

**Resilience in the Context of HIV Risk: A Strengths-Based Perspective for HIV Prevention
Among South African Girls and Young Women**

By: Ashleigh M. LoVette

MA, Michigan State University, 2014

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Date

Abigail Harrison, Co-Advisor

Date

Caroline Kuo, Co-Advisor

Recommended to the Graduate Council

Date

Don Operario, Reader

Date

Catherine Mathews, Reader

Approved by the Graduate Council

Date

Andrew Campbell, Dean of Graduate School

CURRICULUM VITAE

Ashleigh M. LoVette

Brown University School of Public Health
Box G-S121-3 Providence, RI 02912
ashleigh_lovette@brown.edu

EDUCATION

- Present Doctor of Philosophy, Behavioral and Social Sciences
Brown University School of Public Health, Providence RI
Dissertation Title: *Resilience in the context of HIV risk: A strengths-based perspective for HIV prevention among South African girls and young women*
- 2014 Master of Arts, Health and Risk Communication
International Development Specialization
Michigan State University, East Lansing, MI
Master's Practicum: *Preparing tomorrow's global communicators and researchers: A guide for communication arts & sciences graduate students*
- 2012 Bachelor of Arts, Communication
Michigan State University, East Lansing, MI
Granted with High Honors

RESEARCH AND PROFESSIONAL EXPERIENCE

- 2019 – Present Community-Engaged Graduate Fellow
Swearer Center for Public Service, Brown University
- 2019 Graduate Fellow for the Institute of Transformative Practice
Division of Campus Life, Brown University
- 2019 Independent Research Consultant
The Gordon School, East Providence, RI
- 2019 Graduate Research Assistant under Dr. Caroline Kuo
Project Title: *Our Family Our Future: A resilience-oriented family intervention to prevent adolescent HIV/STI infection and depression in South Africa (NIH-R01MH114843)*
- 2018 & 2019 Project Assistant under Dr. Medeva Ghee
The Leadership Alliance, Providence, RI
- 2018 – 2019 Graduate Research Assistant under Drs. Caroline Kuo and Catherine Mathews
Project Title: *Integrated Prevention of HIV risk and Intimate Partner Violence among Adolescents in South Africa (NIH-R34MH113484)*
- 2018 – 2019 Graduate Research Assistant under Dr. Don Operario
Project Title: *Acceptability of PrEP for HIV Prevention among HIV-positive and HIV-negative Adolescents (NIH-R21AI116309)*
- 2015 – 2017 Fellowship Trainee under the Initiative to Maximize Student Development
Project Title: *Advancing the culture of PhD learning and scholarship in biology and health science (NIH-R25GM083270)*
- 2015 – 2017 Graduate Research Assistant under Dr. Caroline Kuo

Project Title: *Family Prevention of HIV Risk and Depression in HIV-endemic South Africa (NIH-K01MH096646)*

- 2014 – 2015 Health Communications Fellow
Office of Communications & Public Liaison
National Cancer Institute, Bethesda, Maryland
- 2013 – 2014 Event Assistant under Dr. Maria Lapinski
Project Title: *One health: the role of emerging communication technology in human behavior (NIH-R13CA162849)*
- 2012 – 2014 Graduate Assistant under Dr. Maria Lapinski
Office for Research, College of Communication Arts & Sciences
Michigan State University
- 2012 Events and Marketing Intern
Michigan Fitness Foundation, Lansing MI
- 2007 – 2012 Departmental Assistant
Department of Animal Science, College of Agriculture & Natural Resources
Michigan State University

PUBLICATIONS

1. LoVette, A., Kuo, C., & Harrison, A. (2019). Strength-based interventions for HIV prevention and sexual risk reduction among girls and young women: A resilience-focused systematic review. *Global public health*, 1-25.
2. Kuo, C., LoVette, A., Pellowski, J., Harrison, A., Mathews, C., Operario, D., ... & Brown, L. (2019). Resilience and psychosocial outcomes among South African adolescents affected by HIV. *Aids*, 33, S29-S34.
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5. LoVette, A., Operario, D., Hoare, J., Giovenco, D., Underhill, K., Kuo, C. (Under Review). Pre-exposure prophylaxis as an opportunity for engagement in HIV prevention among South African adolescents.

CONFERENCE PRESENTATIONS

1. LoVette, A., Harrison, A., Kuo, C. Resilience-based HIV prevention for girls and young women: A systematic review of current interventions. (2019). Presentation for the American Public Health Conference, November 2-6, 2019; Philadelphia, Pennsylvania, USA.
2. LoVette, A., Mathews, C., Jonas, K. & Kuo, C. (2019). Examining differences in psychological and social resources among girls and young women living in the context of sustained HIV risk. Presentation for AIDS Impact, July 29-31, 2019; London, United Kingdom.
3. LoVette, A., Mathews, C., Harrison, A., Orchowski, L., Pellowski, J., Atujuna, M., Stein, D., Brown, L., Kuo, C. (2018). Reducing sexual violence and HIV risk among adolescents in South Africa through gender- and developmentally-tailored interventions. Poster for the Consortium of

Universities for Global Health Conference, March 16-18, 2018; New York, New York. *Lancet Poster Competition Finalist*.

4. LoVette, A., Operario, D., Kuo, C., Hoare, J., Underhill, K., Mtukushe, B., Harrison, A. (2017). Visualization, choice and context: Innovative qualitative approaches for conducting HIV prevention research among South African adolescents. Poster for Global Health Research Day, April 24, 2017; Providence, Rhode Island, USA.
5. LoVette, A., Kuo, C., Pellowski, J., Harrison, A., Mathews, C., Operario, D., Beardslee, W., Cluver, L., Stein, D., Brown, L. Resilience among South African adolescents infected and affected by HIV. (2016). Presentation for the American Public Health Conference, October 29-November 2, 2016; Denver, Colorado, USA.
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7. Smith, L., LoVette, A., Pellowski, J., Kuo, C., Harrison, A. (2016). Ambivalence and contradictions: qualitative study of HIV preventive behaviors and the need for dual protection among young men and women in rural KwaZulu-Natal, South Africa. Poster for the International AIDS Conference, July 19-22, 2016; Durban, South Africa.
8. Lapinski, M. K., Babayaro, H., Glova, N. M., Hussain, S., & LoVette, A. (2013). Breaking the silence: A case study of the ten-year implementation of the Ku Saurara! entertainment-education project in northern Nigeria. Presentation for the meeting of the National Communication Association, November 21-24, 2013; Washington, DC, USA.

POLICY AND EVALUATION

1. Mathews, C., Lombard, C., Puren, A., Cheyip, M., Ayalew, K... LoVette, A....Gray, G. (2019). Evaluation of a South African combination HIV prevention programme for adolescent girls and young women: HERstory study. South African Medical Research Council.
2. Kuo, C., Colvin, C.J., Giovenco, D., Harrison, A., LoVette, A., Lurie, M., Operario, D., & Pellowski, J. (2015). Informational Briefing: HIV Prevention; Assisted in the creation an informational briefing on the current state of HIV prevention in South Africa, for purpose of providing insight to PEPFAR initiatives.

GRANTS

Funded

Nora Kahn Piore Award

Sponsor: Brown University School of Public Health

Award period: April 2019 – April 2020

Direct costs: \$2,500

Mariam K. Chamberlain Dissertation Award

Sponsor: International Center for Research on Women, Washington D.C.

Award period: October 2018 – October 2019

Direct costs: \$10,000

Global Mobility Fellowship

Sponsor: Graduate School, Brown University

Award period: January 2019 – May 2019

Direct costs: \$13,000

Framework in Global Health Scholarship
Sponsor: Global Health Initiative, Brown University
Award period: June 2016 – August 2016
Direct Costs: \$3,500

USAID Global Center for Food System Innovations Scholarship
Sponsor: Michigan State University
Award period: May 2013 – August 2013
Direct costs: \$2,000

Not Funded

American Dissertation Fellowship
Sponsor: American Association of University Women (AAUW), Washington D.C.
Project period: July 2019-July 2020

Understanding psychological resiliency among girls and young women in sustained high HIV risk contexts (F31 MH114747-01A1)
Sponsor: National Institute of Mental Health
Principal Investigator: Ashleigh LoVette
Project period: April 2018-May 2020
Status: Scored 27 (Percentile: 33.0)

TEACHING & MENTORING

Graduate Teaching Experience

Teaching Assistant, School of Professional Studies, Brown University
The Imprint of Time, Space and Place in our Bodies: Understanding Health Disparities (Summer 2019)
Teaching Assistant, Brown University
Multidisciplinary Approaches to HIV Treatment and Care (Spring 2017 & Spring 2018)
Teaching Certification, Brown University
Sheridan Teaching Seminar- Reflective Teaching (Fall 2017)
Teaching Assistant, Brown University
Introduction to Public Health (Fall 2017)

Undergraduate Teaching Experience

Private Tutor, Michigan State University
Introduction to Interpersonal Communication (Spring 2013)
Undergraduate Teaching Assistant, Michigan State University
Introduction to Organizational Communication (Fall 2011)

HONORS AND AWARDS

2018	Exceptional New Leader Award Student Activities Office, Brown University
2018	Diversity & Inclusion Action Plan Community Award Office of Institutional Equity and Diversity, Brown University
2018	Brown Executive Scholars Training Program (BEST) Participant Graduate School, Brown University
2015	Director's Award, Award of Merit National Cancer Institute, National Institutes of Health

INVITED PRESENTATIONS AND TALKS

- 2019 Presenter, *Insights to Action* series
International Center for Research on Women, Washington, DC
- 2017 Guest Lecturer, *The Epidemiology, Treatment, and Prevention of HIV*
Brown University
- 2016 Student Presenter, Women's Leadership Council
Brown University
- 2013 Guest Lecturer, *Information and Communication Technologies for Development*
Michigan State University

SERVICE

University Committees

- 2016 – 2019 Committee Member, Diversity and Inclusion Committee
Brown University School of Public Health
- 2018 Community Adviser, Unconscious Bias eLearning Project
Office of Institutional Equity and Diversity, Brown University
- 2016 Student Committee Member, Diversity and Inclusion Planning Committee
Brown University School of Public Health

Student Committees

- 2019 – Present Department Representative, Graduate Student Council
Brown University
- 2018 – Present Founder and Coordinator, Womxn of Color Collective
Brown University School of Public Health
- 2017 – Present Founder and Planning Committee Member, *Learning & Engaging Around
Diversity (LEAD): an inclusive reading group*
Brown University School of Public Health
- 2017 – 2019 Social Committee Member, Black Graduate Student Association
Brown University
- 2015 – 2016 Community Service Committee Member, Graduate Student Council
Brown University School of Public Health

Associations and Memberships

- 2019 – Present Member, Graduate Learning Community on Community-Engaged Scholarship
Swearer Center for Public Service, Brown University
- 2016 – Present Student Member, American Public Health Association
- 2015 – Present Student Member, International AIDS Society
- 2013 – 2014 Student Member, International Communication Association

Other Service Activities

- 2017 Ad-Hoc Reviewer, Health Education Journal
SAGE Journals
- 2014 Site Advisor, Alternative Spartan Break
International Rescue Committee, Atlanta, Georgia

2012 – 2015

Volunteer
Nyaka AIDS Orphans Project, East Lansing, Michigan

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INTRODUCTION

Populations disproportionately affected by the HIV epidemic face conditions on multiple levels, including individual, social, and structural, which predispose them to negative health outcomes (Baral et al., 2013; Govender et al., 2019; Parker, Easton & Klein, 2000). South Africa has one of the largest populations affected by HIV globally with an estimated 7.9 million people living with HIV (Simbayi et al., 2019). More than half of those living with HIV in South Africa are women aged 15 years or older (UNAIDS, 2018). Girls and young women in South Africa are consistently placed at a disproportionate risk for HIV when compared to boys and young men of the same age (Birdthistle et al., 2019; Harrison et al., 2015). For example, HIV prevalence among South African adolescent girls and young women (AGYW) aged 15-19 is 5.8% versus 4.7% for same aged males, among women aged 20-24 is 15.6% versus 4.8% among same aged males (Simbayi et al., 2019). Thus, innovative ways to promote the sexual health of South African girls and young women are urgently needed. One potential strengths-based approach to promote health is through examination of the concept of resilience. However, research examining associations between resilience and sexual health among girls and young women living in the context of high HIV risk is currently limited.

Resilience is defined as the multi-level processes related to thriving in spite of adversity (Fergus & Zimmerman, 2015; Masten, 2014; Ungar, 2012). Increasing scientific understanding of resilience across multiple levels has the potential to increase the effectiveness of prevention efforts for populations historically placed at high risk, including South African girls and young women. In HIV-endemic contexts, such as South Africa, resilience can contribute to young people's capacity to utilize their strengths and assets to promote health (Masten, 2016). Strengths and assets to promote health among young people placed at risk for HIV can be identified at

multiple levels, particularly within social and community levels, but these resources can vary by context. How resilience is conceptualized and cultivated across these levels may also vary by context, but it is highly likely that there are differences among particular populations based on their lived experiences and environment. One important lived experience to consider in South Africa is the experience of living with HIV. Research has indicated young people living with HIV are at increased risk for other poor health outcomes compared to those living without HIV (Bhana et al., 2016; Remien & Mellins, 2007). As such, examining differences in resilience and health among those living with and without HIV offers insights for how to tailor programming to young people's lived experiences.

Resilience-focused approaches to promoting sexual health are a valuable addition to existing programmatic frameworks, which have largely approached health issues through a risk-focused perspective. In South Africa, social and structural drivers of sexual risk, such as poverty and gender-based violence can lead to poor sexual and reproductive health outcomes among adolescent girls and young women, including HIV acquisition (Andersson, Cockcroft & Shea, 2008; Dunkle & Decker, 2012; Shishana, Rice, Zungu & Zuma, 2010). Developing resilience science among girls and young women during critical periods of age and developmental life transition, which happen to also coincide with increased risk for acquisition of HIV, can inform innovative prevention efforts to shift life trajectories toward optimal health and well-being. Furthermore, identifying the multi-level factors facilitating resilience, and whether processes and narratives of resilience differ among populations with varying lived experiences, can help guide the development of interventions that maximize positive sexual health outcomes for vulnerable populations. This information can also be used to inform policy and programming in various sectors aiming to improve the overall health and well-being of women.

This dissertation develops the evidence base on the resilience of girls and young women in a priority global scientific setting for HIV and sexual health, and provides key information on an alternative approach to address the disparity in HIV prevalence among South African girls and young women. Drawing from collaboration between Brown University and several South African partners, this dissertation leverages unique access to household-based representative data from a national evaluation of combination HIV prevention programming for girls and young women in South Africa. The first objective of this dissertation is to examine associations between resilience and sexual health across multiple levels, in order to understand how best to promote health of this population using a strengths-based approach. The second objective of this dissertation is to deepen our understanding of resilience during transitions to adulthood in this context by critically examining lived experiences and narratives of resilience. I achieve these objectives by completing two secondary analyses using quantitative data from an evaluation study of combination HIV-prevention programming, and one mixed-methods analysis that included primary qualitative data focused on local conceptualizations of resilience and exploring narratives of resilience among girls and young women in South Africa living within the context of HIV.

Dissertation Aims

Chapter 1: To examine patterns in associations between resilience and two sexual health outcomes, including (1) sexual debut and (2) condom usage, using weighted quantitative survey data from South African girls and young women aged 15-24 (N=7237). Specifically, I will examine (i) the direct association between resilience and the sexual health outcomes, and (ii) the moderating effect of biologically-verified HIV status on the association between resilience and both sexual health outcomes.

Chapter 2: To explore social and community resources facilitating sexual health via resilience by testing whether social support and social capital mediate the effect of resilience on two sexual health outcomes, including (1) sexual debut and (2) transactional sex, among South African girls and young women aged 15-24 (N=7237).

Chapter 3: To enhance understanding of the concepts, processes and narratives of resilience among South African adolescent girls and young women living in the context of HIV risk through integration of quantitative survey data (N=373), and primary qualitative data, from one survey district, the City of Cape Town. Qualitative data in the form of in-depth interviews (N=21) will explore socioecological pathways that link resilience with the lived experiences of adolescent girls and young women aged 15-24.

Background

Reviewing the public health burden of HIV among girls and young women.

Recent estimates indicate that every week 6000 adolescent girls and young women are infected with HIV (UNAIDS, 2019). In 2018, young women aged 15-24 years accounted for 26% of all new HIV infections in eastern and southern Africa (UNAIDS, 2019). The burden of HIV for South African adolescent girls also grows rapidly during the transition to adulthood. Among girls and young women aged 15-19, HIV prevalence is 5.8%; among women aged 20-24, HIV prevalence is 15.6%; among women aged 25-29, HIV prevalence is 27.5% (Simbayi et al., 2019). Research has consistently shown higher HIV risk for girls and young women compared to their male counterparts (Cowan & Pettifor, 2009; Dellar, Dlamini & Karim, 2015; Harrison et al., 2015). Therefore, we urgently need new public health approaches to address the alarming gender disparity in HIV risk among this population. Additionally, girls and young women living with HIV may have distinct experiences, such as internalized stigma and discrimination, which

are linked to poor health outcomes. More work needs to be done to understand how resilience may differ among populations living with and without HIV in order to guide tailored programming (Pearlstein et al., 2013; Bhana et al., 2016).

Resilience is a critical, but under-utilized strengths-based framework for sexual health promotion.

Resilience is one of many potential strengths-based approaches that can be used to promote sexual health. A strengths-based approach to health promotion complements a prevention field dominated by risk-focused models (Reyna & Farley, 2006). Interventions designed to improve sexual health and reduce HIV risk often seek to change what individuals deem as unhealthy, or negative, and often focus on making change at the individual level. Alternatively, resilience-focused interventions seek to use a strengths-based approach, by expanding what is already working, or positive, within the population of interest (Khanlou & Wray, 2014; Zimmerman, 2013). While conceptual frameworks for resilience have been created for children and adolescents, there remains a lack of understanding about how these models translate across different populations and health issues (Fergus & Zimmerman, 2005; Li et al., 2015). Emerging research has linked resilience to the overall health and well-being of young people in HIV-affected settings (Betancourt et al., 2013; Eloff et al., 2014; van Breda & Theron, 2018). However, studies of resilience with young people affected by HIV using large representative samples remain limited, especially within generalized HIV epidemics. There is also limited understanding of the concept of resilience in relation to sexual health outcomes associated with HIV risk. This dissertation seeks to address these gaps in the resilience and health literature by using a large household-based representative sample to examine how resilience relates to sexual health outcomes are linked to increased HIV risk.

Understanding the concept of resilience across multiple levels.

Resilience is a concept that spans across disciplines and is broadly defined as the ability to not only overcome, but thrive in spite of adversity (Rutter, 2006; Ungar, 2012). Historically conceptualizations of resilience were focused on the areas of psychology and childhood development (Werner, 1995; Lee et al., 2013). Now, conceptualizations of resilience have evolved to others fields, including public health and HIV prevention. Resilience was previously viewed as a fixed internal asset, but in recent years the field has moved towards a more nuanced view of resilience comprised of dynamic processes influenced by multiple ecosystem levels (e.g. social and community, etc.) external to the individual (Cicchetti, 2010; Masten, 2015).

More and more researchers have started to study how factors at the interpersonal and community levels might influence resilience, with a particular focus on the concepts of social support and social capital (Armstrong, Birnie-Lefcovitch & Ungar, 2005; Patterson, 2002; Poortinga, 2012). While the concept of social support incorporates dynamics at an interpersonal level, such as those involving family, peers and significant others (Zimet et al., 1988), the related concept of social capital considers these dynamics on a larger community and societal level (Szreter & Woolcock, 2004). A recently published study showed resilience and select dimensions of social capital were both significantly associated with good self-rated health among South African adolescents living with HIV (Dageid & Grønlie, 2015). This dissertation seeks to expand on this work by identifying how social resources influence both resilience and sexual health. Once identified, these multi-level factors can be better incorporated as active components of programming and policy to both reduce HIV risk and improve health in settings affected by HIV. Fostering resilience across multiple contextual levels can facilitate healthy development and empower youth to make prevention choices (Sanders et al, 2015; Sapienza & Masten, 2011).

We need stronger empirical evidence to increase our understanding of the culturally-relevant individual, social, and community resources associated with resilience that can directly inform resilience-based programming and policy to promote sexual health (Masten, 2014; Skala & Bruckner, 2014; Ungar et al., 2007).

Current state of resilience-based interventions to promote sexual health among girls and young women. Evidence remains limited regarding strengths-based interventions to improve health outcomes for young women, including outcomes within the critically important area of sexual health. To identify gaps in the literature around resilience and sexual health, I conducted and published a systematic literature review of resilience-promoting interventions to reduce the sexual risk of girls and young women (LoVette, Harrison, Kuo, 2019). This review provides a comprehensive summary of the global literature on interventions utilizing a resilience-based approach to improve the sexual health of girls and young women across the globe. A systematic search of published literature identified 35 articles, representing 25 unique interventions (N=25). These interventions employed in-person, and other engaging methods, to deliver intervention content aimed at fostering resilience and changing sexual risk behaviors. Results from this review highlight gaps in measurement of resilience and rigor of study design, as well as variation in geographic setting and level of behavior change.

Although most interventions within this review targeted individual level behavior change, they still varied greatly in study design and outcome measurement, even when measuring similar outcomes. Consistency in measurement of outcomes and rigorous study designs are vital for conducting meta-analyses and increasing our understanding of the mechanisms responsible for behavior change. Variability in measurement also creates difficulty when comparing efficacy across interventions. Future research should aim to provide consistent measurement of concepts

such as sexual risk, and HIV and STI acquisition. Additionally, this review included interventions only using self-reported outcome measures. When possible, future research should consider measuring at least one outcome biologically to mitigate the potential bias created by the use of self-report.

Variation in conceptualization and measurement of resilience was also an emerging theme. It is also worth noting that while research on the concept of resilience has shown that it may be moderated by gender, only 12 out of the 25 interventions focused solely on girls and young women (Werner, 2013). Those looking to implement and test future interventions to reduce sexual risk through the promotion of resilience should consider this issue in the development or adaptation stage of the intervention process. Additionally, results from this review highlight the issue of various proxies being used to measure resilience and also issues related to operationalizing the multi-level processes inherent to the concept of resilience. Utilizing consistent conceptual language, along with measures of resilience created or validated within the proposed study setting, are points worth addressing by public health researchers seeking to use this approach to promote the sexual and reproductive health of young women in the future.

Overall, findings from this review indicate that although resilience-focused interventions are relatively new, and small in number, they offer a promising strengths-based framework for addressing sexual health disparities among girls and young women. Results provide evidence of widespread geographic representation, but it is important to note that evidence is skewed towards interventions based in the United States. These findings call our attention to ensuring girls and young women facing the highest sexual risk have equitable access to strengths-based interventions and programming. Findings also demonstrate the need for future research to focus

on rigorous study designs, methods of measurement, and conceptualization of resilience. Only a few of the included studies (n=4) incorporated qualitative and mixed methods into their design.

Strengths-based interventions promoting resilience offer a promising approach for improving the sexual and reproductive health of girls and young women. This systematic review offers new directions for developing and expanding resilience research into global public health efforts, and provides a strong rationale for additional inquiry into the concept of resilience among girls and young women in low- and middle-income countries such as South Africa. More specifically, it provides a solid justification for using a representative sample of data that includes biological, as well as self-reported measure of sexual health, and highlights the need for additional mixed-methods studies of resilience across various geographic contexts.

Conclusions

This dissertation addresses the current limited evidence-base of resilience among girls and young women in a priority global scientific setting for HIV. To address a gap in prevention-science knowledge, Chapter 1 of this proposal investigates associations between resilience and sexual health outcomes, and the moderating effect of biologically-verified HIV status among South African girls and young women. Using the same household representative data, Chapter 2 examines the mediating effect of social resources on resilience and sexual health, increasing our understanding of the underlying mechanisms between these concepts. Finally, Chapter 3 will delve even further into the multi-level concept of resilience by combining quantitative survey data with in-depth qualitative interviews to explore narratives of resilience. Chapters 1 & 2 use multivariable logistic regression, and Chapter 3 uses an explanatory sequential mixed-methods design to integrate quantitative and qualitative data. The following section provides background information on the overall study in which this dissertation is nested.

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DATA SOURCE FOR DISSERTATION STUDY

This dissertation is a sub-study of the HERStory study, an evaluation of a South African combination HIV prevention programming for adolescent girls and young women aged 10 to 24 years. The combination-prevention programs were delivered from 2016-2019 with the goals to (1) decrease HIV incidence; (2) decrease teenage pregnancy; (3) increase retention in school; (4) decrease gender-based violence; and (5) increase economic opportunities. This dissertation – a sub-study to the HERStory study – was comprised of two parts: (1) a secondary data analyses of quantitative data from the first survey of the HERStory study, which was collected from 2017 to 2018; and (2) and primary data generated from N=21 qualitative interviews with adolescent girls and young women living in one HERStory study site, which was collected in 2019. The methods for these dissertation components are detailed in depth in Chapters 1, 2, and 3. The purpose of this section of the dissertation is to provide an overview of the overall HERStory study that this dissertation is nested within.

The HERStory study was conducted by the South African Medical Research Council (SAMRC), where I was based during two research visits to South Africa during the course of my doctoral studies. The first visit included technical assistance with study implementation, and the second visit included primary qualitative data collection with the HERStory team in one study site where data collection was deemed most feasible. Prior to accessing the data, and commencing data analyses for this dissertation, I entered into a data sharing agreement with Dr. Catherine Mathews, the Principal Investigator of the study at the SAMRC. This section provides detailed information regarding the HERStory study including an overview of the intervention the HERStory study is evaluating, HERStory study aims and objectives, and methods of the

HERStory study. It also highlights of relevant characteristics of the survey sample from the HERStory study as they pertain to the objectives of this dissertation.

Overview of Intervention

The Global Fund to Fight AIDS, TB and Malaria is a multi-billion-dollar partnership of governments, civil society, technical agencies, and the private sector created to fast-track the end HIV/AIDS, tuberculosis (TB) and malaria epidemics across the world. The partnership has a long history of investments related to HIV/AIDS prevention in Sub-Saharan Africa, including South Africa. From 2016-2019, the Global Fund invested in a South African combination HIV prevention intervention for adolescent girls and young women (AGYW) aged 10 to 24 in ten priority districts in South Africa. The UNAIDS Prevention Reference Group defined combination prevention as evidence-based programming that uses biomedical, behavioral and structural interventions tailored toward specific HIV prevention needs of the community (UNAIDS, 2010). This combination HIV prevention intervention addressed factors that increase the risk of HIV acquisition and transmission among South African AGYW, and promoted factors that increase their resilience. The intervention included behavioral, biomedical and structural HIV prevention programs working in the following areas: (1) access to comprehensive HIV, TB and sexual and reproductive health (SRH) services and commodities; (2) rights-based SRH education; (3) support to keep adolescent girls in school including homework help; (4) therapeutic services for abused children; (5) financial literacy and career development; (6) vocational programs to promote economic empowerment, and (7) interventions to maximize social support and social capital. There was also a conditional cash incentive program in two districts. Intervention programming was delivered through primary school and high schools, and also within communities.

HERStory Study Aims and Objectives

The HERStory study is an evaluation of the aforementioned Global Fund-supported programming conducted by the SAMRC along with study partners. The primary aim of the HERStory study is to determine the intervention impact on HIV incidence over a two-year period. Secondary objectives include assessing the intervention impact on the prevention of behaviors that place AGYW at risk for HIV and other sexually transmitted infections (STIs), and the impact of the intervention on the cognitions and social environments of AGYW. The main outcome in the HERStory study – HIV incidence – was measured using HIV serological testing for recent infections. The work for the HERStory study has been supported by the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), Division of Global HIV & TB (DGHT) under the terms of Cooperative Agreement 1U2GGH001150, and also from the Social Impact Bond Grant at the SAMRC.

HERStory Study Design

The first of the two cross-sectional surveys, which provides quantitative data for this dissertation, was conducted from 2017-2018 in 6 of the 10 priority districts where programming was implemented. Within each of the priority districts, the intervention was targeted to AGYW in selected sub-districts, areas or wards where high HIV risk was estimated. The study population consisted of all AGYW aged 15 to 24 years living in these selected areas. The first serial survey of the HERStory study was completed in the following 6 districts (provinces): City of Cape Town (Western Cape), Ehlanzeni (Mpumalanga), OR Tambo (Eastern Cape), Tshwane (Gauteng Province), King Cetshwayo (KwaZulu-Natal), and Zululand (KwaZulu-Natal). Key information about these districts, including population estimates and HIV prevalence, can be

found in **Table 1**. The HERStory study uses a stratified sampling design, which is detailed in the following section.

Table 1. Characteristics of completed HERStory study sites*

Study District	Population Estimate	Population Estimate AGYW (15-24)	Antenatal HIV Prevalence (%)	Formal dwellings (%)
City of Cape Town	3,957,798	368,071	20.9	78.4
Ehlanzeni	1,743,633	196,054	40.4	91.8
King Cetshwayo	959,858	111,056	39.1	70.0
OR Tambo	1,439,553	169,434	35.2	43.5
City of Tshwane	3,214,408	315,012	28.7	80.7
Zululand	876,278	102,086	37.6	73.1

*Sources: Mathews et al., 2020; Statistics South Africa, 2011; Woldesenbet et al. 2019

Sampling

The selected intervention districts were considered the primary strata for sampling. The sample size per district was planned to be proportional to the AGYW in the sub-districts, areas, or wards, selected for intervention. The organization delivering the intervention in each district was tasked with outlining the sub-areas in which the intervention would be implemented. These outlined areas were then mapped onto the available census small areas layer (SAL) sampling areas covering the targeted areas. A sampling frame was then created for each district based on the 2011 census SALs, which is the most recent census in South Africa. The SAL sampling frames were cross-checked with other sources, and mapped with aerial photography for accuracy. The sampling frames were further adjusted to the latest Geo Terra Image counts, other district council estimates, and Statistics South Africa’s most current midyear estimates of population numbers per province, according to the province boundaries, race, five-year age groups and gender.

For each SAL, information was available about the number of households, and number of individuals by gender, population group, and age. Once the sub-districts, areas, or wards, in each

district selected for the intervention were identified by intervention implementers, HERStory investigators selected a simple random sample of SALs in the intervention areas in each district. A systematic random sample of 35% of the available households within each sampled SAL was selected to generate the required sample size of AGYW. All AGYW aged 15 to 24 years in sampled households were invited to participate, thus there were no sampling at the household level. The HERStory research team identified these preselected households using aerial maps, and determined the geographical coordinates using the Geographical Positioning System. If the selected household was vacant, or the household head declined to complete a household listing form to determine whether there were eligible AGYW within the household, the next household was visited and assessed.

A recording of all individuals who were living in the household and who met the eligibility criteria was made if the household was selected for the study. AGYW were eligible for inclusion in the survey if they met the following inclusion criteria: 1) AGYW residing in household aged 15-24 years; 2) AGYW residing in household <18 years of age who had consented and whose parent, guardian, caregiver or household representative had consented to her participation; 3) Willing to participate in the study, undergo all study procedures including providing blood samples, and willing to give written informed consent. AGYW were ineligible for inclusion if they met the following exclusion criteria: 1) Cognitive or mental challenges (based on the assessment of the participant's ability to comprehend the study information provided); 2) Unable to hear or speak; 3) Unable to speak English, IsiZulu, isiXhosa, Northern Sotho, Sotho, Tswana, Tsonga, Swazi, Sepedi, Afrikaans; 3) Not available for participation between 8 a.m. and 9 p.m.

Weighting of the sample. The baseline survey was completed in 6 of the 10 districts. It was not completed in all 10 priority districts due to logistic challenges related to implementing a household survey of this scale. The number of households visited met the target, but the number of ineligible households was higher in urban-based districts, which led to a lower sample realization. The overall sample realization was 60.6% in the 6 completed districts. Sample weights, which were based on the sampling probability of the primary sampling units in each district, and the systematic probability of households within each SAL, were adjusted within each district to match the planned sample size. The overall sum of the weights is 7,237 individuals. This weighted sample size of the 6 districts is based on the expected proportional distribution of AGYW aged 15-24 years across the districts. The final weighted sample size of N=7327 is used for quantitative analyses included within Chapters 1 and 2 of this dissertation.

Procedures

This section outlines procedures for the quantitative data used in Chapters 1 and 2 of this dissertation. Procedures for the qualitative data collection within one HERStory study site are outlined in Chapter 3. Each potentially eligible study participant was informed about the study and completed the consent form in their preferred language prior to study enrollment. For potential participants under 18 years of age, parent/guardian/foster parent/caregiver consent was obtained before getting consent from the AGYW. Informed consent procedures were conducted in a private space, inside or outside the household, depending on the potential participant's choice. The fieldworker sat with the potential participant and read the forms to her word-for-word, and answered any questions for clarification from the participant. The HERStory study protocol and research tools were approved by the South African Medical Research Council Research Ethics Committee.

Following consent procedures, demographic, psychosocial and behavioral data were collected from all enrolled participants using structured electronic questionnaires administered by trained fieldworkers. The electronic questionnaires were developed using the Mobenzi Researcher data collection software suite and administered via tablet. Each participant was assigned a unique study number associated with their responses to the electronic questionnaire. To diminish social desirability bias that might otherwise affect the quality of data, sections of the electronic questionnaire with sensitive questions were completed by the participants themselves. The fieldworker read each question to the participant, and allowed the participant to enter her responses in the tablet privately. Participants were reimbursed for the time they spent with a gift and voucher to the value of R75 (US \$5).

Key HERStory Measures Related to Dissertation

Along with behavioral and sociodemographic measures, a validated measure of resilience, and other relevant psychosocial concepts were included in the electronic survey of the HERStory study. Resilience, a key measure in all three chapters of this dissertation, was assessed using the 10-item version of the Connor-Davidson Resilience Scale (CD-RISC) (Campbell-Sills and Stein, 2007). Resilience, as measured by the CD-RISC (10-item), can range from 0 to 40 points, with higher scores indicating greater resilience. This measure focuses largely on psychological dimensions and individual processes of resilience. Other resilience measures capturing more socioecological aspects of resilience, such as the Child Youth and Resilience Measure, were considered. However, the CD-RISC was ultimately chosen for its consistent demonstration of strong psychometric properties among South African adolescents, and its higher quality appraisal within a methodological review of resilience measures (Bruwer et al., 2008; Jorgensen & Seedat, 2008; Windle, Bennett & Noyes, 2011).

Sexual health outcomes related to HIV risk, including condom use in the last 3 months, early sexual debut (<15 years), and transactional sex are used as key outcomes within Chapters 1 and Chapter 2. As a measure of known HIV status, biologically-verified HIV status was a proposed moderator in Chapter 1 of this dissertation.

Chapter 2 of this dissertation includes measures of social and community resources, specifically social support and social capital as potential mediators between resilience and sexual health outcomes. Measures of both social support and social capital were included in the HERStory questionnaire. Social support was measured with the Multidimensional Scale of Perceived Social Support (MSPSS). The MSPSS is a 12-item scale designed to measure perceived social support from three sources: family, peers/friends, and a special person/significant other (Zimet et al., 1988). For the MSPSS, the mean scores for scales may be interpreted as follows: a mean score ranging from 1 to 2.9 could be considered low support; a score of 3 to 5 could be considered moderate support, and a score of 5.1 to 7 could be considered high support (Zimet et al., 1990). Social capital is a multi-dimensional concept that examines people's connectedness within and between groups and communities. The concept of social capital was measured using a shortened version of the Adapted Social Capital Assessment Tool (SASCAT). The SASCAT is a multi-item scale capturing the following dimensions of social capital: group membership, support from groups, support from individuals, citizenship activities, and cognitive social capital (De Silva et al., 2006). These measures of social resources were validated among populations living in low- and middle-income countries, and have been used previously in adolescent studies within southern Africa (Kuo et al., 2012; Stewart et al., 2014).

HERStory Sample Characteristics

The unweighted sample included data from N=4,399 South African AGYW from 6 districts identified as priority areas for HIV prevention. Overall sample characteristics relevant to this dissertation are highlighted below in **Table 2**. Characteristics of the sample from the City of Cape Town, the selected HERStory site for Chapter 3, are included within that chapter.

Resilience

The mean resilience score for all participants was 24.54 points (SD: 7.65). Mean resilience scores were significantly different when comparing AGYW who are under the age of 18, to those over the age of 18. For both age groups, the reported mean score is comparable to mean scores of similarly aged populations in various countries (Davidson, 2018).

Sexual health

Sexual health outcomes associated with increased HIV risk are used for quantitative analyses in Chapters 1 and 2 of this dissertation. Most of the sample (68.4%) reported that they had ever had sex. Approximately 9% of AGYW who had ever had sex (n=3009), reported early sexual debut, or sex before the age of 15 years. South African AGYW who report early sexual debut are vulnerable to adverse sexual and reproductive health outcomes (Zuma, Mzolo & Makonko, 2011). Among AGYW who had ever had sex (n=3009), 59% reported using a condom within the last 3 months, indicating that approximately half of AGYW were at risk of HIV acquisition or onward transmission. Finally, approximately 10% of AGYW reported participating in transactional sex, which includes giving oral, anal, vaginal sex to someone because they expected to receive, or received, a variety of gifts/items.

Social resources

Social resources included social support and dimensions of social capital. Participants reported overall high social support, as well as high social support from family and a special person. Peer support was an exception, with participants reporting only moderate support from this group. For social capital, participants reported mean scores less than 1 across several dimensions. These included: group membership, with a possible maximum score of 8, support from groups, with a possible maximum score of 6, and support from individuals with a possible maximum score of 8. Unlike the former dimensions of social capital with several options for each item, the dimensions related to citizenship activities and cognitive social capital only included 2 options (Yes/No) for each item. These dimensions also had higher mean scores for the overall sample suggesting higher social capital in the areas related to citizenship activities, which has a possible maximum score of 2, and cognitive social capital, which has a possible maximum score of 4.

Demographics and socioeconomic status

The mean age for this sample of AGYW was 19.1 years. Most participants self-identified as “African” (89.8%) and almost all of the sample self-identified as either “African” or “Coloured” (99.6%). The sample included a majority AGYW who were identified as living in relatively low socioeconomic status (82%). Socioeconomic status, related to poverty, included information about household characteristics, financial status, and food security. Nearly half of participants (44%) reported that the members of their household depended on social grants, which cover a variety of government funded welfare grants based on economic need, child and older adult care, disabilities, and more.

Conclusions

The HERStory study presents both strengths and limitations as a source of dissertation data. In regards to strengths, this dataset provided a rare opportunity to investigate resilience of a large sample of AGYW, which allowed me to assess the moderating effect of biologically-verified HIV status on resilience and sexual health outcomes. For the purposes of this study, biologically-verified HIV status includes AGYW whose self-reported status corresponds with their laboratory test results, and allows us to better capture of the lived experiences of those knowingly living with and without HIV. The data collected in the HERStory survey was robust and derived from a household-based sample, which provides a representative sample of AGYW within six districts where AGYW were at highest HIV risk.

In relation to this dissertation, the available HERStory study dataset also presented some limitations. Due to time constraints, only baseline cross-sectional data was available for all analyses in this dissertation. Cross-sectional data provides key opportunities to examine associations between variables of interest, including resilience and sexual risk. However, the study design did not allow for analysis of these factors over time, nor does it allow for us to examine temporality between variables of interest. As with most behavioral surveys, the data relies heavily on self-reported data, allowing room for potential measurement error. Common sources of measurement error include the influence of social desirability bias, poor comprehension of questions, and mistakes when completing the survey. Investigators on the study team attempted to overcome these sources of measurement error during training of fieldworkers, in the way the questionnaire was administered, and through the collection of biological samples. Details regarding survey administration can be found the *Procedures* section. All participants were offered an HIV test, which allows for HIV status to be biologically-verified

for those living with and without HIV. Additionally, while responses were self-reported, validated measures of key variables were included in the electronic questionnaire allowing for more rigorous examination of factors associated with resilience. While the chosen measure, the CD-RISC, focuses primarily on psychological aspects of resilience, it still offers a valid measurement of a key dimension of the concept of resilience, which is in turn influenced by social processes. This dynamic allows one to conduct analyses to elucidate these processes by including social and community level factors measured in the HERStory study within analyses.

As a whole, the HERStory dataset provided an exceptional research opportunity with the potential to inform the development and implementation of tailored health programming to reduce sexual risk and promote sexual health among girls and young women living with and without HIV. I capitalized on the opportunities offered by this data source through the use of the weighted quantitative survey data for analyses in Chapters 1 and 2, and the use of quantitative survey data from one HERStory study site, selected for maximum feasibility, to inform the qualitative data collection for the mixed-methods analysis presented in Chapter 3. Integration of the quantitative and qualitative data is outlined within Chapter 3.

Table 2. Characteristics of South African girls and young women (15-24 years) in HERStory Study (N=4399)

	Mean (Standard Deviation) Frequency (Percentage)
Resilience: CD-RISC (10-item) Score	
15-17	24.54 (7.65)
18-24	23.70 (7.73)
	24.96 (7.58)
Sexual Health Outcomes	
Ever had sex	
Yes	3009 (68.4)
No	1390 (31.6)
Sexual Debut (n=3009)	
<i>Early Sexual Debut</i> (<15 years)	259 (8.6)
<i>Later Sexual Debut</i> (≥15 years)	2750 (91.4)
Condom Use (Last 3 Months) (n=3009)	
Yes	1773 (58.9)
No	1236 (41.1)
Transactional Sex	
Yes	424 (9.6)
No	3975 (90.4)
Biologically-Verified HIV Status (n=4397)	
Living with HIV	283 (6.4)
Not living with HIV	2734 (62.2)
Discrepant results	1380 (31.4)
Social Resources	
Social Support: MSPSS	
<i>Family Support Score</i>	5.14 (1.51)
<i>Peer Support Score</i>	4.72 (1.61)
<i>Special Person Support Score</i>	5.19 (1.50)
Social Capital: Adapted SASCAT	
<i>Group Membership</i>	0.41 (0.64)
<i>Support from Groups</i>	0.27 (0.51)
<i>Support from Individuals</i>	0.66 (0.88)
<i>Cognitive Social Capital</i>	1.33 (0.91)
<i>Citizenship Activities</i>	0.26 (59)
Demographic Variables	
Age	19.06 (2.75)
Self-Identified Race/Ethnicity	
<i>African</i>	4139 (94.1)
<i>Coloured</i>	244 (5.5)
<i>Other</i>	16 (0.40)
Social and Economic Variables	
Poverty	
<i>Relatively High SES</i>	792 (18.0)
<i>Relatively Low SES</i>	3607 (82.0)
Receipt of Social Grants in Household	
Yes	1942 (44.1)
No	2457 (55.9)

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CHAPTER 1: Associations between resilience and sexual health among South African girls and young women living with and without HIV

Abstract

Introduction: The context of adversity created by one of the largest HIV epidemics in the world places South African girls and young women at disproportionate risk for HIV and other sexually transmitted diseases. Resilience offers a strengths-based approach to reducing HIV and sexual risk among this population, but processes of resilience may change based on context, including the experience of living with HIV. This study addresses the current gap in resilience and HIV prevention literature by examining associations between resilience and sexual risk outcomes, as well as the potential moderation of these associations by HIV status.

Methods: As part of an evaluation study of HIV combination-prevention programming, a weighted-sample of 7,237 South African girls and young women (aged 15-24) across 6 districts completed a quantitative survey. This survey included a validated measure of resilience, a laboratory HIV test, as well as self-reported age at sexual debut and any condom use within the last 3 months. Multivariable logistic regression models were created to examine if resilience was significantly associated with differing odds in sexual risk after adjusting for confounders. Moderation analyses were conducted on any significant association to explore whether associations between resilience and sexual risk were different for participants living with and without HIV. Data were analyzed using SPSS software.

Results: Increased resilience was significantly associated with later sexual debut, even after adjusting for sociodemographic characteristics. Resilience did not appear to be associated with condom use within the last 3 months. Moderation analyses identified biologically-verified HIV status as a moderator of the association between resilience and sexual debut, with the association no longer significant among participants living with HIV.

Conclusions: Findings provide implications for future programming to improve the sexual health of South African girls and young women. Tailored interventions to promote sexual health of adolescent girls and young women living with HIV should be considered. Programming focused on reducing the sexual risk of South African girls and young women should consider promoting resilience as one of many approaches to improve the health of this population.

Introduction

South Africa has one of the largest HIV epidemics globally, with 7.9 million people living with HIV (Simbayi et al., 2019). Girls and young women in South Africa are placed at a disproportionate risk for HIV when compared to boys and young men (Birdthistle et al., 2019; Harrison et al., 2015). For example, the HIV prevalence of South African girls and young women aged 15-19 is 1.2 times higher than same aged boys and young men (5.8% vs. 4.7%), and for young women aged 20-24 the prevalence is 3.25 times higher than their male counterparts (15.6% vs. 4.8%) (Simbayi et al., 2019). Recent studies have also reported a high prevalence of sexually transmitted infections (STIs) among South African young women (O’Leary et al., 2015; Torrone et al., 2018). One South African study based in Kwazulu-Natal reported the prevalence of STIs (i.e. chlamydia, gonorrhoea, syphilis, trichomonas) to be 13% among women, and noted women under 25 years of age were at significantly higher risk for incident STIs (Naidoo, Wand, Abbai & Ramjee, 2014). Thus, innovative ways to mitigate sexual risk and promote the sexual health of South African girls and young women are urgently needed.

Researchers have suggested employing strengths-based approaches, as opposed to deficit-based approaches, to reduce health risks among young people (Fergus & Zimmerman, 2005; Zimmerman, 2013). One strengths-based approach to promote health among populations placed at high HIV and sexual risk is through examination of the concept of resilience. Emerging research highlights associations between resilience and the overall health and well-being of young people in various settings, including South Africa (Betancourt et al., 2013; van Breda & Theron, 2018). Published research has also demonstrated promising results for interventions using to promote psychosocial well-being, including a large randomized-controlled trial (RCT) of a 5-month resilience-focused school curriculum for more than 2000 adolescent girls in India

(Leventhal et al., 2015). This RCT used positive psychology, social and emotional learning, and life skills to promote resilience, and showed greater improvements in psychosocial constructs, such as self-efficacy and psychological well-being, among the group receiving the program compared to the control group. Additionally, a resilience-promoting intervention for South African children affected by HIV using interactive sessions with both mothers and children demonstrated significant improvement in externalizing behaviors, communication, and daily living skills for children participants (N=390 dyads) (Eloff et al., 2014).

While studies reporting results of resilience-promoting interventions continue to increase, household-representative studies of resilience among adolescent girls and young women remain limited in South Africa. There is also limited understanding of how resilience is associated with outcomes related to HIV and sexual risk. By examining associations between resilience and sexual risk reduction among South African girls and young women, we can gain insight into mechanisms linking resilience-promoting programming to sexual health. Once identified, these concepts can be better incorporated as active components of interventions and health programming for populations facing significant HIV risk.

Strengths and assets to promote the health of South African girls and young women placed at risk for HIV can be identified across various socioecological levels, including individual, interpersonal, and community, but these resources may vary by context. Additionally, how resilience is conceptualized and cultivated can also differ by context, and it is highly likely that there may be differences among particular populations, such as those living with and without HIV. A number of studies have indicated that young people living with HIV are at increased risk for other poor health outcomes, such as those related to mental health, compared to those living without HIV (Mellins & Malee, 2013; Bhana et al., 2016). These documented group differences

offer potential implications for tailored programming, particularly as young people transition to adulthood. With these differences in lived experiences in mind, it is important to consider if known HIV status may moderate any associations between resilience and sexual risk among South African girls and young women.

Sexual health outcomes related to HIV acquisition include age of sexual debut and condom usage. These outcomes may also vary based on known HIV status. Early sexual debut, defined as having sex prior to 15 years of age in South Africa, has been associated with increased sexual risk for girls and young women (Greenberg, Magder, & Aral, 1992; Pettifor et al., 2004). A systematic review examining early sexual debut as a risk factor for HIV infection among women in Sub-Saharan Africa identified significant bivariate associations between early sexual debut and HIV risk among studies appraised as high quality by the authors (Stöckl, Kalra, Jacobi & Watts, 2013). Condoms have long been a tool in the HIV prevention toolbox for their association with HIV and sexual risk. The national average of condom use at last sex among South African people aged 15 and older was recently reported as 38.9% (95% CI: 37.3-40.5) (Simbayi, et al., 2019). Additionally, a national-level survey showed inconsistent condom use was significantly associated with HIV infection (AOR, 1.41; 95% CI, 1.04-1.90) among South African youth (Pettifor et al., 2005). Behaviors surrounding condom usage, including use of male and female condoms, are particularly important for girls and young women for the ability to prevent sexually transmitted diseases, as well as pregnancy (Wiyeh et al., 2020).

This study aims to fill a gap in evidence by examining associations between resilience and sexual health outcomes, and the potential moderation of these associations by HIV status. The first aim of this study is to test associations between resilience and two sexual health outcomes related to HIV risk, sexual debut and condom usage. The second study aim is to assess

whether HIV status moderates any significant associations between resilience and selected sexual health outcomes. Based on previous literature demonstrating differences in the lived experiences of young people living with and without HIV, we hypothesize significant associations between resilience and sexual risk outcomes are moderated by HIV status.

Methods

Study design

This paper reports data from a cross-sectional representative household survey of 4,399 South African adolescent girls and young women aged 15 to 24 years. The survey aimed to evaluate the impact of combination HIV prevention programming among this population. The goals of this intervention programming were to: (1) decrease HIV incidence; (2) decrease teenage pregnancy; (3) increase retention in school; (4) decrease gender-based violence; and (5) increase economic opportunities. This evaluation study took place from 2017 to 2018 across 6 districts in South Africa where programming was implemented. These districts were strategically chosen for their high prevalence of HIV. The overall study used a stratified sampling design with districts as the primary strata. After using census data to create small areas layer sampling areas (SALs), a systematic random sample of 35% of the available households within the SALs across the 6 districts were selected.

All adolescent girls and young women aged 15 to 24 years in sampled households were invited to participate. The survey was administered to each invited participant via tablet from a trained interviewer. Sections of the electronic questionnaire with sensitive questions, including sexual experiences, were completed by the participants themselves to diminish social desirability bias that might otherwise affect the quality of data. Participants were reimbursed for the time they spent completing survey with a gift and voucher to the value of R75 (US \$5).

The overall sample realization was 60.6% in the 6 completed districts and was based on the total number of individual survey participants. Sample weights, which were based on the sampling probability of the primary sampling units in each district, and the systematic probability of households within each SAL, were adjusted within each district to match the planned sample size. The weighted sample size was 7,237 individuals and this a household-based sample of girls and young women aged 15 to 24 years across six districts where this population was at highest HIV risk. The final weighted sample size of N=7327 is used for all study analyses.

Measures

Sociodemographic characteristics. Age, race and ethnicity, receipt of social grants, and various measures related to socio-economic status were included in the HERStory study survey. The small number of participants identifying other than “African” or “Coloured” limited all analyses to these two groups. Participants were asked if their household was current recipient of social grants, including child support, foster care, disability, or pension. Socioeconomic variables related to poverty included information about household characteristics, financial status, and food security. To create a poverty-based indicator variable, a Cluster Analysis (K-modes algorithm) was used to determine which socio-economic status the girl or young women should be placed into. The cluster analysis resulted in two clusters of participants, with one cluster representing relatively high-socioeconomic status and one cluster representing relatively low-socioeconomic status.

Resilience. Resilience was measured using the 10-item version of the Connor-Davidson Resilience Scale (CD-RISC-10). The CD-RISC-10, can range from 0 to 40 points, with higher scores indicating greater psychological resilience. This measure asks participants to indicate how much they agree with statements, such as “I can deal with whatever comes my way,” on a scale

of not true at all (0) to true nearly all of the time (4). The CD-RISC scale has previously demonstrated strong psychometric properties among South African adolescents (Jorgensen & Seedat, 2008). Scale reliability was assessed within the study sample (Cronbach's alpha $\alpha=$ 0.83).

Sexual risk outcomes. Two self-reported sexual health variables related to HIV risk, condom use in the last 3 months and age of sexual debut, were measured in the HERStory study. Participants who reported having sex at least once ($n=5005$) were asked to report their age at the first time they had sex, and if they had used condoms in the last 3 months. Sexual behavior (i.e. vaginal, oral, anal) and type of condom (i.e. male condom, female condom) were not specified for the condom use question. Two dichotomous variables, one indicating early sexual debut, and the other indicating condom usage in the last 3 months (Yes/No), were created and used for all analyses.

HIV status. Participants were asked about their HIV status in the survey, and also provided laboratory samples for biological measurement of HIV status. Biological measurement of HIV status was confirmed following dried blood spot tests and screening using ELISA tests. Known HIV status, as reported by participants, was biologically verified with laboratory testing and used as the measure of HIV status for moderation analyses. Biologically-verified HIV status included adolescent girls and young women whose self-reported status corresponded with their laboratory test results, which allowed us to better capture of the lived experiences of those knowingly living with and without HIV. The choice to use known HIV status allowed us to better capture the lived experience of being HIV positive, as participants were aware of their status prior to testing as part of the evaluation study. The use of a biologically-verified measured also offers a more objective measure of HIV for the moderation analyses.

Statistical analyses

Descriptive analyses were used to examine sample characteristics related to resilience, sexual risk outcomes, and sociodemographic characteristics. For categorical variables, chi-square test for independence were used. For all continuous variables were compared using Pearson's correlation and t-tests. The results of these analyses can be found in **Appendix A** of this dissertation. Variables with significance levels less than 0.25 were considered as candidates to enter into multivariable logistic regression models. Individual multivariable logistic regression models were created using forward-selection method (p -values less than 0.10 entered model) for each sexual risk outcome to examine if resilience was significantly associated with differing odds in sexual risk after adjusting for demographic and socioeconomic factors. All tests were two-tailed ($p < .05$). associations. For any significant associations in the multivariable model, moderation analyses were conducted to determine if associations between resilience and sexual risk were different for participants living with and without HIV (Aguinis, 2004; Jose, 2013). This was done in a two-step process. The first step was running separate multivariable logistic regression models for those living with and without HIV to explore whether moderation was present, and the second step was running a single multivariable logistic regression model with an interaction term. All analyses were conducted using SPSS statistical software version 25 (IBM Corp, Armonk, NY., USA).

Results

Table 1 presents descriptive statistics for all variables of interests as well as sociodemographic characteristics of the study sample. Measure details for these variables can be found in the *Methods* section of this chapter. Almost all study participants self-identified as either "African" or "Coloured." Other observed racial and ethnic categories included "White"

and “Indian/Asian.” Approximately 43% of participants reported their household receipt of social grants, and 80% of the sample was classified as living in relatively low socioeconomic conditions, representing elements of limited household characteristics, lower financial status, and food insecurity. Participants reported a mean resilience score of 24.57 points (SD: 7.64), which is within the range of scores among similarly aged populations using the same measure of resilience (Davidson, 2018). Approximately 70% of the weighted-sample reported ever having sex. Among participants who had ever had sex (n=5005), 9% reported having sex before the age of 15, or early sexual debut. Condom usage in the last 3 months was a more common experience, with 59% of participants who had ever had sex (n=5005) reporting they used a condom in the last 3 months. In regards to biologically-verified HIV status, more than 70% of the participants were correctly verified as either living with HIV (n=433) or without HIV (n=4574). The majority of participants with discrepant results (n=2228) were those who reported that they did not know their HIV status prior to testing or preferred not to say.

Tables 2 and 3 display odds ratios and 95% confidence intervals (95% CIs) for logistic regression models examining the association of resilience with each sexual risk outcome. The unadjusted regression model showed statistically significant associations of resilience with early sexual debut. Specifically, a 1-point increase in resilience was associated with a 2.5% increase in odds of later sexual debut (aged 15 or older) compared to early sexual debut, or 1 higher standard deviation in resilience score was significantly associated with a 20% increase in odds of later sexual debut (aged 15 or older) compared to early sexual debut (95% CI: 1.01-1.04). After adjusting for demographic and socioeconomic factors, the association between resilience and early sexual debut remained significant, with a 1-point increase in resilience associated with a 2.3% increase in odds of later sexual debut (aged 15 or older) compared to early sexual debut, or

with 1 higher standard deviation in resilience score associated with a 19% increase in odds of later sexual debut (aged 15 or older) compared to early sexual debut (95% CI: 1.01-1.04).

As seen in **Table 3**, there was not a significant association between resilience and condom use in the last 3 months. However, there were noteworthy significant associations between sociodemographic variables and both sexual risk outcomes. Self-identified race/ethnicity and age were significantly associated with sexual debut. An increase of 1 years of age was significantly associated with 21.8% greater odds of later sexual debut and those who self-identified as “African” had 48.4% greater odds of later sexual debut compared to those who self-identified as “Coloured”. Self-identified race/ethnicity and poverty were significantly associated with condom use in the last 3 months. Specifically, those who self-identified as “African” had 75.8% greater odds of reporting use of a condom in the last 3 months compared to those who self-identified as “Coloured” and those who were classified as having relatively lower socioeconomic status had 14.9% lower odds of reporting use of a condom in the last 3 months. Age was not significantly associated with condom use.

The association between resilience and sexual debut was then assessed for moderation by HIV status. **Table 4** shows results for adjusted logistic regression models among those living with HIV (Model 1), those living without HIV (Model 2) along with an adjusted model with the entire sample that includes an interaction term for resilience by HIV status (Model 3). When comparing Model 1 and Model 2, results indicate that resilience is no longer significantly associated sexual debut among girls and young women living with HIV. Results from Model 3 show that with the introduction of the interaction term, the association between resilience and sexual debut is no longer significant, and the interaction between resilience and HIV status is significant. Specifically, the interaction term within Model 3 shows among two participants with

the same resilience score, a participant living without HIV has a 2.3% increase in odds of later sexual debut compared to those living with HIV (95% CI: 1.10-1.37). Results from these models support the hypothesis that the association between resilience and sexual debut is moderated by biologically-verified HIV status.

Discussion

This study addresses a gap in the literature around the role of resilience in HIV and sexual risk among a population facing high HIV risk, South African girls and young women. Findings show higher resilience was significantly associated with later sexual debut even after adjusting for demographic and socioeconomic characteristics. This study also identifies biologically-verified HIV status as a moderator between the association of resilience and sexual debut, with the association disappearing for girls and young women living with HIV. These findings provide implications for future programming and policy to improve the sexual health of South African girls and young women.

Resilience was found to be associated with sexual debut, but not recent condom usage among South African girl and young women. Studies across various settings, including a literature review, showed early sexual debut is associated with subsequent riskier sexual behavior, and other negative psychosocial outcomes for adolescent girls and young women (Kastbom et al., 2014; Lara & Abdo, 2016; Sandfort, Orr, Hirsch & Santelli, 2001). Future research is needed to better understand the directions of these association, but findings from this study point to resilience as a promising strengths-based approach to delaying sexual initiation among South African girls and young women. Additional research may also continue to explore why increased resilience is associated with later sexual debut. Resilience and condom usage may not be associated among this population for a variety of reasons. While the measure for condom

use did not specify type of condom, one potential rationale for this observation includes limited control over decisions around male condom use for young women, and issues around access and lower usage of alternative option of the female condom (Beksinska, Smit & Mantell, 2012).

Emerging research among adolescents living with HIV and transitioning to adulthood provides insight into findings surrounding HIV status as a moderator between resilience and sexual risk. Recent literature suggests adolescents knowingly living with HIV may change their sexual behavior based on their HIV status, with a recent systematic review reporting an association between knowledge of HIV status and reduced sexual risk behavior among HIV-positive adolescents from 13 sub-Saharan African countries (Brittain et al., 2019; Busza et al., 2013; Toska et al., 2017). These scientific observations offer one potential rationale for the lack of association between resilience and sexual debut among South Africa girls and young women living with HIV.

Although findings suggest resilience is not associated with sexual debut among girls and young women living with HIV, there are still important implications for this population. Interventions for girls and young women living with HIV incorporating resilience-promoting components may not influence certain sexual risk outcomes, but may still be relevant for other aspects of their health and well-being. Those looking to promote resilience among young women living with HIV may consider situating it within more salient issues for young people living with HIV, such as adherence to antiretrovirals and mental health (Naar-King et al., 2006; Petersen et al., 2010; Reisner et al., 2009), and reproductive health for girls and young women living with HIV (Hamzah & Hamlyn, 2018). In addition to identifying associations between resilience and other health areas more relevant for those living with HIV, forthcoming research may also seek

to identify other potential moderators of associations between resilience and sexual risk among young people in South Africa.

Understanding how resilience relates to health outcomes, such as those related to HIV and sexual risk, is important as resilience emerges as framework for public health research. Additional public health research incorporating strengths-based concepts, including resilience, can be done across various contexts to strengthen this emerging line of evidence, and also to identify any context-specific associations. It is also worth noting the survey questionnaire providing data for this study focused largely on cisgender and heterosexual experiences and relationships. Future research in various settings should consider a range of questions to allow for a more accurate representation of the experiences of girls and young women with various sexual and gender identities.

This study has several limitations. The data presented are cross-sectional, which prohibits us from assessing the direction of causality. Although resilience was framed as the primary predictor in these analyses, we were unable to determine the direction of these associations. Future research should seek to measure resilience and other individual and social factors at multiple time-points to address limitations related to direction of associations and temporality. Additionally, this study relies heavily on self-reports from participants, including the measure used for resilience. This means the data is subject to the limitations of other self-measurements, including social desirability bias. Researchers attempted to limit this bias through the use of tablets to administer the questionnaire, and by having participants respond to sensitive questions related to HIV and sexual behavior privately, but these steps may not have addressed these limitations fully.

Conclusions

This paper presents one of the few household representative studies examining associations between resilience and sexual risk and offers a promising strengths-based approach to promoting sexual health among South African girls and young women. Findings also address a critical gap in resilience and public health research with intervention implications.

Interventions seeking to integrate resilience-building components to prevent HIV and reduce sexual risk should be sure to include and measure relevant health outcomes to maximize program efficacy. Future research must continue examine these associations longitudinally, as well as among different populations and contexts. Programming and policy aiming to reduce the HIV and sexual risk of South African girls and young women may wish to consider promoting resilience as one of many approaches to improve the health and well-being of this population.

Table 1. Participant characteristics of weighted-sample of South African girls and young women, aged 15-24 years (N=7237)

	Mean (SD) Frequency (Percentage)
Demographics	
Age	19.09 (2.74)
Self-Identified Race/Ethnicity	
African	6500 (89.8)
Coloured	701 (9.7)
Other	37 (0.5)
Socioeconomic Factors	
Poverty	
Relatively High SES	1472 (20.3)
Relatively Low SES	5765 (79.7)
Current Recipient of Social Grants	
Yes	3057 (42.2)
No	4180 (57.8)
Resilience	
CD-RISC (10-item) Score	24.57 (7.64)
Sexual Health	
Ever had sex	
Yes	5005 (69.2)
No	2233 (30.8)
<i>Sexual Debut (n=5005)</i>	
Early Sexual Debut (<15 years)	443 (8.9)
Later Sexual Debut (≥15 years)	4562 (91.1)
<i>Condom Use (Last 3 Months) (n=5005)</i>	
Yes	2959 (59.1)
No	2046 (40.9)
Biologically-Verified HIV Status (n=7235)	
Living with HIV	433 (6.0)
Not living with HIV	4574 (63.2)
Discrepant results	2228 (30.8)

Note: Column sums may not add up to N=7237 due to missing values

Table 2. Logistic regression model of resilience on sexual debut, n=4982 (reference group, early sex debut)

	Unadjusted OR (95% CI for Exp β)	p	Adjusted OR (95% CI for Exp β)	p
Resilience	1.025 (1.012-1.038)	<.001	1.023 (1.010-1.036)	.001
Age	-	-	1.218 (1.170-1.269)	<.001
Race (Ref: “Coloured”)	-	-	1.484 (1.068-2.062)	.019
Poverty (Ref: High SES group)	-	-	1.258 (.986-1.605)	.065

Table 3. Logistic regression models of resilience on condom use in last 3 months, n= 4982 (reference group, no condom use)

	Unadjusted OR (95% CI for Exp β)	p	Adjusted OR (95% CI for Exp β)	p
Resilience	1.005 (0.997- 1.012)	.206	1.006 (.998-1.012)	.131
Age	-	-	1.000 (.977-1.023)	.985
Race (Ref: “Coloured”)	-	-	1.758 (1.423-2.2173)	<.001
Poverty (Ref: High SES group)	-	-	.851 (.735-.986)	.031

Table 4. Adjusted logistic regression models of resilience and sexual debut by HIV status

	Odds Ratio (95% Confidence Interval)		
	Model 1: Living with HIV (n=385)	Model 2: Living without HIV (n=3355)	Model 3: Interaction (Resilience x HIV Status) (n=3740)
Resilience	1.019 (0.976-1.065)	1.021 (1.005-1.039)*	1.001 (.981-1.020)
Age	1.197 (1.048-1.367)**	1.171 (1.112-1.234)***	1.174 (1.119-1.232)***
Race (Ref: “Coloured”)	0.000 ^a	1.414 (.958-2.089)	1.386 (.940-2.045)
Poverty (Ref: High SES group)	2.150 (0.943-4.90)	1.461 (1.087-1.964)*	1.518 (1.150-2.005)**
Interaction Term	-	-	1.023 (1.009-1.038)***

* $p < .05$, ** $p < .01$, *** $p < .05$

^aThe value of 0 for this indicator is likely because all but 2 of the biologically-verified HIV+ participants self-identified as “African”

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CHAPTER 2: Social resources as mediators of resilience and sexual health among South African girls and young women

Abstract

Introduction: Adolescent girls and young women in South Africa are placed at increased sexual risk due to multiple socioecological factors. Research has demonstrated that early sexual debut and transactional sex can lead to negative health outcomes for this population. Examining the effects of resilience and social resources on these sexual health outcomes offers a strengths-based approach to address this critical public health issue.

Methods: As part of an evaluation study of a HIV combination-prevention program, a weighted-sample of 7,237 South African girls and young women (aged 15-24) across 6 districts completed a quantitative survey. This survey included a validated measure of resilience, along with self-reported age at sexual debut and participation in transactional sex. We tested if two types of social resources mediated the effect of associations between resilience, and sexual debut and transactional sex using multivariable logistic regression models and bootstrapping methods. Data were analyzed using SPSS and R software.

Results: Results indicated resilience has a significant effect on transactional sex and sexual debut. Social support and dimensions of social capital mediate the effect of resilience on transactional sex, but not on sexual debut. For transactional sex, the proportion of effect mediated by social support from family, peers, and a special person was larger than the proportion of the effect mediated by social capital.

Conclusions: Examining the underlying social and community dynamics related to sexual health can guide development of future resilience-focused programming seeking to reduce sexual risk among girls and young women. Researchers should continue to explore the effect of social resources, especially social support, in relation to resilience and other sexual health outcomes.

Introduction

Young people's sexual decisions and behaviors are influenced by the broader socioecological context of their relationships and communities (Kelly & Ntlabati, 2002; Govender, 2019). In South Africa, sexual decisions and behaviors take place within the context of one of the largest HIV epidemics in the world (Simbayi et al., 2019). Socioecological factors influencing sexual risk behaviors occur within and across multiple levels of the framework proposed by Bronfenbrenner (1992), with interpersonal dynamics related to family, peers and partners, and cultural norms around gender, playing a particularly important role for South African girls and young women (Eaton, Flisher & Aarø, 2013).

Early sexual debut and transactional sex are two sexual risk outcomes associated with poor health for girls and young women in this setting. Specifically, each of these practices is associated with negative sexual health outcomes among South African girls and young women (Kilburn et al., 2018; Jewkes, Dunkle, Nduna & Shai, 2012; Zuma, Mzolo & Makonko, 2011). Several studies, including a systematic review, have linked early sexual debut, or sex before the age of 15, to increased lifetime HIV risk in sub-Saharan Africa (Stöckl, et al., 2012; Wand & Ramjee, 2011) and a recent national-level survey reported that engagement in early sexual debut has increased. Over a 5-year time period, the percentage of South African girls and young women who reported early sexual debut increased from 5.0% in 2012 to 7.6% in 2017 (Simbayi et al., 2019). Transactional sex has also been associated with increased risk for HIV and other sexually transmitted infections (STIs), in South Africa and other low- and middle-income countries (Krisch et al., 2019; Maughan-Brown, Evans & George, 2016; Wamoyi et al., 2016). While transactional sex can be defined as the informal exchange of sex in return for goods or money, or the expectation of goods or money, it is not necessarily considered sex work within

the Southern African context, but rather part of the dynamics of young people's relationships in this context (Wamoyi et al., 2019).

Together these issues create a context of heightened adversity that South African girls and young women must attempt to overcome in order to maintain optimal health and well-being, particularly in regards to their sexual health. A large portion of health promotion efforts use deficit-based approaches to address the health issues faced by South African girls and young women. However, this focus on risks and deficits limits our understanding of how this population successfully navigates contexts of adversity. Resilience, which is defined as the multi-level processes related to overcoming adversity, offers a strengths-based framework to promote sexual health for adolescents and young people (Fergus & Zimmerman, 2005; Khanlou & Wray, 2014; Ungar, 2012). A resilience-based approach also creates an opportunity to more closely examine the contextual factors placing South African girls and young women at increased sexual risk (Masten, 2016; Theron, 2017; Theron & Liebenberg, 2014).

While most programming to promote sexual health among young people acknowledges behavior and decisions around sex occurs within a larger socioecological environment, it usually attempts to reduce sexual risk by intervening at only the individual level. However, most sexual experiences are inherently interpersonal, driven by relationships, and complex social dynamics. There is growing interest in better understanding the effect of these social dynamics, specifically those related to social support and social capital, on resilience and health (Armstrong, Birnie-Lefcovitch & Ungar, 2005; Pinkerton & Dolan, 2007). Social support often focuses on dynamics at an interpersonal level, such as those involving family, peers and significant others (Zimet et al., 1988). The related concept of social capital considers these relations on a larger community and societal level (Szreter & Woolcock, 2004). One South African study found resilience and

select dimensions of social capital were both significantly associated with good self-rated health among adolescents living with HIV (Dageid & Grønlie, 2015). Existing research in this area can be expanded by also examining social dynamics related to both resilience and sexual health.

By examining the potential mediating effect of social resources on resilience and sexual health, this study builds upon emerging research focused on resilience and health. Specifically, this paper offers two contributions to the literature. First, this study offers a much-needed strengths-based perspective in the study of sexual health among girls and young women. Second, this is one of very few studies to use a household representative sample of South African girls and young women to explore community and social factors in relation to resilience and sexual health. The research presented in Chapter 1 demonstrated an increase in resilience is significantly associated with reduced sexual risk among South African girls and young women, but the role of social resources in this association is largely unexamined. Including social and community factors in our examination of resilience and sexual health can provide greater insights into mechanisms influencing the effectiveness of health programming for girls and young women facing increased sexual risk.

This study seeks to explore the effect of social and community influences on resilience and sexual health by assessing if two types of social resources mediate the association between resilience and sexual health outcome among South African girls and young women. These sexual health outcomes include early sexual debut and transactional sex. We hypothesize social resources (i.e. social support and social capital) will mediate the effect of resilience on sexual risk among South African girls and young women. Study results provide implications for resilience-promoting programming seeking to reduce sexual risk among this population.

Methods

Study design

Data are drawn from a cross-sectional representative household survey of 4,399 adolescent girls and young women aged 15 to 24 years. The survey was conducted in areas where girls and young women were at the highest risk for HIV and aimed to evaluate the impact of combination HIV prevention programming among this population. The goals of this intervention programming were to: (1) decrease HIV incidence; (2) decrease teenage pregnancy; (3) increase retention in school; (4) decrease gender-based violence; and (5) increase economic opportunities. This evaluation study took place from 2017 to 2018 across 6 districts in South Africa where programming was implemented. Study districts were strategically chosen for their high prevalence of HIV. The evaluation study used a stratified sampling design with districts as the primary strata. After using census data to create small areas layer sampling areas (SALs), a systematic random sample of 35% of the available households within the SALs across the 6 districts were selected.

All adolescent girls and young women aged 15 to 24 years in sampled households were invited to participate. The survey was administered to each invited participant via tablet from a trained interviewer. Sections of the electronic questionnaire with sensitive questions, including sexual experiences, were completed by the participants themselves to diminish social desirability bias that might otherwise affect the quality of data. Participants were reimbursed for the time they spent completing survey with a gift and voucher to the value of R75 (US \$5).

The overall sample realization was 60.6% in the 6 completed districts. Sample weights, which were based on the sampling probability of the primary sampling units in each district, and the systematic probability of households within each SAL, were adjusted within each district to

match the planned sample size. The weighted sample size was 7,237 individuals resulting in a household-based sample of girls and young women aged 15 to 24 years across six districts where this population was at highest HIV risk. The final weighted sample size of N=7327 is used for all study analyses.

Measures

Sociodemographic characteristics. Age and self-identified race/ethnicity were included in the survey. While those who did not self-identify as either “African” or “Coloured” are included in descriptive analyses, these participants were not included in the final analyses since they comprised less than 1% of the total sample.

Resilience. Resilience was measured using the 10-item version of the Connor-Davidson Resilience Scale (CD-RISC-10) (Campbell-Sills & Stein, 2007). The CD-RISC-10, can range from 0 to 40 points, with higher scores indicating greater psychological resilience. The CD-RISC scale has previously demonstrated strong psychometric properties among South African adolescents (Jorgensen & Seedat, 2008). Internal reliability of the scale was deemed good (Cronbach’s alpha $\alpha= 0.83$).

Sexual health outcomes. Two sexual health variables related to HIV risk, transactional sex and age of sexual debut, were assessed in the survey via self-reported measures. Participants who reported having sex at least once were asked to report their age the first time they had sex (n=5005). Those who reported sexual debut prior to age 15 were classified as having early debut. All participants were asked about transactional sex. To measure transactional sex, participants were asked if they had ever given oral, anal, or vaginal sex to someone for any of the following reasons: money, transport, food for myself/family, clothes/shoes, shelter, school fees/school uniforms, airtime, cellphone, items for children/family, cosmetics, other. If they

responded affirmatively to any of these options, they were classified as participating in transactional sex. Dichotomous variables indicating participation in transactional sex, and early sexual debut, were created and used for all analyses.

Social support. Social support was measured with the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988; Zimet et al., 1990). The MSPSS is a 12-item scale designed to measure perceived social support from three sources: family, peers/friends, and a special person/significant other. Participants respond to each item on a 7-point Likert-type scale ranging from very strongly disagree (1) to very strongly agree (7). The MSPSS previously demonstrated strong psychometric properties among South African young people (Bruwer et al., 2008). Within the current study population, the scale presented good reliability from all three sources, family (Cronbach's alpha $\alpha= 0.85$), peers (Cronbach's alpha $\alpha= 0.88$), and a special person (Cronbach's alpha $\alpha= 0.77$).

Social capital. For social capital, we measured support from groups and citizenship activities using the social cohesion scale of the short version of the Adapted Social Capital Assessment Tool (SASCAT) (De Silva et al., 2006). For group support, participants indicated if they received emotional or economic help, or assistance in knowing or doing things from the following groups over the past 12 months: club, youth/student group, community group, religious group, volunteer group, political group. The positive responses were then added to create a possible maximum group support score of 6. Citizenship activities in the SASCAT measured whether the participant joined together with other community members to address a problem or common issue, or spoke with a local authority or governmental organization about problems in the community over the past 12 months. For citizenship activities, participants

received 1 point for each positive response for a potential maximum score of 2. Internal reliability for this dimension was deemed acceptable (Cronbach's alpha $\alpha = 0.71$).

Statistical analyses

Descriptive analyses were used to examine sample characteristics related to resilience, outcomes, and demographics. Bivariate analyses were used to identify potential confounders to adjust for in the final models. We examined if social support and select dimensions of social capital mediated the effect of resilience on sexual risk using the statistical package and methods outlined by Tingley and colleagues (2014). Multivariable logistic regression models were created to examine if the effect of each resource mediated a significant proportion of the effect of resilience on the selected sexual health outcome. All models employed bootstrapping techniques to provide average effect estimates and confidence intervals over 1000 simulations. All tests were two-tailed ($p < .05$). Descriptive and regression analyses were conducted using SPSS statistical software version 25 (IBM Corp, Armonk, NY., USA) and mediation analyses were completed using R version 3.5 (R Core Team, 2019).

Results

Table 1 presents descriptive statistics for all variables of interests as well as sociodemographic characteristics of the study sample. Descriptions of the measures used for these characteristics can be found in the *Methods* section of this paper. Almost all study participants self-identified as either "African" or "Coloured." Other observed racial and ethnic categories included "White" and "Indian/Asian." Participants reported a mean resilience score of 24.57 points (Range: 0-40 points; SD: 7.64 points), which is comparable to mean scores of similarly aged populations in various countries (Davidson, 2018). At the time of the survey, approximately 70% of adolescent girls and young women reported ever having penetrative

vaginal or anal sex. Among participants who had ever had sex ($n=5005$), 9% reported having sex before the age of 15, which accounted for 6% of the total weighted sample ($N=7237$). Out of all the study participants, 9.5% reported ever participating in transactional sex.

Two types of social resources, social support and social capital, were assessed as potential mediators of the effects of resilience on two sexual health outcomes, sexual debut and transactional sex. We adjusted for sociodemographic variables in each mediation model. In the models with transactional sex as the outcome, models were adjusted for age and self-identified race/ethnicity. **Table 2** provides the results of each model with transactional sex as the outcome along with the proposed mediators. Results from these analyses indicated, on average, resilience has a small significant direct effect on transactional sex. These results also showed a significant proportion of the direct effect of resilience on transactional sex is mediated by all three sources of social support, and also social capital. Social support from a special person, or significant other, mediated the largest percentage of the effect of resilience on transactional sex at 16.2% (95% CI: 0.094 – 0.31; $p < .001$). For social support from family, on average, 15.4% of the effect of resilience on transactional sex was mediated (95% CI: 0.086 – 0.28; $p < .001$). For social support from peers, on average, 10.6% of the effect resilience on transactional sex was mediated (95% CI: 0.086 – 0.28; $p < .001$). A smaller significant proportion, 3.6%, of the effect of resilience on transactional sex was mediated by citizenship activities, a measured dimension of social capital (95% CI: 0.004 – 0.08; $p < .05$).

Models with sexual debut as the outcome were adjusted for self-identified race/ethnicity. The results for these models can be found in **Table 3**. Results indicated resilience does, on average, have a small significant direct effect on sexual debut across all models, with the family support model having a slightly lower p -value ($p < .01$) than the peer and special person models.

However, neither social support or social capital, as measured by support from groups, appear to significantly mediate the effect of resilience on sexual debut (**Table 3**).

Discussion

Findings from this study provide a deeper understanding of underlying social mechanisms of the effect of resilience on sexual health among girls and young women living in a context of extreme adversity. Using a representative household sample, this study showed social support and social capital significantly mediate the effect of resilience on transactional sex. All three sources of social support – family, friends, and significant others – accounted for a larger average percentage of the mediated effect when compared to the dimension of social capital. This study demonstrates the importance of not only intervening at the individual level, but also the social and community level. Helping South African girls and young women positively leverage their interpersonal relationships to support resilience can have an important effect on sexual health.

These findings offer implications for resilience-focused interventions aiming to improve the sexual health of South African girls and young women facing heightened adversity. Findings from this study indicate that in addition to the mediating effect of social resources, resilience itself has a small significant effect on transactional sex. This finding highlights the importance of incorporating social and community resources in resilience-promoting programming and policy aimed at decreasing the transactional sex. Additionally, the type of social resources emphasized within programming is important, with findings suggesting the incorporation of social support into programs to promote sexual health may be more effective than social capital. Integrating social support from all three sources, family, peers, and a special person into resilience-focused interventions with outcomes related to transactional sex, may be ideal, but not necessarily

feasible for researchers. If focusing on one type of social support, findings indicate building on support from a special person, or significant other, may be most effective.

Social resources mediated the effect of resilience on transactional sex, but did not appear to mediate any effect on sexual debut. One rationale for this finding is the sexual debut occurs only once, while transactional sex can occur multiple times over an extended period of time for adolescent girls and young women. Previous literature highlighting the complex social dynamics related to transactional sex provides another rationale for social resources only mediating the effect on transactional sex. One recent study used social mapping techniques to explore social and community dimensions among young women who reported selling sex in Zimbabwe, and found distinct differences based on context, specifically within urban and university settings (Chiyaka et al., 2018). Another South African study using qualitative methods describes the nuanced contextual nature of transactional sex and also discusses how transactional sex is deeply embedded in young women's intimate relationships (Ranganathan et al., 2017). Future research should continue to explore other potential social and community resources related to resilience and sexual health, with a particular focus on transactional sex.

It is also important to situate these findings within the complex social and political context of South African girls and young women. Many young women who participate in transactional sex in this context do not adhere to a narrow definition of transactional sex. A literature review of more than 300 studies examining girls and young women's motivations for transactional sex in sub-Saharan Africa identified three paradigms for this practice: (1) Sex for basic needs; (2) Sex for improved social status; and (3) Sex and material expression of love (Stobenau, Heise, Wamoyi & Bobrova, 2016). This review also identified common structural factors shaping these paradigms, including gender inequities and economic issues. With

consistently high rates of gender-based violence and an average unemployment rate of 29% in South Africa, future research needs to consider this nuanced understanding of transactional sex along with the multi-level factors driving decisions around sex, choice of partner, and income (Abrahams et al., 2012; Statistics South Africa, 2018).

In some settings within South Africa, transactional sex is considered a stigmatized behavior and is often associated with the context-specific phenomenon of “blessers and blessees.” This recently described phenomenon is a type of transactional sex where more affluent, usually older men, called blessers, provide money and gifts to young women, called blessees, in return for sexual favors (Mampane, 2018). The disparities in age and gender dynamics of this phenomenon results in greatly imbalanced power dynamics. Resilience-based policy and programming should be careful not to further stigmatize South African girls and young women who report participation in transactional sex, and should also acknowledge the large differences in power frequently associated with this practice.

Several study limitations are acknowledged. This study uses only cross-sectional data, which prevents us from making inferences around causality. Additionally, while resilience was framed as the primary predictor in these analyses, we acknowledge that resilience and social resources are concepts that often occur together over time. Future research should seek to measure resilience and other individual and social factors at multiple time-points to address limitations related to direction of associations and temporality. Furthermore, this study only includes self-reported data, which means the data is subject to limitations of other self-measurements, such as social desirability bias. We attempted to limit this bias by using tablets to administer the questionnaire, and having participants respond to sensitive questions related to sexual behavior privately, but these steps may not have addressed these limitations fully.

Conclusions

This paper contributes to the growing area of research examining multi-level socioecological factors associated with resilience and health among South African girls and young women facing adversity. Through a strengths-based lens, findings highlight the effect of resilience on sexual health while acknowledging the importance of social resources on this effect. Researchers and professionals using resilience-based approaches to reduce sexual risk should be sure to recognize the importance of social and community factors, and also seek to leverage these influential factors within their programming to promote sexual health among this population. Additional research must continue to examine resilience, sexual health, and social resources over time to increase our knowledge of these complex and dynamic concepts, and to channel research findings into improved program and policy outcomes.

Table 1. Participant characteristics of weighted-sample of South African girls and young women, aged 15-24 years (N=7237)

	Mean (Standard Deviation) Frequency (Percentage)
Sociodemographic Characteristics	
Age	19.09 (2.74)
Self-Identified Race/Ethnicity	
African	6500 (89.8)
Coloured	701 (9.7)
Other	37 (0.5)
Resilience	
CD-RISC (10-item) Score	24.57 (7.64)
Sexual Health	
Ever had sex	
Yes	5005 (69.2)
No	2233 (30.8)
Sexual Debut (n=5005)	
Early Sexual Debut (<15 years)	443 (8.9)
Later Sexual Debut (≥15 years)	4562 (91.1)
Transactional Sex	
Yes	685 (9.5)
No	6552 (90.5)
Social Resources	
Social Support: MSPSS	
Family Support Score	5.14 (1.50)
Peer Support Score	4.74 (1.60)
Special Person Support Score	5.18 (1.50)
Social Capital: Adapted SASCAT	
Support from Groups	.28 (.53)
Citizenship Activities	.26 (.59)

Note: Column sums may not add up to N=7237 due to missing values

Table 2. Models assessing effects on associations between resilience on transactional sex (Reference group: No transactional sex)

	Average Effect Estimate (95% Confidence Interval) (n=4383)			
	Mediator: Social Support (Family)	Mediator: Social Support (Peer)	Mediator: Social Support (Special Person)	Mediator: Social Capital (Citizenship Activities)
Total Effect	-0.018 (-0.025 – -0.01)***	-0.019 (-0.026 – -0.01)***	-0.019 (-0.025 – -0.01)***	-0.019 (-0.026 – -0.01)***
Direct Effect on Outcome	-0.016 (-0.022 – -0.01)***	-0.017 (-0.024 – -0.01)***	-0.016 (-0.022 – -0.01)**	-0.018 (-0.025 – -0.01)***
Mediated Effect	-0.003 (-0.004 – 0.00)***	-0.002 (-0.003 – 0.00)***	-0.003 (-0.004 – 0.00)***	-0.0007 (-0.001 – 0.00)*
Proportion of Mediated Effect	0.154 (0.086 – 0.28)***	0.106 (0.086 – 0.28)***	0.162 (0.094 – 0.31)***	0.036 (0.004 – 0.08)*

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

Table 3. Models assessing effects on associations between resilience on sexual debut (Reference group: Early sexual debut)

	Average Effect Estimate (95% Confidence Interval) (n=2999)			
	Mediator: Social Support (Family)	Mediator: Social Support (Peer)	Mediator: Social Support (Special Person)	Mediator: Social Capital (Support from Groups)
Total Effect	0.015 (0.006 – 0.02)**	0.015 (0.005 – 0.02)***	0.015 (0.006 – 0.02)***	0.015 (0.006 – 0.02)**
Direct Effect on Outcome	0.014 (0.005 – 0.02)**	0.014 (0.005 – 0.02)***	0.014 (0.006 – 0.02)***	0.015 (0.006 – 0.02)**
Mediated Effect	<0.001 (-0.0001 – <0.001)	<0.001 (-0.0004 – <0.001)	<0.001 (-0.0010 – 0.00)	<.001 (-0.0003 – <0.001)
Proportion of Mediated Effect	0.057 (-0.010 – 0.21)	0.015 (-0.037 – 0.09)	0.019 (-0.083 – 0.13)	<.001 (-0.02 – 0.03)

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

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CHAPTER 3: From resilient girls to (more) resilient women: A mixed-methods study
examining narratives of resilience among South African adolescents

Abstract

Introduction: Adolescence is a time of heightened adversity for South African girls and young women due to individual and environmental factors. In this cross-sectional, mixed-methods study, we examined differences in resilience during transitions to adulthood and explored narratives of resilience among this population.

Methods: A sample of 373 South African girls and young women (15-24 years) in the City of Cape Town completed a quantitative cross-sectional survey including a validated measure of resilience and other sociodemographic questions. Quantitative analyses included descriptive statistics and an independent samples t-test to assess differences in resilience. These analyses informed the development of a semi-structured qualitative interview agenda. A purposive sample of 21 South African girls and young women (15-24 years) from the same survey area participated in interviews. Interviews were analyzed for perceptions of difference in resilience by age, and narratives of resilience during adolescence.

Results: Survey results indicated that younger girls (15-17 years) perceived themselves to be less resilient than their older counterparts (19-24 years). Qualitative interview results supported the survey results, and also pointed to a broader difference in resilience between adolescent girls and young women, and older women. Qualitative interview results also highlighted the role of social support in fostering resilience during critical periods of developmental transitions.

Conclusions: For South African girls and young women, adolescence is a key time period for developing resilience to adversity. Programming and policy implications for future resilience research among adolescents are discussed.

Introduction

Increasing our understanding of the concept of resilience across contexts is of growing interest to many psychologists and health scientists (Masten, 2014). Resilience can be defined as multi-level processes that help one successfully navigate experiences of adversity (Rutter, 2006; Ungar, 2012, Zimmerman, 2013). Factors influencing these contextual processes can be both psychological and social. For physiological, developmental, and social reasons, adolescence has been well-documented as time of heightened adversity (Brooks-Gunn & Paikoff, 1997; Jewkes, Dunkle, Nduna & Shai, 2010; WHO 2018). The present study seeks to contribute to a growing body of resilience-focused literature among adolescents by examining differences and narratives of resilience during critical developmental periods of South African girls and young women.

Adolescence is a particularly important time period for young people living in the context of heightened HIV risk. According to latest estimates, young people aged 15-24 account for 32% of new HIV infections each day (UNAIDS, 2019). In the case of South Africa, home to one of the largest global HIV epidemics, adolescence is a precarious time for girls and young women in regards to their health (Birdthistle et al., 2019; Karim & Baxter, 2019). Prevalence for young South African women grows rapidly during the transition to adulthood. For example, among girls and young women aged 15-19, HIV prevalence is 5.8%; among aged 20-24, HIV prevalence is 15.6%; among aged 25-29, HIV prevalence is 27.5% (Simbayi et al., 2019). Research has also shown this population experiences trauma and adversity at high levels (Closson et al., 2016; Myers, et al., 2015; Pillay, Bundhoo & Bhowon, 2010). Although studies have examined factors related to sexual risk among adolescents and young people across various settings, the role of resilience remains largely unexamined (El-Bassel, Shaw, Dasgupta & Strathdee, 2014; Kotchick, Shaffer, Miller & Forehand, 2001). Thus, a greater understanding of

the role of resilience during adolescence can provide key information to inform health promotion efforts for a population placed at heightened risk for HIV and other health issues emerging during adolescence.

Researchers have documented resilience as a dynamic process with both internal and external factors. Studies focused on external factors, such as social support and community, have outlined the importance of considering these factors when discussing processes of resilience (Armstrong, Birnie-Lefcovitch & Ungar, 2005; Pinkerton and Dolan, 2007, Poortinga, 2012). Recent literature has offered differential impact theory, which proposes changes to the environment cause individuals to change and these changes depend on the quality of the multi-level resources provided by the environment, as a way to frame the interactive process of person and environment (Ungar, 2017). Therefore, it is worth examining the idea that resilience may not remain stable during times of transition and heightened adversity, such as during adolescence. There is currently limited research describing how South African adolescent girls and young women maintain health and well-being, in spite of being placed at such high risk.

Research has also shown that gender may moderate processes of resilience (Hirani, 2016; Sun & Stewart, 2007; Werner, 2013). Much of the resilience-based research in South Africa is not gender-specific, and thus identifying gender-specific mechanisms of resilience can add to the limited literature in this area. Understanding differences in resilience among South African girls and young women during this key point can help to identify relevant gender- and developmental-specific resources and aspects of resilience. These resources can then be leveraged to help adolescent women maintain health during their transitions to adulthood.

Reviews of South African studies focused on resilience among youth indicated a lack of studies using resilience-specific instruments, and emphasized the importance of hybrid, or

mixed-methods study designs for resilience research (Theron & Theron, 2010; van Breda & Theron, 2018). Using mixed-methods to study resilience among adolescent girls and young women offers several important opportunities. First, it allows for the use of a multi-dimensional concept of resilience. While quantitative methods may utilize a validated measure to operationalize resilience, qualitative methods can introduce discussion of culturally-relevant and context-specific conceptualization of resilience. Together, these methods can be used to capture the richness of the concept, that one method alone may not be able to describe entirely. The two methods together can also explore how context-specific conceptualizations of resilience may, or may not, align with validated measures. Second, integrating quantitative and qualitative data allows researchers to identify potential explanations for observed trends and patterns. Third, mixed-methods create an important balance in the mixture of strength of evidence. While cross-sectional quantitative data only includes one time-point, qualitative data can be used to explore these trends and patterns retrospectively through narratives. Using narratives to examine the concept of resilience has been previously established, but has limitations that are potentially balanced by connecting qualitative narratives with quantitative data (Ebersöhn et al., 2015; Mosavel, Ahmed, Ports & Simon, 2015).

This study attempts to address current gaps in evidence examining processes of resilience related to age and gender among South African adolescent girls and young women. With a mixed-methods approach, this study uses quantitative data to identify potential differences in resilience among South African adolescent girls and young women, and qualitative data from in-depth interviews with this population to explore potential explanations for these observations, including narratives related to resilience and adolescence.

Methods

This study used an explanatory sequential mixed-methods design. In an explanatory sequential mixed-methods design, quantitative data is collected and analyzed first, with qualitative data collection and analysis following after (Ivankova, Creswell & Stick, 2006; Wisdom & Creswell, 2013). An explanatory sequential design is used when the goal of the mixed-methods study is to use qualitative data to help explain, or build upon, quantitative findings. This study uses qualitative data to further explore differences and identify narratives of resilience previously identified within the quantitative data. The study protocol and research tools were approved by the South African Medical Research Council Research Ethics Committee. Detailed methods information for each phase of the study are presented below.

Quantitative Phase

Data collection measures and procedures. A baseline survey within an evaluation study of combination HIV-prevention programming for South African adolescent girls and young women provides the quantitative data for these analyses. This evaluation study took place from 2017 to 2018 across 6 districts in South Africa where programming was implemented. The overall evaluation study used a stratified sampling design with districts as the primary strata. After using census data to create small areas layer sampling areas (SALs), a systematic random sample of 35% of the available households within the SALs across the 5 districts were selected. All adolescent girls and young women aged 15 to 24 years in sampled households were invited to participate. The survey was administered to each invited participant via tablet from a trained interviewer. Participants were reimbursed for the time they spent completing survey with a gift and voucher to the value of R75 (US \$5). This study uses survey data from one district, or stratum, the City of Cape Town, which includes 373 adolescent girls and young women

(N=373). Quantitative analyses were completed using SPSS Statistics for Windows, version 25.0 (IBM Corp, Armonk, NY., USA). Potential differences among younger (15-17) and older (18-24) age groups were assessed using independent-samples t-tests. The sample was divided into two groups, younger (15-17 years) and older (18-24 years). The groups were dichotomized in this way as 18 years is the legal age of adulthood in South Africa. In South Africa, the age of 18 is also associated with significant social and cultural rites of passage such as educational attainment (i.e. matriculation often coincides with an individual's 18th birthday). These quantitative analyses informed the development of the qualitative interview protocol.

Resilience. The concept of resilience was measured using the 10-item version of the Connor-Davidson Resilience Scale (CD-RISC) (Campbell-Sills & Stein, 2007). The CD-RISC scale has previously demonstrated strong psychometric properties among South African adolescents (Jorgensen & Seedat, 2011). Additionally, when assessed on several criteria, the CD-RISC scale received high overall scores when compared to several other measures of resilience (Windle et al., 2011). Psychological resilience, as measured by the CD-RISC 10, can range from 0 to 40 points, with higher scores indicating greater psychological resilience. This measure asks participants to indicate how much they agree with statements, such as “I believe I can achieve my goals, even if there are obstacles,” on a scale of not true at all (0) to true nearly all of the time (4). Scale reliability was assessed within the sample (Cronbach's alpha $\alpha= 0.83$).

Qualitative Phase

Data collection and procedures. Following analysis of the quantitative survey data and consistent with best practices for qualitative research, we recruited a purposive sample of girls and young women through existing study partnerships at two programming implementation sites within the survey district. Inclusion criteria for the in-depth interviews were: 1) aged 15-24

years; 2) identifies as a woman; 3) lives in the City of Cape Town. Girls under 18 years were excluded if parents did not provide consent or girls did not provide informed assent; young women 18-24 years were excluded if they did not provide consent. If an eligible participant was under 18 years, parent or caregiver consent was sought and obtained prior to interviews. We adhered to proper procedures for ethical data collection including, assessment of eligibility and informed consent and assent, and protections of data collected.

Interviews were conducted in English and took place from February to April 2019 in private rooms at the two programming implementation sites. Participants were reimbursed for the time they spent being interviewed with a voucher to the value of R50 (US \$4). Prior to the interview, each participant completed a short sociodemographic survey. Interviews lasted 30 to 60 minutes and were conducted using a semi-structured agenda developed from survey results around themes needing further exploration as identified in the quantitative analysis, as well as themes related to 1) conceptualization of resilience; 2) role of resilience during transitions to adulthood; 3) factors facilitating development of resilience. The semi-structured agenda used to guide these interviews can be found in **Appendix B**. Each interview included an exercise at the beginning where participant's conceptualized resilience in their own words. These personalized definitions were then used throughout the entire interview allowing for context-specific meanings associated with resilience to be examined within the interview.

Interview debriefing memos were completed within 24 hours of each individual interview. The content of these memos, along with the thematic areas related to questions included in semi-structured interview agenda, informed the creation of an initial codebook. On-going saturation analyses were conducted to identify final sample size. These analyses were based on iterative coding during the data collection phase, including the content of interview

debriefing memos. Audio recording from each individual interview was transcribed word-for-word. These transcriptions were then checked for accuracy and entered into NVivo Version 12 (QSR International Pty Ltd). All observational notes from interviews were entered as memos into NVivo. Following initial development of the codebook, in-depth interviews were coded using hypothesis coding by the lead researchers. Hypothesis coding is used when researchers apply a predetermined list of codes based on existing predictions and use these codes to further investigate these predictions (Saldaña, 2015). Using hypothesis coding, the lead researcher coded all of the transcripts, with regular consultation and discussion from collaborating researchers, for responses to questions related to differences in age, and narratives of resilience during adolescence. In addition to this iterative process, joint coding was conducted on a sample of transcripts at the beginning of data analysis. Coding agreement was assessed among 3 coders in a random selection of 3 transcripts which were coded and compared. This comparison confirmed high coding consistency by node, and moderate coding consistency by frequency.

Integration of Quantitative and Qualitative Data

Data were connected throughout the entire study beginning with the design process. Survey results related to differences in resilience from the quantitative data directly informed development of the semi-structured interview agenda. Questions and probes included in the agenda were developed from quantitative findings related to age, gender, and resilience. For example, observed differences in resilience by age group led to inclusion of a question and probes about perceived differences between resilient girls and resilient women as well as potential explanations for perceived differences and similarities. These explanations were based on the participant's own definition of age range for the terms 'girls' and 'women.' These findings also informed the selection of qualitative interview participants who were likely to fall

into a younger and older age group, which led to recruiting participants who were both currently in- and out-of-school. Finally, results from both the quantitative and qualitative phases are discussed during the results and discussion of this study.

Results

Participant characteristics

Table 1 highlights demographic characteristics that were measured in both the quantitative and qualitative samples. The mean age of participants currently in-school and out of school was also included, and aligned with predetermined age groups of younger (15-17) and older (18-24). Sample characteristics, including age, school attendance, and pregnancy, were similar across most categories for both samples with the exception of primary home language. Of note, there were more qualitative study participants who indicated they primarily spoke isiXhosa at home, when compared to the quantitative sample of which the slight majority indicated speaking primarily English at home. Approximately half of participants in each study reported currently attending school, and almost one third reported having ever been pregnant.

Quantitative

The quantitative sample (N=373) included adolescent girls and young women aged 15-24 years with an average age of 19.1 years. The mean resilience score on the CD-RISC for this sample was 25.97 points (SD: 7.98) with a range of 36 (Minimum: 4, Maximum: 40), which is comparable to mean scores of similarly aged populations in various countries (Davidson, 2018).

Potential differences were examined between younger (15-17 years) and older female participants (18-24 years). When compared to older female participants, younger female participants reported significantly lower resilience with a mean score difference of -2.22 (95% CI: -3.97, -0.47) (See **Figure 1**). Detailed results for this test are provided in **Table 2**. The results

of this analysis led to the development of hypotheses stating younger South African adolescent girls perceive themselves as less resilient than older South African young women. These hypotheses were explored, along with potential explanations for differences in resilience by age, through in-depth semi-structured interviews with South African adolescent girls and young women.

Qualitative

Explanations for differences in resilience by age. The majority of participants conceptualized resilience as bravery and strength regardless of age or school status. Many of the girls and young women affirmed the hypothesis generated from quantitative results that younger adolescent girls perceived themselves to be less resilient than their older counterparts. They also offered potential explanations as for why this may be the case, and spoke to a broader difference between resilient adolescent girls and young women, and resilient older women outside of the study age range. One participant highlighted this broader difference by suggesting the types of problems girls experience in adolescence are not as serious as ones faced by older women.

No, [girls] don't. No, they don't have the same experience, because the older woman have serious problems than the younger—a teenage girl would. Because our problems, we won't compare our problems to our mother's problems, because they deal with huge problems, and we deal with life problems that doesn't matter that gets us nowhere in life, so it's not the same. – In-school participant

Another younger, in-school, participant noted that it is difficult to regard girls as resilient, conceptualized as strong, as they may have not experienced the same issues and problems as someone who is older has experienced. This participant also suggested that talking to someone

older than themselves may help to build resilience by learning healthy coping strategies and sharing of advice.

Well, everyone has a different mindset, you see? For younger girls to be strong, it will be difficult for them because they do not know about life and the experiences and stuff that people go through. They do not know a lot, so I suggest younger girls would go to a bigger person who has experience and idea of what's going on, to speak to them. I wouldn't advise them to keep it for themselves, because now it is so that young children want to commit suicide and stuff, so I suggest they actually speak about it instead of keeping it to themselves. – In-school participant

Another in-school participant noted that resilient women, conceptualized as strong women, may regard girls as less resilient for their inability to use coping strategies during times of adversity, indicating that the process of adolescence itself may be an exercise of developing resilience for this particular setting.

[Strong girls and women] are different, because the stronger women look at the strong girls like at a lower level. Like, "Nah they won't- they'll easily give up." – In-school participant

The idea that women have gained experience over time to become resilient and learn to plan for the future was also echoed by an older, out-of-school participant. This participant provides a specific example linking resilience with education and experience, offering an option for resilient older women to plan for a family on their own terms, which may not be available for their younger, less resilient, counterparts.

I think they are different because women are educated on life. They've been through teenage years and all of those things. Young girls, they tend to make mistakes because

they are not educated, especially where pregnancy is concerned. They, maybe, don't plan for the baby. A strong older woman would have known, I need to plan for this child, or I need to use protection. But yeah, not the younger girls. – Out-of-school participant

When probed further about the steps to becoming a resilient woman, another out-of-school participant noted that there was a distinct process for becoming a resilient woman, which can be described as a sense of independence one gains when progressing through adolescence.

Like being yourself, having your own stuff. Like a girl, you need to go ask for your mother for certain things, can you go there or certain for toiletries and money when you're a woman and you'd be working, having your own stuff. Knowing what you want. – Out-of-school participant

Most of the girls and young women provided statements complementing the hypothesis created from observations of the quantitative data. They also spoke to overall differences in resilience between girls and young women, and resilient older adult women who have already transitioned through a period of adolescence.

Other participants were ambivalent about potential differences in resilience by age. The participants who were ambivalent about age difference in resilience provided various explanations as to why this may or may not be the case. For example, one in-school participant noted differences in perceived resilience may depend on sources of support from peers that is potentially more accessible to younger girls than to adult women.

Yeah, not really. It depends on how you take things. It depends on how you take things 'cause I feel that girls, the younger girls and women have more advantages because maybe our best friends, we can talk to who will help us get through the situation as much as adults to. Maybe adults who—women don't want to talk about their personal things

they're going through, so for younger girls it's more easier 'cause you have someone you can talk to and all that. It's kind of different, yeah. – In-school participant

When prompted specifically about differences in resilient women and girls, conceptualized by courageous and strong, two participants noted that this may be dependent on the particular individual and their background.

Some...As in, like, say women, pregnant women, and then you get girls who fall pregnant, they go through same challenges every day. That's what make them courageous. – In-school participant

It [strength] depends the background situation. You can't say it's better or not better. – Out-of-school participant

One participant provided conflicting results pointing to adolescence itself being a critical time for fostering resilience.

Strong girls versus strong women? I would say girls are stronger, because they — in the way of puberty, that stage of being teenagers, and then, they get the peer pressure from their friend. So I would describe a girl who is strong as a girl who does not let peer pressure gets to her. She knows what she wants. She knows what she can get. – Out-of-school participant

This participant offers a justification for her contrasting belief that younger girls may perceive themselves as more resilient than their older counterparts due to changes related to puberty, and the social adversity created by peer pressure.

Narratives around processes of resilience during adolescence. Results also provided insights into the processes of resilience during the developmental transition from adolescence to adulthood among this population. These narratives highlight resilience as a dynamic process that

changes based on life experiences and background. These processes included both internal and external elements, such as individual coping strategies and activities related to community and citizenship. When asked how girls or young women learn to be resilient, conceptualized as brave and strong, one in-school participant highlighted how this may change based on the situations they face. These processes related to individual circumstances, were affirmed by another out of school participant.

By going through different situations and different things that they experience in life. It makes them stronger and see things differently.” – In-school participant

I think you learn through your circumstances. What you go through depends on how brave and how strong you will be. – Out-of-school participant

Another participant discussed neighborhood and community as a place of learning for resilience, which they conceptualized as strong, and also related resilience to becoming an active citizen.

To be a strong woman in my community is to stand for rights, attend the meetings in the community, share your views and ideas within the community. Yeah...By the programs that they come once in awhile. Maybe the community there will be something for two hours. People from elsewhere, they'll get those short lessons or something like that—just to groom them. – Out-of-school participant

When the same participant was asked about other ways to learn to be resilient, she suggested there were various pathways to becoming a resilient, or strong, woman.

There are many ways to learn to be strong, but I can't begin to focus on all. In your own life just like the way you are as a person, there are things that you have to overcome as in

like your own life and yourself. That's where it starts to become a strong woman. – Out-of-school participant

An in-school participant talked about how multiple aspects of adversity during adolescence may be key for becoming a resilient woman, with these experiences providing opportunities to learn how to handle problems that may persist in adulthood.

It's actually the strong people because they obviously have to deal with those things at a really, really young age, so they will know how to deal with it when they're older. I think it's mostly the strong people comes from the poor backgrounds. People don't have, so they learn from their mistakes. They look after people who have, so they would know what to do. I think it's them that's actually the strong people who doesn't have anything and stuff. – In-school participant

Another participant echoed the idea of resilience growing from moments and experiences of adversity, but also noted that the process of becoming a resilient young woman in her community often meant becoming cold and hard.

I think most girls in my community. They became strong, or even became hard. They don't have that soft heart anymore because of the things that they go through, like drug abuse, alcohol abuse and the community violence and things like that. Which caused them to become like that, like that strong woman, and 'nothing can bring me down'. – Out-of-school participant

This context-specific understanding of resilience provides counterpoint to the notion of resilience always being positive for health. It also points to potential unintended consequences of having to be extremely resilient during this important development period of life in contexts of extreme adversity.

Role of social support and maternal figures. Of particular importance to processes of resilience among participants were relational concepts, such as social support and role models. Two participants, who conceptualized resilience as focused and strong, specifically used the phrase ‘role model’ in their descriptions of becoming more resilient.

The girl, she is focused, but she must still learn more in order to become as a focused woman, and then a focused woman knows what she wants in life. She’s gone throughout everything, and she knows what she must do in order to become... You learn [to be focused] from the focused woman. [Laughter] You get role models, and they teach you, and all that stuff, how to become focused. – In-school participant

Having a role model made me strong, ‘cause when I love someone, I google about you, and see all this stuff, and I’ll be like, ‘Okay, I’m gonna be like her. Maybe she was raised like me’. – In-school participant

Listening to others, hearing their stories, and seeking advice were also verbalized as processes of building resilience

I think so. By getting motivations, listening to other people’s stories so they can relate to their stories. – Out-of-school participant

Mothers, and female caregivers, in particular played a special role in processes of resilience for girls and young women.

I think I learn it [to be resilient] like—I learn everything from my mom. That’s all I can say. She always tells me what to do, how I should do things, and how I should believe in myself, and how I should bring myself on and keep going until the problem is [hand gestures to symbolize gone] – Out-of-school participant

We understand the situation as young as we are because I can see at home now it's difficult, but I've become so strong. I cry. My mom cry, but I become so strong when I talk with my mom. You know it's gonna be fine one day. Yeah. We relate. – Out-of-school participant

Overall, participants highlighted the importance having someone older, usually a maternal figure, to model processes related to resilience and also to provide support during times of adversity.

Discussion

In this mixed methods study of resilience among adolescent girls and young women in South Africa, we find a significant difference in a standard quantitative measure of resilience by age and identify explanations for this perceived difference. In addition to identifying explanations for this difference, meanings and context-specific understandings of resilience were expanded on with qualitative data. The qualitative analysis supported the quantitative-driven hypothesis that younger girls perceived themselves to be less resilient than older young women. Qualitative findings also spoke to broader differences in resilience between girls and young women, and older women. These findings also provided narratives of resilience that highlighted the importance of the time period of adolescence, and emphasized the critical role of social support in developing resilience. While age itself is not a modifiable factor, understanding narratives of resilience and how they may differ during adolescence, can be important when considering tailored programs and when making policy decisions attempting to limit adversity that young people face.

The ability to be resilient within this context was mainly conceptualized as a process that co-occurs with adolescence and transitioning to adulthood. By persisting through adversity,

resilience was developed over time. Role models, including peers for younger girls and support from maternal figures and the larger community, were identified as key factors facilitating resilience during adolescence in this context. This is consistent with the theoretical concepts of social learning and modeling from developmental psychology and other behavioral sciences (Bandura, & Walters, 1977; Grusec, 1992; McAlister, Perry & Parcel, 2008). These parallel narratives of resilience and development, were also strongly tied to the idea of becoming a woman. The discussion of maternal figures and role models also brought up narratives of intergenerational trauma related to violence as well as a demonstration of how relationships between different generations could be a source of resilience for South African girls and young women. Programming looking to build resilience among adolescent girls and young women should consider aspects related to mentorship and peers in their program design and implementation to capitalize on the concept of creating resilience through relationships. Additional research can provide insight into how this process may, or may not, be similar among South African boys and young men who are also placed at high risk.

Findings also highlight the potential costs of resilience, and the emotional consequences of attempting to overcome persistent adversity among young women of color. Research has shown attempting to navigate and using energy to preempt experiences of racism and discrimination can have consequences for physical and mental health (Barajas et al., 2019; Williams et al., 2009; Williams et al., 2012). Additionally, studies based in the US have described the phenomenon of being psychologically resilient, or strong, but physically vulnerable (Erving, Satcher & Chen, 2020; Woods- Giscombé, 2010). Future resilience research should continue to examine these issues across various contexts and with differing health outcomes, particularly during times of key development, such as adolescence. This forthcoming

research can help identify areas of policy to target to reduce young people's necessity to be resilient.

Limitations

There are several limitations to this research. As is consistent with other studies using qualitative methods, the small sample size may limit generalizability to other populations. Although there were a greater number of participants in the quantitative data, participants in this study represented only one urban district of the country, which could limit generalizability to other areas within South Africa. The qualitative study also did not ask participants if they were living with HIV. This provides opportunities for even further examination of resilience in differing populations, such as those living with HIV or in rural areas. Results may also differ among participants that were not exposed to combination-HIV prevention programming. Finally, with the use of cross-sectional quantitative data, we are unable to make more substantial claims about changes in resilience over time during periods of adolescence among girls and young women. However, this limitation is addressed in part through the use of mixed-methods study design, specifically the solicitation of retrospective narratives within the qualitative study. This limitation should also be addressed through future research that seeks to measure resilience across time and during the period of adolescence.

Conclusion

South African girls and young women live within contexts of extreme adversity in regards to their overall health and well-being. Thus, increasing our understanding of the role of resilience during the adolescent development offers a strengths-based perspective to the dominant deficit-based approaches of psychology and public health. This study uses mixed-methods to examine the rich concept of resilience in light of heightened HIV risk. It examines

differences in the development of resilience during stages of adolescence, and explores explanations for these observations. Findings from this study offer potential areas of intervention that can be targeted to potentially increase the efficacy of resilience-based programming. They also highlight a need for increased longitudinal resilience research. Finally, additional research is needed to inform policy that reduces the high rates of adversity adolescents are facing due to social and structural inequities.

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Table 1. Participant characteristics among South African girls and young women, aged 15-24 years

	Quantitative (N=373)		Qualitative (N=21)	
	Frequency (percentage)	Mean (SD)	Frequency (percentage)	Mean (SD)
Age		19.1 (2.7)		19.5 (3.2)
In-School		17.2 (1.9)		16.7 (1.3)
Out of School		20.7 (2.0)		22.1 (1.9)
Primary home language				
isiXhosa	99 (26.5)		15 (71.4)	
English	189 (50.5)		5 (23.8)	
Afrikaans	79 (21.1)		0	
Other	6 (1.6)		1 (4.8)	
Currently in school	171 (45.7)		10 (47.6)	
Ever had a pregnancy	103 (27.5)		4 (19.0)	

Figure 1. Mean differences in resilience score by age group

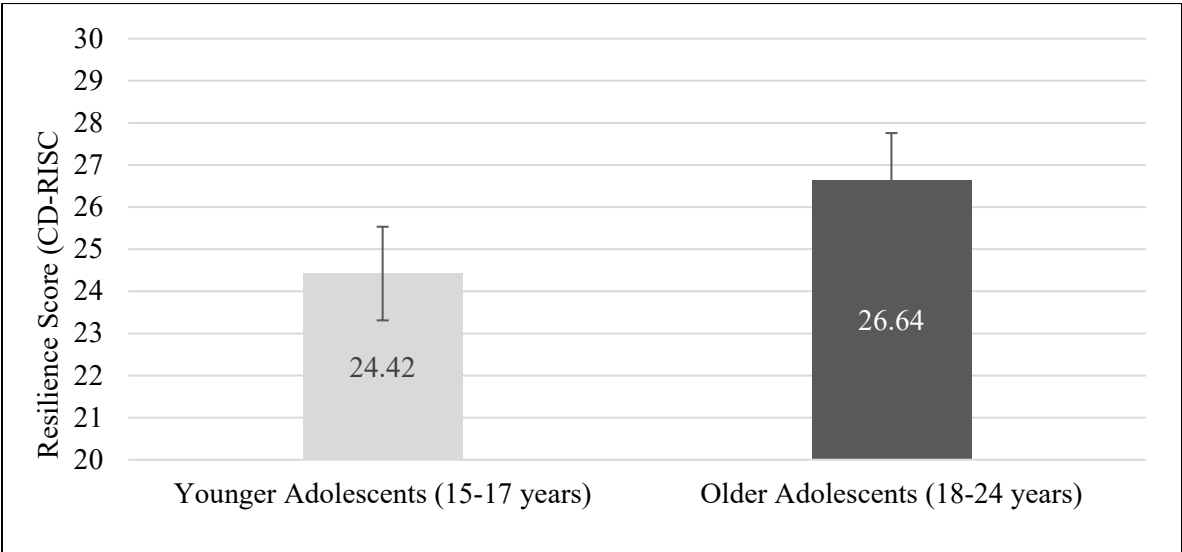


Table 2. Results of independent samples t-test for mean difference in resilience by age group

		Levene's Test		t-test for Equality of Means				95% Confidence Interval		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Standard Error Difference	Lower	Upper
Resilience Score	Equal variances assumed	.500	.480	-2.497	371	0.013	-2.223	0.890	-3.974	-0.473

CONCLUSION

Many South African girls and young women live in a context of extreme adversity, placing them at disproportionate risk for HIV and other negative sexual health outcomes. Sexual health promotion efforts directed towards this population have the potential to reduce HIV transmission and shift life trajectories towards optimal health and well-being (Bekker, Johnson, Wallace & Hosek, 2015; Stirling, Rees, Kasedde & Hankins, 2008). Promising research presents resilience as a strengths-based approach to address this critical public health issue (Bhana et al., 2016; Li et al., 2015; Skovdal & Daniel, 2012). This dissertation contributes to the scientific literature by examining resilience and sexual health among South African girls and young women. Findings offer novel implications for programming and policy, and provides opportunities for future research around resilience and health.

Summary of Dissertation Findings

First, I examined associations between resilience and sexual risk using a household-based representative sample of South African girls and young women from an evaluation of Global Fund combination HIV prevention programming, and found that increased resilience is associated with significantly greater odds of later sexual debut even after adjusting for potential confounders. I also presented, to the best of my knowledge, one of the first studies demonstrating biologically-verified HIV status is a moderator of the association between resilience and sexual debut among South African girls and young women. Second, using the same representative sample of South African girls and young women, I explored whether social support and social capital mediate the effect of resilience on two sexual health outcomes, sexual debut and transactional sex. Both social support and social capital mediated the effect of resilience on transactional sex. However, social support mediated a greater proportion of the effect of

resilience on transactional sex compared to social capital. Neither social support or social capital mediated the effect of resilience on sexual debut. Finally, I deepened our understanding of narratives of resilience as South African girls and young women transition to adulthood in the context of heightened adversity using both quantitative and qualitative data from one district of where the Global Fund evaluation study was being implemented. This mixed-methods study showed younger girls perceived themselves to be less resilient than their older counterparts, and pointed to social support, especially from maternal figures, as a critical interpersonal factor helping girls and young women build their own resilience.

Implications for Chapter 1

In Chapter 1, I concluded that resilience is significantly associated with sexual debut, but this is not the case for adolescent girls and young women living with HIV. These results indicate living with HIV may confer specific types of challenges for sexual health, which needs to be explored in further research. Recent and on-going research, including an NIH-funded study focused on South African adolescents living with HIV (Harrison & Kuo, 2017-2020), has the potential to tell us more about the sexual and reproductive health needs of young people living with HIV as well as how programs can be better tailored to their needs (Judd & Davies, 2018; Hamzah & Hamlyn, 2018). As more work is published on the unique sexual health needs of young people living with HIV, we can also gain greater insights into *why* young people living with HIV may change their behavior and make decisions around sex. The study presented in Chapter 1 also highlighted the need to examine associations between resilience and sexual health outcomes over time, and demonstrated resilience-focused research in public health needs to expand from a predominantly mental health-focused outcomes to include other health outcomes such as sexual health. Finally, although this study uses a household-based representative sample,

the survey providing the data for this study focused primarily on heterosexual and cisgender experiences of South African girls and young women. Future research in South Africa should also explore these questions among lesbian, transgender, bisexual, and queer individuals to ensure programs and policies to promote sexual health are relevant for those with a diversity of sexual and gender experiences identities (Sandfort et al., 2013; Müller, 2017).

Implications for Chapter 2

In Chapter 2, I provided implications for resilience-based research seeking to reduce the sexual risk of South African girls and young women. In this chapter, I recommended resilience-focused programs promoting sexual health of South African girls and young women should also seek to cultivate social resources, especially social support. This finding was supported by results showing social support from family, peers, and a special person mediated a significant percentage of the effect of resilience on transactional sex. Future research should continue to consider the nuanced and complex dynamics related to transactional sex. One South African study used a resilience-based approach to ground the phenomenon of transactional sex within the realities young people living in South Africa, and concluded that HIV prevention programming could benefit from using an expanded understanding of the context in which transactional sex is taking place (Heijden & Swartz, 2013). Chapter 2 also demonstrates the importance of how we frame and promote sexual health within our work. For South African adolescents, a lack of openness and communication around sexuality is a major factor impeding good sexual health outcomes (Bastien, Kajula & Muhwezi, 2011; Phetla et al., 2008). Emerging research has offered a rights- and pleasure-based perspective as a parallel strengths-based approach to promote sexual health among young people (Gruskin & Kismodi, 2020). This sex-positive perspective emphasizes the need to engage in healthy sexuality and relationships, rather than focusing on

avoidance of sexual risk. However, research with a sex-positive approach has not been widely conducted in settings like South Africa or among adolescents (Landers & Kapadia, 2020; Pitts & Greene, 2020). Researchers should continue to explore how the concepts of pleasure and healthy relationships can be incorporated into strengths-based approaches to promoting sexual health.

Implications for Chapter 3

In Chapter 3, I used a mixed-methods approach to identify conceptualizations and narratives of resilience among South African girls and young women as they transition to adulthood. Adolescent girls and young women both conceptualized resilience primarily as strength and bravery, and as a process developing over time and experiences of adversity. Findings from this study emphasized the importance of role models and mentoring for fostering resilience among South African girls and young women. The discussion of maternal figures and role models also brought up narratives of intergenerational trauma related to violence as well as intergenerational resilience. This information can be incorporated into programming and policy seeking to promote healthy development of this population specifically by adding a component related to mentorship, or building healthy relationships with maternal figures. Future research should consider examining narratives and conceptualizations of resilience among women older than 24, as well as South African boys and young men for a richer picture of how age and gender may shape these lived experiences. The importance of taking a critical lens to understanding the concept of resilience also emerged in Chapter 3. Future research must continue to examine consequences of having to be resilient in contexts of extreme adversity. This could inform policy and programming to strengthen young women's resources through social and other types of support. These additional resources could then enhance an individual's ability to demonstrate resilience in the context of heightened adversity.

Future Research

The research presented in this dissertation addresses a critical gap in resilience literature within a priority area for HIV prevention. The limitations of the cross-sectional aspect of the data can be addressed through future research using a longitudinal design. Both additional longitudinal quantitative and qualitative data can provide relevant information for resilience-based approaches to promote health and well-being of South African girls and young women. Chapters 1 and 2 provide some of the few studies examining resilience and sexual health in this context with a household-based representative sample. Another evaluation study, funded and implemented by PEPFAR, also provides a household-based representative sample of South African girls and young women with psychosocial and sexual health outcomes (George et al., 2020). The expansion of studies evaluating strengths-based approaches is an important development within the field of HIV prevention and public health more broadly. Expanding our knowledge around strengths-based approaches to public health can also provide a foundation for programs to promote health and well-being.

This dissertation provides a solid foundation to build upon in my future research as a public health scholar focused on promoting resilience and health among young people. In the future, I would like to examine other outcomes related to sexual health among girls and young women, including intimate partner violence. This additional research will fill a critical gap in research related to resilience and gender-based violence. While this work focuses on South Africa, the questions proposed in this dissertation can also be answered in other contexts of adversity for girls and young women. The research presented also focused solely on girls and young women, providing an opportunity to expand future research to include partners, family, and peers for a greater understanding of the concept of resilience among young people. Finally,

the work presented is situated within the social and historical context of South Africa, which resulted in frequently reported experiences of both individual and intergenerational trauma and violence. I plan to further explore the concept of intergenerational trauma, as well as intergenerational resilience, in future research with the goal of developing an intervention focused on the creation of intergenerational places of healing and wellness.

In conclusion, this dissertation provides an in-depth examination of the concept of resilience and how it relates to the sexual health of adolescent girls and young women living in adverse environments. While this dissertation acknowledges the dynamic and multi-level processes related to resilience, it also offers potential areas of growth for researchers aiming to better capture the interactive and systemic nature of resilience (Collette & Ungar, 2020). Taking a systems approach to resilience will require researchers to be creative and thoughtful with their study designs, but the resulting work has the potential to change to shift the way we think about promoting health among young people (Ungar, 2019; Liebenberg, 2020). There are also opportunities for resilience-based research to shift our focus in public health from primarily identifying health disparities to achieving health equity through work informing policy and programs that will reduce the amount of adversity young people face (Seccombe, 2002; Bottrell, 2009). As long as those working in public health seek innovative ways to address the health disparities young people face in context of adversity, resilience-based research will remain important and relevant. As this research continues to grow in the field of public health, it is my hope that strengths-based and community-based approaches to improving the health of young people are normalized and successful in making all places one where young people can not only survive, but thrive.

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APPENDIX

Appendix A. Bivariate analyses of key variables of this dissertation

<u>Resilience</u> Key Variables Demographic, Social, and Economic Variables	Resilience CD-RISC Score	
	Correlation coefficient or Mean (SD)	<i>p</i>
Sexual Risk		
Sexual Debut		
<i>Early Sexual Debut (<15 years)</i>	23.38 (7.70)	<.001
<i>Later Sexual Debut</i>	24.77 (7.47)	
Condom Use (Past 3 Months)		
<i>Yes</i>	24.76 (7.36)	.219
<i>No</i>	24.49 (7.70)	
Transactional Sex		
<i>Yes</i>	23.10 (8.25)	<.001
<i>No</i>	24.72 (7.56)	
Social Support: MSPSS		
Family support	0.110	<.001
Peer support	0.092	<.001
Special Person support	0.129	<.001
Social Capital: SASCAT		
Citizenship activities	0.023	<.05
Cognitive social capital	-0.010	.390
Group membership	0.007	.530
Support from groups	0.012	.288
Support from individuals	0.056	<.001
Biologically-Verified HIV Status		
Living with HIV	24.15 (7.48)	<.05
Not living with HIV	24.95 (7.59)	
Demographic Variables		
Age	.075	<.001
Self-Identified Race/Ethnicity		
<i>African</i>	24.38 (7.60)	<.001
<i>Coloured</i>	26.46 (7.80)	
Social and Economic Variables		
Poverty		
<i>Relatively High SES</i>	25.89 (7.44)	<.001
<i>Relatively Low SES</i>	24.23 (7.66)	
Household Receipt of Social Grants		
<i>Yes</i>	24.55 (7.68)	.794
<i>No</i>	24.59 (7.59)	

Sexual Risk Outcome Variables Demographic, Social, and Economic Variables	Sexual Risk Early Sexual Debut (<15)		Sexual Risk Condom Use (Last 3 Months)		Sexual Risk Transactional Sex (Lifetime)	
	Mean (SD) or Chi-Square	p	Mean (SD) or Chi-Square	p	Mean (SD) or Chi-Square	p
Social Support: MSPSS						
Family support						
Yes	4.88 (1.54)	<.01	5.07 (1.50)	.800	4.59 (1.73)	<.001
No	5.10 (1.53)		5.08 (1.55)		5.19 (1.47)	
Peer support						
Yes	4.53 (1.60)	.136	4.66 (1.65)	.305	4.24 (1.76)	<.001
No	4.64 (1.63)		4.61 (1.60)		4.79 (1.57)	
Special Person support						
Yes	5.06 (1.43)	.087	5.17 (1.53)	.762	4.69 (1.64)	<.001
No	5.19 (1.50)		5.19 (1.45)		5.24 (1.47)	
Social Capital: SASCAT						
Citizenship activities						
Yes	.33 (.67)	.200	.32 (.65)	<.001	0.44 (.74)	<.001
No	.29 (.62)		.24 (.58)		0.24 (.57)	
Cognitive social capital						
Yes	1.37 (.92)	.274	1.35 (.87)	<.05	1.39 (.92)	<.05
No	1.32 (.89)		1.29 (.92)		1.30 (.90)	
Group membership						
Yes	.48 (.73)	.054	.46 (.66)	<.001	.56 (.66)	<.001
No	.42 (.64)		.37 (.62)		.41 (.64)	
Support from groups						
Yes	.34 (.66)	<.05	.33 (.56)	<.001	.44 (.59)	<.001
No	.28 (.52)		.23 (.48)		.27 (.52)	
Support from individuals						
Yes	.74 (1.00)	.334	.77 (.95)	<.001	.78 (.81)	<.01
No	.69 (.89)		.59 (.83)		.69 (.91)	
Biologically Verified HIV Status						
Living with HIV	3.80	.051	.04	.840	25.72	<.001
Not living with HIV						
Demographic Variables						
Age						
Yes	18.85 (2.91)	<.001	19.97 (2.43)	.843	19.95 (2.68)	<.001
No	20.07 (2.42)		19.96 (2.57)		19.00 (2.73)	
Self-Identified Race/Ethnicity						
African	7.09	<.01	23.32	<.001	2.87	.090
Coloured						
Social and Economic Variables						
Poverty						
Relatively High SES	2.22	.136	1.10	.295	.017	.896
Relatively Low SES						
Household Receipt of Social Grants						
Yes	4.54	<.05	.002	.962	7.06	<.01
No						

QUALITATIVE GUIDE
INTERVIEWS WITH YOUNG WOMEN AND GIRLS
INTERVENTION RECIPIENTS

Ice Breaker: Tell us about someone you admire and why you admire them.

They can be someone you know personally, or don't know personally. They can be a role model or just someone you like, whoever you want.

I. Lived Experiences of Resilience

The goal is this portion of the agenda is to explore lived experiences of resilience and how girls and young women think about challenges within their environment. This portion also aims to examine resilience-based components of existing programming and to inform future implementation of resilience-based programming.

1. We are interested in learning more about how you, and how girls like you, overcome challenges and live healthy lives in spite of difficulties. What words do you use to describe someone:
 - a.who is able to achieve their goals, even if there are obstacles?
 - b. ...who can deal with whatever comes their way?
2. What are **resilient** (USE WORDS FROM PARTICIPANT) women like? What life experiences do **resilient** (e.g. strong, powerful, inspiring, persistent) women have? OR Do you know a **resilient** woman? What life experiences does she have?
 - a. Are these the same for men?
 - b. Are these the same for younger/older girls?
 - c. Are these the same for someone of a different race or ethnicity?
3. What does it mean to be a **resilient** (e.g. strong, powerful, inspiring, persistent) woman to you?
 - a. What does it mean to:
 - i. To your family (i.e. mother, father, caregiver)?
 - ii. To your friends?
 - iii. To your partner?
 - iv. To your community?
4. How do girls and young women in your community learn to be **resilient** (e.g. strong, powerful, inspiring, persistent)?
 - a. How have you learned to be **resilient**?
 - b. How has this changed over time/as you have gotten older?
5. Can you tell me about an event or experience in your life that was hard but made you feel stronger after getting through it?
 - a. What made you feel supported during this event?
 - b. Was this the first time you dealt with a difficult event?
 - i. Can you tell me more about the first time you dealt with a difficult event?
6. How does it feel to be a **resilient** (e.g. strong, powerful, inspiring, persistent) girl or woman all (most of the time)?

- a. What does this feel like physically (in your body)?
- b. What does this feel like mentally (in your mind)?
- 7. How would being a **resilient** (e.g. strong, powerful, inspiring, persistent) girl (or young woman) help girls like you to:
 - a. Prevent pregnancy or use family planning/contraceptive?
 - b. Stay mentally healthy (deal with stress, anxiety, depression; not use alcohol or drugs)?
 - c. Get tested or treated for HIV?

II. Individual and Family Experiences

The goal of this portion of the agenda is to explore girls' (15-18 years old) experience of social support, their initial sexual relationships, how they think about gender relationships, and priorities about their health.

1. We are interested in hearing about how young women and girls like you have happy and safe friendships, as well as sexual relationships.
 - a. If you had a best friend, what would they be like?
 - i. Describe how you and your friends support one another.
 - ii. Have you ever had difficulties with friends? How did you deal with them?
 - b. If you had a romantic partner, what would they be like?
 - i. Describe how you and your partner support one another.
 - ii. Have you ever had difficulties with partners? How did you deal with them?
2. Can you tell me about other challenges that young women like you face?
 - i. Within your home/family?
 - ii. Within your work?
 - iii. Within your neighborhood/community?
 - iv. Within your school?
3. What do you think helps you, or girls (or young women) like you, to stay **resilient** (e.g. strong, powerful, inspiring, persistent) when faced with these challenges?
 - a. How does it make you feel when you are supported through challenges?
4. What kind of help have you received from people, services, or organisations to help you feel safe, protected and happy in your relationships?
5. Who in your life is most helpful in helping you meet the challenges of being a young woman or girl in South Africa? (Probe for peers, parents, family, teachers, health workers)
 - a. What kinds of support have they given you?
 - b. If you have not received all the support you need in your life, what kind of support do you wish you had received? And from whom?
6. What makes it easy/difficult to approach (name adults below) to get help with these things?
 - a. Parents? easy / difficult
 - b. Family? easy / difficult
 - c. Teachers? easy / difficult
 - d. Health workers? easy / difficult
7. If you needed help with family planning, condoms, STI treatment, unhappiness, abuse or other health needs, who would you trust with these issues?
 - a. What kinds of places would help you deal with these issues?

III. Health System Experiences

The goal of this portion of the agenda is to explore girls' (15-18 years old) experience of health systems, the role of resilience within this experience, and facilitators for keeping girls healthy.

We are interested in hearing from you about the health education and health services you and your friends receive at school and in the community. We are especially interested in health education and health services that focus on HIV, TB, and other STIs, teen pregnancy, and stress and depression.

1. What **health education or health services** have/do you and your friends receive/d at school?
2. What **health education or health services** have you and your friends received in the community?
3. To what extent do these services meet your needs and help you to be **resilient** and **healthy**?
 - a. What could be improved about these services?
4. If you could create a programme or place to help girls and young women stay healthy, what would that programme look like?
 - a. Where would it be?
 - b. Who would attend?
 - c. What topics would it cover?
 - d. How long would it last?

IV. School Experiences and Future Planning

The goal of this portion of the agenda is to explore girls' (15-18 years old) experience of school and their plans for the future.

Next, we would like to hear about your school life (*change to past tense for out of school participants*).

1. Are there things that make it easy for you to attend school and get good grades?
2. Are there things that make it difficult to attend school and achieve good grades?
3. What kind of support do you get at school to help you:
 - a. Attend school?
 - b. Cope with homework and tests?
 - c. Do well at school?

We would also like to hear about your future plans.

4. What do you think your life be like in 5 years' time?
 - a. What kinds of support have you received to help you make plans for your future when you leave school?
 - b. Have you had help to find out about careers?
 - c. Have you had training on how to apply for a job?
 - d. Have you had help with planning further studies after you leave school?
5. What has helped you most to prepare for your future?
 - a. What has made it difficult for you to plan your future when you leave school?

V. Experience of Global Fund Programme

*The goal of this portion of the agenda is to explore girls' (15-18 years old) experience of the Global Fund Programme components, specifically the, **Rise Clubs**, and **Keeping Girls in School (KGS) Programme**.*

Now I would like to ask you about specific programs that you may have been a part of, have you ever participated in Rise Clubs? Rise Young Women's Clubs are clubs to empower young women to shape their own lives and the communities they live in. If YES, proceed. If NO, skip to 5.

1. How would you describe your experience being part of the *Rise Club*?
 - a. What did you enjoy the most?
 - b. What did you enjoy the least?
2. To what extent have *Rise Clubs* impacted on your life?
 - i. Probe on changes to daily life? – examples?
 - ii. Probe on changes to who you do things with? – examples?
 - iii. Probe on changes to how you solve challenges in your life? – examples?
3. We would like to hear your experiences and views on different parts of Rise Clubs
 - a. Which parts did you think work well for young women and girls like you?
 - b. Why did you like these best? (Probe for facilitators, content, place/time/location of delivery, format)
 - c. What changes should we make to these clubs so that they prepare young women and girls to be strong, healthy, and successful?
4. To what extent do you think *Rise Clubs* make a difference in the lives of young women and girls like you?
 - a. To what extent have *Rise Clubs* impacted your community?
 - i. Probe ways it has impacted, and why – examples?
 - ii. Probe ways it has not impacted, and why not – examples?
 - b. Have these clubs made any other differences in your life, your daughter's life, or the lives of your family and community that you want to share with us?
 - i. Probe on any positive differences the clubs have made – examples?
 - ii. Probe on any negative differences the clubs have made – examples?

Next, we would like to talk about the Keeping Girls in School (KGS) Programme, which provides homework help and home visits to girls who are absent from school. Have you participated in this programme? If YES, proceed. If NO, move to closing questions.

5. To what extent has the *Keeping Girls in School Programme* changed your educational experience?
 - a. To what extent did things you learned help you to do better in school? - examples
 - b. To what extent did things you learned change the way you face future challenges in your education? - examples
6. To what extent has the **Keeping Girls in School (KGS) Programme** impacted your community?
 - i. Probe ways it has impacted, and why – examples?
 - ii. Probe ways it has not impacted, and why not – examples?

7. Has the programme made any other differences in your life, or the lives of your family and community that you want to share with us?
 - i. Probe on any positive differences the programme has made – examples?
 - ii. Probe on any negative differences the programme has made – examples?
8. We would like to hear your experiences and views on different parts of the Keeping Girls in School Programme
 - a. Which parts did you think work well for young women and girls like you?
 - i. Which parts did not work well?
 - b. Why did you like these best? (Probe for facilitators, content, place/time/location of delivery, format)

If applicable, ask same questions as above for **Women of Worth** programme.

VI. Closing

The goal of this portion of to close the interview by ensuring we have gathered all the advice that we can from young women and girls. Use this opportunity to follow up on anything new and interesting that you heard. Use this opportunity to also thank them for their participation.

1. In this community, what things do you think would help improve the lives of young women and girls like you?
2. What could help young people:
 - a. ...to stay healthy and happy?
 - b. ...to feel loved and accepted?
 - c. ...to protect to themselves from HIV, STIs and unwanted pregnancies?
3. Is there any other advice you would like to give us or any other information you want to share with us?
 - a. What would you like researchers and scientists to focus on in the future?
 - b. Are there any other questions you think we should ask in the future?