Risk and Protective Factors in Rural Youth: Initial Findings From the NC-ACE Rural Adaptation Project

Paul R. Smokowski, Ph.D., MSW
Shenyang Guo, Ph.D.
Caroline Robertson, MSW, LCSWA
Katie Cotter, MSW
Martica Bacallao, Ph.D., MSSW
Kristina Webber, MSW, Cynthia F. Rizo

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* Paul Smokowski’s spouse
Many rural stressors absent in urban environments
  - Geographic isolation
  - Minimal community resources
  - Lack of access to health services

Poorer health outcomes and higher rates of:
  - Unintentional injuries
  - Suicide
  - Obesity
  - Obstructive Pulmonary Disease
  - Adult depression
Little research on risk & protective factors for rural youth (Carlson, 2006; Dawkins, 1995)

Particular dearth on adaptation over middle and high school years (Witherspoon & Ennett, 2011)

Majority of rural youth research focuses on alcohol and drug use
  - Rural youth at elevated risk (Swaim & Stanley, 2011; Martino et al., 2008)

Lack of research devoted to aggressive behavior and delinquency
  - Participation in deviant acts increased from 32% in 6th to 61% in 12th grade (Witherspoon & Ennett, 2011)
  - Verbal harassment reported by 68% (Swaim, Henry, & Kell, 2006)

Prevalence vs. Intensity of the Problem
  - Rural gang membership lower, but members reported fewer school bonds, more hard drug use, & higher levels of gun/weapon possession (Dukes & Stein, 2003)
One of the poorest counties in U.S. (poverty rate 34.7% vs. 13% for U.S.).
The most ethnically diverse rural county in the nation (43% Native American, 9% Latino, 30% African American, 17% non-Latino White).
Largest non-reservation concentration of Native Americans (Lumbee Nation) of any county in the nation.
Homicide rate 23.9/100,000, >four times the national rate 5.2/100,000.
Violent Crimes by Juveniles in Robeson County Per 1000

Source: NC Department of Juvenile Justice and Delinquency Prevention
Note: Wake, Durham, Guilford, Forsyth, Cumberland, and Mecklenburg Counties are urban areas with large populations. The remaining counties are rural with high levels of youth violence.
Two rural counties: Census in County 1, randomly selected 40% of students in County 2

Baseline data for the RAP collected in Spring 2011, then annually in Spring thereafter

Panel study: Follow core cohort for 5 years, add 1,000 more 6th graders each year for comparison.

Students gave assent and completed an online assessment (SSP+) in a school computer lab
  - Each student was given a $10 gift card
  - Students were free to skip any question or stop the assessment at any time
Sample: 6th-8th Grade Students
2,873 in target county
and 1,448 in comparison county

- Gender: 48.6% Male
- Free/Reduced Lunch: 67.9%
- Mean Age: 12.81 years

- Native American: 26%
- African American: 24%
- Anglo/White: 26%
- Latino: 9%
- Mixed/Other: 14%
School Success Profile (SSP)
- 220 items, self report measure
- Attitudes and perceptions about school, friends, family, neighborhood, self, health and well-being

SSP+: Additional Scales
- Youth Self-Report: Internalizing and Externalizing behaviors
- Rosenberg Self-Esteem Scale
- Phinney’s Ethnic Identity Measure
- Conflict Behavior Questionnaire: Parent-Child conflict
## SSP+ Reliabilities from RAP baseline

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<tr>
<th>School</th>
<th>Personal Beliefs and Experiences</th>
<th>Mental Health</th>
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<tbody>
<tr>
<td>• Teacher Support (8 items; $\alpha=.888$)</td>
<td>• Perceived Discrimination (3 items; $\alpha=.732$)</td>
<td>• Aggressive Behaviors (YSR: 12 items; $\alpha=.864$)</td>
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<tr>
<td>• School Danger (11 items; $\alpha=.864$)</td>
<td>• Ethnic Identity (6 items; $\alpha=.927$)</td>
<td>• Internalizing Problems (YSR: 8 items; $\alpha=.900$)</td>
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<td>• Anxiety (3 items; $\alpha=.776$)</td>
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<td>• Academic Relevance (6 items; $\alpha=.884$)</td>
<td></td>
<td>• Self-esteem (5 items; $\alpha=.893$)</td>
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<tr>
<td>• School Hassles (13 items; $\alpha=.910$)</td>
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</tr>
<tr>
<td>Neighborhood</td>
<td>Peers</td>
<td>Family</td>
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<td>--------------</td>
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</tr>
</tbody>
</table>
| **Neighborhood Support**
(5 items; $\alpha=.795$) | **Friend Support**
(5 items; $\alpha=.873$) | **Parent Support**
(5 items; $\alpha=.907$) |
| **Neighborhood Crime**
(3 items; $\alpha=.752$) | **Delinquent Friend Behavior**
(9 items; $\alpha=.906$) | **Parent Child Future Orientation**
(3 items; $\alpha=.887$) |

**Peer Rejection**
(3 items; $\alpha=.718$) | **Peer Pressure**
(5 items; $\alpha=.750$) | **Parent Education Support**
(6 items; $\alpha=.829$) |

**Parent-Child Conflict**
(10 items; $\alpha=.834$) |
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Bullying Victimization: Cross Sectional and Longitudinal Correlates of Traditional and Electronic Bullying Victimization in Rural Youth
Bullying: An Overview

Definition
- Intention, power imbalance, repetition, and provocation
- Used to gain or maintain dominance/status

Prevalence Rates
- Nationally representative sample: almost 30% of students reported being involved in bullying
  - Bullies: 3,708,284
  - Victims: 3,245,904
- Rural youth may be at a higher risk as 82% of youth in one rural sample reported bullying victimization
Bullies, victims, bully/victims, and bystanders are all negatively impacted by bullying:

- Victims and bully/victims have the worst outcomes.
- Negative victim outcomes include: low self-esteem, poor school attendance, nervousness, difficulty making friends, poor peer relationships, increased internalizing problems, withdrawal, and feelings of helplessness, powerlessness, and rejection.

Long term negative consequences for victims:

- Increased rates of depression, anxiety, intimacy problems, and violence as adults.
Research Question 1: How Common are Negative School Experiences?
Prevalence of Negative School Experiences

- Bullied (12 months): 23
- Electronically Bullied (12 months): 11
- Afraid of Being Hurt at School*: 30
- Afraid of Being Hurt on Way to School: 22
- Insulted (30 Days): 44
- Disrespected (30 Days): 51
- Excluded from Activity (30 Days): 27
- Treated Unfairly (30 Days): 45
Negative School Environment

- **Males**
- **Females**

* Happens sometimes or often

- Students Make Fun of Other Students*
- Disagreements Between Different Races
- Destruction of School Property by Students
- Students Carry Weapons
- Students in Gangs
- Students Verbally Abuse Teachers
- Students Physically Abuse Teachers

Prevalence

- 95
- 66
- 95
- 66
- 66
- 47
- 19
Research Question 2: What Demographic, Psychological, Social, and Environmental Risk and Protective Factors Predict Bullying Victimization?
Dependent Measures

- Traditional bullying victimization
  - “During the past 12 months, have you ever been bullied on school property?”
    - Yes or No

- Cyber bullying victimization
  - “During the past 12 months, have you ever been electronically bullied? (Including being bullied through e-mail, chat rooms, instant messaging, Web sites, or texting.)”
    - Yes or No

It's difficult to measure this...
Independent Measures

Demographics
  - Age, race, gender, SES

Psychological factors
  - Internalizing symptoms, self-esteem, externalizing Behaviors

Social support
  - Teacher, friend, parent, neighborhood support

School Characteristics-Cross Sectional Only
  - Size, student achievement, teacher turnover rate, teacher quality, school poverty level, teacher experience

School Experiences-Longitudinal Only
  - School satisfaction, perceived discrimination, school danger, school hassles
<table>
<thead>
<tr>
<th></th>
<th>Traditional Bullying</th>
<th>Electronic Bullying</th>
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<tbody>
<tr>
<td>Age</td>
<td>.74***</td>
<td>.96</td>
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<tr>
<td>Gender (Female)</td>
<td>.87</td>
<td>1.90***</td>
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<tr>
<td>Race (White)</td>
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<tr>
<td>Hispanic</td>
<td>.72*</td>
<td>.47***</td>
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<tr>
<td>African American</td>
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<tr>
<td>Native American</td>
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<td>Anxiety</td>
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<td>Depression</td>
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<td>Externalizing Problems</td>
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<td>Self Esteem</td>
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<td>.98</td>
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<td>School Satisfaction</td>
<td>.48***</td>
<td>.77*</td>
</tr>
<tr>
<td>Friend Support</td>
<td>.77**</td>
<td>.95</td>
</tr>
</tbody>
</table>

Traditional: Model chi-square (df) = 336(28)***
Nagelkerke R Square .142

Model Chi-square (df) = 213(28)***
Nagelkerke R Square .114

School Level effects were not significant.

Models also control for SES, teacher, parent, and neighborhood support; school and teacher characteristics.
Overall prevalence of traditional bullying victimization in this sample (23% range by school 11%-38%) was higher than previous studies reporting 10%-30%

Overall prevalence of electronic bullying victimization: 11%

Traditional, but not electronic, bullying decreases with age

Electronic bullying is more common for females than males

African Americans and Hispanic/Latinos reported less bullying victimization than their Caucasian classmates

Students who reported high levels of anxiety and depression were significantly more likely to experience bullying victimization (both types)

Students with externalizing problems were more likely victims of electronic bullying
Overall, individual level factors were more important predictors than school level factors, confirming previous reports.

Peer support was the only significant source of support that predicted lower bullying victimization.

- This finding points to the importance that the peer group has for adolescents, perhaps suggesting the utility of an intervention focused on peer mediation and strengthening the quality of peer relationships.
- It may also be that teachers, parents, and neighbors are unaware of bullying victimization and school hassles and therefore do not offer needed support.
Research Question 3: Do *chronically victimized* students have more negative school experiences, lower perceived social support, and poorer mental health as compared to episodically victimized or non-victimized students?

Research Question 4: How is *cumulative victimization* related to adolescent adaptation?
A Lack of Longitudinal Research

Minimal research looking at chronic versus episodic victimization, especially for cyber bullying

- Existing research indicates that victim status is relatively stable; children who are victimized are likely to be victimized over time

- Chronic victims reported higher rates of fear, lower self-esteem, and lower use of conflict resolution skills as compared to non-victims and episodic victims

- Timing and Chronicity Matter: Chronic victims (victimized in childhood and adolescence) and current episodic victims (victimized in adolescence but not in childhood) were more poorly perceived by peers as compared to non-victims and adolescents who were only victimized in childhood (children heal over time unless victimization continues)
**Victimization Groups**

- **Chronic Victims**: reported experiencing traditional or cyber bullying victimization at Year 1 and Year 2
- **Episodic Year 2 Victims**: reported experiencing traditional or cyber bullying victimization in Year 2, but not Year 1
- **Episodic Year 1 Victims**: reported experiencing traditional or cyber bullying victimization at Year 1, but not Year 2
- **Non-Involved Youth**: no reported traditional or cyber bullying victimization in Year 1 or Year 2
Traditional Bullying Victimization and Mental Health

- Self-Esteem
- Aggression
- Anxiety
- Depression

- Never a Victim
- Episodic Victim - Year 1
- Episodic Victim - Year 2
- Chronic Victim Years 1 & 2
Cyber Bullying Victimization and Mental Health

<table>
<thead>
<tr>
<th></th>
<th>Self-Esteem</th>
<th>Externalizing</th>
<th>Anxiety</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never a Victim</td>
<td>2.71</td>
<td>1.39</td>
<td>1.41</td>
<td>1.81</td>
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<tr>
<td>Episodic Victim</td>
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<td>1.64</td>
<td>1.97</td>
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<td>1.52</td>
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<tr>
<td>Chronic Victim</td>
<td>2.43</td>
<td>1.64</td>
<td>1.79</td>
<td>1.9</td>
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</table>

- Self-Esteem
- Externalizing
- Anxiety
- Depression

- Never a Victim
- Episodic Victim
- Episodic Victim - Year 2
- Chronic Victim
Cyber Bullying Victimization and School Experiences

- Never a Victim
- Episodic Victim - Year 1
- Episodic Victim - Year 2
- Chronic Victim - Years 1 & 2

Bar chart showing:
- School Satisfaction
- Perceived discrimination
- School Danger
- School Hassles
Traditional Bullying Victimization and Social Support

- **Never a Victim**
- **Episodic Victim**
  - Year 1
  - Year 2
- **Chronic Victim**
  - Years 1 & 2

<table>
<thead>
<tr>
<th>Support Type</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Years 1 &amp; 2</th>
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<td>Neighbor Support</td>
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### Standardized Coefficients for Models Predicting Year 2 Social Support and Mental Health with Cumulative Victimization

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<th>Peer Rejection</th>
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<th>Aggress</th>
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<td>.063 ***</td>
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- *p* < .05; ** *p* < .01; *** *p* < .001
- *N* is greater than 2,700 for all models
- OLS Regression
All three victim groups for both traditional and cyber bullying reported higher levels of anxiety, depression, and externalizing behaviors as compared to Non-Victims

- Shame and humiliation caused by victimization is a partial explanation for the worse mental health outcomes of victims

Any amount of current, past, or ongoing victimization resulted in lower levels of school satisfaction, school safety, and perceived social support

- Generally, chronic victims have the worst outcomes, followed by Episodic Current Year Victims, and then Episodic Last Year Victims

Chronic Victimization is most detrimental across a diverse set of outcomes
Traditionally victimized students in all 3 categories perceived less friend support than Non-Victims, this did not hold true for victims of cyber bullying

- Traditional bullying occurs within the school environment, it is likely that victims’ friends have witnessed the bullying and may not have assisted the victim while cyber bullying is private
- Due to the anonymous nature of cyber bullying, cyber bully victims assume that their friends are not the perpetrators and therefore levels of perceived friend support are minimally affected by cyber bullying victimization

Both traditional and cyber victims report less parent and teacher support

- Indicates that parents and teachers are either not intervening to help stop traditional and/or cyber bullying or that victims do not tell their parents/teachers about the bullying so parents/teachers cannot intervene due to their lack of knowledge
Depression and Self-Esteem in Rural Adolescents
Background

- Depression is the most common mental health disorder among the adolescent population
  - 30% of U.S. adolescents experience some form of depression
  - 9% of U.S. adolescents experience moderate to severe symptoms (Rushton, Forcier, & Schectman, 2002)
- High levels of depression often co-occur with low levels of self-esteem (Millings, Buck, Montgomery, Spears, & Stallard, 2012)
- Protective factors (Arslan, 2009; Mallery, 2011)
  - Positive peer relationships and support
  - Positive adult relationships and support
  - School satisfaction
  - High levels of religious participation
Gender: Females at a greater risk for depression and low self-esteem (Hankin, 2006)

Poor Peer Relationships: depressed adolescents have poorer quality peer relationships and poor peer relationships are a risk factor for low self-esteem (La Greca & Harrison, 2005)

Parent-Child Conflict: High level’s associated with depression and low self-esteem (Smokowski & Bacallao, 2010)

SES: Some researchers show low SES connected to high depression and low self-esteem, but results are mixed (Goodman, Slap, & Huang, 2003)

Minimal research examining how school characteristics effect mental health
  o School racial composition (Walsemann, Bell, & Maitra, 2011)
  o School SES (Farrell, Sijbenga, & Barrett, 2009)
  o School size (Lleras, 2008)
Independent Variables

- Student Demographics
  - Age, Gender, Race, Free/reduced price lunch

- Social Capital Measures
  - Friend Support, Teacher Support, Parent Support, and Neighborhood Support

- Psychological Factors
  - Ethnic Identity, Religious Orientation, Parent-Child Conflict, Negative Peer Relationships, Negative Friend Behaviors, Discrimination Experiences, School Satisfaction

- School Characteristics:
  - School size, Percentage of students at or above grade level in reading and in math, Teacher turnover rate, Percent of teachers with advanced degrees, Racial Composition of school, Percent of students using free or reduced lunch (a proxy for SES), Percent of teachers with 4 to 10 years of experience, and percent of teachers with 10 years or more experience
Dependent Variables

- Depression ($\alpha=.87$)
  - 4 items from SSP+ Internalizing Scale
  - e.g. “I often feel sad” & “I often feel all alone in the world”

- Self-esteem ($\alpha=.89$)
  - 5 items (Adapted version of Rosenberg Self-Esteem Scale)
  - “I feel good about myself” & “I am able to do things as well as most other people”

- Both DVs were non-normally distributed and positively skewed. We used ordinal logistic regression to examine Low, Medium, and High categories.
Students were clustered within schools and therefore may share some of the same characteristics.

Tested clustering using the Intraclass coefficient (ICC) with DVs in original metric and again as dichotomized variables.

Very low ICCs
- Suggests that, at worst, less than 1% variation in an outcome variable lies between schools.
  - Depression: 0.0083
  - Self-esteem: 0.0025

Handled missing data using listwise deletion.
- 3,403 depression model (78.75% of original sample)
- 3,405 self-esteem model (78.80% of original sample)
<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Self Esteem</th>
</tr>
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<tbody>
<tr>
<td>Gender (Female)</td>
<td>2.13***</td>
<td>.67***</td>
</tr>
<tr>
<td>Free/Reduced Lunch</td>
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<td>.99</td>
</tr>
<tr>
<td>Race (White)</td>
<td></td>
<td></td>
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<tr>
<td>African American</td>
<td>.92</td>
<td>2.22***</td>
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<td>1.79***</td>
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<tr>
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<tr>
<td>Religious Orientation</td>
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<td>1.56***</td>
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<tr>
<td>Perceived Discrimination</td>
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<td>.41***</td>
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<td>1.23</td>
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<tr>
<td>School Satisfaction</td>
<td>.64***</td>
<td>2.83***</td>
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<tr>
<td>Friend Support</td>
<td>1.11</td>
<td>1.65***</td>
</tr>
<tr>
<td>Parent Support</td>
<td>.64**</td>
<td>2.07***</td>
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<tr>
<td>Teacher Turnover (School Level)</td>
<td>.98*</td>
<td>1.13</td>
</tr>
<tr>
<td>Free Lunch (School Level)</td>
<td>.99*</td>
<td>1.01</td>
</tr>
</tbody>
</table>

**Ordered Logistic Regression Odds Ratios, N=3,403**

Depression: Model LR Chi-square (df) = 1,313(30)***
Pseudo R Square .22
Low: 59.24%
Medium: 32.62%
High: 9.14%

Self Esteem Model LR Chi-square (df) = 895(30)***
Pseudo R Square .22
Low: 2.35%
Medium: 20.32%
High: 77.35%

Models also control for age, school, and teacher characteristics.
Discussion: Demographic Variables

Gender (Higher Depression, Lower Self-Esteem for Females)
- Females go through puberty earlier than males, which according to the maturational deviance hypothesis, may account for their increased depression
- The maturational deviance hypothesis states that early puberty is a deviation from the norm and the resulting stress may lead to internalizing disorders such as depression
- Strictly prescribed and traditional gender roles often found in rural communities, men are supposed to be masculine and dominant and women are expected to be feminine and compliant (Little & Panelli, 2003)

Race (Higher Self-Esteem for African Americans and Native Americans)
- Substantial number of AA and NA minority youth promoted a feeling of solidarity and cohesion which was translated into high levels of self-esteem
- Ethnic identity is related to a higher self-esteem and minorities are more likely to have a high ethnic identity as compared to Caucasians; high ethnic identity might explain higher self-esteem in African American and Native American youth

SES (Higher SES, Less Depression)
- SES link to depression may indicate that middle school students are aware of their relative disadvantage in resources and opportunities. “Social Mirroring” effects may lead them to believe they are less valued, leading to depression
Discussion: Social Capital Variables

Negative Peer Relationships (Higher Depression, Lower Self-Esteem)
- Negative peer relationships likely indicate a lack of close and supportive friendships; Friends become increasingly important in adolescents as teens strive for autonomy from parents and family
- Highlights the need for school personnel to intervene and stop negative peer interactions
- Counterintuitive that friend support was not associated with lower levels of depression
  - Indicates that seemingly well adjusted children with high levels of friend support are not immune from depression
  - Additional school based interventions may be needed to tackle depression as friend support is not adequate

Parent-Child Relationships (P-C Conflict = Higher Depression, Lower Self Esteem; Opposite Effect for Parent Support)
- Negative effects of parent-child conflict on depression far exceeded the positive effects of parent support
- Indicates the need for immediate intervention in family conflict
  - Suggests the utility of family relationship enhancement models in rural areas to help parents and adolescents communicate and resolve lingering problems
Religious Orientation (Higher Self Esteem)

- Religious congregations are often tight knit and supportive, providing group affiliation and heightening self esteem
- Like other sources of social support (e.g. parent and peers) this supportive religious community could bolster self-esteem
- Perhaps believing in a higher power increases overall life satisfaction and sense of purpose which serves to increase self-esteem (e.g., the feeling of being part of something larger than oneself)

School Satisfaction (Less Depression, Higher Self Esteem)

- School satisfaction is likely a marker for social and academic success, which likely bolsters self-esteem and buffers against depression. This relationship may be mediated by a personal sense of pride in academic accomplishments and future optimism
Limitations

- Depression and self-esteem are complex concepts and it is possible that the 4 and 5 item scales used did not fully capture the constructs.
- Surveys were filled out in computer labs with other students present.
- Listwise deletion: Missing cases were higher risk students, which is common, but may underestimate the true strength of effects.

Conclusions

- Despite the stressful environment, the majority of this sample had low (59.24%) levels of depression and high levels of self-esteem (77.35%), which is a positive and hopeful finding:
  - Lower levels of depression than national averages
  - These results suggest that despite the cumulative risk factors present in Robeson that the adolescent population is resilient.
- Targeted interventions should not only focus on strengthening individuals, but should take an ecological approach and focus on strengthening youths’ social support systems, especially positive adult relationships such as the parent-child relationship.
Anxiety and Aggression in Rural Youth
Why study anxiety and aggression together?

- When positive strategies for reaching goals are blocked, Strain Theory posits that emotional responses (e.g., anxiety, frustration, anger) lead to negative behaviors (e.g., aggressive behavior, delinquency)
- Aggressive children were more anxious than non-aggressive children (McLeod & Shanahan, 1993)
- In a longitudinal study, the strongest predictors of internalizing difficulties was the combination of relational and physical aggression (Crick, Ostrov, & Werner, 2006)
- Rural youth may be at increased risk for anxiety & aggression (Robbins et al., 2008)
Methods: Dependent Variables

- **Anxiety**
  - 3 items from YSR Anxiety subscale: “I often worry about my future,” “I often feel nervous or tense,” and “I often feel fearful or anxious”

- **Aggression**
  - 12-item adapted version of YSR Externalizing subscale: “I get in many fights,” “I have a hot temper,” and “I break rules at home, school, or elsewhere”

- 3-point Likert scale: “Not like me,” “A little like me,” and “A lot like me”

- Dichotomous variables were created using the midpoint (1.5)
Methods: Independent Variables

- **Demographics**: Age, Gender, Race, SES (Free/reduced lunch)

- **Proximal Microsystem Factors**:
  - Psychological: Ethnic Identity, Religious Orientation, Discrimination Experiences, School Satisfaction
  - Negative Social Relationships: Parent-Child Conflict, Negative Peer Relationships, Negative Friend Behaviors
  - Positive Social Relationships: Friend Support, Teacher Support, Parent Support, and Neighborhood Support

- **School-Level Characteristics**: School Size, % students at or above grade level in reading and math, Teacher Turnover Rate, % teachers with advanced degrees, Racial Makeup, % students using free or reduced lunch, % teachers with 4 to 10 years of experience, and % teachers with 10 or more years of experience
Multilevel proposition, where Y is the outcome variable, X is the student-level independent variable, and Z is a school-based level independent level variable.

(Snijders & Bosker, 1999)

1. Proximal microsystem relationships (i.e., parents and peers) will be associated with levels of anxiety and aggression.
2. School-Level characteristics will have less direct impact on outcomes; however will moderate proximal microsystem relationships, forming cross-level interactions.
Students are clustered within schools and therefore may share common characteristics.

Tested clustering using the Intraclass Coefficient (ICC)
- .0079 for Anxiety; .0279 for Aggression

Handled missing data using listwise deletion
- Resulted in 3,405 cases (78.8% of original sample)

Multilevel analyses with logistic regression
- Anxiety Model: 39.3% of sample reported high anxiety
- 15.8% (pseudo R^2) of variation in anxiety score was explained by the covariates in the model
- Aggression Model: 23.1% of sample reported high aggression
- 28.2% (pseudo R^2) of the variation in aggression was explained by the covariates in the model
### Logistic Regression Odds Ratios, N=3405

<table>
<thead>
<tr>
<th></th>
<th>Anxiety</th>
<th>Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (Male)</td>
<td>1.472***</td>
<td>1.385**</td>
</tr>
<tr>
<td>Free/Reduced Lunch (No)</td>
<td>1.266**</td>
<td>1.142</td>
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<tr>
<td>Ethnic Identity</td>
<td>1.224**</td>
<td>1.060</td>
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<tr>
<td>School Satisfaction</td>
<td>0.767*</td>
<td>0.421***</td>
</tr>
<tr>
<td>Parent-Child Conflict</td>
<td>8.556***</td>
<td>11.964***</td>
</tr>
<tr>
<td>Negative Peer Relationships</td>
<td>4.081***</td>
<td>2.425***</td>
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<tr>
<td>Negative Friend Behaviors</td>
<td>1.398**</td>
<td>3.952***</td>
</tr>
<tr>
<td>Teacher Turnover(%)</td>
<td>0.965*</td>
<td>0.962*</td>
</tr>
<tr>
<td>Teachers w/ Adv. Degrees (%)</td>
<td>1.004</td>
<td>1.027**</td>
</tr>
<tr>
<td>% White Students</td>
<td>0.999</td>
<td>0.977*</td>
</tr>
<tr>
<td>% African American Students</td>
<td>1.015*</td>
<td>0.998</td>
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<tr>
<td>“Ethnic Identity” by “% Native American Students”</td>
<td>0.997**</td>
<td></td>
</tr>
<tr>
<td>“Ethnic Identity” by “% Hispanic Students”</td>
<td>0.989*</td>
<td></td>
</tr>
</tbody>
</table>

**Anxiety:** Model $\chi^2 (df) = 721.30(32)***

Pseudo $R^2=$ .16

**Aggression:** Model $\chi^2 (df)=1,040.02(33)***

Pseudo $R^2=$ .28

Models also control for age, race, religious orientation, discrimination experiences, social support (friend, teacher, parent, neighbor), and other school characteristics.

*Reference groups for indicator variables are shown in parentheses.*
Discussion: Interaction Effects for Ethnic Identity by School Racial Composition

Model-predicted Probabilities of High Anxiety

Model-predicted Probabilities of High Aggression

% American Indian Students

% Hispanic Students

Ethnic Identity = 1
Ethnic Identity = 2
Ethnic Identity = 3
Ethnic Identity = 4
Discussion: Anxiety and Aggression in Rural Youth

- Prevalence of high anxiety in this sample (39%) higher than estimates for the general adolescent population (9.9%; Costello et al., 2003)
  - School social workers in rural schools should be cognizant of potentially high levels of anxiety in students

- Prevalence of high aggression in this sample (23%) mirrors that for adolescent population (23%) (Costello et al., 2003)

- While research generally identifies females to be at greater risk for anxiety and males to be at greater risk for aggression, our findings indicate that females are more likely to experience high levels of both anxiety and aggression.

- Students receiving free or reduced-price lunch were significantly more likely to experience high levels of anxiety
Discussion: Ethnic Identity & Anxiety

- A high level of ethnic identity may make youth particularly sensitive to racial messages in environment, thus increasing anxiety (sensitivity to “Social Mirroring”).
- Adolescents highly invested in ethnic groups may choose norms & behaviors that make them stand out from peers, thus increasing anxiety.
- The combination of high ethnic identity AND higher proportions of minority peers was related to decreased anxiety and aggression.
Parent-child conflict: strongest risk factor associated with both anxiety and aggression

- Leaves adolescent to deal with environmental stressors without familial support
- Parental authority and monitoring is destabilized, increasing opportunities for adolescents to act out aggressive frustrations

Negative Peer Relationships & Negative Friend Behavior

- “Keeping up” with negative peers may engender anxiety and aggression
- Additional research needed to determine causality
- Target area for intervention for children displaying anxious and aggressive behaviors
School aggregated risk factors

- Lack of research on school-level characteristics and student behavioral and mental health outcomes, especially for rural youth
- Teacher turnover rates: Students may prefer the change associated with new teachers
- Teachers w/ advanced degrees: high expectations may increase anxiety and frustration, leading to aggressive behaviors
Limitations & Conclusions

Limitations

- Surveys were filled out in computer labs with other students present
- Caution in generalizing to other populations as participants were low-income, rural youth
- “High-levels” of anxiety and aggression as measured in this study do not necessarily correspond with clinically diagnosable disorders

Conclusions

- Prevalence of anxiety and aggression was troubling, indicating a need for prevention and intervention programming
- Parent-child conflict and peer relationships should serve as targets for prevention programs
- This study contributes to current knowledge on risk factors of rural youth and supplements research on anxiety and aggression in the general adolescent population
EXAMINING RISK AND PROTECTIVE PROFILES OF RURAL ADOLESCENTS
# Risk and Protective Factors

<table>
<thead>
<tr>
<th>Category</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>History of physical neglect/abuse, Positive future orientation/hope</td>
</tr>
<tr>
<td>Family</td>
<td>Parent child relationship quality, Parent aggression</td>
</tr>
<tr>
<td>Peer</td>
<td>Association with delinquent peers, Peer trust/support</td>
</tr>
<tr>
<td>School</td>
<td>Connectedness to school, Perceived prejudice/discrimination</td>
</tr>
<tr>
<td>Neighborhood</td>
<td>Neighborhood safety, Afterschool activity options</td>
</tr>
</tbody>
</table>
Study Aims

- Identify subgroups of rural early adolescents based on their self-reported experience of risk and protective factors

- Determine if emergent subgroups differ on demographic characteristics and theoretically/empirically related variables (e.g., perceived support, behavior)
  - Assess robustness of the emergent subgroups
  - Determine meaningfulness/substantive interpretation of the emergent subgroups
Student perceptions of:

- Neighborhood crime
- Parent-child conflict
- Future optimism
- Internalizing behaviors
- School hassles
- Peer relationships
  - pressure/rejection
- Delinquent friends

Data Source: SSP+ scales from Year 1 RAP
Profile-Difference Variables

- **Potential Covariates: Demographic characteristics**
  - Race/ethnicity
  - Gender

- **Perceived Support**
  - Neighborhood (5 items; $\alpha=.78$)
  - Parent (5 items; $\alpha=.89$)
  - Teacher (8 items; $\alpha=.88$)
  - Peer (5 items; $\alpha=.89$)

- **Student Conduct** (e.g., “break rules,” “get in fights,” “lie cheat,” “cut classes/skip school”)


LPA focuses on relationships at a personal level
- Individuals are statistically clustered into subgroups based on the compatibility of their responses on the profile-defining variables

Model Estimation and Evaluation
- Model calibration/validation with random subsamples
- Models were systematically and iteratively compared
- Evaluation criteria:
  - substantive meaningfulness
  - low Bayesian Information Criteria (BIC)
  - significant Lo-Mendell-Rubin (L-M-R)
  - high entropy
  - high posterior probability statistics

Post hoc analysis on best fitting model
- Examine group differences on substantively-related variables
- Chi-square and ANOVA with Bonferonni comparisons
- Method of model validation
Determining Number of Profiles

- Four-class model best fits the data
- Race/ethnicity not a significant covariate
- Gender significantly predicts group membership
- Four-class + Gender model successfully replicated

<table>
<thead>
<tr>
<th>Model</th>
<th>BIC</th>
<th>L-M-R</th>
<th>Entropy</th>
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<tbody>
<tr>
<td>One Class</td>
<td>115742.7</td>
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<tr>
<td>Two Class</td>
<td>113314.36</td>
<td>2449.75***</td>
<td>0.886</td>
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<td>Three Class</td>
<td>111743.52</td>
<td>1606.02***</td>
<td>0.903</td>
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<td>Four Class</td>
<td><strong>110653.91</strong></td>
<td><strong>1132.499</strong>*</td>
<td><strong>0.926</strong></td>
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<td>Five Class</td>
<td>112412.62</td>
<td>1261.23***</td>
<td>0.924</td>
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<td>Covariate Model:</td>
<td><strong>113626.31</strong></td>
<td><strong>1150.694</strong>*</td>
<td><strong>0.921</strong></td>
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<tr>
<td>4 Class + Gender</td>
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</table>
Risk & Protection Profiles

Profile 1: Internalizing & Conflict with Parents and Peers
(n = 400; 19%)

Profile 2: Neighborhood Crime & Delinquent Friends - Moderate
(n = 136; 6%)

Profile 3: Low Risk/Broad Protection
(n = 1560; 72%)

Profile 4: Neighborhood Crime & Delinquent Friends - Severe
(n = 64; 3%)

Legend:
- Neighborhood Crime
- School Hassles
- Future Optimism
- Peer Relationships
- Delinquent Friends
- Parent-Child Conflict
- Internalizing
Validating Profiles through Group Differences

Group membership associated with significant differences in conduct and perceived support

- Profile 3: higher in perceived support and conduct than all other profiles
- Profile 1: lower parental support than Profiles 2 and 3
- Profile 2: better school conduct than Profile 4

<table>
<thead>
<tr>
<th>Measures</th>
<th>Profile 1 (n = 400)</th>
<th>Profile 2 (n = 136)</th>
<th>Profile 3 (n = 1560)</th>
<th>Profile 4 (n = 64)</th>
<th>Bonferroni***</th>
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<tbody>
<tr>
<td>N’hood Support</td>
<td>71.03</td>
<td>70.74</td>
<td>77.34</td>
<td>68.29</td>
<td>3 &gt; 1,2,4</td>
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<tr>
<td>Parent Support</td>
<td>79.06</td>
<td>83.56</td>
<td>92.27</td>
<td>78.25</td>
<td>2 &gt; 1; 3 &gt; 1,2,4</td>
</tr>
<tr>
<td>Teacher Support</td>
<td>74.13</td>
<td>73.32</td>
<td>80.52</td>
<td>72.76</td>
<td>3 &gt; 1,2,4</td>
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<tr>
<td>Friend Support</td>
<td>79.06</td>
<td>78.38</td>
<td>84.05</td>
<td>75.48</td>
<td>3 &gt; 1,2,4</td>
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<tr>
<td>Conduct</td>
<td>77.57</td>
<td>80.20</td>
<td>92.56</td>
<td>75.47</td>
<td>3 &gt; 1,2,4; 2 &gt; 4</td>
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</table>
Identified four meaningful subgroups of rural middle school students

More nuanced understanding of the experiences of early adolescents
  - Variety and commonality of experiences within communities and schools

Inform allocation of limited resources
  - Guiding selection and tailoring of intervention strategies
  - Targeting students based on specific risk and protective profiles
Risk Factors Across Outcomes

- **Gender:** Females were at risk for electronic bullying victimization, depression, low self esteem, anxiety, and aggression
- **Parent child conflict** and **negative peer relationships** were serious risk factors related to higher depression, anxiety, aggression, and lower self esteem

Protective Factors Across Outcomes

- Ethnic minority adolescents had lower victimization and higher self esteem. **Ethnic identity** was related to higher self esteem and anxiety
- **School satisfaction** was associated with less victimization, lower depression, anxiety, aggression, and higher self esteem
- **Parent** and **friend support** were related to lower victimization, less depression, and higher self esteem
References

References cont’d