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The stressors of being young and Black: Cardiovascular health and Black young adults

Anna K. Lee,

North Carolina Agricultural & Technical State University

Maya A. Corneille,

North Carolina Agricultural & Technical State University

Naomi M. Hall,

Winston Salem State University

Cecile N. Yancu, and

Winston Salem State University

Micha Myers

Winston Salem State University

Abstract

Objective—To examine the impact of stressors relevant to the lives of Black young adults including racial, financial, occupational, and general stress and psychological distress on cardiovascular disease (CVD) risk. Specifically, this study examined the relationship between multiple psychosocial stressors and two CVD risk indicators (i.e., obesity and blood pressure).

Design—This study used a quantitative design which included surveys, the collection of anthropometric and blood pressure measures. Participants were 124 Black college students aged 18 to 27 years old. Main Outcome Measures: Participants completed measures to assess psychological distress, general, occupational, financial and racial stress. Measures of body mass index (BMI), waist-to-hip ratio (WHR) and blood pressure (BP) were collected to assess CVD risk.

Results—Findings indicated a significant effect of internalized racism on body mass index and a significant effect of individual racial stress on diastolic blood pressure. Also, depression was significantly associated with systolic BP. There were no significant results for WHR. Conclusion: Findings suggested that the relationship among racial stress, psychological distress and CVD be further explored.

Keywords

stress; racism; psychological distress; cardiovascular; health

Humans are biologically predisposed to efficiently cope with acute stress; however, our bodies are remarkably inefficient at coping with the effects of chronic daily stress (Sapolsky, 2005). Social factors contribute to chronic stress in all groups; however, certain stressful conditions, such as racism, which disproportionately affect marginalized groups, may leave

Black Americans more susceptible to poor health outcomes and therefore, contribute to health inequities (Link & Phelan, 1995; Roosa & Gonzales, 2000).

Health inequities refer to differences, variations, and disparities across groups that are unjust or unfair and require social justice interventions (Kawachi, Subramanian, & Almeida-Filho, 2002). Health inequity in cardiovascular disease (CVD) is evidenced by higher incidence and earlier development of the disease among Black people relative to people of other races and ethnicities (Bibbins-Domingo et al., 2009). Heart disease is the leading cause of death for both men and women (CDC, 2015). Furthermore before age 50, Black Americans' heart failure rate is 20 times higher than that of White Americans and three-fourths of Black Americans who develop heart failure have high blood pressure by age 40 (Bibbins-Domingo et al., 2009). The American Heart Association reports that among non-Hispanic Black Americans aged 20 and older, 44.4% of men and 48.9% of women have CVD (Go et al., 2013).

Public health discourse has put forth a psychosocial stress model of racial/ethnic health disparity which suggests that racism serves as a stressor that can lead to negative health outcomes and limit opportunities to access institutions that support wellness (Dressler, Oths & Gravlee, 2005, Gee & Payne-Sturges, 2004). To address existing race-related health inequities, researchers have investigated both the effect of general chronic stress and stress associated with the experience of racism. Black young adults can experience a myriad of stressors including racial, financial, occupational, and general stress. This paper extends the literature by examining the impact of multiple domains of stressors (i.e. racial, financial, occupational, and general) and psychological distress (e.g. anxiety, depression) relevant to the lives of Black young adults. We focus on young adults because research suggests that CVD, hypertension and heart failure have an earlier onset in Black Americans than other racial groups. Within the U.S., 33% of adults 20 years of age or older and 44% of Black Americans have hypertension (Go, 2013).

Literature Review

Stress has a vast range of definitions, but is best defined as a process of adaptation in response to a physical or psychological challenge that disrupts the balance between physical and psychological systems (Bursac, DiLillo, Kim, West & White, 2009). Psychosocial stress occurs when aversive or demanding conditions tax or exceed an individual's behavioral resources to cope (Lazarus, 1966). Furthermore, review papers on psychological distress and health have reported depression to be significantly related to cardiovascular disease (McElroy, Kotwal, Malhotra, Nelson, Keck, & Nemeroff, 2004; Van der Kooy, van Hout, Marwijk, Marten, Stehouwer, & Beekman, 2007).

Within the global White supremacist power structure, racist ideology is used to obstruct the political, economic and social development of Black people in order to perpetuate White privilege (Welsing, 1991). Structural racism refers to the practices, processes, and ideologies that produce differential access to power and life opportunities along racial and ethnic lines (Bonilla-Silva, 1997; Gee & Ford, 2011; Viruell-Fuentes, Miranda, & Abdulrahim, 2012). Jones (1972) asserted that racism "results from the transformation of race prejudice and/or

ethnocentrism through the exercise of power against a racial group defined as inferior, by individuals and institutions with the intentional or unintentional support of the entire culture” (p. 117). In order to better understand the potential multifaceted impact of racism, Jones developed a multicomponent model of racism.

According to the Jones tripartite model of racism, racism impacts three domains of Black life: individual, cultural and institutional. Individual racism occurs at an interpersonal level and can include negative attitudes and beliefs (prejudice) held by oppressive cultural groups, biased acts that occur as a result of holding racist beliefs (discrimination), and use of racial slurs (Jones, 1997). Cultural racism refers to labeling, describing, or portraying marginalized groups as deficient or invalid. This includes media representations of Black men that have disproportionately associated Black masculinity with hypersexuality, violence, and drug use (Ferber, 2007). Institutional racism occurs when policies and practices, while appearing fair and objective, have the effect of restricting or disadvantaging members of marginalized social/racial groups. An example of this includes the disproportionate targeting of Black and Latino people by the New York City Police Department’s stop and frisk policy (Gelman, Fagan & Kiss, 2007). This domain of racism can have detrimental effects on large populations of marginalized groups over time.

We included a fourth domain of internalized racism which occurs when marginalized groups adopt racist beliefs about their own group and use these beliefs to evaluate themselves and others in their group (Brondolo, Gallo & Meyers, 2009; Taylor & Grundy, 1996). Previous research has found an association between internalized racism and abdominal obesity. Tull and colleagues (1999, 2001) found that after adjusting for age, education, and BMI, the extent to which participants identified with racist stereotypes of Black Americans was significantly correlated with abdominal obesity.

Racism incorporated into policies and institutions can also limit access to desirable resources and economic opportunities. Moreover, racism can deleteriously affect mental health status including psychological distress such as anxiety and depression (R. Williams & Williams-Morris, 2000). Individual-level racism is associated with psychological distress (e.g., negative affect, anger, depression, and anxiety) in addition to personality characteristics (e.g., hostility, trait, negative mood) that increase the experience of distress (Brondolo, Love, Pencille, Schoenthaler, & Ogedegbe, 2011). In a study on Black Americans, Chae et al. (2012) found greater cardiovascular disease risk among participants with a history of mood disorders. These researchers also found a significant interaction between racial discrimination and mood disorder in predicting cardiovascular disease.

Based on the above considerations, we hypothesized that racial stress and psychological distress would be positively associated with cardiovascular health risk indicators such as body mass index (BMI), waist to hip ratio (WHR) and systolic and diastolic blood pressure (BP).

Methods

Participants

Participants included 124 Black American male (N=28) and female students (N=96) from a historically Black university in the Southeastern region of the United States. Participants ranged in age from eighteen to twenty seven (M= 20.41, SD= 1.78). University students were recruited for study participation through campus flyers and classroom announcements. Inclusion criteria for the study included being a Black college student 18 years of age or older. Exclusion criteria for the study included not being a Black college student or being younger than 18 years of age.

Procedure

Data was collected in a laboratory that had private cubicles to collect anthropometric and survey data. Participants received an informed consent form and then completed survey instruments to measure chronic stress, including general stress, depression, anxiety, financial and occupational stress and racial stress. Lastly, anthropometric indicators (i.e., body mass index, waist circumference, waist-to-hip ratio) and blood pressure were collected to assess cardiovascular health risk. In the style of community health fairs, special instructions were not given to participants regarding activities before the anthropometric and blood pressure assessments. Participants were debriefed verbally and in written form and were scheduled to return a second time to collect blood pressure readings. They received a \$15 gift card to compensate them for their time. The study was approved by the university's Institutional Review Board.

Measures

Demographic Questionnaire—Demographic information such as race, ethnicity, age, sex, income, marital status, number of children, occupational status, educational status, and student status were collected. The demographic questionnaire was developed by the researchers specifically for this study.

Depression Anxiety Stress Scales (DASS)—Participants completed a psychological distress-related questionnaire known as the DASS developed by Lovibond and Lovibond (1995) to assess their psychological distress and mental state. The DASS is a 42-item questionnaire that measures current (“over the past week”) symptoms of depression, anxiety and stress. The questionnaire contains three subscales each consisting of 14 items, using a 0–3 scale in which zero indicates that the item does not apply to the participant at all and three indicates that the item applies to the participant very much or most of the time. Lovibond and Lovibond (1995) reported high reliability for each scale; for Depression, $\alpha = 0.96$; Anxiety, $\alpha = 0.89$; and Stress, $\alpha = 0.93$.

Index of Race-Related Stress-Brief version (IRRS-B)—In order to measure each participant's level of racial stress we used the IRRS-B (Utsey, 1999). The IRRS-B is a 22 item, multidimensional measure of Black American racial stress. This measure consists of the following 3 subscales: Cultural, Institutional and Individual racism. The Cronbach's

alphas for the IRRS-B were relatively high .78 for Cultural Racism, .69 for Institutional Racism and .78 for the Individual racism sub-scale (Utsey, 1999).

The Nadanolitization Scale—The Nadanolitization Scale (NAD) was used to measure internalized racism, specifically, how much participants identify with racist stereotypes about Black people (Taylor & Grundy, 1996). The NAD scale contains 49 items and uses a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) and consists of a racist and a social subscale. However, only the 24-item racist subscale was used in this study to examine adoption of racist stereotypes. Sample items included: “*African Americans are born with greater sexual desires than Whites.*” “*You were treated with less respect and courtesy than Whites and other non-African American while in a store, restaurant or other business establishment.*” Taylor and Grundy (1996) reported internal consistencies of .85 for the Racist subscale and .90 for the Social subscale.

Anthropometric Measures—Anthropometric measures were collected in line with Cochrane recommendations (Pirozzo et al., 2002). Weight was assessed using the Health-O-Meter® Professional Digital Scale. Participants were instructed to remove their jacket, shoes, etc. before stepping on the scale. Height was measure in inches using the height rod attached to the scale.

Waist and hip circumference were measured using a cloth tape measure. Participants were asked to stand with their feet together and arms to their side. The tape measure was placed directly above the belly button to assess the waist circumference and around the widest part of the buttocks to assess hip circumference. Weight and height were used to calculate BMI. Waist and hip circumference were used to calculate WHR. These measures were taken in a private designated laboratory on campus. BMI was calculated by dividing weight in pounds (lbs) by height in inches (in) squared and multiplying by a conversion factor of 703. Although there has been debate among scholars regarding the relevancy of BMI (Frankenfield, Rowe, Cooney, Smith, & Becker, 2001; Romero-Corral et al., 2008), the CDC indicates that it is a fairly reliable indicator of risk for obesity, CVD and hypertension.

Blood pressure—Blood pressure was assessed by trained experimenters using an Omron automatic blood pressure monitor. After completing the surveys and being weighed, participants were instructed to sit quietly and rest their left arm on a desk. A blood pressure cuff was wrapped around the upper arm with the cuff’s lower edge one inch above the pit of the elbow. Each participant’s blood pressure was measured twice, once immediately after the survey and then a second time approximately a week later. An average blood pressure reading from time 1 and 2 was calculated and used in the data analysis.

Statistical Approach

Data was entered into the Statistical Package for the Social Sciences. Bivariate associations were assessed using Pearson correlations. Cronbach’s alpha coefficients were computed for all scales and subscales to determine scale reliability. Hierarchical multiple regression analyses were computed to examine if the stress and psychological distress variables (anxiety, depression, individual, cultural, institutional, and internalized racism) were

associated with the CVD risk variables (BMI, waist to hip ratio, blood pressure). Covariates included gender to account for gender disparities in the expression of risk variables and tobacco use. G*Power is a computerized general power analysis program developed by Erdfelder, Faul, and Buchner (1996) that was used to determine adequate sample size. We determined that a medium effect would be sufficient to reveal a significant difference. Therefore, in the G*Power software we input a medium effect size of .03, an alpha of .05 and a power of .95. A minimum of 111 participants were deemed necessary to achieve a medium effect.

Results

Descriptive Statistics

Participants were 124 Black college students who ranged in age from 18 to 27 ($M=20.5$, $SD=1.75$). Descriptive statistics were calculated for anthropometric measures, (i.e., BMI, WHR) and BP; and for the following psychological distress measures, depression, anxiety, general stress and racial stress (see Table 1).

Correlation Analysis

A Pearson's R correlation was conducted to determine the relationship between and measures of stress and cardiovascular health indicators (see Table 2). There was a significant positive correlation between occupational stress and anxiety ($r=.31$, $p<.05$) and a significant negative correlation between financial stress and experiences with individual racism ($r=-.25$, $p<.01$), however, neither occupational nor financial stress were significantly correlated with CVD risk factors.

Analysis of Covariance (ANCOVA)

An ANCOVA was conducted for each of the dependent variables; i.e., BMI, WHR, and BP were entered as dependent variables. Depression, anxiety, general stress, cultural, individual and institutional racial stress and internalized racism were entered as independent variables for each analysis. All continuous variables were transformed into categorical variables. Two covariates, tobacco use and gender were included in the analysis. Tobacco use was included because it is a major risk factor for negative health outcomes. Gender was included as a covariate because there were more women than men in the study and for measures like waist to hip ratio there are differential indicators of health based on the numeric size of the waist to hip ratio.

BMI—There was a significant main effect for internalized racism on BMI ($F=4.55$, $df=2$, $p<.02$) (see Table 3). Further examination of the means revealed that participants in the high internalized racial stress category had higher BMIs ($M=30.59$, $SD=8.50$) than those in the moderate ($M=26.97$, $SD=6.65$) or low ($M=27.18$, $SD=6.15$) categories.

Waist to Hip Ratio—There were no significant effects of the independent variables on Waist to Hip ratio (see Table 4).

Systolic Blood Pressure—There was a significant main effect of depression on systolic BP ($F=3.87$, $df=2$, $p<.03$) (see Table 5). An examination of the means was inconclusive in that the majority of participants were in the normal or mild categories and less than 5% were moderately to severely depressed.

Diastolic Blood Pressure—There was a marginally significant main effect of individual racial stress on diastolic BP ($F=3.31$, $df=2$, $p<.05$). An examination of the means revealed that participants who scored high on individual racial stress had higher average diastolic BP across times 1 and 2 ($M=80.38$, $SD=9.44$) than participants who scored moderate ($M=75.83$, $SD=7.44$) or low ($M=78.00$, $SD=6.18$).

Discussion

Findings from the current study indicate that internalized racism was significantly associated with BMI. Specifically, it was found that participants who scored high on the internalized racism measure also had a higher BMI than those who scored low or moderate. Although there was no significance for WHR, this finding is in line with Tull et. al's study which found a significant relationship between internalized racism and abdominal obesity. Wyatt, Williams, Henderson and Walker concluded that in race-conscious societies, such as the United States, the negative self-evaluations of accepting negative cultural stereotypes as true (internalized racism) can have deleterious effects on cardiovascular health. Therefore, additional research is needed in this area of health inequity.

The finding that depression was associated with cardiovascular risk, specifically systolic BP, supports the “general distress hypotheses” (Todaro, Shen, Niaura, Spiro, & Ward, 2003).” The general distress hypothesis contends that negative emotional states created by anxiety and depression contribute to CVD risk. As stated in the literature review, researchers have found depression to be significantly related to cardiovascular disease (McElroy, et al. 2004; Van der Kooy, et al. 2007). More studies are needed to explore the mechanism by which depression is related to blood pressure and may contribute to increased cardiovascular risk.

The finding that individual racism was associated with diastolic BP is consistent with other research in this area. Armstead, Lawler, Gorden, Cross, and Gibbons (1989) found exposure to racist stimuli was associated with blood pressure increases among Black college students. Furthermore, McNeilly et al. (1995) found evidence that interactive confrontation with racism was associated with significant increases in cardiovascular reactivity and emotional distress. Individual racism includes discrimination and prejudice, which has consistently been found to impact multiple health outcomes. For example, Williams, Neighbors and Jackson (2003) found perceived racial/ethnic discrimination is associated with increased disease risk across various illnesses.

Considering the importance of culture on the thought and behavior of individuals it was surprising to find that cultural racism was not associated with any of the CVD risk variables. Although as we presented in the introduction research has examined the influence of racism on health outcomes in marginalized groups. Most of this research has explored individual experiences with racism rather than the systemic and structural impact of racism. A study

designed to capture the ways in which structural racism influences health may better capture the role that culture plays in racial stress.

Limitations of the Study

Limitations of the study included a limited sample size which consisted of a higher percentage of female participants relative to male participants. The study did not account for potential correlates of blood pressure weight and stress such as alcohol and substance use; therefore the possibility of these variables to exist as confounding variables cannot be ruled out (Tull et al., 1999). The study did not account for the coping style that participants used when confronted with racism. Brondolo and colleagues (2009) describe that coping with racism can involve multifaceted challenges included coping with interpersonal conflict, resulting negative emotions, managing the impact on blocked opportunities, and the potential damage to social identity and self-perception. Previous research indicates that coping style may complicate the association of racism and elevated blood pressure. For example, Clark and Gochett (2006) found that among Black young adults using a coping style of “talking to others” was associated with elevated BP among those who experienced high frequency of racism; whereas this coping strategy was associated with lower incidence of elevated BP among those who reported low frequency of racism. The complexity of coping style and racism may also explain the nonsignificant findings for cultural racism, internalized racism, and the CVD risk variables.

Conclusions & Future Research

This study emphasized the importance of examining the impact of stress in a young adult population. Findings suggested that experiences with racism and depression were significantly associated with indicators of CVD risk. The finding that individual racism was significantly associated elevated blood pressure suggests that efforts to reduce health inequities should focus individual level prevention strategies, and also include efforts to increase equity at the institutional and macro levels which impacts individual’s well-being. The finding that depression is associated with cardiovascular risk suggests that an overall wellness approach that considers both physical and psychological well-being of Black young adults could serve as a beneficial approach to preventing deaths due to cardiovascular disease.

Future studies should seek to delineate the specific mechanisms through which psychosocial stress and psychological distress impact cardiovascular health. Furthermore, additional research is needed to determine the types of coping mechanisms and protective factors that can decrease the impact of stressors and psychological distress. Further research is needed to determine culture-specific interventions that will benefit the cardiovascular health of Black American men and women. Finally, ongoing research is needed to determine what types of policies and institutional structures are necessary to address racial inequities and thereby promote well-being and wellness among Black Americans.

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Table 1

Demographics and CVD Risk Measures Percentages

Demographics	%		
<i>Classification</i>			
Undergraduate	96.7		
Graduate	3.3		
<i>Student Status</i>			
Full time	96.0		
Part time	4.0		
<i>Gender</i>			
Female	77.0		
Male	23.0		
CVD Risk Measures			
<i>BMI</i>			
Underweight	1.6		
Healthy	33.1		
Overweight	33.9		
Obese	31.5		
<i>Waist-to-hip ratio</i>	<i>Women (N=96)</i>	<i>Men (N=28)</i>	
Excellent	32	64.3	
Good	24	17.9	
Average	15	3.6	
High	27	14.3	
<i>Blood Pressure</i>	<i>Systolic</i>	<i>Diastolic</i>	
Normal	22.6	44.4	
Prehypertension	41.9	24.2	
Hypertension	11.3	7.3	
Missing	24.2	30	
Psychosocial Measures			
<i>Psychological Distress</i>	<i>Depression</i>	<i>Anxiety</i>	<i>General</i>
Normal	72.6	58.9	66.9
Mild	14.5	8.1	7.3
Moderate	2.4	8.9	12.1
Severe and Extremely	3.2	13.7	0.64
Missing	7.3	10.5	12.1

Demographics	%			
<i>Racial Stress</i>	<i>Cultural</i>	<i>Individual</i>	<i>Institutional</i>	<i>Internalized</i>
Low	29.0	40.3	49.2	30.6
Moderate	27.4	22.6	22.6	31.5
High	28.2	29.8	20.2	27.4
Missing	15.3	7.3	8.1	10.5

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Table 2

Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Depression	1													
2. Anxiety	.73 ^{**}	1												
3. Stress	.79 ^{**}	.75 ^{**}	1											
4. Cultural	.05	.01	.05	1										
5. Individual	.03	-.07	.11	.60 ^{**}	1									
6. Institutional	-.05	.02	-.02	.43 ^{**}	.51 ^{**}	1								
7. Internalized	.09	.10	.07	.03	-.10	.06	1							
8. Financial	-.06	.02	-.06	-.13	-.25 ^{**}	-.01	.03	1						
9. Occupational	-.13	.31 [*]	.31	.06	.22	.27	.07	-.01	1					
10. BMI	.11	.22 [*]	.06	.16	.03	.12	.15	-.03	-.20	1				
11. Waist (in)	.12	.22 [*]	.07	.17	.01	.07	.18	-.03	-.14	.94 ^{**}	1			
12. Waist to Hip	.07	.18	.03	.18	-.05	.01	.21 [*]	-.04	.01	.69 ^{**}	.85 ^{**}	1		
13. Systolic BP	.01	.03	.03	.12	-.06	-.02	.15	.20 [*]	.15	.41 ^{**}	.43 ^{**}	.34 ^{**}	1	
14. Diastolic BP	-.00	.05	-.02	.27 ^{**}	-.02	.09	.06	.04	-.13	.54 ^{**}	.51 ^{**}	.32 ^{**}	.63 ^{**}	1

^{**} Correlation is significant at the 0.01 level (2-tailed).

^{*} Correlation is significant at the 0.05 level (2-tailed).

Table 3

ANCOVA for BMI

IV	Type III Sum of Squares	df	Mean Square	F	Sig.
Depression	138.58	2	69.29	1.57	.22
Anxiety	94.37	4	23.59	.54	.71
General Stress	56.37	2	28.18	.64	.53
Cultural RS	82.47	2	41.24	.94	.39
Individual RS	101.81	2	50.91	1.16	.32
Institutional RS	80.26	2	40.13	.912	.40
Internalized RS	400.41	2	200.21	4.55	.02
Tobacco	6.94	1	6.94	.16	.69
Gender	29.20	1	29.21	.66	.42
Error	2507.64	57	43.99		
Total	63218.00	77			
Corrected Total	3964.80	76			

^aR Squared = .368 (Adjusted R Squared = .157)

Table 4

ANCOVA for WHR

IV	Type III Sum of Squares	df	Mean Square	F	Sig.
Depression	.00	2	.00	.32	.73
Anxiety	.00	4	.00	.10	.98
General Stress	.00	2	.00	.27	.77
Cultural RS	.01	2	.00	.82	.45
Individual RS	.00	2	.00	.13	.88
Institutional RS	.03	2	.01	1.92	.16
Internalized RS	.02	2	.01	1.37	.26
Tobacco	.00	1	.00	.45	.50
Gender	.02	1	.02	2.72	.10
Error	.38	56			.01
Total	48.87	76			
Corrected Total	.51	75			

^aR Squared = .260 (Adjusted R Squared = .008)

Table 5

ANCOVA for Systolic BP

IV	Type III Sum of Squares	df	Mean Square	F	Sig.
Depression	555.60	2	277.80	3.87	.03
Anxiety	41.07	3	13.69	.19	.90
General Stress	129.79	1	129.79	1.81	.19
Cultural RS	221.47	2	110.74	1.54	.23
Individual RS	152.65	2	76.33	1.06	.35
Institutional RS	32.85	2	16.42	.23	.80
Internalized RS	149.03	2	74.51	1.04	.36
Tobacco	148.11	1	148.12	2.06	.16
Gender	1011.42	1	1011.42	14.08	.00
Error	2945.64	41	71.84		
Total	951938.00	60			
Corrected Total	5165.18	59			

^aR Squared = .430 (Adjusted R Squared = .179)

Table 6

ANCOVA for Diastolic BP

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Depression	34.48	2	17.24	.56	.57
Anxiety	9.77	3	3.26	.11	.96
General Stress	34.19	1	34.19	1.11	.30
Cultural RS	62.49	2	31.25	1.02	.37
Individual RS	202.90	2	101.45	3.31	.05
Institutional RS	35.64	2	17.82	.58	.56
Internalized RS	2.94	2	1.47	.05	.95
Tobacco	72.18	1	72.19	2.35	.13
Gender	77.07	1	77.07	2.51	.12
Error	1257.04	41	30.66		
Total	370660.75	60			
Corrected Total	1945.54	59			

^aR Squared = .354 (Adjusted R Squared = .070)