriate number. If the situation did not happen to you in the last month, circle number 1.

SCHOOL	Did not happen	It happened and it was...			
		Not at all a hassle	A little bit of a hassle	Moderate hassle	A very big hassle
1. Problems getting along with teacher or other adult at school	1	2	3	4	5
2. Problems getting along with other students	1	2	3	4	5
3. Possibility of failing a course	1	2	3	4	5
4. Trouble keeping up with students in your classes	1	2	3	4	5
5. Problems understanding course work	1	2	3	4	5
6. Getting things stolen or losing things at school	1	2	3	4	5
7. Homework	1	2	3	4	5
8. Coming to class with the wrong materials	1	2	3	4	5
9. Getting in trouble in school	1	2	3	4	5
10. Getting lost in school					
11. Using a locker at school	1	2	3	4	5
12. Eating in the school cafeteria	1	2	3	4	5
13. Problems getting to school/coming home from school	1	2	3	4	5
14. Pressure from parents/guardian to do well in school	1	2	3	4	5
15. Being bored at school	1	2	3	4	5
16. No good place at home to do school work	1	2	3	4	5
17. Learning new school rules	1	2	3	4	5

18. Parents/guardian not being around to help you with school work	1	2	3	4	5
19. Being teased by other students about how you do on school work	1	2	3	4	5
20. Not having breakfast before you go to school	1	2	3	4	5
21. Competition in school with other students to do better than each other	1	2	3	4	5
SCHOOL (continued)	Did not happen	It happened and it was...			
		Not at all a hassle	A little bit of a hassle	Moderate hassle	A very big hassle
22. Not having enough money to buy the things that you need to do your school work	1	2	3	4	5
23. Getting a failing grade on a test, homework assignment, or report card.	1	2	3	4	5
24. Having a teacher who does not think you can do very well in school	1	2	3	4	5
25. Having a parent/guardian who does not think you can do very well in school	1	2	3	4	5
26. Parent/guardian not caring very much about how well you do in school	1	2	3	4	5
27. Having a teacher who does not care very much about how well you do in school	1	2	3	4	5
28. Teachers not spending enough time helping you with your school work	1	2	3	4	5
29. Being in a program for gifted students at school	1	2	3	4	5
30. Receiving special education services at school	1	2	3	4	5
31. Having a teacher or other adult at school say or do something mean to you	1	2	3	4	5

32. Were not allowed to do something at school because you are a girl	1	2	3	4	5
33. Treated unfairly at school because you are a girl	1	2	3	4	5
34. Were called names or teased at school having to do with being a girl	1	2	3	4	5
35. Were excluded from an activity at school because of your race/ethnicity	1	2	3	4	5
36. Treated unfairly at school because of your race/ethnicity	1	2	3	4	5
37. Were called names or insulted at school about your race/ethnicity	1	2	3	4	5
38. Were physically attacked/assaulted at school or on the way to school	1	2	3	4	5

FAMILY	Did not happen	It happened and it was...			
		Not at all a hassle	A little bit of a hassle	Moderate hassle	A very big hassle
1. Doing chores at home	1	2	3	4	5
2. Parent/guardian being away from home a lot	1	2	3	4	5
3. Arguments with parent/guardian	1	2	3	4	5
4. Having a parent/guardian who is sick or injured	1	2	3	4	5
5. Rules/restrictions at home	1	2	3	4	5
6. Getting in trouble at home	1	2	3	4	5
7. Parent/guardian doing or saying something mean to you	1	2	3	4	5
8. Family not having enough money	1	2	3	4	5
9. Family member using drugs or drinking a lot of alcohol	1	2	3	4	5
10. Family not having enough to eat	1	2	3	4	5
11. Parents/guardian too curious about what you do	1	2	3	4	5
12. Problems or arguments with brothers or sisters	1	2	3	4	5
13. Dealing with parents' divorce or separation	1	2	3	4	5
14. Sick brother or sister	1	2	3	4	5
15. Parent/guardian not paying enough attention to you	1	2	3	4	5
16. Parents arguing with each other	1	2	3	4	5
17. Parents/guardian not being home after school	1	2	3	4	5
18. Parents/guardian making important family decisions without asking for your opinion/ideas	1	2	3	4	5

19. Parent/guardian failing to do something important for you	1	2	3	4	5
20. Family member having an emotional problem	1	2	3	4	5
21. Were not allowed to do something at home because you are a girl	1	2	3	4	5
22. Treated unfairly in your family because you are a girl	1	2	3	4	5
23. Family member was called racist names or insulted about their race/ethnicity	1	2	3	4	5

PEERS	Did not happen	It happened and it was...			
		Not at all a hassle	A little bit of a hassle	Moderate hassle	A very big hassle
1. Problems or arguments with friends	1	2	3	4	5
2. Being teased/picked on by other kids	1	2	3	4	5
3. Having few or no friends	1	2	3	4	5
4. Having trouble making new friends	1	2	3	4	5
5. Not being asked to do things with the popular group of kids your age	1	2	3	4	5
6. Dating	1	2	3	4	5
7. Not having a boyfriend/girlfriend	1	2	3	4	5
8. Being pressured to join a gang	1	2	3	4	5
9. Not having a best friend	1	2	3	4	5
10. Being at parties, dances, social events, etc	1	2	3	4	5
11. Friends living too far away	1	2	3	4	5
12. Friend having emotional problems	1	2	3	4	5
13. Not having enough time to do things with friends	1	2	3	4	5

14. Parents/guardian not allowing you to see friends	1	2	3	4	5
15. Friends not asking you to do things with them	1	2	3	4	5
16. Friends turning you down when you ask them to do things with you	1	2	3	4	5
17. Being in a gang	1	2	3	4	5
18. Friends/other kids not being interested in your ideas or opinions	1	2	3	4	5
19. Were excluded by other kids because you are a girl	1	2	3	4	5
20. Treated unfairly by other kids because you are a girl	1	2	3	4	5
21. Were called names or teased by other kids about something having to do with being a girl	1	2	3	4	5
22. Were excluded by other kids because of your race/ethnicity	1	2	3	4	5
23. Treated unfairly by other kids because of your race/ethnicity	1	2	3	4	5
24. Were called racist names or teased by other kids about your race/ethnicity	1	2	3	4	5



APPEARANCE	Did not happen	It happened and it was...			
		Not at all a hassle	A little bit of a hassle	Moderate hassle	A very big hassle
1. Parents/guardian telling you they do not like something about your appearance	1	2	3	4	5
2. Friends/other kids telling you they do not like something about your appearance	1	2	3	4	5

3. Having an illness or injury that changes your appearance	1	2	3	4	5
4. Wearing braces	1	2	3	4	5
5. Wearing glasses	1	2	3	4	5
6. Having acne (pimples)	1	2	3	4	5
7. Being short/tall	1	2	3	4	5
8. Being overweight/underweight	1	2	3	4	5
9. Not having nice clothes	1	2	3	4	5
10. Parents/guardian not allowing you to wear certain clothes	1	2	3	4	5
11. Getting a haircut	1	2	3	4	5
12. Parents/guardian not allowing you to change something about your appearance	1	2	3	4	5
13. Not being allowed to wear certain clothes at school	1	2	3	4	5
14. Having something that you don't like about how your face looks (eyes, nose, ears, teeth, etc)	1	2	3	4	5
15. Having something that you don't like about how your body looks	1	2	3	4	5
16. Trying to lose/gain weight	1	2	3	4	5
17. Weight change	1	2	3	4	5
18. Trying to change something about your appearance	1	2	3	4	5
19. Change in your appearance	1	2	3	4	5
20. Experienced teasing about your appearance having to do with being a girl	1	2	3	4	5
21. Experienced teasing or comments about your appearance having to do with your race/ethnicity	1	2	3	4	5

SPORTS/PHYSICAL ACTIVITIES	Did not happen	It happened and it was...			
		Not at all a hassle	A little bit of a hassle	Moderate hassle	A very big hassle
1. Restrictions from parent/guardian about what sports/physical activities you are allowed to participate in	1	2	3	4	5
2. Having an illness or injury that restricts your participation in sports/physical activities	1	2	3	4	5
3. Not having enough money to buy the right clothes or equipment for the sports/physical activities that you want to participate in	1	2	3	4	5
4. Being teased about how well you do at sports/physical activities	1	2	3	4	5
5. Pressure from parents/guardian to do well in sports/physical activities	1	2	3	4	5
6. Trying to learn a new sport/physical activity	1	2	3	4	5
7. Being one of the last to be chosen for sports/physical activities	1	2	3	4	5
8. Participating in gym class (PE)	1	2	3	4	5
9. Not having the chance to participate in the sports/physical activities that you do well	1	2	3	4	5
10. Not being given a chance to play when you participate on sports teams	1	2	3	4	5
11. Parent/guardian not helping you enough with sports/physical activities	1	2	3	4	5
12. Making mistakes when you participate in sports/physical activities	1	2	3	4	5

13. Competition with other kids to do better than each other at sports/ physical activities	1	2	3	4	5
14. Coach not spending enough time helping you when you participate in sports/physical activities	1	2	3	4	5
15. People doing or saying mean things to you when you participate in sports/physical activities	1	2	3	4	5
16. Were not allowed to participate in a sport because you are a girl	1	2	3	4	5
17. Were told you wouldn't be any good at a sport because you are a girl	1	2	3	4	5
18. Were excluded from a sport because of your race/ethnicity	1	2	3	4	5
19. Were expected to be good or NOT be good at a sport just because of your race/ethnicity	1	2	3	4	5

Appendix D: CITI Training Through University of Missouri



Completion Date 26-May-2022
Expiration Date N/A
Record ID 49152731

This is to certify that:

Angela Grosso-Burke


Has completed the following CITI Program course:

Student's
(Curriculum Group)
Doctoral Student Researchers
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Walden University

Not valid for renewal of certification through CME.



Verify at www.citiprogram.org/verify/?w63b31821-31f5-4eaf-b98c-8088b7e5e619-49152731