Appalachian Girls' College Preparedness:

An Intervention Programs Comparison

By

Zetta Kay Nicely

A Dissertation Defense

Presented in Partial Fulfillment of the Requirements for the
Degree of
Doctor of Psychology
in
Counseling Psychology
in
the Department of Psychology
in
the College of Humanities and Behavioral Sciences
RadfordUniversity
Radford, VA
2012

Abstract

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This study compares two programs that designed to increase college readiness for Appalachian youth. High Rocks for Girls and Appalachian Arts and Studies in Schools (AASIS) are enrichment programs designed to empower and better prepare Appalachian high school students for attending college. The programs are structured quite differently. High Rocks is an intensive empowerment and educational program that works with girls throughout their junior high and high school careers. AASIS is coeducational and less intensive; it occurs both in students' high school classrooms and on Radford University's campus. The study focused on sophomore, Junior, and Senior high school students in both programs. It was expected that differences will exist between the groups on measures of traditional and nontraditional college readiness, sense of belonging, and risk and resiliency factors. Results from this study will shape programming for both AASIS and High Rocks, as well as add to the general knowledge about Appalachian First-Generation Student's needs. General findings will be shared with programs and sanitized data will become the property of the programs to use in program evaluation and development.

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CHAPTER I

Appalachian Girls' College Preparedness: An Intervention Programs Comparison

This study assesses the college readiness, resiliency, and levels of belonging for female Appalachian high school juniors and seniors. Participants were recruited from two programs designed to empower and prepare Appalachian youth – Appalachian Arts and Studies in Schools (AASIS) and High Rocks for Girls. Many rural Appalachian girls are the first in their families to attend college and face unique academic, cultural, and social barriers and advantages to secondary education. Data from program evaluations is often used to tailor policies and procedures to the identified strengths and needs of participants.

Appalachia

Broadly and geographically defined, "Appalachia" represents 420 counties and about 23 million people; Appalachia includes all of West Virginia and parts of Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia. About 42 percent of the region's population is rural – over twice the national average (Appalachian Regional Commission, 2008). Appalachia is an area rich with natural resources and beauty. The region produces over one third of coal mined in the United States. Appalachian coal represents one and half billion dollars each year (Energy Information Association, 2008). However, 3,030,896 Appalachians (13.2% of the population) live below the poverty line compared to 12.4% of the overall US population. In West Virginia, the percentage of those living in poverty rises to 17.9%. For the Appalachian regions of Kentucky and Virginia, the rates rise to 24.4 % and 15.4% respectively (ARC, 2008). It is often the areas with the most natural resources that have the highest rates of poverty (ARC, 2008). This discrepancy has led some Appalachian leaders (Lewis, Johnson, & Askins, 1978), to frame

their work with the people of the region with an internal colonial model. Lewis argues that not only do natural resources like coal, timber, and pulp wood leave the area and generate great wealth for outside interest, but the problems and environmental devastation caused by this extraction are blamed on the ignorance or deficiencies of the region's people.

Education in Appalachia

It is not only natural resources that are leaving Appalachia. Hopelessness and lack of opportunity have cultivated a "brain drain" with those bright enough to succeed elsewhere migrating out from the region (McLaughlin, Lichter, & Matthews, 1999; West Virginia Health Statistics Center, 2003). At this time, 76.8% of Appalachian adults have completed high school. Only 17% of Appalachian adults are college graduates (10% in Central Appalachia), compared to 24% of the national population. Many college-educated Appalachians migrate out of the region (West Virginia Health Statistics Center, 2003). Educational status is lowest in economically distressed counties (Haaga, 2004) such as those served by the High Rocks and AASIS programs.

For the counties served by High Rocks, the poverty rate is close to 20% - well above the national average; 80% of High Rocks girls qualify for free or reduced lunch in their high schools (Haaga, 2004; High Rocks, 2010). West Virginia is ranked 5th lowest in the nation for ACT and SAT scores; the state is ranked 6th worst in Advance Placement test scores when compared to other states (WV Higher Ed, 2006). At Pocahontas County High School (one of the three schools associated with High Rocks), the dropout rate is nearly 25% (High Rocks, 2010).

First-Generation Students

Over half of High Rocks girls are the first in their families to enroll in college at all. Nearly 70% would be the first in their families to earn a four year college degree (High Rocks,

2010). Many AASIS students are also first generation college students (AASIS, 2010). Overall, first-generation students (FGS) tend to have lower socioeconomic status and have lower educational aspirations than their continuing generation peers (Pratt & Skaggs, 1989; Terenzini, et al., 1996). First-generation students also differ from continuing generation students in family support, degree expectations and planning, and college preparation in high school. Some have argued they have lower levels of persistence and degree attainment, but these studies have very low effect sizes hinting that meaningful differences may not exist (Bradbury & Mather, 2009; Nunez & Cuccaro-Alamin, 1998). First-generation students and particularly Appalachian students are more likely not to receive financial support from their parents and to be employed while in school than continuing generation students (Hand & Payne, 2008).This adds not only stress related to financial resources, but the added stress of time management, role strain, and often transportation concerns (Bradbury & Mather, 2009). Greerberger and Steinberg (1986) found that the more high school students worked the worse their grades were. This trend continues in college, with more work resulting in lower grades; work schedules also negatively interfere with class and library access (National Center for Health Statistics, 2002). The more hours students work, the more likely they are to drop out of college (Health Statistics, 1998).

Rural Girls

Regardless of geographic or socioeconomic location, girls suffer from real and/or perceived sex role barriers to education and success. From birth, girls and boys are divided into pink and blue realms each with stringent rules and expectations (Bem, 1983; hooks, 1984). Egley and Steffen (1984) proposed a social role theory that asserts that gender roles are a cause and a result of sex segregated occupational roles - such as women must be nurses while men are doctors (Egley & Steffen, 1984; Egley, Wood, & Diekman, 2000). Despite feminist gains in

recent years, elementary school children still endorse many sex stereotyped occupational roles (Wilbuour&Kee, 2010; Sadker, Sadker, & Klein, 1986). Girls not only face stereotypes and sex role expectations in their career choices; they often also face these issues in the classroom as well.

As students, girls in the U.S. suffer difficulties in and out of school related to their gender (AAUW, 1992). Although girls often receive higher academic grades than boys, boys are called on more often, are given longer time to answer questions, and are provided more precise feedback than girls (Sadker & Zittleman, 2005). There have been many improvements to classroom equality in recent years, but Appalachian girls report that classroom gender equality is a goal not yet achieved (Spatiget al., 1998). They report that boys receive much more in school attention – boys are called on more in class, have greater freedoms at home and at school, and often are in trouble more than girls for the same behavior (Spatig, 1998).

Programs Participating In This Study

High Rocks for Girls.

High Rocks is a leadership program for young women ages 13-25 (High Rocks, 2010). High Rocks serves young women in three rural counties in Southeastern West Virginia- Pocahontas, Nicholas, and Greenbrier. The 2010 year marks High Rocks' 14th camp season. One of High Rocks' purposes is to improve college attendance rates and success rates, but no only anecdotal evidence exists regarding their progress toward these goals. High Rocks girls often say they are changed by the experience, but there is little data available on what factors contribute to success (High Rocks, 2010).

Girls who join High Rocks participate in the program through all four years of high school and are offered continuing support after graduation as alumnae. Currently, High Rocks

has over 100 women active in the alumnae network and approximately 70 girls actively participating in the program (High Rocks, 2010). High Rocks speaks of girls' success in terms of them "becoming leaders, taking responsibility for their own lives, completing advanced degrees, achieving successful careers, and giving to others" (High Rocks Best Practices, 2010). Many alums, interns and volunteers maintain a relationship with High Rocks; supporting programs, sending money, volunteering, and serving on the High Rocks board (High Rocks, 2010).

AASIS

The Appalachian Arts and Studies in the Schools (AASIS) program is currently in its 13th year. AASIS is well established in participating communities. The program has the following principal goals: (1) to encourage promising young Southwest Virginia students to pursue higher education and (2) to give these students an opportunity to learn more about the culture of the Appalachian region (AASIS, 2009). The primary purpose of the AASIS program is to improve college enrollment and success rates, but like High Rocks only anecdotal evidence exists regarding their progress toward these goals. There is very little demographic data available for AASIS and information tracking students after they complete the AASIS program is sparse (AASIS, 2010).

The AASIS program is comprised primarily of three types of stakeholders– teachers, scholars, and mentors. Many former AASIS scholars have become mentors after attending Radford University (personal communication, 2010). AASIS's eighteen local high school teachers collaborate to prepare lessons for their classrooms on Appalachian studies. This in-school Appalachian cultural instruction is not supported by Standards of Learning (SOL) and, it often requires great creativity from teachers to incorporate cultural activities within their standardized curriculum (Derrick, R. personal communication, November 6, 2009). AASIS

teachers identify students in their classrooms who are “college-able but not college-bound” (AASIS, 2010). These students become AASIS scholars who participate in the program for up to two years. Scholars are matched with mentors with whom they correspond throughout the school year. Mentors are Radford University students who volunteer with AASIS; they represent various majors and backgrounds.

There is little data available from either AASIS or High Rocks at this time. There is also very little data and information on the specific risk and resiliency factors for Appalachian High School Students planning to attend college. The present study sought to examine quantitative differences between participants in the High Rocks for Girls (HR) program and Appalachian Arts and Studies in Schools (AASIS) program. Measures of GPA and non-academic college readiness, Resiliency, General Sense of Belonging, and Sense of School Belonging were assessed. A quantitative design was used with an emphasis on the data and results being relevant and useful to the programs being evaluated.

Design and Research Methods

The present study examines differences between participants in the High Rocks for Girls (HR) program and Appalachian Arts and Studies in Schools (AASIS) program. This study assesses quantitative differences between these groups on measures of GPA and non-academic college readiness, Resiliency, General Sense of Belonging, and Sense of School Belonging. A quantitative design will be used with an emphasis on the data and results being relevant and useful to the programs being evaluated.

Participants

Program participants from both High Rocks for Girls and Appalachian Arts and Studies in the Schools (AASIS) were recruited for this study. All participants were High School

sophomores, juniors, and seniors attending rural, Appalachian schools. There were 26 total participants in this study. As the focus of this study is Appalachian girls, only data from female participants was analyzed. However, data from male and transgender male students was compiled and shared with the programs.

High Rocks participants were 4 female and 1 female-to-male transgender person who have been involved in the High Rocks program since the summer before their 9th grade year in high school. High Rocks participants were residents of Greenbrier, Pocahontas, or Nicholas counties in Southern West Virginia. Each participant attended their respective county high school.

AASIS participants were currently enrolled in the AASIS program in either Fort Chiswell High School (n=7) or Carroll County High School (N= 14). There were 10 male and 11 female participants.

Measures

College Survival and Success Scale. The College Survival and Success Scale is a measure that consists of 60 self-report items (Liptak, 2006). Participants respond to statements on a 4 point scale from 1(a lot like me) to 4 (not like me). These items are scored to provide a portrait of strengths and weaknesses in the following domains: (1) commitment to education, (2) self- and resource-management skills, (3) interpersonal and social skills, (4) academic success skills, and (5) career planning skills. Scores are summed and range from 12 to 48 on each subscale. The CSSS is a fairly new measure and has not been tested extensively. The developer reported that the CSSS demonstrated split-half correlation coefficients that ranged from .89 to .92. Test retest reliability coefficients ranged from .88 - .94 (Liptak, 2006). For the current study,

the total mean score on the CSSS was 188.40 (*SD* = 25.74). Analysis of internal consistency for his measure revealed an alpha coefficient of .95 for this sample.

Resiliency Scales for Children and Adolescents (RSCA). The RSCA is a self-report measure that consists of three stand-alone global scales of 20-24 questions each and ten subscales. Participants respond to items on a 5 point scale from 0 (never) to 4 (almost always). The scales and subscales are as follows: Sense of Mastery (optimism, self-efficacy, and adaptability), Sense of Relatedness (trust, support, comfort, tolerance) and Emotional Reactivity (sensitivity, recovery, impairment Prince-Embury, 2007). For adolescents ages 15-18 the RSCA has demonstrated alpha coefficients that ranged .87 - .97 (Prince-Embury, 2007; RSCA Manual, 2006). For the current study, the mean score on the Sense of Mastery scale was 52.13 (*SD* = 9.85) and had an alpha coefficient of .87. The Sense of Relatedness scale had a mean of 60.00 (*SD* = 10.60) with an alpha coefficient of .84. The mean for the Emotional Reactivity scale was of 32.73 (*SD* = 13.57) and the alpha coefficient was .91.

Sense of Belonging Instrument (SOBI). The SOBI consists of two separately scored scales (Hagerty & Patusky, 1995). Participants respond to all items on a 4 point scale from 1 (very relevant) to 4 (not at all relevant). The Sense of Belonging – Psychological (SOBI-P) measures characteristics of fit and valued involvement, while the Sense of Belonging – Antecedents (SOBI-A) provides a measure of a person's ability and desire to develop a sense of belonging. The SOBI-P is comprised of 18 items with scores that range from 18 – 72. The SOBI-P has high coefficient alphas ranging from .91-.93. The SOBI-A has 8 items and scores that range from 8 to 32.The SOBI-A has somewhat lower alphas that range from .63-.76 (Hagerty, Williams, & Oe, 2002).The correlation for the SOBI-P and SOBI-A has been reported as .45 (Hagerty & Patusky, 1995).The SOBI also demonstrated alphas of .95 in a study of Australian

Gay Men (Mclaren, Jude, & Mclaren, 2008).Alphas ranged from .77 (SOB-A) to .92 (SOB-P) in a group of elderly Australian adults. (Kissane & Mclaren, 2006). For the current study, the mean score on the SOBI-P was 42.60 (*SD* = 5.42) and it had an alpha coefficient of .89. The SOBI-A had a mean of 19.47 (*SD* = 3.48) with an alpha coefficient of .34.

Psychological Sense of School Membership Scale (PSSM*).* The Psychological Sense of School Membership Scale (PSSMS) consists of 18 self-report items (Goodenow, 1993). Scores on the PSSMS range from 18 to 90. Participants respond to items on a 5 point scale from 1 (strongly disagree) to 5 (strongly agree). Goodenow demonstrated the PSSMS' high internal consistency with alphas ranging from .71 to .88 for four samples of urban and suburban middle school youth. Hagborg (1994) reported an alpha of .88 for both middle and high school youth. He also found good test-retest reliability (4week interval) with a sample of 50 eighth graders (*r* = .78). For the current study, the PSSM had a mean of 66.47 (*SD* = 14.24) with an alpha coefficient of .93.

Demographics. The demographic questionnaire includes questions pertaining to the respondent regarding age, ethnicity, class status, generational status, program attended and county of residence. (See Appendix A).

Procedures

After obtaining approval from the Radford University Institutional Review Board, the researcher met with AASIS classroom teachers and explained the study. Classroom teachers believed in-class data collection would be more reliable as they feared students may rush or give poorly thought-out answers on Radford's campus visit. Teachers suggested that consent be sought in-class as well and agreed to solicit return of parental consent. Teachers solicited parental consent by sending home forms with students after AASIS meetings. Data was collected

by the primary researcher in two High Schools with one visit at each school. Data was collected in the library with all the AASIS students present that day who had returned parental consent forms. High Rocks' participant data was collected during afterschool tutoring sessions on the HRG campus in Pocahontas County.

Participants were given a short informed consent document and assent form before completing measures. All AASIS participants were given the measures, both male and female participants. For the purpose of this study, only female participants' data was analyzed. However, the sanitized data for both male and female participants will become the property of the AASIS program and may be used in their own program evaluation. Both AASIS and High Rocks programs will be given information and recommendations for procedures to safeguard data.

The survey took participants 30 to 45 minutes to complete. The survey packet contained a demographics sheet, the College Survival and Success Scale, Resiliency Scales for Children and Adolescents, Sense of Belonging Scale, and the Psychological Sense of School Belonging Scale. Participants completed measures in any order they preferred. Participants completed measures and demographic questionnaires using pen and paper methods. Raw data were entered into a dataset, cleaned, and analyzed. Each participant was assigned a participant code; no names were written on measures or on questionnaires. Measures and consent forms were stored separately in locked drawers in a locked office. Electronic data was stored on two password-protected computers as both an SPSS data set and as an MS Excel file.

Data Analysis

Data was analyzed using SPSS for Windows 20. Demographic variables and descriptive statistics were calculated including age, year in school, generational status, program, and college

plan. Differences between groups were analyzed using a one-way ANOVA. Subscales on the CSSS were intended to be analyzed using factor analysis to assess for latent variables of college readiness. However, the sample was too small to justify this analysis.

There is a very small sample size in this study and it is difficult to discover statistically significant results with such small groups. There are some promising findings related to effect size in the data analysis. Statistical significance with a *p*-value of .05 means that there is only a 5% chance that differences between two groups occurred by chance. As a result, researchers can say they are 95% sure that there is some measureable difference between groups on a given measure. However, significance is strongly affected by the number of participants. With very large groups, tiny differences may be significant but do not tell the researcher anything about the size or strength those differences. Effect size is not a measure of statistical significance; instead it is a measure of the percentage of total variance accounted for by a variable. In this study, effect size calculations measure the total variance explained by membership in the AAIS or High Rocks groups. An effect size of .18 would mean that 18% of the total variance of scores on a measure is accounted by program membership. Effect size helps explain the size of a difference– a statistically significant difference with a large effect size means there are meaningful, real-life differences between groups. Effect sizes are also useful in understanding non-significant differences in this study. A large effect size with non-significant significance does not tell us that differences exist between AASIS and High Rocks, but it does hint that perhaps we just do not have enough data to reveal differences. A large portion of the variance is explained by group membership, but there is not enough information to know if there are significant differences between groups.

For this study we used the following standards for effect size for Chi-square analysis: small ($\Phi^2 = .01$), medium ($\Phi^2 = .09$), and large ($\Phi^2 = .25$). For ANOVA we used the following standards: small ($\eta^2 = .01$), medium ($\eta^2 = .06$), and large ($\eta^2 = .13$).

Results

Sample Description

The overall sample collected for this study totaled 15 female participants. Eighty six percent of participants identified as Caucasian, 6.7% Native American/Caucasian, and 6.7% identified as "other" and indicated African American, Native American and Caucasian Ancestry. Participants were between ages 15 and 18 [age 16 (46.7%), age 15 (20%), age 18 (20%), and age 17 (13.3%)]. The mean age was 16.33 with a standard deviation of 1.0. Students were in grades 10-12 in high school. Juniors comprised the majority 53.3%, while sophomores made up 13.3% and seniors 33.3%.Eighty percent of students were first-generation college students with neither parent having attended a 4 year university while 20% were continuing generation students with at least one parent attending college. All students planned to attend college after graduation; 66% planned to attend a 4 year university while 33% planned to attend community college.

High Rocks Sample. Of the 4 High Rocks participants, the mean age was 17.25 with a standard deviation of 1.5. Fifty percent of students identified as Caucasian and 50% identified as "other" indicating African American, Native American, and Caucasian ancestry. Seniors made up 75% while sophomores made up 25%. Fifty percent were first-generation and 50% were continuing- generation. All High Rocks participants planned to attend a 4 year university.

AASIS Sample. Of the 11 AASIS participants, the mean age was 16 with a standard deviation of .632. All AASIS students identified as Caucasian. Seniors made up 18.2%, juniors, 72.7% and sophomores 9.1%. In this group, 90.9% were first-generation and 9.1% were

continuing- generation. Students who planned to attend a 4 year university were 54.5% while 45.5% planned to attend community college.

Analysis

The data was analyzed by a series of one-way ANOVAs comparing scores on measures between High Rocks and ASSIS groups. Nominal demographic data (generational status, parental education, and college plan) group differences were examined using a Chi-Square analysis. For all statistical tests, an alpha level of .05 was used.

Grade Point Average. Many students were not able to report their GPA, but were able to circle their letter grades from a list. The circled grades were re-coded into an estimated GPA with A's being coded as 4.0, A's and B's as 3.5, B's 3.0, B's and C's as 2.5, C's 2.0, C's and D's as 1.5, and D's as 1.0. One student did not report GPA or circle grades. Differences between High Rocks and AASIS student's reported GPA (for those who knew) and estimated GPA between groups was not significant [$F(1, 12) = 1.20$ $p = .27$, $\eta^2 = .09$]. The mean GPA for High Rocks students was 3.08 ($SD = .46$) while the mean GPA for AASIS students was 3.40 ($SD = .52$).

College Plan. All students planned to attend college. There were not significant differences between AASIS and High Rocks students' college plans to attend a 4-year university or a community college $\chi^2 (1, N = 15) = 2.73$, $p = .09$, $\Phi^2 = .18$]. The effect size is moderate meaning that with a larger sample it may be revealed that more High Rocks Girls plan to attend a 4-year university than AASIS students. See Table 1.1 for cross tabulation values.

Father Education. Father's education was calculated by two methods. Father education was first condensed into two groups calculated by determining if a participant's father had completed a 4 year degree. There were not significant differences between High Rocks and

AASIS students [χ^2 (1, N = 15) = .64, p = .43, Φ^2 = .03]. Then, father's education was calculated by dividing groups between those whose fathers had some college experience including those who had attended but not completed college, completed a 2 year community college degree, or a 4 year degree (Barry, Hudley, Kelly, & Cho, 2009; Billson & Terry). There were no significant differences using this definition either [χ^2(1, N = 15) = .69, p = .40, Φ^2 = .05]. Both these finding have small effect sizes. This indicates that even with a larger sample there may be few differences is fathers' levels of education between High Rocks and AASIS. See Table 1 for cross tabulation values.

Mother Education. As above, mother's education was calculated by two methods. Education was first condensed into two groups calculated by determining if a participant's mother had completed a 4 year degree. There were significant differences between groups [χ^2(1, N = 15) = 6.35, p = .01, Φ^2 = .42]. This means High Rocks mothers were more likely to be college educated than AASIS mothers. In fact, none of the ASSIS participant's mothers had completed a 4 year degree. The large effect size indicates real differences exist between groups. Mother's education was also calculated by dividing groups between those who had college experience including those who had attended but not completed college, completed a 2 year community college degree, or a 4 year degree (Barry, Hudley, Kelly, & Cho, 2009; Billson & Terry). There were no significant differences using this definition [χ^2(1, N = 15) = 1.76, p = .19, Φ^2 = .12]. However, the effect size is large. This means that with a larger sample it could be revealed that High Rocks Girls' mothers are more likely have some college experience than AASIS students. See Table 1.1 for cross tabulation values.

Generational Status. Generational status was calculated by determining if either of a participant's parents had completed a 4 year degree. Those who had neither parent complete a 4

Table 1.1

Cross Tabulation Table for College Plan, Parental Education, and Generational Status (N = 15)

Variable	AASIS N (%)	High Rocks N (%)
College plan		
Community College	5 (45.5%)	0 (0%)
4-Year University	6 (54.5%)	4 (100%)
Father's Education - Completed		
Completed College	1 (9.1%)	1 (25%)
No college degree	10 (90.9%)	3 (75%)
Father's Education-Attended		
Attended College	3 (27.3%)	2 (50%)
Did not Attend College	8 (72.7%)	2 (50%)
Mother's Education-Completed		
Completed College	0 (0%)	2 (50%)
No college degree	11 (100%)	2 (50%)
Mother's Education -Attended		
Attended College	4 (36.4%)	3 (75%)
Did not Attend College	7 (63.6%)	1 (25%)
Generation Status- Completed		
First-Generation	10 (90.9%)	2 (50%)
Continuing-Generation	1 (9.1%)	2 (50%)
Generation Status - Attended		
First-Generation	5 (45.5%)	0 (0%)
Continuing-Generation	6 (54.5%)	4 (100%)

year college degree were coded as first-generation. There were marginally significant differences in generational status between groups [$\chi^2(1, N = 15) = 3.07$, $p = .080$, $\Phi^2 = .20$]. This substantial effect size indicates High Rocks girls may be more likely to have a parent graduate from college than AASIS students with a larger sample. Generational Status was also calculated by dividing groups between those who had college experience including those who had attended but not completed college, completed a 2 year community college degree, or a 4 year degree. There were no significant differences using this definition [$\chi^2(1, N = 15) = 2.73$, $p = .10$, $\Phi^2 = .18$]. While results are not significant, the large effect size indicates real differences may exist with a larger sample.

College Survival and Success Scale (CSSS). The College Survival and Success Scale is a measure that consists of 60 self-report items on which participants respond to statements on a 4 point scale from 1(a lot like me) to 4 (not like me). These items are scored to provide a portrait of strengths and weaknesses in the following domains: (1) commitment to education, (2) self- and resource-management skills, (3) interpersonal and social skills, (4) academic success skills, and (5) career planning skills. Individual items on the CSSS were summed to produce an overall subscale score. On the CSSS differences between High Rocks and AASIS students were not significant. Of note, participants had above average scores on all subscales according to the measure developers' scale. Individual scores ranged from 22-48 on all subscales and had mean scores ranging from 34 to 39. For the Commitment to Education subscale there were no significant differences between AASIS and High Rocks students [$F(1, 13) = .46$, $p = .51$, $\eta^2 = .01$]. There were also no significant differences between AASIS and High Rocks students on the Self and Resource Management subscale [$F(1, 13) = .15$, $p = .71$, $\eta^2 = .01$]. Interpersonal and Social skills subscale had no significant differences between AASIS and High Rocks students

[$F(1, 13) = .60$, $p = .45$, $\eta^2 = .04$]. Academic Success Skills subscale revealed no significant differences between AASIS and High Rocks students either [$F(1, 13) = .303$, $p = .60$, $\eta^2 = .02$]. On the Career Planning Skills subscale, differences between AASIS and High Rocks students were non-significant [$F(1, 13) = .01$, $p = .92$, $\eta^2 = .00$]. See Table 1.2 for means and standard deviations for this measure.

Resiliency Scales for Children and Adolescents (RSCA). The RSCA is a self-report measure that consists of three stand-alone global scales of 20-24 questions each. Participants respond to items on a 5 point scale from 0 (never) to 4 (almost always) to provide a profile of strengths and weakness on the following scales: Sense of Mastery, Sense of Relatedness, and Emotional Reactivity. Scores on the RSCA were calculated by adding raw scores for each measure. As this is not a clinical measure in the current study, *t*-scores were not calculated using established norms on the RSCA. Individual items were summed to produce an overall subscale score. Differences between AASIS and High Rocks students on this measure were not significant. The Emotional Reactivity subscale did not reveal significant differences between AASIS and High Rocks students, but did have a medium effect [$F(1, 13) = .11$, $p = .74$, $\eta^2 = .10$]. AASIS students had a mean score of 32.00 (SD =14.42) while HR students had a mean score of 34.75 (SD= 12.61) on the emotional reactivity measure. Differences between AASIS and High Rocks students on the Sense of Mastery subscale were not significant, but also had a medium effect [$F(1, 13) = 1.37$, $p = .26$, $\eta^2 = .07$]. High Rocks students had a mean of 64.50 (SD = 7.93 while AASIS students' mean was 58.36 (SD = 11.29) on feelings of mastery. The self-reported relatedness scores for High Rocks and ASSIS students were not significantly different [$F(1, 13) = .98$, $p = .34$, $\eta^2 = .01$]. See Table 1.2 for means and standard deviations for this measure.

Table 1.2

Means and Standard Deviations for all Measures

Variable	AASIS M (*SD*)	High Rocks M (*SD*)	Total M (*SD*)
CSSS			
Commitment to Education	38.36 (7.88)	41.25 (5.06)	39.13 (7.18)
Self and Resource Management	38.82 (5.31)	37.75 (2.22)	38.53 (4.63)
Interpersonal and Social Skills	36.45 (6.55)	39.25 (1.71)	37.20 (6.11)
Academic Success Skills	34.18 (7.61)	36.25 (1.80)	34.73 (6.27)
Career Planning Skills	38.91 (7.61)	38.50 (4.80)	38.80 (6.81)
RSCA			
Sense of Mastery	49.63 (10.27)	56.00 (7.62)	51.13 (9.85)
Sense of Relatedness	58.36 (11.29)	64.50 (7.93)	60.0 (10.60)
Emotional Reactivity	32.00 (14.42)	34.75 (12.61)	32.73 (13.57)
SOBI-P	43.82 (5.49)	39.25 (4.03)	42.6 (5.42)
SOBI-A	20.18 (3.74)	17.50 (1.73)	19.47 (3.48)
PSSM	60.91 (12.06)	81.75 (6.02)	66.47 (14.24)

Sense of Belonging Instrument (SOBI). The SOBI consists of two separately scored scales. Participants respond to all items on a 4 point scale from 1 (very relevant) to 4 (not at all relevant). The Sense of Belonging – Psychological (SOBI-P) measures characteristics of fit and valued involvement, while the Sense of Belonging – Antecedents (SOBI-A) provides a measure of a person's ability and desire to develop a sense of belonging. For the SOBI, items 1 2, 3, 5,11,13,15,20,23,24, and 27were reverse scored. Items 1,3,5,7,8,10,11,13,15,16,18,19,20,22,23,24,25,and 27 were added to create the SOBI-P score. For the Sense of Belonging – Psychological subscale there were no significant differences between AASIS and High Rocks students [$F(1, 13) = 2.27$, $p = .16$, $\eta^2 = .14$] While differences are not significant, the large effect size indicates real differences may exist with a larger sample. The mean score for the SOBI-P for High Rocks students was 39.25 (*SD*= 4.03) while the mean was 43.82 (*SD*=5.49) for AASIS students. Items 2, 4,6,12,14,17,21, and 26 make up the SOBI-A

score. There were likewise no significant differences between groups on this subscale [$F(1, 13) = 1.85$, $p = .20$, $\eta^2 = .12$]. However, again the large effect size indicates real differences may exist with more participants. The mean score for the SOBI-A for High Rocks students was 17.50 ($SD = 1.73$) while the mean was 20.18 ($SD = 3.74$) for AASIS students. See Table 1.2 for means and standard deviations for this measure.

Psychological Sense of School Membership Scale (PSSM). The Psychological Sense of School Membership Scale (PSSMS) consists of 18 self-report items on a 5 point scale. This measure evaluates level of psychological membership to the High Rocks or AASIS program. On the PSSM items 3, 6, 9, 12, and 16 were reversed scored. Individual items were summed to produce an overall score. On this measure of program membership, there were significant differences between groups with High Rocks girls having higher scores than AASIS students[$F(1, 13) = 9.5$, $p = .01$, $\eta^2 = .42$)].This means that High Rocks girls have higher sense of membership to the High Rocks program than the AASIS students do to the AASIS program. The mean score for the PSSM for High Rocks students was 81.75($SD = 6.02$) while the mean was 60.91 ($SD = 12.06$) for AASIS students. Of note, the relationship of sense of membership and participant's program is strong using eta squared analysis (Nunnally, & Bernstein, 1994; Ferguson, 2009). See Table 1.2 for means and standard deviations for this measure.

Discussion

Comparisons between AASIS and High Rocks students on the following measures is discussed in this section; grade point average, college plan, father's education level, mother education level, generational College Survival and Success Scale, Resiliency Scales for Children and Adolescents, Sense of Belonging Instruments, and Psychological Sense of School Membership Scale.

Grade Point Average

There were no significant differences between groups on reported grades or grade point average. Many students were not able to report their GPA, but were able to circle their letter grades from a list. Many students did not know their GPA. In AASIS groups, students asked what a Grade Point Average was and were unfamiliar with the term. There was a moderate to strong effect size ($\eta^2 = .09$) indicating that program memberships accounted for 9% or the total variance of GPA. AASIS students had a higher GPA, but not significantly higher with a sample this size. With a larger sample, significant differences may be revealed, but also differences may be a product of estimated GPA. All the HR students knew their GPA while most AASIS students circled broader letter grade categories as they were not aware of their GPA. Since GPA was estimated for more AAIS students from broad letter grade categories, the AASIS students may have higher estimated GPAs than actual GPA.

College Plan

All students in this study planned to attend college. There were not significant differences between groups' college plans to attend a 4-year university or a community college. Given that 80% of the total sample was first-generation, the fact that all students had some plan to attend college is interesting as Terenzini and colleagues (1996) assert that first-generation college students have lower levels of educational attainment than their continuing-generation counterparts. This may indicate that both the High Rocks and AASIS program attract students with college aspirations or the programs themselves foster college plans.

Father's Education

Father's education was calculated by two methods. Father education was first condensed into two groups calculated by determining if a participant's father had completed a 4 year degree.

There were not significant differences between groups. Traditionally, the method of defining first-generation college status is more inclusive and defined as students whose parents did not graduate from a college (Hand & Payne,2008). However, it is often poorly explained as to whether "college" is limited to a 4-year degree program or if a 2-year associate's degree program would also be included. Many advocate strictly defining first-generation as students for whom neither parent as ever enrolled in college (Nunez, & Cuccaro-Alamin, 1998; Horn, & Nuñez, 2000; Choy, 2001). To accommodate both definitions, father's education was also calculated by dividing groups between those whose fathers had some college experience (including those who had attended but not completed college, 2 year degrees, and a 4year degrees) and those who had never enrolled in college (Barry, Hudley, Kelly, & Cho, 2009; Billson & Terry). There were no significant differences using this definition either.

Mother's Education

As above, mother's education was calculated by two methods. Education was first condensed into two groups calculated by determining if a participant's mother had completed a 4 year degree. There were significant differences between groups. This means more High Rocks mothers were college educated than were AASIS mothers. In fact, none of the ASSIS participants' mothers had completed a 4 year degree. The effect size for this comparison is large (Φ^2= .42). Mother's education was also calculated by dividing groups between those who had some college experience (including those who had attended but not completed college, 2 year degrees, and a 4year degrees) and those who had never enrolled in college (Barry, et al, 2009; Billson & Terry). There were no significant differences using this definition, but again there was a large effect size (Φ^2= .12). This large effect suggests further study as it may be more likely for High Rocks mothers to have attended college than AASIS mother; this may be revealed with a

larger sample. This may be an important area for exploration in future research as Stevenson and Baker (1987) focused on the mother as the primary agent of socialization and educational aspirations. Mothers' levels of education are often a stronger influence on children's educational abilities than fathers' (Mercy & Steelman, 1982). Also, Otto (2000) demonstrates that adolescents look more to their mothers for general career advice.

Generational Status

Generational status was calculated by determining if either of a participant's parents had completed a 4-year degree. Using the traditional definition, those who had neither parent complete a 4-year college degree were coded as first-generation. There were marginally significant differences in generational status between groups (p = .08) and this had a large effect size (Φ^2 = .20). Generational Status was also calculated by dividing groups between those who had college experience including those who had attended but not completed college, completed a 2 year community college degree, or a 4 year degree. There were no significant differences using this definition, but again a large effect (Φ^2= .18). Both analyses suggest that continuing-generation status was overrepresented among High Rocks girls. This finding is not surprising given that the AASIS program specifically targets "college capable, but not college bound" students and indicates many students in the program are first-generation. However, both programs report large numbers of "first in family to attend college" students. Perhaps this is worth further examination in both programs. Demographic information similar to those used in this study could be easily obtained and would prove useful in tracking first-generation students in both programs.

College Survival and Success Scale (CSSS)

There were no significant differences between groups on any subscale of the CSSS. Subscales are scored to provide a portrait of strengths and weaknesses in the following domains: (1) commitment to education, (2) self- and resource-management skills, (3) interpersonal and social skills, (4) academic success skills, and (5) career planning skills. Most participants had above average scores on all subscales. This could indicate that students were mature and had high levels of college readiness. The measure has very high face validity and all items are positively worded. It is possible students overestimated their abilities. Validation of the measure by comparing scores with actual college performance may be useful for developers of the measure. Some students seemed interested in reading suggestions for improving skills in areas, but most seemed pleased to have scored so well. Since the CSSS is a relatively new measure, less is known about its validity, and further studies are needed to validate this measure with high school students and first-generation students.

Resiliency Scales for Children and Adolescents (RSCA)

As this is not a clinical measure in the current study, *t*-scores were not calculated using established norms on the RSCA. Differences between groups on this measure were not significant on any of the RSCA scales (Sense of Mastery, Sense of Relatedness, and Emotional Reactivity). This means that AASIS and High Rocks students demonstrated similar levels of resiliency and strengths. Resiliency is a focus of the High Rocks program; empowerment, community building, and self-efficacy are often incorporated in High Rocks programming. AASIS program focuses primarily on cultural education and college entrance issues (application to school, financial aid, living on campus, etc.). Findings indicate that High Rocks and AASIS students similarly feel connected to others, masterful, and have equal control of their negative

emotions. Of note, the Emotional Reactivity Subscale had a substantial effect size ($\eta^2 = .10$). Though not significant, High Rocks girls had higher Emotional Reactivity scores. Perhaps with a larger sample, real differences between High Rocks and AASIS students may be revealed. This is interesting given the focus of the High Rocks program on community building, discipline, and leadership. Issues of emotional reactivity and positive coping are not part of the current AASIS program. Emotional reactivity is categorized on the RSCA as a "risk factor" that affects positive coping on the Sense of Mastery and Sense of Relatedness scales. This area begs future attention as a research focus in the High Rocks program as this seems to be counterintuitive to High Rocks' goals and interventions. Lower emotional reactivity scores in the AASIS program may also be useful in tailoring programming to maximize strengths of AASIS students.

Sense of Belonging Instrument (SOBI)

The Sense of Belonging – Psychological (SOBI-P) scale measures characteristics of fit and valued involvement, while the Sense of Belonging – Antecedents (SOBI-A) scale provides a measure of a person's ability and desire to develop a sense of belonging. There were no significant differences on the SOBI subscales between AASIS and High Rocks. The SOBI is a measure of belonging overall and is not specific to program belonging. This means that, in general, High Rocks and AASIS students feel similar levels of belonging in their communities, families, and peer groups. We know Appalachian students have a strong sense of belonging to their communities and geographic places. Appalachian students often express a strong desire to be both emotionally and geographically close to their families (Bradbury & Mather, 2009; Hand & Payne, 2008). Close networks of both immediate and extended family is a hallmark of Appalachian culture and values (Jones, 1996). It is important to note, both scales on the SOBI had large effect sizes between AASIS and High Rocks students. AASIS students had higher, but

not statistically significant, scores on sense of belonging measures. Again, significant differences may be revealed with a larger sample. As the AASIS program seeks to increase Appalachian cultural ideas and identity, perhaps the general sense of belonging is influenced by AASIS place-based programming. Increased sense of cultural belonging seems to fit with AASIS program goals and certainly warrants further study.

Psychological Sense of School Membership Scale (PSSM)

The PSSM is a measure of psychological sense of membership to the High Rocks or AASIS program. There was a significant difference between groups with High Rocks girls having higher scores. This indicated that High Rocks girls have a stronger sense of membership to the High Rocks program than the AASIS students to the AASIS program. Given the level of involvement in the High Rocks program, including overnight visits, afterschool meetings, and the increased time commitment of the High Rocks program this finding is not surprising. Data was collected from only 4 High Rocks girls during afterschool tutoring; these girls had a very high level of involvement in the program. It was the opinion of High Rocks leadership that these girls were the "most active" in the program and certainly the most active in the upper class grades (10^{th} -12^{th}grade). It seems intuitive that these girls would have high levels of affiliation with High Rocks reflected by their scores on the PSSM. This finding is intriguing in the light of the data trends on the Sense of Belonging Instrument. While there were not significant differences on the SOBI, substantial effect sizes hint that changes may exist in a larger sample. High Rocks students had significantly higher PSSM scores, but not higher SOBI scores. Further research could perhaps seek to find differences in general sense of belonging and program membership as outcome measures or thorough involvement in the program. The possible

differences in general sense of belonging and sense of program membership suggests further research in both programs is called for.

Strengths

A strength of this study is that it provides more information than is currently available to each program about their students' demographic information, generational status, college plans, strengths and areas of growth. Data collection troubles could be viewed as useful information for the programs in themselves. For example, the difficulty of participant recruitment due to varying institutional, classroom instructor, and student investment provides critical information for both the AASIS and High Rocks programs. A deeper understanding of students' profiles, needs, and strengths could be used to improve continued involvement in the programs, tailoring programming, and perhaps soliciting financial and community support. This study's results provide each program an opportunity to begin to catalogue and collect basic demographic information about participants. It also provides a concrete way to discuss what program leaders feels is more important to know about students. The measures used in this study could be used as before and after measures to evaluate program goals and outcomes. Also, currently, both programs could benefit from operationalized definitions of the students they seek to help for funding sources. For example, the AASIS program may be eligible for specialized funding as so many of their students are first-generation and all have college aspirations.

Although sample size is small and many results are non-significant, this information can be used to structure programming to meet student needs and to design future outcome research or program evaluation. Both programs have engaged and energetic students; however, little demographic or outcome data has been available prior to the current study. Outcome data can offer concrete proof that the program is meeting its goals and aspirations; it can also provide

clear assessment of areas of the program that are not effective. Both programs work very hard and have staff who dedicate many volunteer hours to the program, by clearly identifying "what works" and "what doesn't work," staff may be able to budget energy and time towards the most effective interventions. Outcome research can also increase investment from outside stakeholders. For example, it appeared that AASIS was valued differently by the various school systems and teachers. Outcome research could increase energy and investment from school leadership and parents.

With only 15 participants, it would be very difficult to find differences between groups. It is notable that while few significant results were found with such a small sample size, effect sizes are quite large on several measures between groups. This hints that true differences may exist and may be revealed with more participants. Outcome research could be integrated into the beginning processes of each program or collected as part of program involvement.

Limitations

Sample Size. *A* major limitation of this study is the small sample size. The programs themselves presented a limited sample to begin with, although programs believed there would be a high level of participation from all stakeholders. Originally researchers and programs anticipated 80 AASIS students and 25 High Rocks students; these sample numbers were small but represented a large portion of female sophomores, juniors, and seniors in both programs. However, this project required several layers of the consent process. School systems, superintendents, principals, classroom teachers, parents, and students themselves all needed to give consent to collect data from participants. This consent process presented several issues. Five of the seven county school systems and high school principals with AASIS students were originally supportive of data collection in the classroom. One of these principals withdrew his

support later in the school year as he had forgotten about the proposed research and felt there was not time with other state examination and educational requirements. In the remaining four schools, there were varying levels of classroom teacher involvement. Teachers expressed difficulty organizing AASIS meetings and reported poor student attendance on club days and meetings. Very few parental consent forms were returned even after multiple copies were distributed. Data was collected from two schools in which teachers were very active in organizing students and the return of consent forms. Student absence from school on data collection days was also a factor. Of note, on both of these collection dates students were highly motivated, seemed excited about the AASIS program, and peppered the researcher with questions related to college attendance. In the High Rocks sample, program organizers were active in recruiting participants, but found that there was poor attendance to weekly tutoring and other High Rocks programming by upper class students. There appear to be very different ideas about ways to define "active" High Rocks members among staff. Despite extending consent return deadlines, postponing data collection school visit dates, and frequent contact with classroom teachers the primary researcher exhausted all available participants in both programs for timely data collection.

External Validity. The small sample size, involvement in each program, and limited program membership make these findings unique to the AASIS and High Rocks programs. Data should be viewed as phenomenological rather than as revealing overall trends in Appalachia or in girls who express interest in attending college. Data is most valuable in discussing the strengths and limitations for the girls participating in both High Rocks for Girls and ASSIS. It provides a good starting place for future data collection, but should be interpreted with care. Data will be

shared with programs; it is hoped it will be used to tailor programming to Appalachian students' needs and maximize strengths.

CHAPTER II
LITERATURE REVIEW

Appalachian Girls' College Preparedness: An Intervention Programs Comparison

This study assesses the college readiness, resiliency, and levels of belonging for female Appalachian high school juniors and seniors. Participants were recruited from two programs designed to empower and prepare Appalachian youth – Appalachian Arts and Studies in Schools (AASIS) and High Rocks for Girls. Many rural Appalachian girls are the first in their families to attend college and face unique academic, cultural, and social barriers and advantages to secondary education. Data from program evaluations is often used to tailor policies and procedures to the identified strengths and needs of participants.

Appalachia

Broadly and geographically defined, "Appalachia" represents 420 counties and about 23 million people; Appalachia includes all of West Virginia and parts of Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia. About 42 percent of the region's population is rural – over twice the national average (Appalachian Regional Commission, 2008). Appalachia is an area rich with natural resources and beauty. The region produces over one third of coal mined in the United States. Appalachian coal represents one and half billion dollars each year (Energy Information Association, 2008). However, 3,030,896 Appalachians (13.2% of the population) live below the poverty line compared to 12.4% of the overall US population. In West Virginia, the percentage of those living in poverty rises to 17.9%. For the Appalachian regions of Kentucky and Virginia, the rates rise to 24.4 % and 15.4% respectively (ARC, 2008). It is often the areas with the most natural resources that have the highest rates of poverty (ARC, 2008).This discrepancy has led some Appalachian leaders (Lewis, Johnson, & Askins, 1978), to frame their

work with the people of the region with an internal colonial model. Lewis argues that not only do natural resources like coal, timber, and pulp wood leave the area and generate great wealth for outside interest, but the problems caused by this extraction and environmental devastation are blamed on the ignorance or deficiencies of the region's people.

Education in Appalachia

It is not only natural resources that are leaving Appalachia. Hopelessness and lack of opportunity have cultivated a "brain drain" with those bright enough to succeed elsewhere migrating out from the region (McLaughlin, Lichter, & Matthews, 1999; West Virginia Health Statistics Center, 2003). At this time, 76.8% of Appalachian adults have completed high school. Only 17% of Appalachian adults are college graduates (10% in Central Appalachia), compared to 24% of the national population. Many college-educated Appalachians migrate out of the region (West Virginia Health Statistics Center, 2003). Educational status is lowest in economically distressed counties (Haaga, 2004) such as those served by the High Rocks and AASIS programs.

The benefits of a college education are numerous both to individuals and to society in general. College graduates earn 73% more than high school graduates over the course of their lives (Baum & Payea, 2005). College graduates have much lower unemployment and poverty rates than high school graduates. The income gap between high school and college graduates continues to increase over time. Higher earnings and more secure employment result in college graduates contributing more to tax revenue. College graduates often report that they are in better health, have lower smoking and incarceration rates, and engage in more volunteerism than those who did not graduate from college (Baum &Payea, 2005).

For the counties served by High Rocks, the poverty rate is close to 20% - well above the national average; 80% of High Rocks girls qualify for free or reduced lunch in their high schools (Haaga, 2004; High Rocks, 2010). West Virginia is ranked 5th lowest in the nation for ACT and SAT scores; the state is ranked 6th worst in Advance Placement test scores when compared to other states (WV Higher Ed, 2006). At Pocahontas County High School (one of the three schools associated with High Rocks), the dropout rate is nearly 25% (High Rocks, 2010).

Family poverty and parents' educational status are associated with Appalachian students' educational attainment; community and parent education levels are associated with college goal setting (Brown et al., 2009). Students from poorer communities and families have trouble setting and achieving college goals. Academic performance decreases with family income (Brown et al., 2009). Financial stressors, lack of educated role models, and low levels of familiarity with college culture compromise students' ability to establish goals, apply to, and succeed in college (Brown et al). Students often feel dependent on their parents and community members' advice, but for many Appalachian students there are few people they know who have been to college at all. College life, classroom politics, study habits, and social concerns are a complete mystery to family members who have not been to college.

Cultural Considerations

Appalachian values differ from the dominant culture in some aspects (Jones; 1996; Lemon, Newfield, & Dobbins, 1993) these differences make adjusting to leaving the region and college life difficult. These values can include kinship ties, place-boundedness, acculturation stress, stereotypes, and life satisfaction.

Kinship ties. Appalachian students often express a strong desire to be both emotionally and geographically close to their families (Bradbury & Mather, 2009; Hand & Payne, 2008).

Close networks of both immediate and extended family is a hallmark of Appalachian culture and values (Jones, 1996). Family provides many Appalachians with information, friendship, emotional and monetary support (Bryan & Simmons, 2009; Hennon & Photaidis, 1974; Lemon, Newfield, & Dobbins, 1993). This family-based social capital serves as a strength, especially when there is lower financial capital (Dyk & Wilson, 1999).Kinship ties can be a strong source of social support for Appalachian students, but can also serve as barriers to education.

Chenoweth and Galliher (2004) found that West Virginian students often chose not to attend college or to attend someplace close to home because of the ties to their home communities. Bradbury and Mather (2009) found that many Appalachian students had daily contact with family members and continued involvement in family activities on regular basis. Many students had frequent contact with grandparents and extended family as well. This family support was helpful in facilitating a successful adjustment to college, but could also serve as a stressor. Worries and concerns at home percolated into college life. Some students visited home every weekend because they were needed to help with child and elder care and to assist with chores (Bradbury & Mather, 2009; Bryan & Simmons, 2009). Ties to home are not related strictly to family but also to the land and the history associated with their families and the land (Chenoweth & Galliher, 2004). Hand and Payne (2008) found that many students reported that they would also miss the mountains if they left home.

Place-boundedness. A common theme in Appalachian literature is the deep-seated connection of Appalachians to place, people, and nature (Jones, 2007; Purdy, 2007). Baldwin (1996) calls this connection “cultural place-boundedness.” Many times, the first questions of new interactions address geographical origins and familial ties. This place connectedness is especially salient for Appalachians who are faced with leaving the region to find employment or go to

school (Salyers & Ritchie, 2003). For many High Rocks girls for example, the nearest community college is over an hour away on roads often rendered impassable by winter weather. The nearest university is an over two and a half hour drive. There are limited employment opportunities in Appalachia; of the jobs that are available, most do not require a college degree (Peters, Wilson, & Peterson, 1986). Many of the jobs available are low paying or very dangerous; most have very few opportunities for advancement. Appalachian students in college report that their high school friends who take local jobs often make more money than can be earned with a college degree. The students seemed quite cognizant that many of the local, well-paying jobs are high risk and noted that college "at least won't kill them" (Hand & Payne, 2008). Appalachian students may feel that they need to return to fill needs for services in their home communities despite limited romantic, social, or career opportunities (Bryans & Simmons, 2009). Students may also feel compelled to return to their home communities because home feels the most culturally comfortable for them.

Acculturation stress. Appalachian culture is in many ways, "invisible" since there are not concrete, external markers of identity (Hand & Payne, 2008; Lemon et al., 1993; Dees, 2006). Loyal Jones (1996) describes Appalachians as independent, self-reliant, proud, neighborly, hospitable, humble, modest, patriotic, and having a good sense of humor. Students from Appalachia report that they experience a "culture shock" when first attending college but also find they receive little support in the adjustment (Dees, 2006; Bryan & Simmons, 2009: Hand & Payne, 2008). Students may not know how to interact with faculty and other students, meet expectations, or navigate college environment (Bradbury & Mather, 2009). As they become more comfortable and better understand of ways to adjust, Appalachian students often feel like they have "separate identities" at home and at school (Bryan & Simmons, 2009; Dees, 2006).

Their families and friends at home may disapprove of their "educated" ways or feel that their behavior is disloyal in some way.

Family members may feel threatened by the changes in students. Dees (2006) asserts that developing an integrated bicultural understanding of themselves is important work for Appalachian students, but often faculty and student engagement programs overlook this "invisible" culture. This can mean that Appalachian students feel quite isolated in their development of bicultural identity. They, like their faculty, may assume that because they "look like" the dominant culture their experience of college must be the same. Appalachian students may struggle with communicating acculturation related stressors to others. Mountain students may also experience conflict with discussing their cultural identity because of perceived or real negative stereotypes.

Stereotypes. Many people overlook Appalachians as an ethnic group. However, when there is awareness, most commonly the images of Appalachians in popular culture are negative. The hillbilly stereotype is often portrayed as a gun toting, illiterate, toothless simpleton. Teens are particularly sensitive to internalizing media messages (Beullens, Eggermont, & Van den Bulck, 2008). The "hillbilly" myth is perpetuated in television and movies (*Beverly Hillbillies, Hee Haw, The Dukes of Hazzard, The New Beverly Hillbillies, and Deliverance*) as well as comics (*Little Abner, Snuffy Smith).* The success of Jeff Foxworthy's Blue Collar Comedy Tour that grew out of his "you might be a redneck if …" stand up routine seem to illustrate the notion that "Hillbillies appear to be the last acceptable ethnic fools" (Speer, 1993, p. 18).

When studying adults' Appalachian perceptions, Raitz and Ulack (1991) found differences when they compared those who lived in Appalachia and identified as Appalachian (insider), those who lived geographically in the region but did not identify as Appalachian

(cognitive outsider), and those who neither lived in the region nor identified as Appalachian (residential outsider). Cognitive outsiders held more negative views, while insiders associated more positive attributes to the region and its people. Residential outsiders held more neutral opinions about the region. There are no known studies of adolescents' Appalachian perspectives of their own culture.

Although, there are commonalities among Appalachians, the culture is not homogenous. Banks, Billings, and Tice (2007) warn against over- generalizing or universalizing Appalachian culture. They assert that the region is markedly stratified, internally class-bound and often the harshest dialogue of the region's poor comes from within the region. Many times, Affrilachian (Appalachian African Americans) are completely overlooked as many have the idea that all Appalachian mountain people are of Scotch-Irish descent (Billings, Norman, & Ledford, 2001).

Stereotypes may follow Appalachian students into their college classrooms as well. Conflicting ideas and values may lead to a fissure in an Appalachian student's relationship with professors. Dees (2006) reports that often teachers have the ideas that rural (and especially Appalachian) ways are simplistic and lacking sophistication. Students often mirror their teachers' expectations of them (Vroom, 1964; Persely, 1973). Students perceive that their values are disregarded and may internalize these stereotypes or withdraw from faculty. This is harmful to both the students learning and to their adjustment to college. Students are forced to either scoff at their cultural upbringing or defend it in campus situations in which they are outnumbered. Many students withdraw from faculty, do not ask for assistance when needed, and are personally affronted by the faculty member's lack of respect for their culture (Dees, 2006).

Life satisfaction. Another issue that presents a potential conflict surrounds life and educational values assumed by cognitive and residential outsiders. The desire to change

Appalachians in ways that are inconsistent with their values is a problem identified by Wilson and Peterson (1988) as counterintuitive to any life "improvements" outsiders seek to make. For Appalachian youth "quality of life" is measured a bit differently than it is in the dominant culture. Appalachians appear to place more value on subjective measures of life satisfaction, rather than solely on more objective measures (Wilson & Peterson, 1988). Self esteem, marital status, and financial security were objective predictors, but educational and occupational achievement did not predict life satisfaction for Appalachian youth. Self perceptions about attainment of goals related to formal educational attainment, children, and proximity to childhood homes were predictive of overall quality and satisfaction of life (Wilson, Henry, & Peterson, 1997). This likely means that for some Appalachian students, educational and career attainment goals are not as heavily weighted as connections to home and family. The pull of their home communities and families may be stronger for Appalachian students than for other first-generation students and the desire for education may be easily overshadowed.

First-Generation Students

Over half of High Rocks girls are the first in their families to enroll in college at all. Nearly 70% would be the first in their families to earn a four year college degree (High Rocks, 2010). Many AASIS students are also first generation college students (AASIS, 2010). Overall, first-generation students (FGS) tend to have lower socioeconomic status and have lower educational aspirations than their continuing generation peers (Pratt & Skaggs, 1989; Terenzini et al., 1996). First-generation students also differ from continuing generation students in family support, degree expectations and planning, and college preparation in high school. Some have argued they have lower levels of persistence and degree attainment, but these studies have very low effect sizes hinting that meaningful differences may not exist. First-generation students and

particularly Appalachian students are more likely not to receive financial support from their parents and to be employed while in school than continuing generation students (Hand & Payne, 2008).This adds not only stress related to financial resources, but the added stress of time management, role strain, and often transportation concerns (Bradbury & Mather, 2009). Greerberger and Steinberg (1986) found that the more high school students worked the worse their grades were. This trend continues in college, with more work resulting in lower grades; work schedules also negatively interfere with class and library access (National Center for Health Statistics, 2002). The more hours students work, the more likely they are to drop out of college (Health Statistics, 1998).

First-generation students often feel pressure to succeed for their whole family. FGS are frequently viewed as delegates and ambassadors for their families (London, 1992). Hand and Payne (2008) found that students reported that family messages about education shaped their commitment to school – even if their parents did not attend college. For Appalachian students, this pressure to succeed is often compounded by tight knit communities and how few attend college. Appalachian students report feeling like they "represent" not only their families but also their schools, churches, teachers, and friends (Bryan & Simmons, 2009). First-generation students carry a heavy load with them to college. They must navigate college without traditional (cultural, economic, experiential) support from their parents or communities. Appalachian students may also feel the financial burden of their education on themselves and their families due to limited resources. Financial commitments and anxieties may increase the performance pressure. First-generation students must also exist between cultures and many times create new integrated identities. This pressure manifest differently at times for Appalachian students because of the "invisibility" of their culture and strong ties to home, family, and geography.

Rural Girls

Regardless of geographic or socioeconomic location, girls suffer from real and/or perceived sex role barriers to education and success. From birth, girls and boy are divided into pink and blue realms each with stringent rules and expectations (Bem,1983; hooks, 1984). Egley and Steffen (1984) proposed a social role theory that asserts that gender roles are a cause and a result of sex segregated occupational roles -such as women must be nurses while men are doctors (Egley & Steffen, 1984; Egley, Wood, & Diekman, 2000). Despite feminist gains in recent years, elementary school children still attribute many sex stereotyped occupational roles (Wilbuour & Kee, 2010; Sadker, Sadker, & Klein, 1986).Girls not only face stereotypes and sex role expectations in their career choices, they often also face these issues in the classroom as well.

As students, girls in the U.S. suffer difficulties in and out of school related to their gender (AAUW, 1992). Although girls often receive higher academic grades than boys, boys are called on more often, are given longer time to answer questions, and are provided more precise feedback than girls (Sadker & Zittleman, 2005). There have been many improvements to classroom equality in recent years, but Appalachian girls report that classroom gender equality is a goal not yet achieved (Spatiget al., 1998). They report that boys receive much more in school attention – boys are called on more in class, have greater freedoms at home and at school, and often are in trouble more than girls for the same behavior (Spatig, 1998).

Women anticipate more barriers to education than male participants overall regardless of class or ethnicity (McWhirter, 1997). Although there is little research of the experience for Appalachian girls, barriers to education may be greater. Maggard (1990) reported that the Appalachian economic system is sex segregated. Women have fewer employment opportunities overall and are often found working the lowest status, lowest paying jobs. In working class

families, Appalachian women are often economically dependent on partners and family members (Maggard, 1990). Maggard asserts that "Appalachian women are particularly vulnerable to poverty, remaining poor or slipping in and out of poverty" (p. 5). Young mountain women often preferred paid labor to domestic roles (Spatig, 1998), but felt limited in their occupational choices and in their educational paths. Appalachian girls reported feeling confined to teaching and nursing as college majors (Spatiget al., 1998). Although there has been some growth of women in Math, Science, and Technology classrooms, women are still quite outnumbered in these fields nationally (AAUW, 2010). Mountain girls often feel backed into care giving roles in their careers and at home as many have higher responsibilities to care for younger siblings and relatives while their parents work (Spatig et al., 1998).

An Appalachian adolescent girl may also find herself as caregiver of her own child. Stereotypes about "barefoot and pregnant" Mountain women are grossly overrepresented in popular media. There has been a recent increase in teen pregnancy nationally and this is also true in Appalachia. The United States has the highest teenage pregnancy rates of all Western nations (Chapman & Sheppard, 2008). From 1991-2004, teen pregnancy decreased by 34% in the nation as a whole. However, in 2006 teen pregnancy rates increased for the first time in over a decade (Chapman & Sheppard, 2008). Experts feel this is linked to the increase in adolescent sexual activity and decrease in condom use (only 61% of sexually active teen use contraception).In West Virginia where High Rocks is located, 53% of teen are sexually active compared to 47% nationally. The West Virginia teen birthrate is 43.4 pregnancies per 1000; the national rate is 40.5 per 1000. For older teens (18-19 years old) this rate jumps to 77 in 1000 compared to 70 per 1000 nationally. For economically distressed Appalachian counties (particularly the coal fields), 34.7% of births are to teen mothers. Adolescent mothers are at a much higher risk for not

completing high school and for living in poverty (Chapman & Sheppard, 2008). Navigating college as a teen mother is particularly difficult. Not only must she adjust culturally, perhaps live away from home and family supports, provide care for her child (and possibly other family members), she also live with the negative stereotypes about her cultural heritage in general and related to early motherhood.

Predicting College Success

Educational psychology strives to find predictors in high school for college success (Hezlett et al., 2001; Pascarella & Terenzinii, 1991). College success is usually defined by college achievement (GPA) and persistence (retention) (Robbins et al., 2006; Le, et al., 2005). Fundamentally, research on the prediction of college success can be divided into not only traditional predictors (ACT, SAT, or High school GPA) which are common requirements of the college application process but also non-traditional measures and nontraditional predictors (including family of origin information and interpersonal and intrapersonal constructs).

Traditional Measures

Perhaps the most well known predictors of college success are the standardized tests that high school students are required by many colleges to take prior to admission. These tests are the Scholastic Aptitude Test (SAT) and the American College Test (ACT). High school Grade Point Average (GPA) is also commonly used to predict college GPA. For many colleges, standardized test scores are given equal weight in admission criteria and decisions as high school GPA (Robbins et al., 2006). Standardized tests like the ACT and SAT are heavily researched and effective in predicting student success – especially in predicting first year GPA (ACT, 2008; College Board, 2008). However, these standardized tests have been criticized for the lack of demonstrated validity with certain disadvantaged groups (Sackett, Schmitt, Ellingson, & Kabin,

2001; Jencks, & Phillips, 1998). ACT/SAT scores have a strong positive relationship to socioeconomic status, meaning as that scores often increase with family income. Additionally, while standardized scores and first year GPA are related, this is certainly not a perfect relationship. The correlation between all subtests of the SAT and first year college GPA for the SAT ranged from r = .64 to .03 (Bridgeman, Burton, & Pollack, 2008). This means that at best SAT scores are able to account for around 40% of the variance of first semester GPA.

Most colleges give equal weight to High School GPA and standardized scores. High School GPA is able to aid in predicting first year GPA (adjusted r= .54; Kobrin, 2008). However, controlling for differences in grading standards and differences between curricula is very difficult (Robbins, 2006). For rural areas, high school GPA may be an even poorer predictor. As a rural teacher said to Spatiget al., (1998), "An A here is not an A someplace else." Rural schools may have fewer well-trained teachers and much smaller groups to establish classroom norms. Teachers in small communities are much more likely to know their students' personal lives, siblings, and social status which may cloud their ability to grade fairly (Spatig, 1998). Family conflicts, troublesome older siblings, or negative local last name reputations may result in teachers giving students lower marks on subjectively graded assessments such as projects, papers, and essays.

Non-Traditional Measures

Research on non-academic contributors of college success and readiness is abundant. A meta-analysis by Robbins et al (2004) reported several non-academic factors that contributed to both college performance (GPA) and college persistence (retention). The strongest predictors of GPA and college performance were academic self -efficacy, achievement motivation, and academic goals. Persistence was most related to academic goals, academic self- efficacy,

institutional commitment, academic related skills, social support, and social involvement. While much is known about these factors with urban and suburban students, there is less literature that addresses rural students. Appalachian students are not often studied.

Pajares and Schunk (2001) assert that self-efficacy often plays an important role in school achievement. When children have confidence that they can complete an activity they will be more willing to adopt more challenging goals and sustain effort longer. Also, adolescents with higher social self-efficacy and academic self-concept (i.e., perceptions of academic abilities) reported higher overall life satisfaction (Fogle, Huebner, & Laughlin, 2002; Huebner, Gilman, & Laughlin, 1999). Low self- efficacy is associated with increased depression and social phobia, school phobia and behavioral disturbance (Muris, 2002). For first year students attending university, academic self-efficacy was shown to be a powerful predictor of expectations and performance (Chemers, Hu, & Garcia, 2001). Academic self-efficacy is a facet of overall self efficacy that focuses only on one's belief in their ability to compete academic tasks (Chemers et al., 2001). Gore (2006) found that academic self-efficacy was a significant predictor of both grade point average and retention among a large sample of Midwestern university students. The internal factors that affect Appalachian students' success in college are currently unknown.

Persistence. Tinto (1987) found that 43% of college students drop out of school altogether, never completing their degree. Ishitani (2003) indicates the percentage is much higher for first-generation students now standing at 71%. Academic ability has much to do with persistence, but emotional and social issues also play an important role. Pritchard & Wilson (2003) discovered that social factors (e.g. stress, frequency of alcohol consumption) and emotional factors (e.g. self-esteem, fatigue) are related to persistence in school as well. For Appalachian students, persistence may be encouraged by their families of origin as it aligns with

Appalachian values such as independence and self-reliance. However, other values such as connection to family and place may play a more important role. Appalachian students may choose to quit school and return home due to these factors (Bradbury & Mather, 2009; Pratt & Skaggs, 1989).

Programs

Programs Designed To Empower Young Girls

Girl Scouts of America. Girl Scouts of America is a national organization is designed to "build girls of courage, confidence, and character, who make the world a better place" (GSA, 2010). The Girls Scouts was first organized in 1912 and chartered by the US Congress in 1950. Currently, there are 3.3 million girls scout members in the US and more than 50 million American women have been involved with the organization sometime in their lives. Although famous for cookies, Girl Scouts offer many programs for young girls. Scouts earn badges and awards for completing activities that address need in their local or global communities. Girl Scouts partnered with Dove Inc. in 2002 and formed the *Uniquely Me* program. It is designed to foster self esteem in girls ages 8-17 (GSA, 2010). Other programs include the following: P.A.V.E. (Project Anti-Violence Education) the Way; Challenge and Change: Challenge Yourself, Change the World; CentsAbility; Girl Scouts shape UP!

Girls Incorporated®. Girls Incorporated **is** a national nonprofit youth organization dedicated to "inspiring all girls to be strong, smart, and bold" (Girls Inc. 2010). Girls Inc provides educational programs to girls in low-income and underserved areas. The organization stresses girls' value and potential and seeks to counter harmful societal messages. Girls Inc has its beginnings in New England programs dating back to 1884. Currently Girls Inc offers the following programs nationally: Economic Literacy® ,Friendly Peesuarsion® , Leadership and

Community Action, Media Literacy®, Operation SMART®, Preventing Adolescent Pregnancy®, Project BOLD, and Sporting Chance® (Girls Inc, 2010). Girls Inc received strong criticism in 2005 from the conservative American Family Association when they partnered with the popular doll and storybook series "American Girl." American Girl Dolls conservative followers criticized Girl Inc as a "pro-abortion, pro-lesbian advocacy group" (USA Today, 2005).

Other Programs.*Girlstart* is a Texas based program that is a "best-case practices leader in empowering, educating, and motivating girls to enjoy and become more proficient in math, science and technology (Girlstart, 2010). Girlstart provides the following educational opportunities: after-school programs, workshop series, summer camps, Expanding Your Horizons, and free community events. Fun, girl friendly, hands on exploration of topics such as science, math, and technology are common to all Girlstart events. *WriteGirl* is an LA based organization that encourages writing by one-on-one mentoring and monthly workshops. Participants are given techniques, insights and hot tips for great writing in all genres from professional women writers.

Girl Scouts, Girls Inc., Girlstart, and WriteGirl are all designed to empower young girls interpersonally as well as educationally. However, there is little empirical support for the effectiveness of these programs. High Rocks has similar goals as these other empowerment programs, but seeks to tailor activities for rural, Appalachian girls. Girl Scouts and Girls Inc. are nationally programs encompassing a wide range of cultures. Girlstart and Writegirl are composed of predominately urban and suburban participants. At this time, data is needed to support the necessity of empowerment programs tailored for girls as well as to demonstrate strengths and weaknesses of their participants. A better understanding of risk and resiliency

factors can be used to modify activities and programs to better suit the needs of participants.

Programs Designed To Increase College Readiness

TRIO. Trio outreach and student services programs are designed to identify and provide services for individuals from disadvantaged backgrounds. TRIO is a Federal organization that includes eight programs targeted to serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline from middle school to post-baccalaureate programs. TRIO programs are as follows: Educational Opportunity Centers, Ronald E. McNair Post-baccalaureate Achievement, Student Support Services, Training Program for Federal TRIO Programs Staff, Upward Bound, Upward Bound Math-Science, and Veterans Upward Bound (TRIO, 2010).Upward Bound and Student Support Services are TRIO programs that address populations similar to this study.

Upward Bound. Upward Bound serves both low-income and first generation high school students. First-generation students are operationally defined by Upward Bound as students for whom neither of their parents have a Bachelor's degree. Increasing the rate at which participants complete secondary education and enroll in and graduate from institutions of postsecondary education is the primary focus of Upward Bound programming (Upward Bound, 2010). While programs may be organized somewhat differently across schools, participants in the Upward Bound program are given academic instruction in mathematics, laboratory sciences, composition, literature, and foreign languages. They also participate in mentoring, cultural enrichment, work-study programs, and residential life on a college campus. Currently, there are 964 Upward Bound programs nationally that serve more than 65,000 students. Upward Bound students are 50% more likely than their first generation and low income peers to attain a

bachelor's degree. Upward Bound students were also more likely to apply for financial aid (Seftor, Mamun, & Schirm, 2009).

Student Support Services (SSS*).* Student Support Services serves low-income and first generation college students. The primary goal of SSS is to assist participants with enhancing their academic skills, increasing their retention and graduation rates and promoting graduate and professional school programs. Like Upward Bound, SSS programs may be organized differently across schools, but all SSS projects must provide the following: academic tutoring, advice and assistance in postsecondary course selection, assistance with student financial aid programs, locating public and private scholarships and assistance in completing financial aid applications. Programs also must include services designed to improve financial and economic literacy and assist students in applying for admission to graduate and professional programs. SSS may also provide career counseling and/or cultural enrichment programming. Currently, there are nearly 200,000 students being served in the 945 SSS programs nationwide. Compared to similarly qualified students in the control group, SSS students are more likely to be retained for both second and third years in school, earn more credits, and have higher GPAs (Chaney, Muraskin, Cahalan & Rak, 1997).

Upward Bound and Student Support Services have well established effectiveness in supporting students academically and in retaining students (increasing persistence). High Rocks and AASIS seek to incorporate factors of these programs. High Rocks' college trips and AASIS visits to Radford University are somewhat similar to Upward Bound. Both High Rocks and AASIS have cultural components that are not as foundational for TRIO programs. Also both High Rocks and AASIS do not have the funding or staff to provide as intensive academic support similar to TRIO programs. Therefore, data is needed to reveal the social and academic needs of

Appalachian students. This information will lead to the development of programming by AASIS and High Rocks to address areas of the highest need. TRIO programming provides an empirically supported model that could likely be adapted to Appalachian students' identified needs.

Programs Participating In This Study

High Rocks for Girls. High Rocks is a leadership program for young women ages 13-25 (High Rocks, 2010). High Rocks serves young women in three rural counties in Southeastern West Virginia: Pocahontas, Nicholas, and Greenbrier. The 2010 year marks High Rocks' 14th camp season. One of High Rocks' purposes is to improve college attendance rates and success rates, but no literature except anecdotal exists regarding their progress toward these goals. High Rocks girls often say they are changed by the experience, but there is little data available on what factors contribute to success (High Rocks, 2010).

High Rocks began in 1996 when founder and former public school teacher - Susan Burt - and some friends wanted to provide a camp for middle school girls to help them feel better about themselves and their options for high school, college, and life. High Rocks was born with 13 campers that first summer (High Rocks, 2010). Since that time, High Rocks has expanded beyond summer camps into many other programs. Susan Burt's daughter, Sarah Burt Kindleman Riley, now serves as co-director of High Rocks.

High Rocks girls come from diverse backgrounds. They range from "A" students to those having academic or behavioral problems in school. Some lack family support or have a history of legal trouble. The girls are not labeled as "at risk," although their website argues that all girls in the catchment area are somewhat "at risk." High Rocks seeks to label each girl as "gifted" and rejects all other labels that may be applied (High Rocks Best Practices, 2008). Each High Rocks

girl completes a detailed application at the end of her eighth grade year; this application includes a written application with short answer and essay questions, followed by an interview with a staff member and a current High Rocks girl. They join the program by attending camp the summer before beginning high school (High Rocks, 2010). All High Rocks camps and activities are free to girls who attend (High Rocks Best Practices, 2008). Parents are encouraged, but not required, to help out by bringing meals to tutoring session, carpooling, and participating in other community activities.

Girls who join High Rocks participate in the program through all four years of high school and are offered continuing support after graduation as alumnae. Currently, High Rocks has over 100 women active in the alumnae network and approximately 70 girls actively participating in the program (High Rocks, 2010). High Rocks speaks of girls' success interns of them "becoming leaders, taking responsibility for their own lives, completing advanced degrees, achieving successful careers, and giving to others" (High Rocks Best Practices, 2010). Many alums, interns and volunteers maintain a relationship with High Rocks, supporting programs, sending money, volunteering, and serving on the High Rocks board (High Rocks, 2010).

***High Rocks programs*.** High Rocks has several programs that run year round. These can be best understood in 4 spheres: Summer Camps, Weekly Tutoring, Youth Community Action Meetings, and College Trips/Post Grad Planning.

Summer camps. High Rocks began in 1996 with New Beginnings Camp for newly graduated 8th graders; this has continued annually since that time. Also in July, CampSteele provides a similar experience to veteran campers in grades 9-12.

Weekly tutoring. After several years of summer camps, the High Rocks staff report that the girls required more frequent support throughout the academic year. They began hosting

weekly tutoring session that include a family style dinner and other community building activities .Girls are carpooled and bussed to High Rocks on Tuesday evenings for these weekly activities. They can receive help with homework, complete college applications, or take SAT/ACT practice tests during these times (High Rocks, 2010).

Youth community action meetings. Youth Community Action Meetings give girls an opportunity to organize and implement direct service projects in response to needs they identify in their communities. The staff meets with the girls in each of the 3 counties after school to discuss their community's needs and challenges them to do something positive to address these needs. Past projects have included: organizing a women's self-defense class, forming a student group to present teen concerns at city council meetings, recording stories from community members, organizing a stream clean-up for a local creek, starting after-school programs at a local Middle School, and working to prevent child abuse (High Rocks, 2010).

College trips/post grad planning. Staff members encourage girls to research colleges and financial aid opportunities and provide guidance as they complete applications and admission essays. High Rocks hosts weekend workshops for ACT and SAT tests. They also host college trips intended to introduce the girls to current students, admission officers, professors, and college-level classes. The girls sit in on classes of their choice and stay in the dormitories—often with a High Rocks alumnae. Currently, 100% of graduating girls have college plans (High Rocks, 2010). For alumnae, 93% have gone on to pursue some form of secondary education or military training (High Rocks, "success stories", 2010).

High Rocks core values. Founder Susan Burt, reports that High Rocks works by removing the markers of social class, working to build a strong female community, and teaching girls to value their own abilities (Burt, S. personal correspondence, July 15, 2007). This idea is

best captured in the 12 day Camp New Beginnings, which serves as a way of introducing girls to the High Rocks way. In 2008, Camp New Beginnings welcomed 17 girls newly graduated from eighth grade. Veteran campers serve as Junior Counselors "JCs" during the 12 days of camp. All camps are funded through donations and fundraising - no one has to pay to attend.

Overall, Camp New Beginnings has a wilderness atmosphere. The girls sleep in 3 walled structures on cots. There are 2 to 4 girls in each structure. There is no electricity or pop media. There are no mirrors or indoor showers or boys for the 12 days of camp. Designer clothes are discouraged. The 2008 year was the first time the girls had hot showers. They voted to stoke a wood burning water heater themselves- much to the dismay of High Rocks Alums. Along with the usual camp activities of hiking, wilderness training, and sleeping under the stars, the girls participate in classes including construction/building, environmental sustainability, math and art, filmmaking, and entrepreneurship. They may participate in body mapping and performance activities. There are daily "Girls' Group" discussions that function much like process groups tackling issues of sex, drugs, self-esteem, divorce, etc. The girls eat three open air, organic/local meals with vegetarian options. Nightly campfires include singing - showcasing compositions of the day - skits and conversation (as observed by the author).

AASIS

The Appalachian Arts and Studies in the Schools (AASIS) program is currently in its 13th year. AASIS is well established in participating communities. The program has the following principal goals: (1) to encourage promising young Southwest Virginia students to pursue higher education and (2) to give these students an opportunity to learn more about the culture of the Appalachian region (AASIS, 2009). The primary purpose of the AASIS program is to improve college enrollment and success rates, but like High Rocks only anecdotal evidence exists

regarding their progress toward these goals. There is very little demographic data available for AASIS and information tracking students after they complete the AASIS program is sparse (AASIS, 2010).

The AASIS program is comprised primarily of three types of stakeholders: teachers, scholars, and mentors. Many former AASIS scholars have become mentors after attending Radford University (Derrick, R., personal communication, November 6, 2010). AASIS's eighteen local high school teachers collaborate to prepare lessons for their classrooms on Appalachian studies. This in-school Appalachian cultural instruction is not supported by Standards of Learning (SOL) and often requires great creativity from teachers to incorporate cultural activities within their standardized curriculum (personal communication, 2009). AASIS teachers indentify students in their classrooms who are "college-able but not college-bound" (AASIS, 2010). These students become AASIS scholars who participate in the program for up to two years. Scholars are matched with mentors with whom they correspond throughout the school year. Mentors are Radford University students who volunteer with AASIS; they represent various majors and backgrounds.

Mentors are assigned to a school group and they interact with scholars on several occasions during the academic year. Each semester, mentors present information at a visit to their assigned high school and serve as hosts to scholars during their campus visit to Radford University. Mentors are encouraged to write letters describing their academic and social lives at Radford (emphasizing homework, class and work schedules and positive social experiences). During the fall school visit, mentors hand out information and necessary paperwork for completing financial aid/standardized tests, outline the college application process, discuss the college lifestyle and answer any questions the scholars may have. Usually during the spring

school visit, the emphasis is on Appalachian culture and identity. Each school team develops its own interactive program to address the students 'cultural strengths and heritage, as well as stereotypes and stigmas of the region. Also in the spring, scholars organize "What we've learned" presentations that summarize the content of the AASIS program from a scholar's perspective (AASIS training material, 2009).

There is little data available from either AASIS or High Rocks at this time. There is also very little data and information on the specific risk and resiliency factors for Appalachian High School Students planning to attend college. The present study seeks to examine quantitative differences between participants in the High Rocks for Girls (HR) program and Appalachian Arts and Studies in Schools (AASIS) program. Measures of GPA and non-academic college readiness, Resiliency, General Sense of Belonging, and Sense of School Belonging will be assessed. A quantitative design will be used with an emphasis on the data and results being relevant and useful to the programs being evaluated.

CHAPTER III

DESIGN AND RESEARCH METHODS

The present study examines differences between participants in the High Rocks for Girls (HR) program and Appalachian Arts and Studies in Schools (AASIS) program. This study assesses quantitative differences between these groups on measures of GPA and non-academic college readiness, Resiliency, General Sense of Belonging, and Sense of School Belonging. A quantitative design will be used with an emphasis on the data and results being relevant and useful to the programs being evaluated.

Participants

Program participants from both High Rocks for Girls and Appalachian Arts and Studies in the Schools (AASIS) were recruited for this study. All participants were High School sophomores, juniors, and seniors attending rural, Appalachian schools. There were 26total participants in this study. As the focus of this study is Appalachian girls, only data from female participants was analyzed. However, data from male and transgender male students was compiled and shared with the programs.

High Rocks participants were 4 female and 1 female-to-male transgender person who have been involved in the High Rocks program since the summer before their 9th grade year in high school. High Rocks participants were residents of Greenbrier, Pocahontas, or Nicholas counties in Southern West Virginia. Each participant attended their respective county high school.

AASIS participants were currently enrolled in the AASIS program in either Fort Chiswell High School (N=7) or Carroll County High School (N= 14). There were 10 male and 11 female participants.

Measures

College Survival and Success Scale

The College Survival and Success Scale is a measure that consists of 60 self-report items (Liptak, 2006).Participants respond to statements on a 4 point scale from 1 (a lot like me) to 4 (not like me). These items are summed to provide a portrait of strengths and weaknesses in the following domains: (1) commitment to education, (2) self- and resource-management skills, (3) interpersonal and social skills, (4) academic success skills, and (5) career planning skills. Scores range from 12 to 48 on each subscale. The CSSS is a fairly new measure and has not been tested extensively. The developer reported that the CSSS demonstrated split-half correlation coefficients that ranged from .89 to .92. Test retest reliability coefficients ranged from .88 - .94 (Liptak, 2006). For the current study, the total mean score on the CSSS was 188.40 (*SD* = 25.74). Analysis of internal consistency for this measure revealed an alpha coefficient of .95 for the this sample.

Resiliency Scales for Children and Adolescents (RSCA)

The RSCA is a self report measure that consists of three stand-alone global scales of 20-24 questions each and ten subscales. Participants respond to items on a 5 point scale from 0 (never) to 4 (almost always). The scores are summed. The scales and subscales are as follows: Sense of Mastery (optimism, self-efficacy, and adaptability), Sense of Relatedness (trust, support, comfort, tolerance) and Emotional Reactivity (sensitivity, recovery, impairment Prince-Embury, 2007). For adolescents ages 15-18 the RSCA has demonstrated alpha coefficients that ranged .87 - .97 (Prince-Embury, 2007; RSCA Manual, 2006). For the current study, the mean score on the Sense of Mastery scale was 52.13 (*SD* = 9.85) and had an alpha coefficient of .87. The Sense of Relatedness scale had a mean of 60.00 (*SD* = 10.60) with an alpha coefficient of

.84. The mean for the Emotional Reactivity scale was of 32.73 (*SD* = 13.57) and the alpha coefficient was .91.

Sense of Belonging Instrument (SOBI)

The SOBI consists of two separately scored scales (Hagerty & Patusky, 1995). Participants respond to all items on a 4 point scale from 1 (very relevant) to 4 (not at all relevant). The Sense of Belonging – Psychological (SOBI-P) measures characteristics of fit and valued involvement, while the Sense of Belonging – Antecedents (SOBI-A) provides a measure of a person's ability and desire to develop a sense of belonging. The SOBI-P is comprised of 18 items with summed scores that range from 18 – 72. The SOBI-P has high coefficient alphas ranging from .91-.93. The SOBI-A has 8 items and scores that range from 8 to 32.The SOBI-A has somewhat lower alphas that range from .63-.76 (Hagerty, Williams, & Oe, 2002). The correlation for the SOBI-P and SOBI-A has been reported as .45 (Hagerty & Patusky, 1995). The SOBI also demonstrated alphas of .95 in a study of Australian Gay Men (Mclaren, Jude, & Mclaren, 2008). Alphas ranged from .77 (SOB-A) to .92 (SOB-P) in a group of elderly Australian adults. (Kissane & Mclaren, 2006). For the current study, the mean score on the SOBI-P was 42.60 (*SD* = 5.42) and it had an alpha coefficient of .89. The SOBI-A had a mean of 19.47 (*SD* = 3.48) with an alpha coefficient of .34.

Psychological Sense of School Membership Scale (PSSM). The Psychological Sense of School Membership Scale (PSSMS) consists of 18 self-report items (Goodenow, 1993). Scores on the PSSMS range from 18 to 90. Participants respond to items on a 5 point scale from 1 (strongly disagree) to 5 (strongly agree). Goodenow (1993) demonstrated the PSSMS' high internal consistency with alphas ranging from .71 to .88 for four samples of urban and suburban middle school youth. Hagborg (1994) reported an alpha of .88 for both middle and high school

youth. He also found good test-retest reliability (4week interval) with a sample of 50 eighth graders (r = .78). For the current study, the PSSM had a mean of 66.47 (SD = 14.24) with an alpha coefficient of .93.

Demographics

The demographic questionnaire includes questions pertaining to the respondent regarding age, ethnicity, class status, generational status, program attended and county of residence. (See Appendix A).

Operational Definitions

This section contains discussion on how the variables to be explored will be operationalized.

Age

Age was categorized by a single item responded to by the participant, ranging from ages 15-18 years.

Class Status

Class status was categorized by a single item responded to by the participant ranging from, sophomore (2nd year High School), Junior (3rd year high school) or Senior (4th year high school).

Generational Student Status

Generational student status was categorized by highest degree obtained by mother and by father. Students for whom at least one parent has completed a 4 year degree will be classified as potential "continuing generation" college students, while students for whom neither parent has completed a 4 year degree will be classified as "first generation" (Martinez, Sheer, Krill, & Wood, 2009; TRIO, 2010). Data was also collected to measure if students have never had a

parent attend college at all (Barry, Hudley, Kelly, & Cho, 2009; Billson & Terry, 1982; Hand & Payne, 2008).

College Plans

College Plans was categorized by a single item responded to by the participant, ranging from (1) "I plan to attend college." (2) "I plan to attend community college." (3) "I do not plan to attend college." Or (4) "I am unsure about attending college."

Sense of Belonging –Psychological

Sense of Belonging – Psychological was measured by participant's sum score on the Sense of Belonging Instrument – Psychological (SOBI-P).

Sense of Belonging - Antecedent

Sense of Belonging –Antecedent was measured by participant's sum score on the Sense of Belonging Instrument – Antecedent (SOBI-A).

Psychological Sense of School Belonging

Psychological Sense of School Belonging was measured by a participant's sum score on the Psychological Sense of School Belonging Scale – Brief.

Sense of Mastery

Sense of Mastery was measured by participant's sum score on the Sense of Mastery scale on the Resiliency Scales for Children and Adolescents (RSCA).

Sense of Relatedness

Sense of Relatedness was measured by sum score on the Sense of Relatedness scale on the Resiliency Scales for Children and Adolescents (RSCA).

Emotional Reactivity

Emotional Reactivity was measured by sum score on the Emotional Reactivity scale on the Resiliency Scales for Children and Adolescents (RSCA).

Commitment to Education

Commitment to Education was measured by the participant's sum score on the Commitment to Education subscale of the College Survival and Success Scale (CSSS).

Self and Resource Management

Self and Resource Management was measured by the participant's sum score on the Self and Resource Management subscale of the College Survival and Success Scale (CSSS).

Interpersonal and Social Skills

Interpersonal and Social Skills was measured by the participant's sum score on the Interpersonal and Social Skills subscale of the College Survival and Success Scale (CSSS).

Academic Success Skills

Academic Success Skills was measured by the participant's sum score on the Academic Success Skills subscale of the College Survival and Success Scale (CSSS).

Career Planning Skills

Career Planning Skills was measured by the participant's sum score on the Career Planning Skills subscale of the College Survival and Success Scale (CSSS).

Hypotheses

Hypotheses for this study are as follows:

Hypothesis 1

High Rocks girls will have higher overall college readiness scores as measured by the College Survival and Success Scale (CSSS) when compared to AASIS students. High Rocks is more intensive program and has a primary focus on college readiness.

H_{css}: $\mu_{hr} > \mu_{aasis}$

Hypothesis 1a. High Rocks girls will have higher scores on the Commitment to Education subscale of the CSSS when compared to AASIS students. High Rocks is an intensive, outside-of- school program requiring a much high time commitment for girls than does the AASIS program.

H_{CE}: $\mu_{hr} > \mu_{aasis}$

Hypothesis 1b. High Rocks girls will have higher scores on the Self and Resource management subscale of the CSSS when compared to AASIS students. High Rocks programming and summer classes seek to develop time management and leadership skills.

H_{srm}: $\mu_{hr} > \mu_{aasis}$

Hypothesis 1c. High Rocks girls will have higher scores on the Interpersonal and Social Skills subscale of the CSSS when compared to AASIS students. High Rocks has overnight programs and camps that focus on teambuilding, interpersonal skills, and communication.

H_{iss}: $\mu_{hr} > \mu_{aasis}$

Hypothesis 1d. High Rocks girls will have higher scores on the Academic Success Skills subscale of the CSSS when compared to AASIS students. High Rocks weekly tutoring and community support meetings allows for development of academic skills.

H_{ass}: $\mu_{hr} > \mu_{aasis}$

Hypothesis 1e. High Rocks girls will have higher scores on the Career Planning Skills subscale on the CSSS when compared to AASIS students. High Rocks programming focuses on a variety of career skills while the AASIS program is more focused on college attendance.

H_{cps}: $\mu_{hr} > \mu_{aasis}$

Hypothesis 2

AASIS students will have higher overall Vulnerability scores on the Resiliency Scales for Children and Adolescents (RSCA) when compared to High Rocks students. The High Rocks program seeks to build leadership skills and self-esteem skills

H_{vul}: $\mu_{hr} < \mu_{aasis}$

Hypothesis 2a. AASIS students will have higher Emotional Reactivity scores on the RSCA when compared to High Rocks students. The High Rocks program seeks to foster psychological well-being and positive coping skills, while this is not a focus in the AASIS program.

H_{em}: $\mu_{hr} < \mu_{aasis}$

Hypothesis 2b. AASIS will have lower Sense of Mastery scores on the RSCA when compared to High Rocks students. High Rocks seeks to build self-esteem in girls and also allows for more individualized attention to develop individual strengths.

H_{sm}: $\mu_{hr} < \mu_{aasis}$

Hypothesis 2c.AASIS will have lower Sense of Relatedness scores on the RSCA when compared to High Rocks students. Team building and group membership are much stronger emphasis in the High Rocks program than the AASIS program.

H_{sr}: $\mu_{hr} < \mu_{aasis}$

Hypothesis 3.

HR students will have higher overall Sense of Belonging scores on the Sense of Belonging Instrument when compared to AASIS students. Teambuilding and group membership are much stronger emphasis in the High Rocks program than the AASIS program.

Hypothesis 3a. HR students will have higher Sense of Belonging - Psychological scores on the Sense of Belonging Instrument - Psychological than AASIS students.

H_{sbp}: $\mu_{hr} > \mu_{aasis}$

Hypothesis 3b. HR students will have higher Sense of Belonging - Antecedent scores on the Sense of Belonging Instrument - Antecedent than AASIS students.

H_{sba}: $\mu_{hr} > \mu_{aasis}$

Hypothesis 4.

HR students will have PSSM scores on the Psychological Sense of School Membership than AASIS students.

H_{pssm}: $\mu_{hr} > \mu_{aasis}$

Procedures

After obtaining approval from the Radford University Institutional Review Board, the researcher met with AASIS classroom teachers and explained the study. Classroom teachers believed in-class data collection would be more reliable as they feared students may rush or give poorly thought-out answers on Radford's campus visit. Teachers suggested that consent be sought in-class as well and agreed to solicit return of parental consent. Teachers solicited parental consent by sending home forms with students after AASIS meetings. Data was collected by the primary researcher in 2 High Schools with one visit at each school. Data was collected in the library with all the AASIS students present that day who had returned parental consent forms. High Rocks' participant data was collected during afterschool tutoring sessions on the HRG campus in Pocahontas County.

Participants were given a short informed consent document and assent form before completing measures. All AASIS participants were given the measures, both male and female participants. For the purpose of this study, only female participants' data was analyzed. However, the sanitized data for both male and female participants will become the property of

the AASIS program and may be used in their own program evaluation. Both AASIS and High Rocks programs will be given information and recommendations for procedures to safeguard data.

The survey took participants as 30 to 45 minutes to complete. The survey packet contained a demographics sheet, the College Survival and Success Scale, Resiliency Scales for Children and Adolescents, Sense of Belonging Scale, and the Psychological Sense of School Belonging Scale. Participants completed measures and demographic questionnaires using pen and paper methods. Raw data were entered into a dataset, cleaned, and analyzed. Each participant was assigned a participant code; no names were written on measures or on questionnaires. Measures and consent forms were stored separately in locked drawers in a locked office. Electronic data was stored on two password-protected computers as both a SPSS data set and as a MS Excel file.

Data Analysis

Data was analyzed using SPSS for Windows 20. Demographic variables and descriptive statistics were calculated including age, year in school, generational status, program, and college plan. Differences between groups were analyzed using a one-way ANOVA. Subscales on the CSSS were intended to be analyzed using factor analysis to assess for latent variables of college readiness. However, the sample was too small to justify this analysis.

There is a very small sample size in this study and it is difficult to discover statistically significant results with such small groups. There are some promising findings related to effect size in the data analysis. Statistical significance with a *p*-value of .05 means that there is only a 5% chance that differences between two groups occurred by chance. As a result, researchers can say they are 95% sure that there is some measureable difference between groups on a given

measure. However, significance is strongly affected by the number of participants. With very large groups, tiny differences may be significant but do not tell the researcher anything about the size or strength those differences. Effect size is not a measure of statistical significance; instead it is a measure of the percentage of total variance accounted for by a variable. In this study, effect size calculations measure the total variance explained by membership in the AAIS or High Rocks groups. An effect size of .18 would mean that 18% of the total variance of scores on a measure is accounted by program membership. Effect size helps explain the size of a difference– a statistically significant difference with a large effect size means there are meaningful, real-life differences between groups. Effect sizes are also useful in understanding non-significant differences in this study. A large effect size with non-significant significance does not tell us that differences exist between AASIS and High Rocks, but it does hint that perhaps we just do not have enough data to reveal differences. A large portion of the variance is explained by group membership, but there is not enough information to know if there are significant differences between groups.

For this study we used the following standards for effect size for Chi-square analysis: small ($\Phi^2 = .01$), medium ($\Phi^2 = .09$), and large ($\Phi^2 = .25$). For ANOVA we used the following standards: small ($\eta^2 = .01$), medium ($\eta^2 = .06$), and large ($\eta^2 = .13$).

CHAPTER IV

Results

Sample Description

The overall sample collected for this study totaled 15 female participants. Eighty six percent of participants identified as Caucasian, 6.7% Native American/Caucasian, and 6.7% identified as "other" and indicated African American, Native American and Caucasian Ancestry. Participants were between ages 15 and 18 [age 16 (46.7%), age 15 (20%), age 18 (20%), and age 17 (13.3%)]. The mean age was 16.33 with a standard deviation of 1.0. Students were in grades 10-12 in high school. Juniors comprised the majority 53.3%, while sophomores made up 13.3% and seniors 33.3%.Eighty percent of students were first-generation college students with neither parent having attended a 4 year university while 20% were continuing generation students with at least one parent attending college. All students planned to attend college after graduation; 66% planned to attend a 4 year university while 33% planned to attend community college. See Table 4.1 for frequency statistics.

High Rocks Sample. Of the 4 High Rocks participants, the mean age was 17.25 with a standard deviation of 1.5. Fifty percent of students identified as Caucasian and 50% identified as "other" indicating African American, Native American, and Caucasian ancestry. Seniors made up 75% while sophomores made up 25%. Fifty percent were first-generation and 50% were continuing- generation. All High Rocks participants planned to attend a 4 year university.

AASIS Sample. Of the 11 AASIS participants, the mean age was 16 with a standard deviation of .632. All AASIS students identified as Caucasian. Seniors made up 18.2%, juniors, 72.7% and sophomores 9.1%. In this group, 90.9% were first-generation and 9.1% were

Table 4.1

Frequency Statistics for Demographic Variables for Sample (N = 15)

Variable	AASIS N (%)	High Rocks N (%)	Total N (%)
Ethnicity			
Caucasian	11 (100%)	2 (50%)	13 (86.7%)
Native American/Caucasian	0 (0%)	1 (25%)	1 (6.7%)
Other	0 (0%)	1 (25%)	1 (6.7%)
Age			
15	2 (18.6%)	1 (25%)	3 (20%)
16	7 (63.6%)	0 (0%)	7 (46.7%)
17	2 (18.2%)	0 (0%)	2 (13.3)
18	0 (0%)	3 (75%)	3 (20%)
Class			
Sophomore	1 (9.1%)	1 (25%)	2 (13.3%)
Junior	8 (76.7%)	0 (0%)	8 (53.3%)
Senior	2 (18.2%)	3 (75%)	5 (33.3%)

continuing-generation. Students who planned to attend a 4 year university were 54.5% while 45.5% planned to attend community college.

Analysis

The data was analyzed by a series of one-way ANOVAs comparing scores on measures between High Rocks and ASSIS groups. Nominal demographic data (generational status, parental education, and college plan) group differences were examined using a Chi-Square analysis. For all statistical tests, an alpha level of .05 was used.

Grade Point Average. Many students were not able to report their GPA, but were able to circle their letter grades from a list. The circled grades were re-coded into an estimated GPA with A's being coded as 4.0, A's and B's as 3.5, B's 3.0, B's and C's as 2.5, C's 2.0, C's and D's as 1.5, and D's as 1.0. One student did not report GPA or circle grades. Differences between High Rocks and AASIS student's reported GPA (for those who knew) and estimated GPA between groups was not significant [$F(1, 12) = 1.20$ $p = .27$, $\eta^2 = .09$]. The mean GPA for High

Rocks students was 3.08 (*SD* = .46) while the mean GPA for AASIS students was 3.40 (*SD* = .52).

College Plan. All students planned to attend college. There were not significant differences between AASIS and High Rocks student's college plans to attend a 4-year university or a community college χ^2 (1, *N* = 15) = 2.73, *p* = .09, Φ^2 =.18]. The effect size is moderate meaning that with a larger sample it may be revealed that more High Rocks Girls plan to attend a 4-year university than AASIS students. See Table 4.2 for cross tabulation values.

Father Education. Father's education was calculated by two methods. Father education was first condensed into two groups calculated by determining if a participant's father had completed a 4 year degree. There were not significant differences between High Rocks and AASIS students [χ^2 (1, *N* = 15) = .64, *p* = .43, Φ^2 = .03]. Then, father's education was calculated by dividing groups between those whose fathers had some college experience including those who had attended but not completed college, completed a 2 year community college degree, or a 4 year degree (Barry, Hudley, Kelly, & Cho, 2009; Billson & Terry). There were no significant differences using this definition either [χ^2(1, *N* = 15) = .69, *p* = .40, Φ^2 = .05]. See Table 4.1 for cross tabulation values. Both these finding have small effect sizes. This indicates that even with a larger sample there may be few differences is fathers' levels of education between High Rocks and AASIS.

Mother Education. As above, mother's education was calculated by two methods. Education was first condensed into two groups calculated by determining if a participant's mother had completed a 4 year degree. There were significant differences between groups [χ^2(1, *N* = 15) = 6.35, *p* = .01, Φ^2 = .42]. This means High Rocks mothers were more likely to be college educated than AASIS mothers. In fact, none of the ASSIS participant's mothers had

Table 4.2

Cross Tabulation Table for College Plan, Parental Education, and Generational Status (N = 15)

Variable	AASIS N (%)	High Rocks N (%)
College plan		
Community College	5 (45.5%)	0 (0%)
4-Year University	6 (54.5%)	4 (100%)
Father's Education - Completed		
Completed College	1 (9.1%)	1 (25%)
No college degree	10 (90.9%)	3 (75%)
Father's Education-Attended		
Attended College	3 (27.3%)	2 (50%)
Did not Attend College	8 (72.7%)	2 (50%)
Mother's Education-Completed		
Completed College	0 (0%)	2 (50%)
No college degree	11 (100%)	2 (50%)
Mother's Education -Attended		
Attended College	4 (36.4%)	3 (75%)
Did not Attend College	7 (63.6%)	1 (25%)
Generation Status- Completed		
First-Generation	10 (90.9%)	2 (50%)
Continuing-Generation	1 (9.1%)	2 (50%)
Generation Status - Attended		
First-Generation	5 (45.5%)	0 (0%)
Continuing-Generation	6 (54.5%)	4 (100%)

completed a 4 year degree. The large effect size indicates real differences exist between groups. Mother's education was also calculated by dividing groups between those who had college experience including those who had attended but not completed college, completed a 2 year community college degree, or a 4 year degree (Barry, Hudley, Kelly, & Cho, 2009; Billson & Terry). There were no significant differences using this definition [$\chi^2(1, N = 15) = 1.76,\ p = .19,\ \Phi^2 = .12$]. However, the effect size is large. This means that with a larger sample it could be

revealed that High Rocks Girls' mothers are more likely have some college experience than AASIS students See Table 1 for cross tabulation values.

Generational Status. Generational status was calculated by determining if either of a participant's parents had completed a 4 year degree. Those who had neither parent complete a 4 year college degree were coded as first-generation. There were marginally significant differences in generational status between groups [$\chi^2(1, N = 15) = 3.07,\ p = .080, \Phi^2 = .20$]. This substantial effect size indicates High Rocks girls may be more likely to have a parent graduate from college than AASIS students with a larger sample. Generational Status was also calculated by dividing groups between those who had college experience including those who had attended but not completed college, completed a 2 year community college degree, or a 4 year degree. There were no significant differences using this definition [$\chi^2(1, N = 15) = 2.73, p = .10, \Phi^2 = .18$]. While results are not significant, the large effect size indicates real differences may exist with a larger sample.

College Survival and Success Scale (CSSS). The College Survival and Success Scale is a measure that consists of 60 self-report items on which participants respond to statements on a 4 point scale from 1(a lot like me) to 4 (not like me). These items are scored to provide a portrait of strengths and weaknesses in the following domains: (1) commitment to education, (2) self- and resource-management skills, (3) interpersonal and social skills, (4) academic success skills, and (5) career planning skills. Individual items on the CSSS were summed to produce an overall subscale score. On the CSSS differences between High Rocks and AASIS students were not significant. Of note, participants had above average scores on all subscales according to the measure developers' scale. Individual scores ranged from 22-48 on all subscales and had mean scores ranging from 34 to 39. For the Commitment to Education subscale there were no

significant differences between AASIS and High Rocks students [$F(1, 13) = .46$, $p = .51$, $\eta^2 = .01$]. There were also no significant differences between AASIS and High Rocks students on the Self and Resource Management subscale [$F(1, 13) = .15$, $p = .71$, $\eta^2 = .01$]. Interpersonal and Social skills subscale had no significant differences between AASIS and High Rocks students [$F(1, 13) = .60$, $p = .45$, $\eta^2 = .04$]. Academic Success Skills subscale revealed no significant differences between AASIS and High Rocks students either [$F(1, 13) = .303$, $p = .60$, $\eta^2 = .02$]. On the Career Planning Skills subscale, differences between AASIS and High Rocks students were non-significant [$F(1, 13) = .01$, $p = .92$, $\eta^2 = .00$]. See Table 4.3 for means and standard deviations for this measure.

Resiliency Scales for Children and Adolescents (RSCA). The RSCA is a self-report measure that consists of three stand-alone global scales of 20-24 questions each. Participants respond to items on a 5 point scale from 0 (never) to 4 (almost always) to provide a profile of strengths and weakness on the following scales: Sense of Mastery, Sense of Relatedness, and Emotional Reactivity. Scores on the RSCA were calculated by adding raw scores for each measure. As this is not a clinical measure in the current study, *t*-scores were not calculated using established norms on the RSCA. Individual items were summed to produce an overall subscale score. Differences between AASIS and High Rocks students on this measure were not significant. The Emotional Reactivity subscale did not reveal significant differences between AASIS and High Rocks students, but did have a medium effect [$F(1, 13) = .11$, $p = .74$, $\eta^2 = .10$]. AASIS students had a mean score of 32.00 (SD =14.42) while HR students had a mean score of 34.75 (SD= 12.61) on the emotional reactivity measure. Differences between AASIS and High Rocks students on the Sense of Mastery subscale were not significant, but also had a medium effect [$F(1, 13) = 1.37$, $p = .26$, $\eta^2 = .07$]. High Rocks students had a mean of 64.50 (SD = 7.93

Table 4.3

Means and Standard Deviations for all Measures

Variable	AASIS M (*SD*)	High Rocks M (*SD*)	Total M (*SD*)
CSSS			
Commitment to Education	38.36 (7.88)	41.25 (5.06)	39.13 (7.18)
Self and Resource Management	38.82 (5.31)	37.75 (2.22)	38.53 (4.63)
Interpersonal and Social Skills	36.45 (6.55)	39.25 (1.71)	37.20 (6.11)
Academic Success Skills	34.18 (7.61)	36.25 (1.80)	34.73 (6.27)
Career Planning Skills	38.91 (7.61)	38.50 (4.80)	38.80 (6.81)
RSCA			
Sense of Mastery	49.63 (10.27)	56.00 (7.62)	51.13 (9.85)
Sense of Relatedness	58.36 (11.29)	64.50 (7.93)	60.0 (10.60)
Emotional Reactivity	32.00 (14.42)	34.75 (12.61)	32.73 (13.57)
SOBI-P	43.82 (5.49)	39.25 (4.03)	42.6 (5.42)
SOBI-A	20.18 (3.74)	17.50 (1.73)	19.47 (3.48)
PSSM	60.91 (12.06)	81.75 (6.02)	66.47 (14.24)

while AASIS students' mean was 58.36 (SD = 11.29) on feelings of mastery. The self-reported relatedness scores for High Rocks and ASSIS students were not significantly different [$F(1, 13) = .98$, $p = .34$, $\eta^2 = .01$]. See Table 1.2 for means and standard deviations for this measure.

Sense of Belonging Instrument (SOBI). The SOBI consists of two separately scored scales. Participants respond to all items on a 4 point scale from 1 (very relevant) to 4 (not at all relevant). The Sense of Belonging – Psychological (SOBI-P) measures characteristics of fit and valued involvement, while the Sense of Belonging – Antecedents (SOBI-A) provides a measure of a person's ability and desire to develop a sense of belonging. For the SOBI, items 1 2, 3, 5,11,13,15,20,23,24, and 27were reverse scored. Items 1,3,5,7,8,10,11,13,15,16,18,19,20,22,23,24,25,and 27 were added to create the SOBI-P score. For the Sense of Belonging – Psychological subscale there were no significant differences between AASIS and High Rocks students [$F(1, 13) = 2.27$, $p = .16$, $\eta^2 = .14$] While differences are not significant, the large effect size indicates real differences may exist with a larger sample.

The mean score for the SOBI-P for High Rocks students was 39.25 (*SD*= 4.03) while the mean was 43.82 (*SD*=5.49) for AASIS students. Items 2, 4,6,12,14,17,21, and 26 make up the SOBI-A score. There were likewise no significant differences between groups on this subscale [$F(1, 13) = 1.85$, $p = .20$, $\eta^2 = .12$]. However, again the large effect size indicates real differences may exist with more participants. The mean score for the SOBI-A for High Rocks students was 17.50 (*SD* = 1.73) while the mean was 20.18 (*SD* = 3.74) for AASIS students. See Table 4.3 for means and standard deviations for this measure.

Psychological Sense of School Membership Scale (PSSM). The Psychological Sense of School Membership Scale (PSSMS) consists of 18 self-report items on a 5 point scale. This measure evaluates level of psychological membership to the High Rocks or AASIS program. On the PSSM items 3, 6, 9, 12, and 16 were reversed scored. Individual items were summed to produce an overall score. On this measure of program membership, there were significant differences between groups with High Rocks girls having higher scores than AASIS students[$F(1, 13) = 9.5$, $p = .01$, $\eta^2 = .42$)].This means that High Rocks girls have higher sense of membership to the High Rocks program than the AASIS students do to the AASIS program. The mean score for the PSSM for High Rocks students was 81.75(*SD* = 6.02) while the mean was 60.91 (*SD* =12.06) for AASIS students. Of note, the relationship of sense of membership and participant's program is strong using eta squared analysis (Nunnally, & Bernstein, 1994; Ferguson, 2009). See Table 4.3 for means and standard deviations for this measure.

Hypotheses

Hypotheses for this study were as follows:

Hypothesis 1

The hypothesis that High Rocks girls would have higher overall college readiness scores as measured by the College Survival and Success Scale (CSSS) when compared to AASIS students was not supported.

Hypothesis 1a.The hypothesis that High Rocks girls would have higher scores on the Commitment to Education subscale of the CSSS when compared to AASIS students was not supported.

Hypothesis 1b. The hypothesis that High Rocks girls would have higher scores on the Self and Resource Management subscale of the CSSS when compared to AASIS students was not supported.

Hypothesis 1c.The hypothesis that High Rocks girls would have higher scores on the Interpersonal and Social Skills subscale of the CSSS when compared to AASIS students was not supported.

Hypothesis 1d.The hypothesis that High Rocks girls would have higher scores on the Academic Success Skills subscale of the CSSS when compared to AASIS students was not supported.

Hypothesis 1e. The hypothesis that High Rocks girls would have higher scores on the Career Planning Skills subscale on the CSSS when compared to AASIS students was also not supported.

Hypothesis 2

The hypothesis that AASIS students would have higher overall Vulnerability scores on the Resiliency Scales for Children and Adolescents (RSCA) when compared to High Rocks students was not supported.

Hypothesis 2a.The hypothesis that AASIS students would have higher Emotional Reactivity scores on the RSCA when compared to High Rocks students was not supported. In fact, data revealed a substantial effect in the other direction. Differences between High Rocks and AASIS students were not significant, but AASIS students had lower scores on Emotional Reactivity than High Rocks students. The large effect hints that real differences may exist and may be revealed in a larger sample.

Hypothesis 2b. The hypothesis that AASIS students would have lower Sense of Mastery scores on the RSCA when compared to High Rocks students was not supported.

Hypothesis 2c. The hypothesis that AASIS students would have lower Sense of Relatedness scores on the RSCA when compared to High Rocks students was not supported.

Hypothesis 3.

The hypothesis that High Rocks students would have higher overall Sense of Belonging scores on the Sense of Belonging Instrument when compared to AASIS students was not supported. In fact, data revealed a substantial effect in the other direction. Differences between High Rocks and AASIS students were not significant, but AASIS students had higher scores on both Psychological and Antecedent Sense of Belonging Scales than High Rocks students. The large effect hints that real differences may exist and may be revealed in a larger sample.

Hypothesis 3a. The hypothesis that High Rocks students will have higher Sense of Belonging –Psychological scores on the Sense of Belonging Instrument- Psychological than AASIS students was not supported.

Hypothesis 3b. The hypothesis that High Rocks students will have higher Sense of Belonging- Antecedent scores on the Sense of Belonging Instrument - Antecedent than AASIS students was not supported.

Hypothesis 4.

The hypothesis that High Rocks students will have higher PSSM scores on the Psychological Sense of School Membership than AASIS students was supported. This finding also had a very large effect indicating that there are meaningful differences in High Rocks and AASIS students' sense of psychological membership in their programs.

The analyses comparing High Rocks and AASIS students yielded few significantly significant results. However, there is useful information to be gained from these results and trends in the data that may reveal more with a larger sample. Also results speak to the need of future research within the AASIS and High Rocks programs. A discussion of results, strengths and limitations, and suggestions for future research can be found in the next section.

CHAPTER V

Discussion

This study compares two programs that designed to increase college readiness for Appalachian youth. High Rocks for Girls and Appalachian Arts and Studies in Schools (AASIS) are enrichment programs designed to empower and better prepare Appalachian high school students for attending college. The programs are structured quite differently. High Rocks is an intensive empowerment and educational program that works with girls throughout their junior high and high school careers. AASIS is coeducational and less intensive; it occurs both in students' high school classrooms and on Radford University's campus. The study focused on sophomore, junior, and senior high school students in both programs. In this chapter, the results of the present study are discussed in regard to their contribution to the study and to the programs. In addition, strengths and limitations of the study are examined, as are suggestions for the direction of future related research.

Findings

Comparisons between AASIS and High Rocks students on the following measures is discussed in this section; grade point average, college plan, father's education level, mother education level, generational College Survival and Success Scale, Resiliency Scales for Children and Adolescents, Sense of Belonging Instruments, and Psychological Sense of School Membership Scale.

Grade Point Average

There were no significant differences between groups on reported grades or grade point average. Many students were not able to report their GPA, but were able to circle their letter grades from a list. Many students did not know their GPA. In AASIS groups, students asked

what a Grade Point Average was and were unfamiliar with the term. There was a moderate to strong effect size (η^2=.09) indicating that program memberships accounted for 9% or the total variance of GPA. AASIS students had a higher GPA, but not significantly higher with a sample this size. With a larger sample, significant differences may be revealed, but also differences may be a product of estimated GPA. All the HR students knew their GPA while most AASIS students circled broader letter grade categories as they were not aware of their GPA. Since GPA was estimated for more AAIS students from broad letter grade categories, the AASIS students may have higher estimated GPAs than actual GPA.

College Plan

All students in this study planned to attend college. There were not significant differences between groups' college plans to attend a 4-year university or a community college. Given that 80% of the total sample was first-generation, the fact that all students had some plan to attend college is interesting as Terenzini et and colleagues (1996) assert that first-generation college students have lower levels of educational attainment than their continuing-generation counterparts. This may indicate that both the High Rocks and AASIS program attract students with college aspirations or the programs themselves foster college plans.

Father's Education

Father's education was calculated by two methods. Father education was first condensed into two groups calculated by determining if a participant's father had completed a 4 year degree. There were not significant differences between groups. Traditionally, the method of defining first-generation college status is more inclusive and defined as students whose parents did not graduate from a college (Hand & Payne,2008). However, it is often poorly explained if "college" is limited to a 4-year degree or if a 2-year associate's degree would also be included.

Many advocate strictly defining first-generation as students for whom neither parent as ever enrolled in college (Nunez,& Cuccaro-Alamin, 1998; Horn, & Nuñez, 2000; Choy, 2001). To accommodate both definitions, father's education was also calculated by dividing groups between those whose fathers had some college experience (including those who had attended but not completed college, 2 year degrees, and a 4year degrees) and those who had never enrolled in college (Barry, Hudley, Kelly, & Cho, 2009; Billson & Terry, 1982). There were no significant differences using this definition either.

Mother's Education

As above, mother's education was calculated by two methods. Education was first condensed into two groups calculated by determining if a participant's mother had completed a 4 year degree. There were significant differences between groups. This means more High Rocks mothers were college educated than were AASIS mothers. In fact, none of the ASSIS participants' mothers had completed a 4 year degree. The effect size for this comparison is large (Φ^2= .42), indicating that meaningful differences may exist. Mother's education was also calculated by dividing groups between those who had some college experience (including those who had attended but not completed college, 2 year degrees, and a 4year degrees) and those who had never enrolled in college (Barry, Hudley, Kelly, & Cho, 2009; Billson & Terry). There were no significant differences using this definition, but again there was a large effect size (Φ^2= .12). This large effect suggests a need for further study, as significant differences may be revealed with a larger sample. This may be an important area for exploration in future research as Stevenson and Baker (1987) focused on the mother as the primary agent of socialization and educational aspirations. Mothers' levels of education are often a stronger influence on children's

educational abilities than fathers' (Mercy & Steelman, 1982). Also, Otto (2000) demonstrates that adolescents look more to their mothers for general career advice.

Generational Status

Generational status was calculated by determining if either of a participant's parents had completed a 4-year degree. Using the traditional definition, those who had neither parent complete a 4-year college degree were coded as first-generation. There were marginally significant differences in generational status between groups (p =.08) with more first-generation AASIS students than High Rocks students. This finding had a large effect size (Φ^2 = .20). Generational Status was also calculated by dividing groups between those who had college experience including those who had attended but not completed college, completed a 2 year community college degree, or a 4 year degree. There were no significant differences using this definition, but again a large effect (Φ^2= .18). The effect size indicates that more High Rocks girls were continuing-generation than AASIS students. This finding is not surprising given that the AASIS program specifically targets "college capable, but not college bound" students and indicates many students in the program are first-generation. However, both programs report large numbers of "first in family to attend college" students. Perhaps this is worth further examination in both programs. Demographic information similar to those used in this study could be easily obtained and would prove useful in tracking first-generation students in both programs.

College Survival and Success Scale (CSSS)

There were no significant differences between groups on any subscale of the CSSS. Subscales are scored to provide a portrait of strengths and weaknesses in the following domains:(1) commitment to education, (2) self- and resource-management skills, (3) interpersonal and social skills, (4) academic success skills, and (5) career planning skills. Most

participants had above average scores on all subscales. This could indicate that students were mature and had high level of college readiness. The measure has very high face validity and all positively worded items. It is possible students overestimated their abilities. Validation of the measure by comparing scores with actual college performance may be useful for developers of the measure. Some students seemed interested in reading suggestions for improving skills in areas, but most seemed pleased to have scored so well. Since the CSSS is a relatively new measure, less is known about its validity, and further studies are needed to validate this measure with high school students and first-generation students.

Resiliency Scales for Children and Adolescents (RSCA)

Differences between groups on this measure were not significant on any of the RSCA scales (Sense of Mastery, Sense of Relatedness, and Emotional Reactivity). This means that AASIS and High Rocks students demonstrated similar levels of resiliency and strengths. Resiliency is a focus of the High Rocks program; empowerment, community building, and self-efficacy are often incorporated in High Rocks programming. AASIS program focuses primarily on cultural education and college entrance issues (application to school, financial aid, living on campus, etc.). Findings indicate that High Rocks and AASIS students similarly feel connected to others, masterful, and have equal control of their negative emotions. Of note, the Emotional Reactivity Subscale had a substantial effect size (η^2=.10) with High Rocks girls having non-significantly higher Emotional Reactivity scores. This indicates that with a larger sample, real differences between High Rocks and AASIS students may be revealed. This is interesting given the focus of the High Rocks program on community building, discipline, and leadership. Issues of emotional reactivity and positive coping are not part of the current AASIS program. Emotional reactivity is categorized on the RSCA as a "risk factor" that affects positive coping on

the Sense of Mastery and Sense of Relatedness scales. This area begs future attention as a research focus in the High Rocks program, because these results are contradictory to High Rocks' goals and interventions. Lower emotional reactivity scores in the AASIS program may also be useful in tailoring programming to maximize strengths of AASIS students.

Sense of Belonging Instrument (SOBI)

The Sense of Belonging – Psychological (SOBI-P) measures characteristics of fit and valued involvement, while the Sense of Belonging – Antecedents (SOBI-A) provides a measure of a person's ability and desire to develop a sense of belonging. There were no significant differences on the SOBI subscales between AASIS and High Rocks. The SOBI is a measure of belonging overall and is not specific to program belonging. This means that, in general, High Rocks and AASIS students feel similar levels of belonging in their communities, families, and peer groups. We know Appalachian students have strong sense of belonging to their communities and geographic places. Appalachian students often express a strong desire to be both emotionally and geographically close to their families (Bradbury & Mather, 2009; Hand & Payne, 2008). Close networks of both immediate and extended family is a hallmark of Appalachian culture and values (Jones, 1996). It is important to note, both scales on the SOBI had large effect sizes between AASIS and High Rocks students. AASIS students had higher, but not statistically significant, scores on sense of belonging measures. This indicates that real differences may be revealed with a larger sample. As the AASIS program seeks to increase Appalachian cultural ideas and identity, perhaps the general sense of belonging is influenced by AASIS place-based programming. Increased sense of cultural belonging seems to fit with AASIS program goals and certainly warrants further study.

Psychological Sense of School Membership Scale (PSSM)

The PSSM is a measure of psychological sense of membership to the High Rocks or AASIS program. There was a significant difference between groups with High Rocks girls having higher scores. High Rocks girls have a stronger sense of membership to the High Rocks program than the AASIS students to the AASIS program. Given the level of involvement in the High Rocks program, including overnight visits, afterschool meetings, and the increased time commitment of the High Rocks program this finding is not surprising. Data was collected from only 4 High Rocks girls during afterschool tutoring; these girls had a very high level of involvement in the program. It was the opinion of High Rocks leadership that these girls were the "most active" in the program and certainly the most active in the upper class grades (10^{th} - 12^{th}grade). It seems intuitive that these girls would have high levels of affiliation with High Rocks reflected by their scores on the PSSM. This finding is intriguing in the light of the data trends on the Sense of Belonging Instrument. While there were not significant differences on the SOBI, substantial effect sizes hint that changes may exist in a larger sample. High Rocks students had significantly higher PSSM scores, but not higher SOBI scores. Further research could perhaps seek to find differences in general sense of belonging and program membership as outcome measures or thorough involvement in the program. The possible differences in general sense of belonging and sense of program membership suggests further research in both programs.

Strengths

A strength of this study is that it provides more information than is currently available to each program about their students' demographic information, generational status, college plans, strengths and areas of growth. Data collection troubles could be viewed as useful information for the programs in themselves. For example, the difficulty of participant recruitment due to varying

institutional, classroom instructor, and student investment provides critical information for both the AASIS and High Rocks programs. A deeper understanding of students' profiles, needs, and strengths could be used to improve continued involvement in the programs, tailoring programming, and perhaps soliciting financial and community support. This study's results provide each program an opportunity to begin to catalogue and college basic demographic information about participants. It also provides a concrete way to discuss what program leaders feels is more important to know about students. The measures used in this study could be used as before and after measures to evaluate program goals and outcomes. Also, currently, both programs could benefit from operationalized definitions of the students they seek to help for funding sources. For example, the AASIS program may be eligible for specialized funding as so many of their students are first-generation and all have college aspirations.

Although sample size is small and many results are non-significant, this information can be used to structure programming to meet student needs and to design future outcome research or program evaluation. Both programs have engaged and energetic students; however, little demographic or outcome data has been available prior to the current study. Outcome data can offer concrete proof that the program is meeting its goals and aspirations; it can also provide clear assessment of areas of the program that are not effective. Both programs work very hard and have staff who dedicate many volunteer hours to the program, by clearly identifying "what works" and "what doesn't work," staff may be able to budget energy and time towards the most effective interventions. Outcome research can also increase investment from outside stakeholders. For example, it appeared that AASIS was valued differently by the various school systems and teachers. Outcome research could increase energy and investment from school leadership and parents.

With only 15 participants, it would be very difficult to find differences between groups. It is notable that while few significant results were found with such a small sample size, effect sizes are quite large on several measures between groups. This hints that true differences may exist and may be revealed with more participants. Outcome research could be integrated into the beginning processes of each program or collected as part of program involvement.

Limitations

Sample Size

A major limitation of this study is the small sample size. The programs themselves presented a limited sample to begin with, although programs believed there would be a high level of participation from all stakeholders. Originally researchers and programs anticipated 80 AASIS students and 25 High Rocks students; these sample numbers were small but represented a large portion of female sophomores, juniors, and seniors in both programs. However, this project required several layers of the consent process. School systems, superintendents, principals, classroom teachers, parents, and students themselves all needed to give consent to collect data from participants. This consent process presented several issues. Five of the seven county school systems and high school principals with AASIS students were originally supportive of data collection in the classroom. One of these principals withdrew his support later in the school year as he had forgotten about the proposed research and felt there was not time with other state examination and educational requirements. In the remaining four schools, there were varying levels of classroom teacher involvement. Teachers expressed difficulty organizing AASIS meetings and reported poor student attendance on club days and meetings. Very few parental consent forms were returned even after multiple copies were distributed. Data was collected from two schools in which teachers were very active in organizing students and the return of consent

forms. Student absence from school on data collection days was also a factor. Of note, on both of these collection dates students were highly motivated, seemed excited about the AASIS program, and peppered the researcher with questions related to college attendance. In the High Rocks sample, program organizers were active in recruiting participants, but found that there was poor attendance to weekly tutoring and other High Rocks programming by upper class students. There appear to be very different ideas about ways to define "active" High Rocks members among staff. Despite extending consent return deadlines, postponing data collection school visit dates, and frequent contact with classroom teachers the primary researcher exhausted all available participants in both programs for timely data collection.

Self-Selection and Self-Report

Since students were responsible for the return of parental consent forms and attending data collection meetings there is a self-selection limitation in generalizing findings to the programs overall. Classroom teacher investment and institutional support likely directly influenced student buy-in for this study. For AASIS students, it can be assumed that data was collected from the students who were responsible enough to return forms, motivated to attend meetings, and had both classroom teacher and school administration support. High Rocks participants were identified by staff as the "most involved" older students in the program. There were many students who were involved at a much lower level and do not regularly attend tutoring, meetings, and community programs; these students' perspectives are not represented in this sample.

An additional limitation is that as the questionnaires are self-reported, the possibility exists that participants will seek appear socially desirable rather than provide an accurate representation of their thoughts and feelings. Students may have different levels of investment in

their programs. Social desirability and strong feelings for their respective programs may result in an attempt to present more favorably.

Data Collection Time

Another limitation is that data was collected from groups at several different times of the school year. The effect of the time of the academic year (i.e. college applications and interview deadlines) may contribute to differences between groups. The trouble with organizing the return of consent forms and classroom data collection dates meant that data collection occurred during both the fall and late spring semester of the school year. The return of parental consent forms was likely affected by missed days due to inclement weather, school holidays, student illness, and outside appointments. AASIS teachers reported that students often missed scheduled club meetings and club days were often rescheduled because of changing school schedules. High Rocks staff spoke about college visits and other overnight trips as distractions from regular programming and irregular attendance from girls due to fatigue and family obligations. Together, scheduling difficulty, weather, and other factors limited the sample in the current study.

External Validity

The small sample size, level of involvement in each program, and program membership make these findings unique to the AASIS and High Rocks programs. Data should be viewed as phenomenological rather than as revealing overall trends in Appalachia or in girls who express interest in attending college. Data is most valuable in discussing the strengths and limitations for the girls participating in both High Rocks for Girls and ASSIS. It provides a good starting place for future data collection, but should be interpreted with care. Data will be shared with programs;

it is hoped it will be used to tailor programming to Appalachian students' needs and maximize strengths.

Considerations for future research

Participatory Program Evaluation

High Rocks and AASIS have very dedicated staff and volunteers who work hard to make a difference for Appalachian students' college readiness and overall wellbeing. There are many other stakeholders who have varying levels of investment in the program. Parents and family members, teachers, principals, superintendents, and other community members want their students to be successful and productive. Both AASIS and High Rocks programs would benefit from further research and program evaluation. Staff members and volunteers may feel there is little time for program evaluation, but effective evaluation can actually reveal areas that are less effective and should receive less attention. Evaluation can reveal what is working and what is less effective in programs. A solid knowledge of program efficacy, strengths, and areas of needed growth are useful for all participants. With a deeper understanding of the effectiveness of aspects of programming, leaders can begin to improve and streamline activities to better serve students. Program evaluation can also show an organization's utility and efficacy to the community and/or financial supporters. Also, evaluation can reveal to program leadership how each of the active players in the program are functioning – parents, teachers, staff members, and students themselves have useful voice in understanding how a healthy a program may be and areas that would benefit from more active care. Program evaluation can also provide data for other programs to understand effective methods of helping and begins to build an evidence base for future programming.

This project reveals that students in High Rocks and AASIS are unfamiliar with data collection as a part of involvement in the programs. Perhaps since there is so little data available, qualitative methods may be most useful initially. Community Based Participatory Research is a model in which the students themselves would have ownership in the process of deciding the sorts of information to collect and active in data collection, analysis, and reporting. CBPR is driven by participants within the community, in this case, driven by the AASIS students, teachers, and staff or the High Rocks students and staff. The community members design, implement, analyze, and report findings in the ways that make the most sense to them and best meet their needs. Community Based Participatory Research may not only increase student participation in general (increasing sample size), but also align with the education and outreach mission and goals for each program. High Rocks seeks to encourage girls in math and science and AASIS would like to introduce students to scholarly pursuits. By encouraging students to take ownership in evaluating their respective programs, AASIS and High Rocks can benefit from the information gathered and the students can gain expertise as researchers.

It has already been discussed that the sample in the current study likely represent the more motivated and involved students. Many of these students appeared to be excited to discuss their involvement in the program. A more integrated assessment component, may also reach those who are less motivated and involved. It also could provide information for the program to be able to better meet the needs of less involved students. High Rocks participants were very active and had well-developed college plans. Qualitative interviews with these students would certainly prove useful in program evaluation. Given that High Rocks' promotional materials emphasize girls in the math and science fields, data collection and analysis would provide a valuable teaching and empowerment opportunity as well as provide information. Qualitative,

quantitative, or mixed methods designs could all be tailored to involve the girls in a participatory research framework.

AASIS students had many questions about college attendance for the researcher. They seemed energized by their scores on the CSSS (the only self-scored measure in the current study). Involving these students in discussion about the AASIS program, their perceived needs and strengths, and general data collection would reveal a wealth of information. Also, seeking student's perspectives about and perceived needs within the program would likely increase their investment in the program – and perhaps even in educational/research process in general. Students are the experts in their own experiences of the AASIS program and are often gifted and bright. By engaging students on many levels, AASIS leadership can meet the program's goal of college success by familiarizing students with college application and culture, but also by increasing their scholarly pursuits, research and interpersonal savvy, and ownership of their own educational outcomes.

Outcome Research

Outcome research for each program and more within-subjects design is an area of future research. Currently, there is very little data for AASIS students after participating in the program. It is unclear how involvement in AASIS affects students' high school performance and attrition, or college plans and attendance. All students participating in the study had plans to attend college, but it is unclear if this is a direct result of the AASIS and High Rocks programming. AASIS reports that students attend Radford University and become mentors themselves, but there is no data available to support this trend. High Rocks does track involved students after high school, but as discussed earlier many students have varying levels of participation and discontinue contact with High Rocks prior to graduation from high school. Given the very high

percentages of failure to finish high school in the counties served by High Rocks, information about high school completion and post-secondary education may be lucrative in obtaining grants and other funding opportunities (Haaga, 2004; High Rocks, 2010).

The effect of the AASIS lesson plans and Standards of Learning (SOL) in the classroom is another area where future research may focus. There is some attention in the Appalachian literature right now about place-based education (Cook & Taylor, 2001). By providing empirical support that place-based education can also meet national and state standards of learning would be very powerful proponents for programs like AASIS and for culturally-sensitive classroom instruction.

First Generation Students

The current study looked at participant's mother's and father's educational level and used several ways of defining first-generation status. In established literature, there is not a standardized definition of first-generation and many studies citing first-generation students "weaknesses" have very small effect sizes. Many of the national studies of first-generation students have enormous numbers of participants and often use demographic data from many universities and colleges. As a result, differences between first- and continuing- generation students may be significant, but not meaningful. Research in the area of first-generation college students calls for more developed definitions and more sophisticated research designs. Generational status can serve as a moderator of the relationship between psychological factors and college outcomes (Aspelmeier et al, 2012). Future research could focus on strengths and weaknesses of first-generation students as well as the efficacy of local and national programs focused on first-generation students.

Suggestions for future work

This researcher unabashedly identifies as Appalachian and has a very strong commitment to the region's youth. She plans to continue to work with adolescent girls and young woman in a way that is culturally-sensitive. Too much of current literature focuses on limitations of first generation students and Appalachians in general. Of note, most of studies belaboring the "risk factors" of first-generation students have such small effect sizes that generalizations are not supported.

Interacting with the Appalachian students in both the AASIS and High Rocks programs was engaging to the researcher and demonstrated the need for empirical support for programs like these. She has planned for some time to develop a girls' habitat in Appalachia that honors strengths of the culture's traditional wisdom, tight-knit community, and place-boundedness, as well as, addresses issues of poverty, internal colonization, and environmental devastation. Because of this current project, the researcher has an energized commitment to infuse program evaluation, data collection and analysis, and careful attention to feedback from all stakeholders in her future plans. In this intended girl's habitat, programming will center around empowerment, sustainability, and building community. The current study has emphasized the need to establish program evaluation and outcome measures in all stages of programming. Also the researcher is committed to involving students in assessment and evaluation throughout the process.

Summary

This study sought to examine two programs designed to encourage Appalachian students to be more successful in college and career choices. The small number of participants from each program and great difficulty in organizing all stakeholders (including students) to participate

fully in completing measures may indicate how unfamiliar students and leaders are with data collection as part of their involvement in the programs. Both programs have engaged and energetic students, and staff that work very hard to meet their program's goals. Both AASIS and High Rocks would benefit from knowing more about their students. Program evaluation, outcome research, and basic demographic information would aid programs in tailoring interventions to students' needs. Appalachian and first-generation college students have often been victims of poor representation, stereotypes, and cultural stigmatization in psychological, sociological, and educational literature, as well as, in popular media. There is a great need for research that acknowledges these students' unique contributions, cultural strengths, and creative solutions to college and career success. Also empirical support for programs such as AASIS and High Rocks is essential so that programs like these can continue to help Appalachian and/or first-generation college students to have a voice on college campuses and beyond.

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APPENDIX A

ID Number _____

I'm in HIGH ROCKS AASIS (circle one)

Age_____ Year in School_____
School Attended_____
County of Residence_____
Ethnic Identity (circle all that apply)
White/Caucasian
Black/African American
Latino/Latina
Asian American
Native American
Other: _____

GPA_____
I make mostly As, Bs, Cs, Ds, Fs in School (circle all that apply)

Choose one:
___ I am planning to attend a 4 year university after graduation.
___ I am planning to attend a community college after graduation.
___ I may attend college, but I'm not sure.
___ I do not plan to attend college.

Choose one:
___ My mother did not finish high school (or GED).
___ My mother did not attend college.
___ My mother attended college, but did not finish her degree.
___ My mother has a community college or 2 year degree.
___ My mother has a 4 year degree.

Choose one:
___ My father did not finish high school (or GED).
___ My father did not attend college.
___ My father attended college, but did not finish his degree.
___ My father has a community college or 2 year degree.
___ My father has a 4 year degree.

APPENDIX B

Informed Participant Assent

Assent for Participation in a Research Study

Why have I been asked to participate in the research study? You have been asked to participate in a study of participants in either High Rocks for Girls or in Appalachian Arts and Studies in Schools program.

Who is running the research study? I, Zetta Nicely, MA a doctoral candidate in the Counseling Psychology program at the Radford University, will be conducting the study. I can be reached at 304-661-2070.

What is the purpose of the study? The purpose of the study is to study is to provide information about college readiness, strengths and weaknesses for participants in High Rocks for Girls and Appalachian Arts and Studies in Schools.

What do I have to do for the study? For the study you will be asked to agree here in writing to take the study. Then you will be asked to fill out an anonymous survey that will take about 45-60 minutes to complete. You can also agree to let the researchers contact you for a follow-up discussion of the results once the study is finished.

When will the study be done, and for how long will the study be done? The study will begin in July of 2010 and be completed in the Spring 2012.

Why would I not participate in the study? You will not be a candidate for the study if you are not in the 10^{th}, 11^{th} or 12^{th} grade and are not a participant in either AASIS or High Rocks.

What are the risks and/or discomforts to me of participating in the study? The risks of participating in the study are very slight. The only foreseeable risk of participating in this research project may be that after taking the survey you will begin to think about things that may make you uncomfortable. In this case, we could provide a list of good counselors in the area. There also may be risks that are unknown and unforeseeable at this time.

What will the benefits of participating in the study be? The benefits to participating in the study are that you will be contributing to a better understanding of AASIS and High Rocks programming.

What will the cost of the study be for me? There will be no costs to you for participating in the study other than your time.

Will I receive any rewards from participating in the study? There are no rewards for participating in the study.

Do I have to participate in the study? You should participate in the study only because you want to participate. You do not have to participate in the study. There will be no penalty from High Rocks or ASSIS if you do not participate or withdraw from this research project.

What if I decide not to finish the study? There are no penalties for you if you choose not to complete the study. You may withdraw at any time without penalty.

Is this study confidential? Yes, any identifying information associated with you will be removed before data is entered. No one will be able to know that information provided came from you. No names will be used on any of the measures.

What other information do I need to know? You may want to know that this research will be used as the basis for my doctoral dissertation.

What if I have questions? If you have additional questions, you may call me, Zetta Nicely at 304-661-2070 This study has been approved by the Radford University Institutional Review Board for the Review of Human Subjects Research. If you have questions or concerns about your rights as a research subject or have complaints about this study, you should contact Dr. Dennis Grady, Dean, College of Graduate and Professional Studies, Radford University, dgrady4@radford.edu, 1-540-831-7163.

Signature_____
Research participant

Signature_____
Primary investigator

APPENDIX C

Sense of Belonging Instrument

(1) Very
Relevant……(4)
Not at all Relevant

1. _____ I wonder if I really fit in.
2. _____It's important to be valued by others.
3. _____I am not sure if I fit with friends.
4. _____I have felt valued in the past.
5. _____I describe myself as a misfit.
6. _____It's important that I fit.
7. _____People accept me.
8. _____I feel like piece of a jigsaw puzzle.
9. _____I have qualities that other's value.
10. _____I feel like what I offer is valued.
11. _____I feel like an outsider.
12. _____I am working on fitting in.
13. _____I have no place in this world.
14. _____I want to be part of things.
15. _____I could disappear for days.
16. _____I am a part of mainstream society.
17. _____It's important to me that my opinions are valued.
18. _____I tend to observe life rather than participate.
19. _____If I died, few people would come to my funeral.
20. _____I feel like a square peg.
21. _____Others recognize my strengths.
22. _____I really don't fit.
23. _____My background and experiences are different than most people's.
24. _____I prefer to not see or call my friends.
25. _____I feel left out.
26. _____I can make myself fit.
27. _____I feel not valued or important.

APPENDIX D

Psychological Sense of School Membership Measure

(1) Strongly Disagree
(2) Disagree
(3) Neither agree or disagree
(4) Agree
(5) Strongly Agree.

_____ 1. I feel like a real part of High Rocks.
_____ 2. People here notice when I'm good at something.
_____ 3. It's hard for people like me to be accepted here.
_____ 4. Other students in this school take my opinions seriously.
_____ 5. Most teachers at High Rocks are interested in me.
_____ 6. Sometimes I feel like I don't belong here.
_____ 7. There is at least one teacher or other adult at this school I can talk to if I have a problem.
_____ 8. People at this school are friendly to me.
_____ 9. Teachers here are not interested in people like me.
_____ 10. I am included in lots of activities at High Rocks.
_____ 11. I am treated with as much respect as other students.
_____ 12. I feel very different from other other students here.
_____ 13. I can really be myself at this school.
_____ 14. The teachers here respect me.
_____ 15 People here know I can do good work.
_____ 16. I wish I were in a different school.
_____ 17. I feel proud of belonging to High Rocks.
_____ 18. Other students here like me the way I am.

APPENDIX E

Informed Parental Consent

Consent for Participation in a Research Study- Parental Form

Why has my child been asked to participate in the research study? Your child has been asked to participate in a study of because s/he participates in either High Rocks for Girls or in Appalachian Arts and Studies in Schools program.

Who is running the research study? I, Zetta Nicely, MA a doctoral candidate in the Counseling Psychology program at the Radford University, will be conducting the study. I can be reached at 304-661-2070.

What is the purpose of the study? The purpose of the study is to study is to provide information about college readiness, strengths and weaknesses for participants in High Rocks for Girls and Appalachian Arts and Studies in Schools.

What does my child have to do for the study? For the study you will be asked to agree here in writing to take the study. Then your child will be asked to fill out an anonymous survey that will take about 45-60 minutes to complete. You can also agree to let the researchers contact you for a follow-up discussion of the results once the study is finished.

When will the study be done, and for how long will the study be done? The study will begin in July of 2010 and be completed in the Spring 2012.

Why would my child not participate in the study? Your child will not be a candidate for the study if s/he is not in the 10^{th}, 11^{th}, or 12^{th} grade and is not a participant in either AASIS or High Rocks.

What are the risks and/or discomforts to me of participating in the study? The risks of participating in the study are very slight. The only foreseeable risk of participating in this research project may be that after taking the survey your child may begin to think about things that may make them uncomfortable. In this case, we could provide a list of good counselors in the area. There also may be risks that are unknown and unforeseeable at this time.

What will the benefits of participating in the study be for my child? The benefits to participating in the study are that your child will be contributing to a better understanding of AASIS and High Rocks programming.

What will the cost of the study be for my child? There will be no costs to you or your child for participating in the study other than your child's time.

Will I receive any rewards to my child for participating in the study? There are no rewards for participating in the study.

Does my child have to participate in the study? Your child should participate in the study only because sh/he wants to participate. No one is required to participate in the study. There will be no penalty from High Rocks or ASSIS if your child does not participate or withdraws from this research project.

What if my child decides not to finish the study? There are no penalties for your child if s/he chooses not to complete the study. You may withdraw your child at any time without penalty.

Is this study confidential? Yes, any identifying information associated with your child will be removed before data is entered. No one will be able to know that information provided came from your child. No names will be used on any of the measures.

What other information do I need to know? You may want to know that this research will be used as the basis for my doctoral dissertation.

What if I have questions? If you have additional questions, you may call me, Zetta Nicely at 304-661-2070. This study has been approved by the Radford University Institutional Review Board for the Review of Human Subjects Research. If you have questions or concerns about your rights as a research subject or have complaints about this study, you should contact Dr. Dennis Grady, Dean, College of Graduate and Professional Studies, Radford University, dgrady4@radford.edu, 1-540-831-7163.

Please put an X before all the following that apply.

_____ I agree that my child, _____, may participate in the research study.

_____ I do not want my child, _____, to participate in the research study.

Signature_____Parent/legal guardian of participant

Signature_____Primary investigator