2020

Cognitive behavioral therapy, coping, critical consciousness and HIV in young adults in Rwanda

BOSTON UNIVERSITY

GRADUATE SCHOOL OF ARTS AND SCIENCES

Dissertation

COGNITIVE BEHAVIORAL THERAPY, COPING, CRITICAL CONSCIOUSNESS AND HIV IN YOUNG ADULTS IN RWANDA

by

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Submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

2020

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ACKNOWLEDGMENTS

This dissertation and everything that prepared me for it would not be possible without the support, guidance and love of so many people. Thank you so much to my advisor and first reader, Leslie Brody, PhD for her guidance, feedback and encouragement throughout every step of my academic journey. Her empathy, integrity, thoughtfulness and enduring belief in my capabilities continue to inspire me.

Many thanks also to Mardge Cohen, MD, Medical Director of WE-ACTx, for all of her help, knowledge, and inspiration along the way. Without Mardge, this dissertation would not have been possible. Her passion, courage and steadfast dedication to serving others is something I hope to emulate in all aspects of my work.

I also want to thank Charles Ingabire, MA, the Kigali Imberehaza Project (KIP) Director. I'm not sure there are words to fully express my gratitude to Charles whose incredible expertise, hard work, and dedication made this endeavor come to fruition. Whether from across continents or during my visit to Kigali, his guidance and ideas truly made this work possible.

I also want to thank Josylyn Umubyeyi who not only worked tirelessly at recruiting participants, translating and running study visits, but who brightened each day during my time in Kigali with her warm smile, contagious laughter and endless patience for all of my questions.

A big thank you also to Henriette Byabagamba, Josette Tuyishime, Odette Uwimana, Aime Ndorimana and Chantal Benekigeri, (Clinical Coordinator of We-ACTx for Hope) and the rest of my amazing team of my colleagues at WE-ACTx for Hope who worked tirelessly to help with translation, recruiting participants, running study visits, and collecting data in a condensed time period. This project was a true international partnership and each step was only made possible by their collaboration, expertise and incredible hard work and I feel so lucky to have had the privilege of working with each of them.

The current study was funded by two fellowships from Boston University: a Clara Mayo Memorial Research Fellowship as well as a Graduate Research Abroad Fellowship. This study was an adjunct to a parent study, The Kigali Imbereheza Project (KIP), which was supported by the NIH: NICHD (R01HD074977). Thank you to the PIs of the KIP study: Mardge Cohen, Geri Donenberg, PhD and Sabin Nsanzimana, MD. Additional thanks to Mary Fabri, PsyD, the WE-ACTx Mental Health Director, who helped to design, implement and supervise the lay counselors in learning and delivering the CBT intervention for the KIP, to Jean Bosco Ndayambaje and to Donna Rae Palmer, Executive co-director of WE-ACTx. I also am infinitely grateful to the amazing study participants for sharing their time, experiences and stories of resilience of fortitude.

I would like to thank my dissertation committee members, in addition to Leslie and Mardge: Donna Pincus, PhD, Michael Lyons, PhD and my chair, Kristin Long, PhD.

I also want to acknowledge my family and friends. Thank you to my labmates and classmates, in particular, Yudelki Firpo, Libby Glenn Ruffing, Amantia Ametaj and Clair Cassiello Robins for their tireless moral support, laughter, and at times much needed distraction and cat memes. I also want to acknowledge my parents, Barbara Bruck and Allen Segal for the values they have instilled in me, the sacrifices they have made to support my education and their love and unwavering faith in my abilities even when I doubted myself. These acknowledgements wouldn't be complete without mentioning my family cat, Mia, whose countless photos and videos my parents patiently supplied me with and whose very existence brightens even the most tedious of days. Finally, endless thanks to my partner Adam for his support through both the trials and successes, for his love and logical, steadfast presence and for his invaluable formatting and proofreading assistance.

COGNITIVE BEHAVIORAL THERAPY, COPING, CRITICAL CONSCIOUSNESS AND HIV IN YOUNG ADULTS IN RWANDA

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ABSTRACT

Approximately 3% of 15 to 49-year-olds in Rwanda live with HIV, many of whom are young adults. They face multiple stressors including stigma, anxiety, depression, trauma, orphanhood, and poverty. Little is known about the types of coping that facilitate resilience. Cognitive behavioral therapy (CBT) delivered by lay counselors can help decrease mental health symptoms in HIV+ youth, but there is little research on how administering CBT affects HIV+ lay counselors' own coping and mental health.

Participants included 69 Rwandans (ages 21-27, M=10 years of education, 38 female, 26 orphans), comprising four groups: (1) HIV+ lay counselors who administered CBT (Youth Leaders, YL) (n=17) (2) HIV+ peer-parents (PPs; facilitators of non-CBT support groups for HIV+ youth) (n=17); (3) HIV+ community members (HIV+C) (n=18); and (4) HIV- community members (HIV-C) (n=17). Groups were administered self-report measures translated into Kinyarwanda to compare use of (1) coping strategies, including mindfulness, critical consciousness (awareness of social inequities), self-blame, denial, behavioral disengagement, positive reframing, acceptance, active coping, and religious coping, and (2) mental health outcomes of anxiety/depression, self-esteem, and HIV-related stigma. Relations between coping and health outcomes across all groups were investigated.

Principal components factor analysis of seven coping strategies revealed two factors: avoidant (self-blame, denial, behavioral disengagement) and approach (positive reframing, acceptance, active coping, religious coping). ANCOVAs, partial correlations, and multiple regressions indicated that YLs and HIV-Cs used significantly less avoidant coping than PPs. YLs reported less behavioral disengagement than PPs, and PPs reported more positive reframing than HIV-Cs. YLs and PPs reported higher self-esteem and less stigma than HIV-Cs. YLs demonstrated lower anxiety/depression than HIV+Cs. No other group differences were significant.

Among the entire sample, approach coping and mindfulness related to higher self-esteem, whereas stigma and behavioral disengagement related to lower self-esteem. Stigma and denial related to higher anxiety/depression. Positive reframing and mindfulness related to higher self-esteem only for individuals with low critical consciousness.

Results suggest that training lay counselors in CBT may reduce their own maladaptive coping and depression/anxiety. Further, facilitating critical consciousness or mindfulness/reframing and decreasing stigma may help increase self-esteem and reduce anxiety/depression in HIV+ Rwandan young adults.

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LIST OF ABBREVIATIONS

ADG .... Anxiety and Depression- Guhangayika Scale

ART .... Antiretroviral Therapy

CBT .... Cognitive Behavioral Therapy

CC .... Critical Consciousness

HIV .... Human Immunodeficiency Virus

HIV STIG .... HIV Stigma Scale

PLWH .... Persons Living with HIV

PTSD .... Post-traumatic Stress Disorder

RSES .... Rosenberg Self Esteem Scale

SE .... Self-Esteem

WLWH .... Women Living with HIV

INTRODUCTION

Sub-Saharan Africa has been characterized as having some of the highest rates of HIV worldwide and, as of 2013, HIV and related complications remain a significant cause of death in this part of the world despite increased access to antiretroviral medications (ART), Bendavid et al., 2016). Rwanda, however, has evidenced both a decline in new infections and an increased availability of ART in recent years (Nsanzimana et al., 2015), and prevalence rates have remained steady at 3% from 2007-2013 (Bendavid et al., 2016). The country has witnessed positive outcomes from recent national programs such as universal access to antiretroviral medication at no cost, as well as mobile services for reaching difficult to access populations (Rwanda Biomedical Center, 2012; World Health Organization, 2009).

Despite this, many Rwandans continue to struggle with adherence, mental health issues and other psychosocial factors that impact HIV outcomes and quality of life. Many youth were prenatally infected with HIV as the result of sexual violence during the 1994 Rwandan genocide (Sharlach, 2000; Weitsman, 2008). Furthermore, its aftermath resulted in many children who were left orphaned or lost parents, either to violence and/or HIV, as well as who experienced widespread trauma, loss and economic hardship (Cohen et al., 2009; Mellins & Malee, 2013). While not surprisingly, children orphaned as a result of the genocide (now young adults) demonstrate elevated levels of mental health problems (Schaal, Dusingizemungu, Jacob & Elbert, 2011), research indicates that descendants of survivors also experience anxiety and depression at high rates (Rieder & Elbert, 2013). Even for children born subsequent to the conflict, high parental rates of depression and

PTSD are likely to impact the upbringing of their children, who are now young adults (Betancourt et al., 2011). Furthermore, for many Rwandan women, the transmission of HIV through rape during the genocide has left a continued legacy of intersecting gender based violence and HIV, resulting in dual stigma and elevated rates of depression and PTSD symptoms (Cohen, Benekigari & Fabri, 2015; Russell, Lim, Kim & Morse, 2016). Another major stressor is that HIV stigma and discrimination against those living with HIV is widespread, with stigma related internalized self-beliefs (umushiha) reinforced by feedback from the social environment (experienced stigma). Discrimination and stigma may range from belittling comments or peer's refusal to share dishes with those with HIV (Mutwa et al., 2013), to social isolation, lack of employment and educational opportunities, and general feelings of distrust (Betancourt et al., 2011b). Many young adults of both genders, especially those living with HIV, face significant poverty, and a scarcity of employment opportunities. A significant number of young adults who were orphaned as children assumed caregiver /head of household responsibilities which has been associated with negative psychological health outcomes (Boris et al., 2008).

Thus, young adults living with HIV in Rwanda face a unique conglomeration of stressors including managing the symptoms of HIV, adhering to a medication regimen, and coping with HIV stigma, depression, low self-esteem (SE), trauma, anxiety, gender-based violence, orphanhood, lack of resources and limited educational and employment opportunities. Importantly, however few studies exist exploring the nature of and interrelationships between these factors, or coping strategies that might mitigate them.

While some research exists regarding factors that may increase mental health risk in young adults living with HIV, few studies have explored positive attributes that may facilitate psychological resilience (Mellins & Malee, 2013). One study exploring the dual stigma experienced by HIV+ individuals in the United States who were ethno-racial minorities proposed that interventions designed to promote empowerment, increase social support and promote adaptive coping strategies, such as cognitive reframing, may increase psychological resilience to stigma and reduce depression (Earnshaw, Bogart, Dovidio & Williams, 2013). Other research has shown that improved health is related to self-efficacy and realistic goal setting in South African HIV+ individuals (Betancourt, Meyers-Ohki, Charrow & Hansen, 2013; Petersen et al., 2010); to self-efficacy and mindfulness in HIV+ Danish individuals (Rodkjaer et al., 2017); and to SE and perseverance in Rwandans (Betancourt et al., 2011a; Betancourt et al., 2013). A qualitative study of U.S. women living with HIV (WLWH) who are more resilient (suppressed viral load, higher CD4 counts, and higher medication adherence) found that they have more mutually supportive relationships, more self-awareness, and greater self-efficacy than those who are less resilient (Brody et al., 2016). Self-compassion has also been associated with lower depressive symptoms in mixed-gender samples of people living with HIV (PLWH), and self-care has been associated with higher health-related quality of life in WLWH (Eller et al., 2014; Gielen, McDonnell, O'Campo & Faden, 2001). Much of this research has been conducted with American samples; further exploration is necessary to more fully conceptualize the contributors to resilience in a culturally relevant manner in Rwandan populations, specifically young adults.

As advancements in HIV diagnosis and treatment have changed the nature of HIV from a terminal to more chronic illness, health professionals have turned to various efforts to improve HIV health outcomes and increase quality of life in both developed and developing countries. Of these strategies, administering CBT with the help of lay therapy or counseling may be particularly important in low resourced or underserved settings to supplement limited professional services and establish trusting relationships based on empathy and shared experiences (Hilfinger Messias, Moneyham, Vyavaharkar, Murdaugh & Phillips, 2009; Sanjana et al., 2009). A few existing studies have demonstrated that cognitive behavioral therapy (CBT) can decrease depression and facilitate psychological health outcomes in HIV+ individuals (Dale & Safren, 2017; Safren et al., 2009). In one study, local Tanzanian young adults ages 24-30 served as group leaders providing an intervention that incorporated components of trauma informed CBT in order to promote resilience, improve psychological health and increase adherence for youth living with HIV (Dow et al., 2018). Group leaders were lay counselors, half of whom were selected due to their own HIV+ status, and half of whom were HIV-, but had prior experience in delivery of psychological treatment. Unlike the current study, this research was not focused on the impact of treatment delivery on the counselors themselves, however it is demonstrative of the positive effects of CBT for HIV+ youth in sub-Saharan Africa. Qualitative results of the study suggest that it facilitated resilience by reducing stigma and trauma responses and increased disclosure (Dow et al., 2018). Questions remain as to whether similar intervention in the current study may have similarly positive effects on the lay counselors themselves.

As in other low resourced countries, CBT trained psychological professionals and resources are scarce in Rwanda. Researchers recently conducted a pioneer study in Kigali, Rwanda in which young adult HIV+ lay counselors, trained in TI-CBT, administered therapy to HIV+ youth, the results of which are still under analysis (Fabri, Ingabire, Cohen, Donenberg & Nsanzimana, 2015). However, little is known as to whether and how these lay-led interventions foster resilience and impact coping, stigma and psychological functioning in the lay counselors themselves.

Consequently, the current study contributes to the literature by examining how training and administration of CBT affects Rwandan lay counselors. Specifically, this study tests the ideas that in contrast to other Rwandan young adults living with HIV as well as HIV uninfected Rwandan young adult community members, CBT training and administration will heighten lay counselor's self-esteem (SE); approach coping strategies (including mindfulness: present-focused non-judgmental awareness; critical consciousness (CC): an awareness of social inequities and a resulting orientation toward collective action to address these inequities), and other strategies, including positive reframing, acceptance, active coping, and religious coping. CBT training and administration is also hypothesized to minimize lay counselors' use of avoidance coping (including self-blame, behavioral disengagement and denial); as well as their HIV stigma, depression and anxiety symptoms.

The study utilizes a cross sectional, between-groups, mixed methods design to compare CBT HIV + lay counselors with 3 other groups of young adults in Rwanda, including 1. HIV+ peer parents (HIV + Rwandan young adult peer leaders who lead HIV support groups but who are not trained to administer CBT); 2. HIV+ community members (neither lay counselors nor peer parents), and 3. HIV- Rwandan community members. Furthermore, the study allows for a detailed exploration of factors that influence psychosocial health outcomes in this population by exploring the relationships among various types of coping strategies, HIV stigma, SE and anxiety/depression across all groups. Finally, because previous work exploring these variables has been limited in the Rwandan context, a qualitative component of the study provides a contextualized understanding of how young adults view the stressors and obstacles to growth as well as the motivations for growth that they experience.

Literature Review

Coping Strategies. Psychological theory has yet to reach consensus on a definition of coping, however, many researchers broadly define coping strategies as attempts to regulate responses to stressful or traumatic situations, through some combination of behaviors, cognitions, or affective, emotional or physiological responses (Compas et al., 2014; Lazarus & Folkman, 1984). While previous research has utilized a number of different classification systems for coping styles, one of the most common comprises two broad types: 1. avoidant or disengagement coping (turning away from either the stressor itself or the sequelae of that stressor (subsequent thoughts or emotions) via strategies such as situational avoidance, denial, emotion or thought suppression) and 2. engagement or approach coping, defined as orientation toward the stressor or sequelae either through acceptance and acknowledgement of the contingent emotional response, reframing stress-induced thinking, active problem solving to improve the stressor and seeking social support (Sanchez, Adams, Arango & Flannigan, 2018; Weinstein, Brown & Ryan, 2009).

Mindfulness. Two approach based coping strategies, mindfulness and CC, have been found to improve HIV outcomes in the U.S. (Kelso et al., 2014; Moskowitz, Hult, Bussolari & Acree, 2009). Mindfulness (present moment non-judgmental awareness) has been found to produce neurocognitive and hormonal changes consistent with decreased stress response (Hölzel et al., 2011; Matousek, Dobkin & Pruessner, 2010), decreased depression (Hofmann, Sawyer, Witt & Oh, 2010) and benefit HIV+ populations by buffering or increasing CD4 count (Creswell, Meyers, Cole & Irwin, 2009; Gonzalez-Garcia et al., 2014) and by reducing depression and increasing positive affect (Gayner et al., 2012). One meta-analysis of over 20 randomized control trial studies explored the effects of Mindfulness-Based Stress Reduction (MBSR) (a mindfulness intervention that promotes focused mind-body awareness via physical and attentional exercises) and noted that across studies, MBSR interventions evidenced consistent reduction in psychological symptoms, with small to moderate effect sizes compared to either no treatment or other treatment types (De Vibe, Bjørndal, Tipton, Hammerstrøm & Kowalski, 2012).

Furthermore, mindfulness has exhibited a positive effect on mental health in U.S. PLWH. One Spanish study noted that mindfulness-based CBT resulted in increased quality of life and decreased depression among PLWH (Gonzalez-Garcia et al., 2014). A second, U.S. based study found that both overall levels of mindfulness, as well as specific aspects of mindfulness involving non-judgement and attention/ awareness (intentionally attending to internal state or external environment) were inversely correlated with depression (Moskowitz et al., 2015). Furthermore, authors noted that higher levels of mindfulness were inversely associated with avoidant coping and self-blame (Moskowitz et al., 2015). Finally, mindfulness was also negatively related to stress-appraisal, or the tendency to interpret situations as stressful, as well as to positive affect (Moskowitz et al., 2015). Similarly, in a study exploring coping with HIV stigma, results revealed an interaction between avoidance and mindfulness such that those with low levels of avoidance and high levels of mindfulness evidenced the fewest anxiety symptoms (Gonzalez, Solomon, Zvolensky & Miller, 2009). Importantly, research on mindfulness or acceptance-based coping in low resourced countries, particularly in Sub-Saharan Africa, is quite limited, so questions remain as to how the aforementioned findings translate onto these populations. In one small, South African pilot study, authors noted that training in MSBR resulted in increased CD4 count, but did not observe significant differences in depression, anxiety or stress as a result of MBSR, though authors caution that this may reflect insufficient power (n=7) (McIntyre, Elkonin, de Kooker & Magidson, 2017).

Critical Consciousness. CC (an awareness of social inequities) is theorized to promote health in at least two ways. First, CC places responsibility for social inequities on social systems, in contrast to self-blaming and feelings of helplessness. Attributing negative events and circumstances to external, rather than internal causes is typically consistent with positive mental health outcomes, while the inverse is characteristic of higher levels of depression and anxiety (Hong & Cheung, 2015; Rueger & George, 2017; Sweeney, Anderson & Bailey, 1986). In a U.S. study exploring “goal striving stress”, or the psychological burden caused by the gap between life goals and their achievement, college-educated African American men who attributed lack of goal achievement to the structural inequities of racism demonstrated better psychological well-being than those who made personal attributions (Sellers, Neighbors & Bonham, 2011). Secondly, attributing sociocultural inequities to broader society structures may empower collective action on behalf of change, and mitigate feelings of helplessness or maladaptive resignation. In this way, cultivating a collective action orientation may promote efficacious feelings and behaviors, which have been linked to SE (Judge, Erez, Bono & Thoresen, 2002). Finally, the ability to develop awareness and understanding of unequal societal power distributions, as well as one's own relationship to those distributions (whether among race, gender, socioeconomic or disability/disease status) requires both self-acceptance and critical thinking skills (Watts, Diemer & Voight, 2011), that may promote health in their own right (Emlet, Tozay & Raveis, 2010; Figueroa et al., 2016; MacInnes, 2006).

While few studies have explored CC in HIV+ populations, one study documented that CC served to buffer the effects of racial discrimination on viral load in WLWH, such that, of those women who had reported experiencing higher levels of racism, those with high levels of CC had increased likelihood of undetectable viral load, whereas those with low CC evidenced increased likelihood of detectible viral load (Kelso et al., 2014). Furthermore, though even less is known regarding the nature and effects of CC in sub-Sharan Africa, in an intervention study founded on the theory of critical consciousness, results indicated that providing women with loans, education and empowerment regarding structural inequities served to reduce rates of intimate partner violence compared to controls by 55% (Pronyk et al., 2006). However, it is not clear what the mechanisms of change are that account for these results.

In Rwanda, little is known about how CC, the awareness of and desire to facilitate change to mitigate social inequities, may affect health outcomes. There are many social inequities related to HIV infection, gender and socioeconomic status. For example, high levels of stigma surrounding HIV infection in Rwandan culture are associated with social isolation and limited opportunities for PLWH (Kang, Delzell & Mbonyingabo, 2017). Furthermore, while the Rwandan genocide can likely be attributed to a complex web of proximal and ultimate causes, the role of structurally sanctioned discriminatory practices and economic, political and social inequities between the Hutu majority and the Tutsi minority contributed significantly to this atrocity in which over 800,000 individuals were killed in the span of 100 days in 1994 (Magnarella, 2005). Post-genocide Rwanda has witnessed governmentally controlled efforts to eradicate ethnic discrimination, largely through censorship of ethnic and genocide related topics (for example, prohibition of identification on the basis of ethnicity) and a focus on national loyalty and unity (Russell & Carter, 2018). Despite these advancements, however, research has demonstrated that ethnic microaggressions persist, and questions remain as to the psychological and interpersonal impact of mandated one-ness or “ethnic -blindness” (Russell & Carter, 2018).

Furthermore, in regards to gender inequities, the chaos and destruction wrought by the genocide left a gaping hole in the fabric of societal and governmental structure which had the positive consequence of amending pre-genocide patriarchal societal norms as women became integral to the restoration process. Thus, women have assumed positions in Parliament in increasing numbers (Brown, 2016) and have helped bring about policy changes such as rights related to inheritance of property (Brown, 2016). Despite the government's espoused commitment to gender equality, however, both structural barriers and interpersonal patriarchal attitudes and beliefs continue to persist. For example, women remain less likely to receive higher education, gender based violence remains common, and women are more likely to shoulder the majority of domestic responsibilities even while otherwise employed (Abbott & Malunda, 2016). Furthermore, among Rwandan youth with HIV, girls are more likely to report experiences of forced sex, as well as transactional sex (Test et al., 2012). It remains an open question as to whether current awareness of these social inequities and history is adaptive for health in Rwandan young adults, as CC has been found to be in other populations.

Approach/Avoidant Coping. In addition to critical consciousness and mindfulness, positive reframing, spirituality and active coping have also been classified as approach based coping styles, whereas conversely, behavioral disengagement, denial and self-blame have been classified as avoidant coping (McIntosh & Roselli, 2012; Sanjuán, Molero, Fuster & Nouvilas, 2012; Steglitz, Ng, Mosha & Kershaw, 2012;). In a sample of low SES, African American and Puerto Rican WLWH in the US, spirituality was found to be positively correlated with psychological adaptation (Simoni, Martone & Kirwin, 2002) and was inversely associated with avoidant coping in HIV+ adults in

Tanzania (Steglitz et al., 2012). Studies have also demonstrated positive effects of active coping on well-being in PLWH in Spain (Sanjuán et al., 2012) and positive thinking has been found to be related to resilience in newly diagnosed PLWH in Spain (Garrido-Hernansaiz, Murphy & Alanso-Tapia, 2017). Conversely, many studies across a variety of HIV+ populations, including African American mothers in the U.S., and adults in Tanzania and Spain have demonstrated that avoidant coping is related to psychological distress, anxiety and depression and to decreased well-being and increased stigma in adults (Prado, et al., 2003; Sanjuán et al., 2012; Steglitz et al., 2012).

Anxiety, Depression and Self-esteem (SE) in Rwandan Young Adults. SE and anxiety/depression impact quality of life and/or better HIV medication adherence across multiple samples, including South African and U.S. samples and both Rwandan children and adults (Epino et al., 2012; Fawzi et al., 2015;Holzemer et al., 2009; Simbayi et al., 2007). Depression has been identified as a prevalent comorbid psychological disorder in HIV infected individuals, with an estimated rate of 20 to 30%, approximately three times greater than that of the HIV negative population (Blashill, Perry & Safren, 2011; Simoni et al., 2011). Furthermore, depression is a critically important outcome in patients with HIV since, in addition to psychological symptoms, depression directly relates to HIV viral load (the amount of HIV virus in the blood) and can also act as a barrier to adherence to antiretroviral medications, as evidenced by studies in Rwanda, Botswana and the United States. (Do et al., 2010; Wagner et al., 2011; Wroe et al., 2014). One meta-analysis evaluating studies on depression and adherence in Sub-Saharan Africa estimated that individuals with symptoms of depression were less than half as likely to be adherent to ART as those without symptoms of depression (Nakimuli-Mpungu et al., 2012). Both avoidant coping and baseline depression have been directly associated with poorer HIV outcomes such as increased viral load and decreased CD4 count (Ironson et al., 2005). Depression and SE tend to be negatively correlated (Sowislo & Orth, 2013; Orth, Robins, Meier & Conger, 2016) and SE has been found to be a significant predictor of adherence and HIV health outcomes in its own right (Ironson et al., 2005).

SE has been implicated as a protective factor and promotes resilience in Rwandan children and adolescents, ages 10-17, who are living with HIV (Betancourt et al., 2011a). In a qualitative study on families and children with HIV, participants identified factors that served as protective against HIV related psychosocial and mental health challenges. Participants identified *Kwigirira ikizere,* a construct that overlaps with SE, which is a combination of the perception of self- competence, combined with a sense of purpose and optimism (Betancourt et al., 2011a). Furthermore, when measured quantitatively, high levels of SE related to low levels of depression and higher levels of self-care and overall functioning (Scorza et al., 2017). Importantly, however, while some research exists on SE and depression in Rwandan children and older adults, little is known about the way in which these factors operate in young adults, a unique cohort in that many were born around the time of the genocide.

HIV Stigma. Stigma has been defined as "an adverse reaction to the perception of a negatively evaluated difference" (Green, Davis, Karshmer, Marsh & Straight, 2005) and is a phenomenon embedded in social interactions that is possible only in the presence of a differential power dynamic (Green et al., 2005; Link & Phelan, 2001). HIV has a long history of being stigmatized, partly rooted in misinformation about disease transmission and beliefs that people will catch the disease from those infected simply by being in their presence (Darlington & Hutson, 2017). Further, because the disease is either sexually transmitted or transmitted through contaminated drug needles, judgments about inappropriate or shameful sexual or substance use activities are also made against those who are infected (Earnshaw et al., 2013; Yuh, Ellwanger, Potts & Ssenyonga, 2013). HIV stigma is an especially important topic in sub-Saharan Africa, where an HIV diagnosis is culturally unacceptable, and negatively affects family, social relationships, job and earning prospects, and quality of life (Mbonu, van den Borne & De Vries, 2009: Yuh, et al., 2013). Furthermore, because of the shame and internalized stigma associated with the disease, many HIV+ sub-Saharan Africans are noncompliant with treatment for fear of being seen attending doctor visits and receiving help (Treves-Kagan et al., 2016). The extent to which individuals with HIV report internalized self-stigma, meaning that they negatively judge themselves for having the disease, has been found to relate to lower adherence and lower quality of life in studies conducted in China and Tanzania (Lyimo et al., 2014). In a U.S. study on PLWH, the negative effect of internalized HIV stigma on SE was attenuated by active and engaged coping, as opposed to avoidant coping (Varni, Miller, McCuin & Solomon, 2012). Higher CC and mindfulness, which may both be conceptualized as active/approach coping, may facilitate more adaptive coping in the face of stigma and might relate to better HIV health outcomes, including SE and depression.

While few studies have been conducted in Rwanda specifically, one qualitative study indicated that HIV stigma was one of the factors most self-reported as interfering with adolescents' adherence to HIV medication. Adolescents cited both perceived and "experienced stigma" (discrimination experiences) as barriers to adherence, noting the desire to avoid being seen obtaining medication from the clinic, or observed by friends or even siblings while taking medication.

Lay Counseling. While internalized HIV related self-stigma is associated with detrimental consequences both in Rwanda and abroad, undergoing training and administering CBT therapy as lay counselors may help to reduce stigma both for the clients and the lay counselors themselves. The majority of research on lay counseling for HIV has centered either on HIV prevention or efforts to increase adherence in the recipients of the counseling (Bachanas et al., 2016; Nachega et al., 2016). Importantly, however, most existing studies have investigated the impact of these interventions on the recipients of counseling, rather than on the lay counselors themselves. Furthermore, even fewer studies have explored trauma informed CBT as administered by lay counselors.

Providing CBT counseling may have positive effects on HIV+ young adults through a variety of mechanisms. Counselors may learn to apply health-promoting evidence-based CBT coping skills to their own lives. Secondly, counselors may derive SE and self-efficacy from counseling and teaching others. Furthermore, facilitating discussions and skill development regarding the psychosocial challenges associated with HIV and related issues may help lay counselors overcome their own internalized self-stigma. Finally, learning the stories and challenges faced by HIV+ youth and serving as a role model and leader may both facilitate a deeper understanding of the context surrounding HIV and the choices and circumstances of HIV+ youth. This, in combination with the sense of empowerment derived from being a role model, CBT may foster counselors' sense of critical consciousness and desire for societally oriented action. In this way, the opportunities inherent in the processes of training with other counselors, and CBT group facilitation may foster an environment conducive to facilitating adaptive coping styles and positive health outcomes. While youth leadership training and implementation can certainly be defined as a process, the conceptualization of this process as systemic, i.e., as comprising a micro-environment consisting of the intersection of individual coping efforts and structural "opportunities for coping" allows for a more comprehensive depiction of coping and resilience in contrast to the conceptualization of coping as something that occurs only at an individual level (Skovadal & Daniel, 2012). As consistent with this perspective, the act of being trained in CBT and providing CBT lay counseling may foster resilience because the structural opportunities built into the role facilitate not only potential internalization of CBT skills, but also the development of a micro- environment conducive to promoting social support and empowerment.

Very few studies have been conducted on HIV+ lay CBT counselors. Lay counseling not specific to CBT has demonstrated efficacy for women with HIV in the Southern United States (Hilfinger Messias et al., 2009) and for uninfected adolescents, with the lay counseling role significantly improving self-efficacy, HIV knowledge and self-conceptualization as agents of change (Pearlman, Camberg, Wallace, Symons &

Finison, 2002). In a qualitative study on WLWH trained as lay counselors in the rural Southern United States, counselors discussed the risks and benefits of serving as lay counselors. Though they articulated some risks, such as emotional vulnerability that comes from disclosure, they noted that these were outweighed by benefits such as a sense of purpose derived from helping others, developing trusting relationships, instilling hope, and helping themselves and their clients overcome stigma (Hilfinger Messias et al., 2009). Similarly, in a mixed methods study exploring the role of lay counselors in HIV testing and counseling in Zambia, lay counselors reported that through assisting and serving as role models for others, their work allowed them to foster a sense of personal and collective empowerment (Sanjana et al., 2009). Finally, in non-HIV populations, being a non-CBT lay counselor has been found to improve SE and coping strategies (Karcher, 2009).

Contributions and Limitations of Previous Studies. While existing literature has begun to explore relationships among coping, stigma, SE and depression/anxiety in HIV+ populations, few studies have integrated all of these factors to attain a more holistic picture of the psychosocial functioning of individuals with HIV. Furthermore, the paucity of such studies in Sub-Saharan Africa, and Rwanda in particular, is even more profound. Existing Rwandan studies tend to focus on children/adolescents (Betancourt et al., 2011; Betancourt et al., 2014; Binagwaho et al., 2012; Fawzi et al., 2016) with less focus on the young adult population who, as they come of age, start to play an integral part in the fabric of Rwandan society. Little is known about factors that influence coping, motivators, and psychosocial functioning in this population and even less is known about the culturally sensitive nature of and impact of the specific coping strategies of mindfulness and critical consciousness. Further, investigating how coping strategies and mental health outcomes are impacted by being trained in and administering trauma informed CBT has not been studied in Rwanda.

The Current Study

The current study explores the effect of training in and administration of trauma informed CBT on young adult Rwandan lay counselors(also termed youth leaders)': (a) coping strategies (mindfulness, critical consciousness (CC), active coping, positive reframing, acceptance, religion, self-blame, behavioral disengagement and denial; (b) HIV self-stigma and generalized self-stigma (general attitudes toward and beliefs about HIV) (c) SE and (d) depression and anxiety symptoms, as compared to HIV uninfected individuals, and HIV infected peer leaders (termed peer parents) and community members. HIV+ peer parents were selected as a comparison group because they are involved in leading social support groups for HIV infected Rwandan youth and therefore provide an important control assessing the impact of a leadership position on coping and mental health as opposed to the impact of leadership combined with trauma-informed CBT training and administration. HIV+ community members have neither systematic leadership nor experiences in receiving or administering CBT; and HIV- community members provide a window into understanding the impact of living with HIV when they are compared to the other three groups in coping and mental health. Further, the study examines the relationships among coping strategies, stressors, HIV stigma, SE and anxiety-depression across all groups. Finally, a qualitative component of the study allows for a contextualized understanding of factors influencing stressors and resilience in this population.

Specific Aims and Hypotheses

Aim 1. Examine differences in coping skills, SE, HIV stigma (both internalized self-stigma and generalized HIV stigma), and depression/anxiety among four groups of young Rwandan adults (HIV+ lay counselors, HIV+ Rwandan peer leaders, not trained to administer CBT, HIV+ community members who are neither lay counselors nor peer leaders, and HIV- Rwandan community members).

Hypothesis 1: CBT lay counselors will report using significantly higher levels of mindfulness and CC than other groups.

Hypothesis 2: The three groups who are HIV+ will report using significantly higher levels of CC than those without HIV.

Hypothesis 3: Groups will report significant differences in their use of positive reframing, acceptance, behavioral disengagement, self-blame, denial, and active coping strategies, with CBT lay counselors reporting the highest levels of positive reframing, active coping, and acceptance and HIV+ community members reporting the highest levels of behavioral disengagement, self-blame and denial.

Hypothesis 4: Groups will report significant differences in depression, self-esteem, generalized HIV stigma, and internalized self-stigma (among HIV positive groups only). CBT lay counselors will endorse the highest levels of self-esteem, and lowest levels of anxiety/depression and both types of stigma compared to other groups. Peer leaders will endorse higher levels of self-esteem and lower levels of stigma compared to both community populations. HIV + community members will demonstrate the lowest levels of self-esteem and highest levels of anxiety/depression.

Exploratory Question 1: Effects of gender on all coping and mental health outcome variables will be examined. Effects of interactions between gender and group on all coping and mental health outcome variables will also be examined.

Aim 2. Investigate main effects of stigma (including generalized HIV stigma and internalized self-stigma) and coping, (including CC and mindfulness) on health outcomes of SE and anxiety/depression as well as interactions between stigma and coping in relation to health outcomes. Aim 2 will also investigate any potential interactions between CC and other types of coping in relation to SE and anxiety/depression.

Hypothesis 5: Higher levels of mindfulness, CC, positive reframing, acceptance, active coping and religious coping will significantly relate to higher levels of SE and lower levels of anxiety/depression.

Hypothesis 6: Among HIV + groups, higher levels of internalized self-stigma and generalized HIV stigma will relate to higher levels of anxiety/depression and lower levels of SE.

Hypothesis7: Approach based coping strategies will moderate the relationship between HIV stigma and SE/depression such that individuals who report higher levels of these coping skills and lower levels of HIV stigma (both types) will exhibit the lowest levels of anxiety/ depression and highest levels of SE compared to other groups.

Exploratory Question 2: Because critical consciousness has neither been examined within the context of other coping strategies, nor within the context of

Rwandan young adults, this study will explore the interaction between critical consciousness and other types of coping strategies in predicting SE and depression.

Aim 3. Provide descriptive information on stressors and life motivators in order to contextualize quantitative results regarding coping and mental health.

Exploratory Question 3: Frequency of themes around stressors and motivators will be identified via a thematic analysis of participants' qualitative open-ended questions. Descriptive statistics will be provided for each theme.

RESEARCH DESIGN AND METHODS

Data for the current study were collected as part a larger intervention study conducted at the We-Act for Hope HIV Clinic and the University Teaching Hospital of Kigali (CHUK) in Kigali, Rwanda. The parent study evaluated the effects of a trauma informed CBT intervention on medication adherence in HIV infected Rwandan youth ages 14 – 21. The current study focuses on the 21 – 27-year-old lay counselors who delivered the CBT treatment, comparing their coping styles and health outcomes to three other groups of age matched peers, as described previously.

CBT lay counselors were selected by study staff on the basis of consistent adherence to HIV medications, low viral load and high CD4 count, as well as leadership skills in other areas. All lay counselors were required to have completed secondary school and some lay counselors had previously served as peer parents . Lay counselors underwent training and supervision to administer a 6 session, trauma informed group CBT intervention, designed to increase adherence in HIV+ youth. Supervision and training followed a cascading supervision model in which an expert in TI-CBT from the

United States provided an intensive 3-week in-person training to youth leaders and a Rwandan psychologist from each clinic (We-Act and CHUK). The training entailed education regarding basic CBT concepts (e.g the relationship between thoughts, feelings and behaviors), the importance of ART adherence for viral suppression, and psychoeducation regarding depression, traumatic stress, and coping strategies. Additionally, the expert trainer explained the treatment manual (which had been created during an earlier phase of the study), and the CBT lay counselors practiced intervention delivery until they achieved competence.

During the 6 sessions, lay counselors taught CBT skills and facilitated discussion during each therapy session in an effort to target safe sex practices and HIV knowledge, trauma and gender-based violence and impediments to adherence (Fabri et al., 2015). Throughout this time, CBT lay counselors received twice weekly supervision from the Rwandan psychologists, who meet weekly via Skype with the expert trainer to review supervision experiences. Topics included in the intervention were: psychoeducation about HIV, effects of stress on the body, identifying and coping with HIV and adherence related stressors, understanding the connection between thoughts, feelings and behaviors and how these interact with stressors and coping to impact HIV related choices, and problem solving skills and gender roles and their impact on thoughts, feelings and behaviors. CBT lay counselors were financially compensated for their work. Peer parents were selected by clinic staff on the basis of their excellent leadership skills and were trained in listening and support skills. They received ongoing, once a month (plus as needed) supervision for their work leading non-CBT support groups, which were held three times per month. Support groups covered topics such as HIV disclosure, HIV medication adherence, safe sex and family conflict. Peer parents received a small amount of compensation for their services.

HIV- and HIV + community members who did not participate in the parent study were recruited for the current study via word of mouth with the help of native Rwandan psychologists, fluent in Kinyarwanda, French and English and known to the community. Inclusion criteria included: aged 21-27, understanding the consent process and fluency in Kinyarwanda. All participants were financially compensated (approximately $5) for their time and effort and reimbursed for transportation to and from the study visit if applicable.

Participants

The current study included 69 young Rwandan adults, ages 21-27, mean age = 23.54, *SD* = 1.98. Participants comprised four groups: (a) HIV+ lay counselors, trained to deliver trauma-informed CBT skills to 14 -21 year old participants at the WE-ACTx for Hope clinic as part of the parent study (17 participants), (b) HIV+ Rwandan young adult peer leaders (non CBT-trained) who led/taught social activities at WE-ACTx for Hope and CHUK (17 participants) (c) HIV+ young adults affiliated with the WE-ACTx for Hope clinic, who were neither lay counselors nor peer leaders (18 participants) (d) HIV- young adults from Kigali not associated with the WE-ACTx for Hope clinic (17 participants). Groups were matched as much as possible for age, education, and gender. Across groups, thirty-eight (55.1%) of participants identified as female and 31 (38%) identified as male. The average age was 24 and the average age at HIV diagnosis was

14.37. Seven percent of the sample were orphans. Please see Table 1 for a complete list of participant demographics.

Participants completed questionnaires during a single study visit, with the exception of 14 of the CBT trained lay counselors, who completed the self- esteem, anxiety/depression, and the internalized self-stigma questionnaire three times, once at parent study baseline, which occurred post training but prior to the CBT intervention, once at a 6 month intervention follow up and once at a 12-month intervention follow-up. Only the data from 12 month follow up was utilized for the current study as this most closely coincided with sub-study data collection. With the exception of data collection for 14 of the lay counselors, data collection for all other participants occurred during a single study visit lasting approximately 3 hours, in a secure environment within the WE-ACTx for Hope clinic in Kigali. Instructions and questionnaire items were read aloud in Kinyarwanda to groups of participants (average years of education = 9.98) to supplement their reading of the questions and enhance comprehension. Participants were seated throughout the room to ensure privacy when completing measures. Those individuals who struggled with literacy and needed to proceed at a different pace completed questionnaires in a separate environment with the help of study staff.

Measures

Reliable, valid and culturally sensitive questionnaires which have been used cross-culturally and/or with HIV populations were administered to address study aims. All questions were reviewed and evaluated by native Rwandan professionals to verify the cultural validity of items and make modifications when necessary. All questionnaires were translated and back translated into Kinyarwanda.

Demographic Variables and Covariates. Demographic variables and covariates include gender, age at visit, HIV status, age of HIV diagnosis (if applicable) and other members in the household if applicable. Participants indicated whether each of their parents was living or deceased, and the cause of death if applicable (AIDS, other medical problem, accident, murder, don't know) as well as number of and reason for residential relocations in the past year. Demographic variables also included education (current status and highest level completed), as well as job status and employment type if applicable. Participants also indicated their support system ("Who helps support you? When I say support, I mean who helps support you either financially, emotionally or watches you"). Demographic variables also included income and *Ubudehe* (poverty category; a classification of socioeconomic status intended to determine level of eligibility for governmental services) of participant's family as well as whether participant's household possessed the following items: electricity, radio, television, landline phone, cellular phone, refrigerator, computer and car.

Coping (COPE). Coping strategies were assessed utilizing a measure constructed for the current study, which combines the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R) with select subscales from the BRIEF Cope (Carver, 1997). The CAMS-R is a 12-item, self-report measure assessing global mindfulness, with four subscales (attention, present-focus, awareness and acceptance). The total scale has demonstrated acceptable content and predictive validity and internal consistency, with alpha levels from measure development studies ranging from .74-.75. Internal consistency was lower for some of the sub-factors (Feldman, Hayes, Kumar, Greeson & Laurenceau, 2007), therefore only the total score for CAMS-R was utilized for the current study. Responses are recorded on a 4 point Likert scale. The alpha level for the current study was .66.

The BRIEF Cope is a 28-item self-report measure assessing the manner in which individuals cope with stressful situations. Items are assessed on a 4 point Likert scale from 0 (I haven't been doing this at all) to 3 (I've been doing this a lot). The measure is comprised of 14 subscales of two questions assessing each of the following coping strategies: active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement and self-blame. The current study utilized a modified, shortened version of the questionnaire, comprised of 7 subscales (active coping, denial, behavioral disengagement, positive reframing, self-blame, acceptance and religion). The BRIEF Cope has demonstrated adequate internal reliability, with subscale alphas ranging from .50-.90 (Carver, 1997). Furthermore, many studies have utilized the BRIEF Cope and have demonstrated good content and predictive validity among HIV+ samples (Futterman et al., 2010, Pence et al., 2008) as well as among international samples (Sharma, Fine, Brennan & Betancourt, 2017; Shayeghian et al., 2014; Stanley & Bhuvaneswari, 2015; Futterman et al., 2010). The measure is intended to assess either characteristic, trait-like features of coping style or situational responses to a current or past stressor. For the purpose of the current study, participants identified a stressor that occurred over the last 6 months and anchored their responses to this stressor.

Rosenberg Self Esteem Scale (RSES). The RSES is a 10-item self-report measure assessing global or general SE (e.g. "on the whole I am satisfied with myself"). Items are assessed on a four-point Likert scale ranging from 0= strongly disagree to 3= strongly agree. The scale has demonstrated good construct and internal validity as well as test-retest and internal reliability (Robins, Hendin & Trzesniewski, 2001; Rosenberg, 1965; Sinclair, et al., 2010). Additionally, a number of studies in a variety of locations world-wide, including Sub Saharan Africa, have utilized the RSES and have demonstrated good content and predictive validity with both HIV+ and - populations (Okawa et al., 2011). One study exploring commemorations of the Rwandan genocide utilized an adapted version of the RSES and obtained acceptable levels of reliability, .63-.79, suggesting that this measure is suitable for use with Rwandan samples (Kanazayire, Licata, Melotte, Dusingizemungu & Azzi, 2014). The current study generated an alpha level of .76.

Anxiety and Depression- Guhangayika Scale (ADG). Anxiety and depression were measured utilizing the Guhangayika scale, which is comprised of the internalizing subscale of the Youth Self Report (YSR) measure (Achenbach, 1991), in combination with additionally culturally validated questions derived from qualitative research with Rwandan youth and adolescents (Betancourt et al. 2011; Betancourt et al., 2014). The combined scale is a 25 item self-report measure assessing symptoms of anxiety and depression over the past six months (items 1-17 derived from the YSR internalizing scale, while items 18- 23 derived from qualitative research, Betancourt et al. 2011; Betancourt et al., 2014). Items are measured on a 3-point Likert scale ranging from not at all true to often true. For those items endorsed, participants also indicate whether the symptom has been present over the past two weeks. Participants also have the option of selecting “don’t know” for items they are unable to answer.

The YSR is an assessment tool for behavioral and psychological problems in youth and adolescents. It is comprised of multiple subscales and contains options for youth self-report and informant report versions. For the purposes of the current study, only the internalizing subscale was utilized. The YSR has good content and predictive validity (Achenbach, 1991; Achenbach & Rescorla, 2001; Ebesutani, Bernstein, Martinez, Chorpita & Weisz, 2011; Moylan et al., 2010). In a study with HIV+ youth in Rwanda, Betancourt (Betancourt et al. 2011b; Betancourt et al., 2014) utilized a combination of the YSR internalizing scale and locally derived questions after qualitative research indicated that the YSR was insufficient in capturing all aspects of the anxiety/depression construct experienced by Rwandan youth. The resulting combined questionnaire demonstrated excellent internal consistency and test- retest reliability as well as content and predictive validity (Betancourt et al. 2011b; Betancourt et al., 2014). This combined scale was adapted slightly for the purposes of the current study and the last question was excluded as it pertained to anxiety about school, which was not applicable for all participants. For the current study, the ADG scale demonstrated a Cronbach’s alpha level of .93.

HIV Stigma. Two measures of HIV stigma were utilized for the current study. The first, the HIV Stigma scale (HIV-STIG), is a 40 item, self-report questionnaire with responses anchored on a 4- point Likert scale (1= strongly disagree to 4= strongly agree). The measure was constructed to capture the psychosocial experience of living with HIV and was based on stigma theory and literature. Because this measure is only applicable to HIV+ individuals, it was only administered to the three groups that met this criteria (lay counselors, youth leaders and HIV+ community members). The scale yields scores for four subscales (Personalized Stigma Subscale, Disclosure Subscale, Negative Self Image Subscale and the Public Attitudes Subscale) as well as a total score reflecting HIV stigma more generally. Initially created to assess the stigma perceived by HIV+ individuals in the United States, the measure has been utilized among various populations worldwide including HIV+ orphans in South Africa and trauma survivors in the U.S. (Culver, Gardner & Operario, 2008; Gonzalez et al., 2016). The HIV STIG has demonstrated excellent content and predictive validity, as well as excellent reliability, with subscale alphas ranging from .90-.93 and total score alpha of .96 (Berger, Ferrans, & Lashley. 2001). The current study used an adapted version of the scale, comprised of only the first 12 items in order to reduce participant burden and minimize redundancy with the other HIV stigma scale. The alpha level for 12 items included in the current study was .70. The majority of the specific items included in the current study reflected two types of stigma as elucidated by Berger et al.; negative self-image (negative feelings and beliefs about oneself in relation to having HIV) and disclosure concerns (beliefs or worries related to disclosure, as well as behaviors endorsed to uphold non-disclosure). Because both of these types of stigma are self-directed, for the current study, this construct will be referred to as internalized self-stigma throughout the remainder of the paper.

The second measure of HIV stigma, the HIV/ AIDS Stigma Scale (Visser, Kershaw, Makin & Forsyth, 2008), measures stigmatizing attitudes, beliefs, and behaviors directed toward individuals with HIV and will be referred to in the current study as generalized HIV stigma (The Visser Scale). It is applicable regardless of personal HIV status. The scale consists of 16 items each with four response options (agree, disagree, don't know and no answer). It was initially developed to examine HIV related stigma in South Africa (Visser, Kershaw, Makin & Forsyth, 2008) and was adapted by Theresa S. Betancourt for use in Rwanda. The original scale has demonstrated acceptable levels of internal consistency and construct validity, with high scores correlated with increased levels of depression and decreased SE in HIV+ populations (Visser et al., 2008). The alpha level for this scale for the current study was .68.

Critical Consciousness. (CC). The critical consciousness measure was constructed for the current study by applying research and theory on CC to specific elements of Rwandan social systems. An existing CC measure (Kelso et al. 2014), based on the theoretical model of Gurin et al., 1980, was utilized as a framework for creation of this measure. Items were adapted and developed in collaboration with Rwandan professionals who had expertise working with HIV+ young adults, and the instrument was piloted with Rwandan young adults to enhance construct validity. The measure evaluates four facets of CC: power discontent, identification, rejection of system legitimacy and collective action orientation (Gurin P., Miller & Gurin G., 1980; Kelso et al., 2014). Responses were assessed via a 5 point Likert scale with the exception of the collective action orientation scale. The power discontent subscale required respondents to rate their beliefs regarding the power held by various sociodemographic groups. Relevant items were reverse scored such that higher scores indicated greater critical consciousness, i.e., an awareness that some groups were unfairly accorded high power and status. Two items ("middle class" and "youth") were excluded from analysis, since these groups are neither inherently empowered nor disempowered. With these two items excluded, the Cronbach's alpha for the subscale was .62.

The identification subscale assesses the extent to which individuals identify with others of similar demographics (e.g. "If applicable, how much do you have in common with other individuals with HIV?" or "If applicable, how much do you have in common with other women?"). A mean score was not calculated for this section, since examining each type of identification separately provided the most conceptual utility.

Rejection of system legitimacy consists of disagreement with dominant and stereotypic cultural narratives that accord privileged groups more power. It was measured with pairs of diametric statements to which respondents indicated their degree of agreement (e.g. "Husbands have a right to hit their wives when their wives are disobedient" and "Husbands should never hit their wives regardless of the circumstances"). Difference scores were calculated for each pair of diametric statements (more CC minus less CC options) and then an average of all difference scores was calculated to obtain a total subscale score. Two questions were excluded due to unclear CC valence. Cronbach's alpha for this subscale, excluding these two questions was .61.

Collective action orientation consists of beliefs in working in a group to effect social change. It was assessed via a rank-ordering system in which respondents ranked 6 methods of engaging in social change for various sociocultural issues. To score this subscale, each item was weighted 1-3, depending on the degree to which the method was reflective of a collective action orientation, with one being the most collectively oriented and 3 being the least. Participant rankings were then multiplied by these weights and a mean was calculated as the subscale final score, with higher numbers indicated lower collective action orientation. The Cronbach's alpha of the mean scores was .64.

Stressors and Motivators. Qualitative analyses were conducted in order to contextualize quantitative results by providing a more nuanced understanding of the types of stressors participants face, as well as motivators for success within the context of these stressors. Participants provided brief written responses (typically one or two sentences in length) to open ended questions: 1. "What are the top stressors you face in your life? How do these stressors impact your life on a daily basis? And 2. "What are you top motivators for success?"

A multi-step thematic analysis was utilized to analyze data. In the first step, the coding structure was created by using open/ substantive coding to identify themes for each of the two questions. Two researchers; one graduate student in clinical psychology and one senior doctoral level clinical psychologist, conducted independent readings of participant responses and then engaged in discussion to identify coding categories to best fit the data. Agreed upon themes consisted of 9 categories of stressors and 7 categories of motivators. Please see tables 2 and 3 for a full list of agreed upon themes.

In step 2, the two coders independently recorded the presence or absence of each stressor and motivator for each participant. Because some participants listed multiple stressors and motivators and because some responses were relevant to multiple categories, categories were not treated as mutually exclusive, i.e., multiple stressors could be coded as present for each participant. The percent agreement between the two researchers for stressor themes was 96.5% and for motivators was 93.1%. Discrepancies were resolved by the primary author, who carefully weighed and considered the evidence to determine a final code.

Missing Data

Due to the nature of the response options in which participants were given the option of responding “don’t know”, 21 participants were missing data for the anxiety/depression measure. Of these, 10 participants were missing one item, 5 participants were missing two items, 1 participant was missing three items, 2 participants were missing four items, 1 participant was missing five items, 1 participant was missing six items and 2 participants were missing eight items. Missing data points were imputed by calculating the mean of the completed items on the scale and all participants were included in analyses, as no participant was missing greater than one third of the items for this measure.

Similarly, due to the nature of the response options (“don’t know” and “no answer”), a total of 26 participants were missing data for the generalized HIV (Visser) stigma scale. Of these, 3 participants were missing data for more than one third of the items, therefore these participants were excluded from relevant analyses. Of the remaining participants, one participant was missing 5 items, two participants were missing 4 items, 1 participant was missing 2 items and 19 participants were missing one item. For participants missing less than one third of items, data points were imputed by calculating the mean of the completed items on the scale.

Three HIV- participants were also missing data for education. These participants were excluded from all analyses in which education was included as a covariate.

One participant was missing an item for the Brief-COPE religious coping scale. Because this scale is only comprised of 2 items, imputation was infeasible and therefore this participant was excluded from relevant analyses.

For qualitative analyses, one participant did not provide a response for the stressors question and two participants did not provide a response for the motivators question.

Statistical Analyses

All analyses were conducted using the Statistical Package for Social Sciences (SPSS 25.0). Descriptive statistics were obtained for all variables. A factor analysis was conducted in order to establish composite coping variables for the Brief COPE, which was used in subsequent analyses in addition to individual Brief COPE subscales. Preliminary analyses using Pearson correlations, chi-square tests and ANOVAs were used to evaluate relationships between demographic variables and primary study variables and to determine which demographics should be included as covariates.

In order to test the hypotheses, ANCOVAs were utilized to test main effects of group (HIV-, peer leader, CBT lay counselor, HIV+ community young adults) and gender on coping (mindfulness, critical consciousness, and Brief COPE variables), HIV stigma (internalized self- stigma and generalized HIV stigma), SE and anxiety/depression, as well as interactions between group and gender on health outcomes.

Next, partial correlations were utilized to explore relationships among all study variables. The results of partial correlations were used to guide selection of variables to include in multiple regressions that examined the main effects of predictors (coping variables and stigma), as well as interaction effects (stigma x coping; CC x coping) on mental health outcomes (anxiety/depression and SE) across the sample. Analyses including stigma (both types) were limited to HIV+ participants only, however all participants were included in all other analyses.

Finally, open ended qualitative thematic coding was utilized to identify stressors and motivators across groups.

RESULTS

Preliminary Analyses

Descriptive Statistics. Means and standard deviations for primary study variables (coping strategies, stigma and mental health outcomes) are presented in Table 4.

Factor Analysis of Coping Strategies. A principal components factor analysis with varimax rotation was utilized to identify patterns of relationships among the seven coping strategies. Results extracted two factors with eigenvalues greater than 1 (factor 1 eigenvalue= 2.38; factor 2 eigenvalue = 1.56). Combined, these two factors explained 56.30% of the variance (34.06% and 22.23%) respectively. All items loaded onto one of the two primary factors, with all factors loadings above the .4 cut off. Factor 1 included coping styles that have been generally theorized to be approach based, i.e., active coping (factor loading = .74), positive reframing (factor loading = .66), positive acceptance (factor loading = .80), and religious coping (factor loading = .66). Factor 2 included coping styles that have been theorized to be avoidance based, i.e., denial (factor loading = .76) , behavioral disengagement (factor loading = .78) and self-blame (factor loading = .67). These two factors, approach coping and avoidance coping, were used as predictor and outcome variables in subsequent analyses.

Group differences in demographics. A chi square test was conducted to examine potential differences in number of males and females across groups; and was not found to be significant (X^2 (3) = 5.07, p = .166, ϕc = .27). One-way ANOVAs were utilized to examine whether the four groups significantly differed in education level. Results revealed a significant difference in education as a function of group (F(3,62) = 11.93, p = .000). Post-hoc tests revealed that, on average, CBT lay counselors (M= 12.76, SD = 2.46) and peer leaders (M = 11.18, SD = 2.07) reported higher levels of education compared with HIV+ (M = 6.28, SD = 2.07) and HIV – community members (M = 9.93, SD = 3.99). Further, HIV- community members reported greater levels of education compared to HIV + community members.

Chi square tests were utilized to examine the relationship between orphan status and group (CBT lay counselor, peer leader, HIV+ community member, HIV – community member). Groups significantly differed on frequency of orphan status (X^2 (3) = 10.70, p = .013, ϕc = .39). Post-hoc analyses comparing pairs of groups revealed that a greater proportion of peer leaders (n = 9, 52.9%), CBT lay counselors (n=9, 52.9%) and HIV+ community members (n = 7, 36.8%) reported orphan status in comparison to the HIV- group (n = 1, 5.9%). ((X^2 (1) = 9.07, p = .003, ϕc = .52), (X^2 (1) = 9.07, p = .003, ϕc = .52) (X^2 (1) = 9.07, p = .003, ϕc = .52) and (X^2 (1) = 4.98, p = .026, ϕc = 37) respectively). HIV+ groups did not significantly differ from each other based on orphan status. Because of the disproportionately small number of HIV- individuals who were orphans, orphan status was not included as a covariate in analyses exploring differences across all 4 groups, as doing so would confound group with orphan status. Furthermore, of note, although education was included as a covariate as detailed below, variables related to income or employment status were excluded from all analyses. This is because CBT lay counselors, and to a lesser degree peer leaders, were financially compensated for their services. Such compensation was time-limited and not reflective of long term resources.

Relationship between demographics and outcomes. Pearson correlations were utilized to examine the relationships between education level and study variables. Education level was significantly negatively correlated with generalized HIV stigma (r =-.52, p =.000), internalized self- stigma (r = -.32, p = .023), anxiety/depression (r =-.54, p = .000), denial coping (t = -.29, p = .021), self-blame coping (r = -.31, p = .010), avoidant coping (composite of self-blame, denial and behavioral disengagement coping) ($r = -.34$, $p = .005$) and collective action orientation ($r = -.24$, $p = .045$). Furthermore, education level was significantly positively correlated with self-esteem ($r = .39$, $p = .001$), active coping ($r = .29$, $p = .018$), mindfulness ($r = .28$, $p = .023$) and rejection of system legitimacy ($r = .42$, $p = .000$). Because education showed group differences and was significantly related to many outcome variables, it was included as a covariate in subsequent analyses testing hypotheses as specified below.

HIV status was also examined as a potential covariate. Independent samples t-tests were utilized to explore the relationship between HIV status and study outcomes of generalized HIV stigma, self-esteem and anxiety/depression. Results revealed that there was a significant difference in self-esteem between HIV+ and HIV- individuals ($t = -2.96$, $p = .004$), such that HIV + individuals ($M = 21.87$, $SD = 4.74$) evidenced higher SE than HIV- participants ($M = 17.88$, $SD = 5.04$). Additionally, there was a significant difference in generalized HIV stigma ($t = 2.62$, $p = .011$) such that HIV+ individuals ($M = 1.47$, $SD = 1.80$) reported lower levels of generalized HIV stigma compared to HIV- participants ($M = 2.92$, $SD = 2.16$). There was no significant difference between HIV+ and HIV- groups in anxiety/ depression ($t=-.72$, $p = .47$).

Relationships among coping variables. Partial correlations were utilized to examine these relationships. Covariates included in the partial correlations included HIV status and education. Results revealed a significant positive correlation between approach and avoidance coping ($r = .30$, $p = .015$), between approach and self-blame coping ($r = .33$, $p = .008$), between avoidance and positive reframing coping ($r = .29$, $p = .019$), between positive reframing and self -blame (r = .28, p = .026), between avoidance and religious coping (r = .35, p = .005), between self blame and religious coping (r= . 28, p = .027), between active and self-blame coping (r = .33, p = .008) and between denial and religious coping (r = .25, p = .044). Additionally, results demonstrated a significant positive correlation between: approach coping and mindfulness coping (r = .55, p = .000), positive acceptance and mindfulness (r = .54, p = .000), active coping and mindfulness (r = . 39, p = .002), positive reframing and mindfulness (r = .36, p = .004) and religious coping and mindfulness (r= .31, p = .013). Furthermore, there was a significant negative correlation between behavioral disengagement and rejection of system legitimacy (r = -.33, p .009). Finally, for HIV + individuals, when controlling for education, identification with HIV significantly positively correlated with approach based coping (r = .35, p = .012), positive acceptance (r = .43, p = .002) and rejection of system legitimacy (r = .36, p = .009).

Partial correlations, excluding HIV- participants, controlling for education, were analyzed in order to examine internalized self-stigma in relation to coping variables across the three HIV+ groups. Results revealed significant correlations between internalized self-stigma and: generalized HIV stigma (r = .37, p = .009). Additionally, generalized HIV-stigma was negatively correlated with identification with HIV (r = -.48, p = .000), however, there was no significant relationship between internalized self-stigma and identification with HIV. For a full list of partial correlations between coping variables (including correlations between Brief-COPE variables), please see table 5.

Relationships among mental health outcomes. Partial correlations testing relationships among mental health outcomes (controlling for education and HIV status) revealed a significant negative correlation between anxiety/ depression and self-esteem ($r = -.29$, $p = .022$) as well a significant negative correlation between generalized HIV stigma and self- esteem ($r = -.40$, $p = .001$). Generalized HIV stigma did not significantly correlate with anxiety/depression.

Primary Results

Aim 1: Differences in coping and mental health outcomes as a function of gender and group. Two-way ANCOVAs (gender x group) were utilized to examine main effects and potential interactions between gender and group in relation to all study outcomes (coping styles, stigma, mental health outcomes). Separate ANCOVAs were utilized for each outcome. When relevant, education was included as a covariate as specified below. Education was excluded from models in which the outcome did not significantly correlate with education during preliminary analyses. Across all models for coping and health outcomes, none of the interactions between group and gender were significant.

Hypotheses 1 and 2: Group and gender differences in critical consciousness and mindfulness. Hypotheses 1 and 2 had predicted that CBT lay counselors would report significantly higher levels of CC and mindfulness than other groups and that all three HIV + groups would report significantly higher levels of CC compared to HIV- community members.

Separate ANCOVAs controlling for education were conducted for each critical consciousness subscale. Results revealed a significant difference in the power discontent subscale of critical consciousness as a function of group (F (3, 61) = 2.79, p = .048, η_p^2 = .12). Tukey's HSD pairwise comparisons only reached the level of a trend however, such that HIV- community members demonstrated greater levels of power discontent (M=4.00, SD = .37) compared to CBT lay counselors (M = 3.52, SD = .52) and peer leaders (M =3.48, SD = .44). There were no significant differences in power discontent as a function of gender (F (1, 61) = .07, p = .786, η_p^2 = .00). There was a significant difference in rejection of system legitimacy as a function of gender (F (1, 57) = 4.89, p = .031, η_p^2 =) such that women (M = 1.64, SD = 1.23) reported greater levels of rejection of system legitimacy in comparison to men (M = 1.17, SD = 1.06). Further, although there was no significant main effect of group on rejection of system legitimacy (F (3, 57) = 1.57, p = .207, η_p^2 =), post hoc pairwise comparisons revealed a significant group difference between CBT lay counselors and peer leaders such that CBT lay counselors (M = 2.14, SD = .89) reported more rejection of system legitimacy than peer leaders (M = 1.24, SD = 1.21). There were no significant differences in collective action orientation on the basis of group (F (3,57) = 1.1, p = .357) or gender (F (1,57) = .00, p = .983). Results demonstrated a significant difference in identification with others with HIV as a function of gender (F(1,45) = 7.13, p = .011, η_p^2 =), such that HIV + women (M = 4.10, SD = 1.06) reported greater identification with other HIV + individuals than HIV+ men (M = 3.32, SD = 1.09) did. However, men and women across all groups did not significantly differ regarding how much they identified with their own gender (F(3,61) =

.12, p = .735, η_p^2 =). Finally, identification with HIV+ individuals did not differ as a function of group (F(2,45) = 1.96, p = 1.53).

Regarding mindfulness, no differences as function of group ((F(3,57) = 2.56, p = .064) or gender (F(1,57) = .22, p = .644) were found.

Hypothesis 3: Group and gender differences in coping styles. Hypothesis 3 had stated that groups would report significant differences in their use of positive reframing, acceptance, behavioral disengagement, self-blame, denial, and active coping, with CBT lay counselors reporting the highest levels of positive reframing, active coping, and acceptance and HIV + community members reporting the highest levels of behavioral disengagement, self-blame and denial. This hypothesis was tested with individual ANCOVA models using each coping subscale (positive acceptance, positive reframing, active coping, religion, self-blame, behavioral disengagement and denial) as well as the two coping factors (approach coping and avoidant coping) as outcomes. Education was included as a covariate in models analyzing denial, self-blame, active coping and maladaptive coping as outcomes, as these were the only coping styles that correlated with education in preliminary analyses.

Results demonstrated a significant difference in behavioral disengagement coping as a function of group, (F (3,61) = 5.20, p = .003) such that CBT lay counselors (M = 3.94, SD = 1.78) reported lower behavioral disengagement coping compared to peer leaders (M = 6.18, SD = 1.94). There was also a significant difference in positive reframing coping as a function of group (F(3, 61) = 3.91, p = .013), such that peer learders (M = 7.29, SD = 1.36) reported greater positive reframing compared to HIV-community members (M = 5.82, SD = 1.33). There was a significant difference in active coping as a function of gender (F (3,57) = 4.73, p = .005) such that women (M = 7.31, SD = .89) reported using significantly more active coping compared to men (MD = 6.70, SD= 1.49). For self-blame coping, differences as a function of group reached only the level of a trend (F (3,57) = 2.41, p = .076), however pairwise comparisons were significant such that peer leaders (M = 4.65, SD= 1.93) reported significantly greater levels of self-blame coping compared to CBT lay counselors (M = 3.00, SD= 1.37). Finally, there was a significant difference in levels of avoidance coping (factor composed of behavioral disengagement, self-blame and denial) as a function of group (F (3,57) = 4.73, p = .005). Pairwise comparisons indicated that CBT lay counselors (M = 10.65, SD = 4.12) and HIV- community members (M = 13.50, SD = 3.65) reported lower levels of avoidance coping than peer leaders (M = 15.71, SD = 4.30).

There were no significant group differences in active (F (3,57) = .28, p = .837) , acceptance (F (3,61) = 1.24, p = .304, η_p^2 = .06), religious (F (3,60) = .18, p = .908, η_p^2 = .01), denial (F (3,57) = 1.80, p = 1.57), or approach coping (factor) (F (3,60) = .73, p = .538, η_p^2 = .04). Additionally, there were no significant gender differences in religious coping (F (1, 60) = .30, p = .586, η_p^2 = .01), acceptance (F (1, 61) = 1.35, p = .250, η_p^2 = .02) , behavioral disengagement (F (1,61) = .08, p = .778, η_p^2 = .00), positive reframing (F (1,61) = .00, p = .991, η_p^2 = .00), denial (F (1,57) = .72, p = .399), self-blame (F (1,57) = 1.32, p = .256, η_p^2 =) or approach coping (F (1,60) = 1.48, p = .229, η_p^2 = .03).

Hypothesis 4: Group and gender differences in mental health outcomes. Hypothesis 4 had predicted that levels of anxiety/depression, SE, internalized self-stigma and generalized HIV stigma would differ by group such that CBT lay counselors would demonstrate better mental health outcomes compared to all groups, peer leaders would demonstrate better mental health outcomes compared to HIV + and HIV- community members and that HIV+ community members would demonstrate the worst mental health outcomes. Gender was explored as a moderator of these relationships. Separate ANCOVAs were analyzed to explore group and gender differences for each mental health outcome: anxiety/depression, self-esteem and generalized HIV stigma. Among HIV+ groups only, ANCOVAS were used to explore internalized self-stigma as a function of group and gender because internalized stigma measure was not applicable to HIV- participants. Education was included as a covariate in all analyses.

Results revealed a significant difference in anxiety/ depression as a function of group ($F(3,57) = 3.30$, $p = .027$). Pairwise comparisons revealed a significant difference between HIV+ community members and CBT lay counselors, such that HIV + community members reported higher levels of anxiety/depression (M = 27.02, SD = 10.29) compared to CBT lay counselors (M = 8.43, SD = 7.48). No other pairwise comparisons regarding anxiety/ depression were significant. Additionally, results indicated a significant difference in anxiety/depression as function of gender ($F(1,57) = 9.83$, $p = .003$) such that women (M = 20.93, SD = 11.51) reported significantly higher levels of anxiety/ depression compared to men (11.31, SD = 8.43).

Results also revealed a significant difference in self-esteem as a function of group ($F(3, 57) = 3.67$, $p = .017$). Pairwise comparisons demonstrated that HIV- community members reported lower self-esteem (M = 17.21, SD = 5.15) compared to CBT lay counselors (M = 24.06, SD = 2.70) and peer parents (M = 21.94, SD = 4.08). Self-esteem did not differ based on gender (*F*(1, 57) = .00, *p* = .947).

Similarly, results indicated a significant difference in generalized HIV stigma (*F*(3,54) = 2.78, *p* = .050) such that HIV- individuals demonstrated greater generalized HIV stigma (M = 3.22, SD = 2.31) compared to CBT lay counselors (M = .62, SD = .90) and peer leaders (M = 1.21, SD = 1.44). Differences in generalized HIV stigma for females compared to males were not significant (*F* (1,54) = .26, *p* = .611). Among HIV+ participants, there were no significant differences in internalized self-stigma based on group (F(2, 45) = 1.65, p = .203) or gender (F(1, 54) = 2.39, p = .129).

Aim 2. Aim 2 investigated the main effects of stigma and coping, including CC and mindfulness, on health outcomes of SE and anxiety/depression as well as interactions between stigma and coping in relation to health outcomes. Additionally, aim 2 explored interactions between CC and other types of coping in relation to health outcomes.

Hypotheses 5, 6 and 7: Relationships between coping, stigma and mental health outcomes. Hypothesis 5 was that higher levels of mindfulness, CC, positive reframing, acceptance, active coping and religious coping would significantly relate to higher levels of SE and lower levels of anxiety/depression. Hypothesis 6 was that higher levels of internalized self-stigma and generalized HIV stigma would relate to higher levels of anxiety/depression and lower levels of SE. Hypothesis 7 was that, for HIV+ participants, approach based coping strategies would moderate the relationships between stigma (both types) and SE/depressions such that individuals who reported higher levels of these coping skills and lower levels of stigma would exhibit the lowest levels of depression and highest levels of SE.

A 2 step process was utilized to examine each of these hypotheses. First, partial correlations were conducted to determine relationships between coping and mental health outcomes. The results of these analyses were then used to determine the selection of coping variables to include in subsequent regressions examining main effects and interactions between coping and stigma in predicting health outcomes, including SE and anxiety/depression.

Partial correlations: coping and self-esteem. Partial correlations controlling for education and HIV status revealed a significant positive correlation between self-esteem and: approach coping; ($r = .28$, $p = .027$); mindfulness ($r = .40$, $p = .001$); positive acceptance ($r = .25$, $p = .049$); and positive reframing ($r = .35$, $p = .005$). Conversely, self-esteem was negatively correlated with behavioral disengagement ($r = -.27$, $p = .031$). Additionally, for HIV+ participants, when controlling for education, the relationship between SE and identification with HIV approached significance ($r = .25$, $p = .077$). Rejection of system legitimacy also approached significance in relating to SE ($r = .23$, $p = .074$). Please see table 6 for a full list of partial correlations between coping variables and self-esteem.

Partial correlations: coping and anxiety/depression. Partial correlations controlling for education and HIV status also revealed a significant positive correlation between avoidant coping and anxiety/ depression ($r = .26$, $p = .042$), as well as between denial and anxiety/ depression ($r = .34$, $p = .006$). Rejection of system legitimacy also approached significance in relating to anxiety/depression ($r = .22$, $p = .088$). Please see table 6 for a full list of partial correlations between coping variables and anxiety/depression.

Based on the results of the above partial correlations, specific coping variables were selected for inclusion in regression models if they significantly correlated with particular mental health outcomes. Thus, several sets of regressions were conducted to test subsequent hypotheses. Covariates (e.g. education for models predicting SE; education and gender for models predicting anxiety/depression) were entered in block one, a coping variable (one of the individual BRIEF Cope strategies or one of the coping factors), a stigma variable (either internalized self-stigma or generalized HIV stigma), or one of the CC variables: rejection of system legitimacy or identification with HIV, were entered in block 2 as main predictors, and two- way interaction terms e.g., stigma x coping variable or CC x coping variable) were entered in block 3. Interaction terms were calculated by creating dummy scores consisting of multiplying standardized scores for each variable in the interaction. Based on the results of partial correlations, the following coping variables were included in models predicting self-esteem as an outcome: approach coping, mindfulness, positive acceptance, positive reframing, behavioral disengagement, HIV identification and rejection of system legitimacy. For models predicting anxiety/depression: avoidant coping, denial, HIV identification and rejection of system legitimacy were included. Due to limited power and high collinearity between coping styles, each coping style was analyzed in a separate model. For models that included either type of stigma, only data from the three HIV+ groups were included.

Regressions: Generalized HIV-Stigma, Coping Variables and Self-esteem (SE). Variables in these models included education (entered in block one), a coping variable (approach coping, mindfulness, positive acceptance, positive reframing, behavioral disengagement, HIV identification or rejection of system legitimacy) and generalized HIV stigma entered as predictors in block 2 and interaction terms (coping variable x generalized HIV stigma) was entered in block 3. Results of regressions indicated a main effect of generalized HIV stigma on SE (β=-.49, t= -2.76, p=.008, CI [-.87- -.14]) such that higher generalized HIV stigma was associated with lower SE. Note that these specific statistical results are from the regression model that included approach coping as a main predictor in block 2, however, generalized HIV stigma was significant in relation to SE across all models. Results also demonstrated a main effect of mindfulness on SE (β=.37, t= 3.10, p=.003, CI [.13- .60]) such that higher levels of mindfulness were associated with increased self-esteem. Similarly, there was a significant main effect of positive reframing coping on SE (β=.27, t= 2.13, p=.038, CI [.02- .51]) such that greater positive reframing was associated with higher SE. Finally, there was a significant main effect of behavioral disengagement on SE (β=-.27, t= -2.08, p=.043, CI [-.49- -.01]) such that greater behavioral disengagement coping was related to lower SE. Results did not yield significant main effects for approach coping, rejection of system legitimacy, HIV identification or positive acceptance nor were there any significant interactions between generalized HIV stigma and any of the coping variables. Please see table 7 for full results.

Regressions: Internalized Self-Stigma, Coping and SE. Variables included in these models were education (entered in block one), a coping variable (approach coping, mindfulness, positive acceptance, positive reframing, behavioral disengagement, HIV identification or rejection of system legitimacy) and internalized self-stigma entered as predictors in block 2 and interaction terms (coping variable x internalized self- stigma) was entered in block 3.Results revealed a significant main effect of internalized self-stigma on SE (β=-.46, t= -3.76, *p* =.000, CI [-.65- .-.20]) such that higher internalized self-stigma related to lower SE. Again, please note that this statistical result reflects the regression model which also included approach coping as a main effect in block 2, however similar main effects of internalized self-stigma on SE were demonstrated in models containing the other coping variables. Additionally, there was a main effect of HIV identification on SE (β=.26, t= 2.27, *p* =.028 CI [.03- .52]), such that individuals with stronger HIV identification had higher SE. As similar to the results for generalized HIV stigma, analyses also demonstrated significant main effects of positive reframing, and mindfulness on SE. Unlike the results for generalized stigma, however, when self-stigma was included in the model, there was a significant positive main effect of approach coping on SE (β= .24, t = 2.07, *p* =.044, CI [.01 - .44]) such that individuals who use more approach coping report higher levels of SE. Finally, there were no significant main effects of positive acceptance, behavioral disengagement, rejection of system legitimacy or nor were there any significant interactions between internalized self-stigma and any of the coping variables in relation to SE. Please see table 8 for full results.

Generalized HIV-Stigma, Coping and Anxiety/Depression. Variables included in these models were education and gender, entered in block 1, a coping variable (avoidant coping, denial, HIV identification or rejection of system legitimacy) and generalized HIV stigma entered in block 2 and an interaction (generalized HIV stigma x coping variable) entered in block 3. Multiple linear regression results demonstrated a significant positive main effect of denial coping (β=.24, t= 2.23, p =.030, CI [.02 - .45]) on anxiety/depression. Additionally, when the interaction term of generalized stigma x rejection of system legitimacy was included in the model, there was a significant positive main effect of generalized HIV stigma on anxiety/depression (β=.43, t= 2.78, p =.008, CI [.14 - .88]). There was also a significant interaction between generalized HIV stigma and rejection of system legitimacy (β=.36, t= 2.86, p =.006, CI [.09 - .52]). Simple regressions indicated a significant positive effect of generalized HIV stigma in relation to anxiety/depression only for individuals who reported high levels (M >1.48) of rejection of system legitimacy (β high sys legit =.42, t = 2.40, p =.025, CI [.10- 1.34]); (β low sys legit=.03, t = .16, p =.875, CI [-.35 - .41]). Thus, generalized HIV stigma is associated with increased levels of depression only for those likely to reject system legitimacy. There were no significant main effects for avoidant coping, rejection of system legitimacy or HIV identification in relation to anxiety/ depression, nor were there any other significant interaction effects. Please see table 9 for full results.

Internalized Self-Stigma, Coping and Anxiety/Depression. Variables included in these models were education and gender, entered in block 1, a coping variable (avoidant coping, denial, HIV identification or rejection of system legitimacy) and internalized self-stigma entered in block 2 and an interaction (internalized self- stigma x coping variable) entered in block 3. Multiple regression results demonstrated a significant positive main effect of internalized self-stigma on anxiety/depression (β=.36, t= 3.21, *p* =.002, CI [.14 - .59]) (note that these statistics refer to the regression model that contained avoidant coping as a main predictor in block 2, however the main effect of internalized HIV stigma on anxiety/depression was significant across all models). Similar to previously described models, there was as a significant positive main effect of denial coping (β=.23, t= 2.19, *p* =.019, CI [.02 - .45]). There were no significant main effects of avoidant coping, rejection of system legitimacy or HIV identification in relation to anxiety/ depression, nor were there any significant interaction effects. Please see table 10 for full results.

Exploratory Question 2 Relationships between CC, coping and health outcomes. Exploratory question 2 sought to explore the interaction between critical consciousness and other types of coping strategies in predicting SE and anxiety/depression. The CC variables included were rejection of system legitimacy and HIV identification.

Rejection of system legitimacy and coping styles predicting SE. Multiple linear regressions including all participants were utilized to examine the interactions between coping variables and rejection of system legitimacy in relation to SE. Education and HIV status were entered in block one as covariates. Rejection of system legitimacy and a coping variable (mindfulness, positive reframing, positive acceptance, approach coping,behavioral disengagement, HIV identification (for HIV + participants only) were entered as main effects, along with rejection of system legitimacy in block 2 and an interaction between rejection of system legitimacy and each coping variable was entered in block three. Again, each coping style was analyzed in a separate model. Similar to previous models, results revealed a main positive effect of approach coping on SE (β =.23, t = 2.10, p =.040, CI [.01- .44]), however, unlike with previous models, when system legitimacy was included as a main predictor in block 2, the effect of approach coping on SE was reduced to a trend once the interaction term was added to the model (β =.19, t = 1.73, p =.089, CI [-.03- .42]). Additionally, there was a positive main effect of positive reframing on SE (β=.30, t= 2.81, p =.005, CI [.09- .51]) as well as a significant interaction between system legitimacy and positive reframing (β =-.23, t = -2.32, p =.024, CI [-.41- -.03]). Significant interactions were interpreted by performing simple regressions separately for either participants who reported high levels of positive reframing (greater than or equal to M = 6.53) vs. those who reported low positive reframing or those who reported high (greater than or equal to M = 1.46) levels of system legitimacy vs. low levels. Results revealed a significant positive main effect of positive reframing in relation to SE only for participants with low levels of system legitimacy ($\beta l_{ow\ sys\ legit}$ = .43, t = 2.65, p =.014, CI [.12- .94]); but not for participants with high levels of system legitimacy ($\beta_{high\ sys\ legit}$ = .17, t = 1.00, p =.33, CI [-.12 - .36]).

Further, there was a significant positive main effect of system legitimacy in relation to SE only for individuals who reported low levels of positive reframing and not high levels (β low pos reframe = .44, t = 2.25, p =.035, CI [.03 - .84]) (β high pos reframe = .08, t = .49, p =.624, CI [-.22 - .37]). In other words, it seems that the use of positive reframing and rejection of system legitimacy (recognition of and desire to change inequitable societal norms and practices) compensate for each other in relation to SE – having high levels of one protects SE when the other variable is low.

Results also revealed a significant positive main effect of mindfulness in relation to SE (β =.37, t = 3.52, p =.001, CI [.16- .58]) (as previously reported) as well as a significant interaction between system legitimacy and mindfulness (β = -.25, t = 2.59, p =.012, CI [-.50- -.06]). Simple regressions indicated a significant positive effect of mindfulness in relation to SE only for individuals who reported low levels (<1.46) of system legitimacy ($\beta_{low\ sys\ legit}$ = .43, t = 2.75, p =.011, CI [.13- .87]); ($\beta_{high\ sys\ legit}$ = .26, t = 1.50, p =.144, CI [-.07 - .47]). Further, there was a significant positive main effect of system legitimacy on self-esteem for individuals who reported low levels (< M of 36.29) of mindfulness ($\beta_{low\ mindful}$ = .47, t = 2.94, p =.007, CI [.14- .77]), but not for individuals who reported high levels of mindfulness ($\geq$ M of 36.29) ($\beta_{high\ mindful}$ = - .16, t = -.80, p =.428, CI [-.37 - .16]). As previously reported, there were no significant main effects of acceptance or behavioral disengagement, nor were there any other interaction effects. Just as with reframing and CC, it seems that mindfulness and rejection of system legitimacy compensate for each other: having high levels of one protects self-esteem when the other variable is low. Please see table 11 for full results.

Interactions between HIV identification and coping styles in relation to SE. Multiple linear regressions (HIV + participants only) were utilized to examine the interactions between coping variables and HIV identification in relation to SE. Separate models were run for each coping variable (behavioral disengagement, approach coping, mindfulness, acceptance and positive reframing). Education was entered in block one as a covariate. HIV identification and each coping variable were entered in block 2 and an interaction between HIV identification and each coping variable was entered in block 3. As previously reported, results revealed `a significant main effect of positive reframing and mindfulness on SE. The main effect of HIV identification on SE that had been found previously (in the model containing internalized self-stigma) was no longer significant in this model. There were also no significant main effects of approach coping, positive acceptance, behavioral disengagement or rejection of system legitimacy nor were there any significant interactions between HIV identification and coping variables. Please see table 12 for full results.

Interactions between rejection of system legitimacy and coping styles in relation to anxiety/depression. Multiple linear regressions including all participants (HIV + and -) were utilized to examine the interactions between coping variables and system legitimacy in relation to anxiety/depression. Education and gender were entered in block one as covariates. Rejection of system legitimacy and each coping variable were entered in block 2 and an interaction between rejection of system legitimacy and each coping variable was entered in block three. Separate models for avoidant coping, denial and HIV identification were examined. There were no main effects of rejection of system legitimacy, avoidant coping or HIV identification in relation to anxiety/depression nor where there any significant interactions between rejection of system legitimacy with any coping variable. There was a significant positive main effect of denial in relation to anxiety/ depression (β=.21, t= 2.02, p =.047, CI [.002 - .41], which is also consistent with findings limited to HIV+ participants reported previously. Please see table 13 for full results.

Interactions between HIV Identification and coping styles predicting anxiety/depression. Multiple linear regressions (HIV + participants only) were utilized to examine the interactions between coping variables and HIV identification in relation to anxiety/depression. Education and gender were entered in block one as covariates. HIV identification and each coping variable were entered in block 2 and an interaction between HIV identification and each coping variable was entered in block three. Separate models for avoidant coping, denial, and rejection of system legitimacy were examined. There were no significant main effects or interaction effects for this model. Please see table 14.

Aim 3: Qualitative stressors and motivators.

Exploratory question 3. Exploratory question 3 sought to provide descriptive information on stressors and life motivators for all participants in order to contextualize quantitative results. In order of frequency, the top three stressors identified in qualitative coding were: HIV/HIV stigma/HIV impact on relationships (n= 28, 54.9% of HIV positive participants), poverty (unemployment/lack of food) (n= 28, 41.2% of all participants) and orphanhood/loss/separation or death of parent or caretaker (n = 23, 33.8% of all participants). While not a top stressor in terms of frequency, it is noteworthy that some participants reported experiencing extreme psychological distress, with one HIV + participant identifying their stressor as “being depressed and traumatized. That makes me want to commit suicide or stab myself with a knife." For a full list of frequencies for all stressors, please see table 2.

The top motivators for success were: a belief in self-capabilities, including self-confidence, self-efficacy, self-awareness, and self-acceptance (n = 33, 49.3%); wanting to attain or achieve security or material goods or a stable family life in the future (n = 24, 35.%); identifying with role models as a source of inspiration/ advice (n=10, 14.9%); and escaping/overcoming difficult circumstances (n=10, 14.9%). For a full list of frequencies for all motivators codes, please see table 3.

DISCUSSION

Summary and Findings

The current study endeavored to explore the impact of CBT training on young adult lay counselors living with HIV. CBT lay counselors' coping styles and mental health outcomes were compared with those of 1. Young adults (peer leaders) living with HIV who led supportive non-CBT groups for HIV+ youth, 2. Community members living with HIV and 3. HIV -community members. Furthermore, because little research has examined coping strategies as they relate to Rwandan young adult's mental health outcomes, the relationships among coping strategies and mental health were investigated in order to better understand factors that contribute to resilience among a population facing high rates of poverty, trauma and orphanhood.

First, the qualitative and descriptive results of the study provide a context for understanding the struggles of Rwandan young adults, both those living with HIV and those who are HIV -. Major stressors were described as HIV (including experiences of stigma, and concerns about, or ways in which HIV has impacted relationships, concerns about quality of life or premature death) (54.9% of HIV positive participants); poverty (and related contributors and consequences such as hunger, unemployment, prostitution) (41.2% of all participants); and loss of caregiver (including orphanhood or loss or separation from a parent or other caregiver (33.8% of all participants). In a few cases, these stresses were associated with poignant suicidal and self-destructive thoughts, with one HIV + community member writing “Being depressed and traumatized. That makes me want to commit suicide or stab myself with a knife.”

Major motivators for growth were described as belief in self-capabilities (including self-confidence, self-efficacy, self-awareness, and self-acceptance (49.3%); wanting to attain or achieve security or material goods or a stable family life in the future (35.%); identifying with role models as a source of inspiration/ advice (14.9%); and escaping/overcoming difficult circumstances (14.9%). The belief in self-capabilities is consistent with the Rwandan concept of *Kwigirira ikizere,* a combination of the perception of self- competence combined with a sense of purpose and optimism (Betancourt et al., 2011a), and the qualitative data suggests that this concept may be a major motivator in the lives of Rwandan young adults. The perseverance, thoughtfulness and strength inherent in these motivators in the face of severe stressors provides a compelling context for the results of the current study.

Overall, as consistent with hypotheses, results provide some evidence that training and provision of CBT lay counseling may mitigate the counselors’ avoidant coping and depression and bolster their self-esteem. More specifically, regarding coping styles, CBT lay counselors endorsed lower levels of behavioral disengagement (e.g. “I give up the attempt to cope”) coping compared to peer leaders. Furthermore, both CBT lay counselors and HIV- community members reported using significantly less maladaptive coping than peer leaders. Interestingly, however, peer leaders reported greater levels of positive reframing compared to HIV- community members.

Regarding group differences in mental health outcomes, as partly consistent with hypotheses, both CBT lay counselors and peer leaders reported higher self-esteem and lower levels of generalized HIV stigma (stigmatizing beliefs about HIV and attitudes and behaviors directed toward those with HIV) than HIV- community members. Additionally, CBT lay counselors demonstrated significantly lower levels of depression/ anxiety compared to HIV+ community members.

Furthermore, while gender was not found to moderate any of the relationships between group and coping or mental health variables, results provide evidence to suggest that young Rwandan men and women may differ in relation to both mental health and the way they cope with stressors. Specifically, though women self-reported greater levels of depression, they also reported using more active coping compared to men. Additionally, and perhaps not surprisingly, women also reported greater levels of rejection of system legitimacy (awareness of and desire to reduce societal inequities) in comparison to men. Finally, among HIV positive individuals, women reported more HIV identification (e.g. felt they had more in common with other individuals living with HIV) in comparison to men.

Because this is an understudied population, it was also important to explore both the relationships between different types of coping, as well as potential associations between copying styles and mental health outcomes among the entire sample. As consistent with previous studies, as well as with theories focused on the importance of the diversity and relativistic nature of coping strategies (e.g., coping strategies are not just "good" or "bad" (Gembeck & Locke, 2007), the current study's findings indicated positive correlations between coping strategies that are typically considered adaptive and maladaptive. These included: a significant positive correlation between approach and avoidance coping; between approach and self-blame coping; between positive reframing coping and both self -blame and avoidance coping; between avoidance and religious coping; between self-blame and religious coping; between active and self-blame coping and between denial and religious coping.

As predicted, there were also positive correlations between mindfulness coping and the following variables: positive acceptance, active coping, positive reframing, religious coping and approach based coping (composite of active, acceptance, positive reframing and religious coping), indicating that mindfulness related to other adaptive coping strategies. Also, behavioral disengagement was negatively correlated with rejection of system legitimacy, which suggests that individuals who were more likely to report attitudes in favor of social equality, were also less likely to avoid directly addressing or challenging stressors.

Furthermore, HIV identification positively correlated with: approach based coping, positive acceptance, and rejection of system legitimacy. The fact that HIV identification significantly related to many coping strategies that are generally conceptualized as adaptive suggests that self-perception of commonalities with other PLWHA may contribute to resilience in this population. In further support of this, higher identification with HIV was also associated with higher self-esteem and lower generalized HIV-stigma.

Relationships between different mental health outcomes were as expected in that anxiety/ depression and self-esteem negatively correlated with each other, and the two types of stigma (internalized self-stigma and generalized HIV stigma) positively correlated with each other. Additionally, both types of stigma negatively correlated with self-esteem, whereas only internalized self-stigma positively correlated with anxiety/depression.

Regarding coping and mental health outcomes, regression results suggested that approach based coping, mindfulness and positive reframing were related to higher self-esteem, whereas behavioral disengagement was related to lower self-esteem. Interestingly, however, interactions suggest that positive reframing and mindfulness may only increase self-esteem for individuals who tend not to reject system legitimacy (i.e, they accept social inequities), whereas rejection of system legitimacy is beneficial to self-esteem only for those who report low levels of positive reframing or mindfulness. It seems that these coping strategies may compensate for each other in terms of their effects on self-esteem. Additionally, higher levels of denial coping related to higher levels of depression, as did higher levels of generalized HIV stigma. Interestingly, however, interactions suggest that generalized HIV stigma only contributes to depression for individuals who are likely to reject system legitimacy. Each of these results will be discussed in detail below, organized in terms of study hypotheses.

Differences Between Groups: Mindfulness and Critical Consciousness

Hypothesis 1, which predicted that CBT lay counselors would endorse the highest levels of mindfulness and CC was partly supported. Although there were no differences in mindfulness between groups, CBT lay counselors were more likely to reject system legitimacy compared to other groups, as indicated by a significant pairwise comparison between youth leaders and peer leaders. Rejection of system legitimacy entails an understanding that inherently inequitable societal structure and practices cause and sustain inequality and unjust practices (e.g. “women should be able to make independent choices about how they spend their money”). Additionally, individuals who tend to reject system legitimacy typically attribute social ills to structural causes rather than placing blame on disempowered individuals (e.g. “Rwandan people get HIV for a number of reasons that are not their fault”).

This finding can likely be explained by the confluence of two factors. First, the TI-CBT protocol delivered by the lay counselors included psychoeducation and discussion regarding gender and gender roles. Thus, it is likely that their training and counseling role facilitated an awareness of (and perhaps critical thinking about) gender inequities, which comprise one type of societal power imbalance addressed in the rejection of system legitimacy subscale. It is also possible that cognitive restructuring skills that are integral to CBT helped to facilitate youth leaders’ ability to perceive societal inequities. Cognitive restructuring entails identification of automatic negative beliefs, as well as the ability to logically assess evidence supporting or refuting such beliefs in order to then generate evidence based alternatives. While this is typically utilized in order to target personal beliefs associated with automatic negative emotions, it is possible that youth leaders generalized this skill and applied it to their understanding of society more generally. Future research may benefit from an explicit exploration of the relationship between cognitive restructuring and rejection of system legitimacy. Importantly, however, Hypothesis 1 was only partially supported in that differences between CBT lay counselors and each of the other groups (HIV+ and HIV- community members) were not significant. Due to small sample size, it is possible that the non-significance of this finding is due to limited power and therefore further researching with a larger sample size is warranted.

Regarding power discontent (participants' perception that the distribution of power in society is unfair,e.g., indicating whether various groups such as women, individuals with HIV have too much, too little or the right amount of societal power), there was a main effect of group. However, pairwise group comparisons only reached the level of a trend such that HIV- community members endorsed greater power discontent compared to both CBT lay counselors and peer leaders.

Results related to power discontent should perhaps be treated with caution due to the nature of Rwandan society. While all of the items on self-report questionnaires (including this subscale of CC) were anonymous and while none of the items asked participants to rate their political dissent or ethnic identification, Rwandan sociopolitical structure has been characterized as censoring dissenting viewpoints and dissuading political debate (Beswick, 2010; Purdekova, 2011). This sense of censorship or "narrowing of political space" (perceived limitation of open expression of dissenting viewpoints) arises from the intersection of governmental policies and laws and civil perception of permissible practices. While some laws, for example, restrictions on grassroots campaigning by political opposition to the governing party, have been lifted in recent years, it is possibly that residual reluctance for expressing opposition exists. Additionally, other currently existing laws, such as those prohibiting expressed discrimination, sectarianism and genocidal ideology (restricting discussion of the fact that some Hutus, in addition to Tutsis were victims of the genocide) have been criticized as vague and ambiguous (Beswick, 2010; Thomson, 2011). Arguably, the ambiguity may leave room for civil overinterpretation, and the governmentally encouraged focus on unity and similarity may further compound and perhaps generalize reluctance and anxiety surrounding dissent on multiple sociopolitical topics. While articles exploring this topic have not explored discontent related to the Rwandan power structure per se, it is possible that such reluctance may have impacted validity on self-report questions regarding power discontent.

Additionally, validity of participant responses to items related to collective action orientation (extent to which individuals are likely to take collective, rather than induvial action (e.g. voting) to facilitate equitable social change (being active in an organization), should also be treated with caution. Thus, it is possible that the lack of significant findings related to this subscale (none of the analyses including this subscale were significant) may also be confounded by a sociopolitical climate which minimizes dissent.

Differences between groups: Coping variables

The group differences in other coping variables also partially supported Hypothesis 3. Specifically, compared to peer leaders, CBT lay counselors demonstrated lower levels of behavioral disengagement and both HIV – community members and youth leaders demonstrated lower levels of overall maladaptive coping compared to peer parents. These differences may suggest that even though CBT lay counselors are not explicitly instructed to apply CBT to their own lives, they may have internalized these skills, resulting in a reduction of maladaptive coping styles. Furthermore, the fact that youth leaders specifically endorsed lower levels of behavioral disengagement, provides further evidence for the explanation that CBT skills may be driving this result, since one of the primary goals of cognitive behavioral treatments is to minimize avoidance of strong emotions or situations which provoke such emotions. Importantly, however further exploration is necessary to definitively explain the reason for this association.

It is also noteworthy that HIV- young adults also demonstrated lower levels of avoidant coping compared to peer leaders. While there are many potential explanations for this finding, it is possible that HIV- participants have fewer, or perhaps different stressors than other groups as they do not face stigma and mental and psychological challenges associated with HIV. Furthermore, in the current sample significantly fewer HIV- young adults identified as orphans compared to youth leaders or peer parents.

Future research may therefore benefit from systematically measuring and/or controlling for life stressors when investigating coping.

In addition to group differences in maladaptive coping, there was also a group difference in that peer leaders evidenced greater positive reframing than HIV- community members. It is possible that, as part of their role providing emotional support and facilitating groups, peer leaders have learned how to assist group members in focusing on the positive aspects of their lives and in doing so applied this type of thinking to their own lives as well. Further exploration is needed in order to explain why between group differences in positive reframing were limited to these two groups.

Group Differences: SE, Stigma, Depression/Anxiety

The fact that both CBT lay counselors and peer leaders had the highest levels of self-esteem suggests that serving in a leadership position may have had a positive psychological impact, regardless of whether the intervention delivered is CBT or a supportive treatment. Regardless of intervention, lay counseling may engender a sense of purpose and self-efficacy, and group trainings and intervention provision to individuals facing similar stressors (e.g. having HIV) may provide a sense of social support and solidarity. Finally, self-esteem may also be derived from helping others and countering stigma or silencing by openly sharing personal experiences with trauma and HIV. This aligns with qualitative data on the experience of South African HIV lay counselors, who were inspired by a sense of comradery, helping others, and open disclosure and communication (Peltzer & Davids, 2011). However, it is also possible that the cause and effect explanation may be reversed here: the young people with the highest levels of self-esteem may have sought out opportunities to engage in leadership positions, and/or were able to make social connections that facilitated being able to find leadership positions.

Of note, however, results regarding internalized self-stigma did not support Hypothesis 4, that CBT lay counselors would have lowest level, in that there were no significant differences between groups. While these findings are surprising, it is possible that the destigmatizing effects of open communication and psychoeducation associated with peer leadership are sufficient to alter general HIV attitudes, but are not sufficient in altering one's HIV self-concept or identity. Identity is not easy to shift, as noted by psychological theorists across many diverse theoretical schools (Wachtel, 2001).

Additionally, the fact that both CBT lay counselors and peer leaders endorsed lower levels of generalized HIV stigma than HIV – community members suggests that peer leadership among HIV positive young adults can help to reduce negative perceptions of HIV. The Visser stigma scale measures general beliefs and attitudes toward HIV and those living with it. While lack of exposure to or knowledge about HIV might contribute to higher levels of this type of stigma among HIV- individuals, the fact that only peer leaders and CBT lay counselors, but not HIV+ community members report lower levels of this stigma implies that the training and support received by peer leaders and CBT lay counselors helped them to overcome stigma. For PLWH, stigma often results in concealment and non-disclosure, and such silencing only further reinforces stigma beliefs, thus perpetuating a negative cycle. Though HIV related stigma is prevalent world-wide, in Rwanda, and other sub-Saharan African countries, lack of knowledge and rampant misinformation regarding HIV (such as moral judgments associated with HIV transmission), likely compound existing stigma levels (Kang, Delzell & Mbonyingabo, 2017). Importantly, training and delivery of peer counseling can help address and mitigate each of these factors contributing to stigma. By receiving training and psychoeducation about the nature of HIV, peer counselors receive accurate information, which helps to dispel stigmatizing myths about HIV. Furthermore, the act of meeting others with HIV who face similar challenges, and sharing their own struggles and experiences both with other counselors and with patients can help ameliorate shame or fear induced silencing.

Similarly, the fact that youth leaders demonstrated significantly lower levels of depression and anxiety than HIV + community members supports existing research that PLWH may have higher levels of depression than the general population and that cognitive behavioral therapy may ameliorate such symptoms (Ciesla & Roberts, 2001; Riley, Lee & Safren, 2017). Furthermore, the fact that youth leaders demonstrated the lowest levels of anxiety/ depression, (significantly lower than peer parents and the other two groups), lends potential support to the explanation that youth leaders may have utilized CBT skills in their own lives.

Gender Differences in Coping and Mental Health Outcomes

In addition to differences between groups, differences in outcomes based on gender were investigated. Women reported higher levels of anxiety/depression than men, which is consistent with the limited research on gender differences in mental health in Rwanda (Haaim & Schaal, 2014; Rugema, Mogren, Ntaganira & Krantz, 2015) as well as other cultures (Salk, Hyde & Abramson, 2017). In a meta-analytic study exploring gender differences in depression, authors found that depression rates were, on average 1.95 times higher in women than men across many different countries, though the effect size of the gender difference was mediated by a variety of factors, including age (Salk, Hyde & Abramson, 2017). A number of different potential factors have been postulated to explain this discrepancy, including gender differences in stress exposure (Nolen-Hoeksema, 2001) differential gender norms for expectations surrounding depression, differential reporting of symptoms, and gender differences in the way in which depression symptoms present (Martin, Neighbors & Griffith, 2013).

The results of the current study also indicated that women were more likely than men to use active coping (e.g. "I concentrate my efforts on doing something about the situation I'm in"). While it is possible that this is solely a function of the fact that higher levels of depression/ anxiety necessitate more coping, it is also probable there is a direct relationship between gender and coping style. One study exploring gender differences in coping across time in the US found that adolescent girls use more active coping than boys, but that these rates equalize during early adulthood (Flannery, Vannuci & Ohannessian, 2018). Another contradictory study demonstrated that women instead tend to use more avoidant coping among low income, racial minority groups in the US (Stien & Nyamathi, 1999). Thus, existing literature is inconsistent and further research is needed to explore other factors such as culture and ethnicity that might intersect with gender to impact coping.

In the current study, women were also more likely to endorse rejection of system legitimacy than men, perhaps because they are systematically disempowered compared to men, and therefore more likely to recognize and want to change social inequities. Additionally, the fact that women were more likely to endorse a group identity associated with HIV (HIV identification) may be due to the fact that female gender roles prescribe affiliation and connection with others. Collective identity is theorized to serve as one of the building blocks of group empowerment, since a stronger identification with a group identity is likely to minimize denial and promote action for social change on behalf of the group (Drury & Reicher, 2009), both of which have been shown to be associated with higher self-esteem (Nario-Redmond, Noel & Fern, 2013) . Additionally, in the current study, HIV identification also significantly correlated with other coping strategies typically perceived as adaptive such as approach based coping, positive acceptance, positive reframing and mindfulness. It also significantly correlated with self-esteem, which will be discussed further below.

Relationships Among Coping Strategies and Between Coping and Health Outcomes

The approach coping factor (comprised of acceptance, positive reframing, active and religious coping) and the avoidance coping factor (comprised of behavioral disengagement, denial and self-blame) were positively correlated, as were approach coping and self-blame. Furthermore, there were also significant positive correlations between positive reframing coping and both self -blame and avoidance coping; between avoidance and religious coping; between self-blame and religious coping; between active and self-blame coping and between denial and religious coping. These finding serves to highlight the complexity, and relativistic nature of coping more generally, as individuals may often utilize multiple coping styles simultaneously, and may choose different coping styles depending on the stressor. For example, if someone commits a wrongdoing, a moderate amount of self-blame may generate awareness of the error, as well as acceptance rather than denial of causal responsibility (Woodyat, Wenzel & de Vel-Palumbo, 2017) which may subsequently engender active coping in order to act to remedy the situation.

Regarding relationships between coping styles and mental health, the fact that self-esteem related positively with mindfulness, positive reframing and adaptive coping, is largely consistent with existing literature (McIntosh & Rosselli, 2012; Moskowitz et al., 2009) and expands this literature to a Rwandan context. In a study exploring relationships among HIV stigma, coping and mental health outcomes, the relationship between felt stigma and reduced self-esteem was moderated by approach-based coping, which included positive reframing (Varni et al., 2012). Furthermore, in a study examining the impact of cognitive behavioral therapy (including cognitive reframing) on psychological health outcomes in women living with HIV in South Africa, cognitive restructuring was an important component in relating to positive changes in self-esteem (Tshabalala & Visser, 2011). It is important to note that positive reframing is only one component of cognitive restructuring, which entails objectively examining the situation and generating as many new beliefs as possible based on the evidence available. The new restructured beliefs may or may not be positively valanced (as consistent with positive reframing), depending on the reality of the situation.

The fact that positive reframing imposes a positive viewpoint may explain the interaction between this coping style and rejection of system legitimacy in the current study. Specifically, rejection of system legitimacy related to increased self-esteem only for individuals low in positive reframing, and conversely, positive reframing was beneficial to self-esteem only for those with low levels of rejection of system legitimacy. These two interactions are perhaps most parsimoniously described by two colloquial maxims “ignorance is bliss” and “knowledge is power”. Rejection of system legitimacy is empowering precisely because it entails the ability to recognize disempowering societal practices. This knowledge entails the ability to recognize the negative in a situation, and is potentially antithetical to positive reframing. Therefore, an individual using both of these coping strategies would need to minimize the cognitive dissonance of these beliefs, most likely through emotional avoidance or denial (e.g. acknowledging that women should be able to make independent choices about how to spend their money, but not allowing oneself to feel angry or sad that some women are not able to do this). Using only one of these coping strategies, in contrast to having to deal with the incongruence created by using both, may allow for the maintenance of self-esteem.

Similar logic can be applied to the interaction between mindfulness and system legitimacy. However, the multifaceted nature of mindfulness may complicate this relationship. While there is some variability in research regarding the nature and number of mindfulness components, it is generally agreed that present-focused attention, acceptance and non-judgment are central components (Bishop et al., 2004; McCracken & Thomspon, 2009). Acceptance and non-judgment of the self would likely benefit self-esteem, however, an accepting and nonjudgmental attitude of societal inequities, is perhaps more akin to passivity or avoidance. Thus, research could further benefit from an examination of the interaction between separate components of mindfulness as related to rejection of system legitimacy in impacting self-esteem.

Results indicating a positive relationship between HIV identification and self-esteem suggest that identification, or endorsement of commonalities with other HIV+ individuals may provide another pathway to positive self-esteem. While research exploring the effects of group identification on individuals with HIV is limited, studies of the effects of identification in other disempowered or frequently stigmatized groups show mixed findings. In one study of individuals with psychological disorders, collective identity was protective against stigma (Crabtree, Haslam A.S., Postman & Haslam C., 2010) and another study indicated a significant positive association between collective identity and self-esteem in individuals with disabilities more generally (Nario-Redmond et al., 2013). However, in a study of ethnic group identification among Latin American students, those with stronger group identification were more likely to interpret ambiguous experiences as discrimination, in turn resulting in lower self-esteem (Eccleston & Major, 2006). These inconsistent findings suggest that further deconstruction of the specific cognitions and attributions underlying HIV group identification is warranted.

It is possible that in the case of HIV, identification with other HIV+ individuals may be empowering in that it may allow people to take ownership of the narrative of what it means to have HIV and thereby replace the disempowering societal discourse with their own discourse of empowerment, resulting in higher self-esteem. However, is not clear what the direction of causality is for the association between self-esteem and HIV identification. The causality may be reversed: it is possible that those individuals who already have higher self-esteem are more able to overcome the stigma associated with HIV and proudly identify with other HIV+ individuals. Importantly, however, the fact that HIV identification was not significantly correlated with either type of stigma suggests that the relationship between HIV identification and SE may operate by a mechanism distinct from de-stigmatization per se. Because of this, further exploration is necessary to ascertain a comprehensive understanding of factors underlying this relationship.

The significant associations of higher behavioral disengagement with lower self-esteem and higher denial with higher depression is consistent with much of the existing research on relationships between avoidant coping styles and negative health outcomes among various HIV positive populations, including pregnant mothers and gay men (Blaney et al., 2004; McIntosh & Roselli, 2012; Namir, Wolcott, Fawzy & Alumbaugh, 1987). Previous research has demonstrated that cognitive behavioral therapy reduces maladaptive coping, especially avoidance, in HIV positive patients (Tshabalala &, Visser, 2011). While CBT lay counselors did not evidence greater adaptive coping compared to other groups, previous research has indicated that a reduction in avoidant coping in and of itself is associated with decreased depression for HIV + individuals who had lost loved ones to HIV (Smith, Tarakeshwar, Hansen, Kochman & Sikkema, 2009). While every response to loss or trauma is different, such results suggest that reduction of maladaptive coping may decrease the risk factors of higher depression and lower self-esteem and perhaps facilitate resilience in the face of multiple stressors (e.g. loss and HIV) that are particularly relevant to the young adult Rwandan population.

Additionally, results indicate that two different types of stigma, internalized self-stigma (internalized negative emotions or beliefs about oneself as a function of having HIV and behavioral changes as a result of these emotions or beliefs- e.g. not disclosing HIV status)and generalized HIV stigma (beliefs and attitudes toward people with HIV (e.g., “I think getting HIV is a punishment for bad behavior”), may differentially relate to self-esteem and depression. Results revealed that both types of stigma were negatively associated with self-esteem, and internalized self stigma was associated with anxiety/ depression. The relationship between anxiety/depression and generalized HIV stigma was more complex in that it was significantly associated with anxiety/depression only for those with higher levels of system legitimacy. This suggests that a heightened awareness of societal inequities does not protect against the detrimental consequences of stigmatizing HIV beliefs. In fact, the nature of the interaction suggests that an acute understanding of and disagreement with dominant sociocultural in the face of stigma may be detrimental to mental health. It is possible that the confluence of an awareness of inequities and adoption of negative HIV beliefs is suggestive of greater sensitivity to negative social evaluation, which has been shown to magnify the relationship between stigma and mental health in previous HIV research (Turan et al., 2019). This finding, however, is only partly consistent with previous literature which has demonstrated that both types of stigma significantly negatively correlated with self-esteem (Berger et al., 2001), and significantly positively correlated with depression and anxiety (Berger et al., 2001; Harek, Saha & Bruack, 2013). Consequently, future research is needed to further illuminate why general attitudes and beliefs toward HIV might relate to self-esteem but not anxiety/depression in this sample.

Other than the aforementioned interaction, the hypothesis that coping variables would moderate the effect of either type of stigma on SE/anxiety/depression was not supported. None of the other interactions between any of the coping variables and either type of stigma was significant. Because there were direct effects of various coping variables and both types of stigma on mental health outcomes (described above), it is possible that coping exerts effects directly on self-esteem or is otherwise mediated or moderated by different factors. Importantly, however, the current study did not explore mediational models, and therefore additional research is needed to examine potential mediating effects of coping on stigma in relation to mental health.

Clinical and Theoretical Implications of Findings and Future Directions

The current study is integral to furthering our understanding of the benefits of peer leadership and lay counseling on mental health, as well as illuminating the relationships between coping styles and mental health outcomes in the Rwandan context. Qualitative data indicated that Rwandan youth living with HIV face multiple stressors, including concerns related to HIV, poverty and orphanhood. In that very stressful context, leadership and lay counseling positions, lower levels of avoidant coping, awareness of social inequities, and an identification with other HIV individuals may foster self-esteem and /or lower anxiety/depression, which in turn may foster resilience. Moreover, the fact that higher levels of some aspects of CC (rejection of system legitimacy) related to lower behavioral disengagement and higher approach coping (HIV identification) suggests a bidirectional relationship between CC and coping style (i.e., using less avoidant and more approach coping). The synergy between CC and coping styles may prove powerful in enhancing resilience.

In recent years, evidence-based treatments (especially CBT) are becoming more globally disseminated, including in many countries which lack significant mental health care infrastructure. This confluence has resulted in training and provision of evidence-based treatment by lay counselors. At the same time, dissemination and implementation studies exploring factors such as acceptability, feasibility and cultural validity and appropriateness have been underway (Murray, et al., 2014). While some research has studied the experiences of lay service providers, few studies have systematically examined the impact of these experiences on providers' own mental health and coping. Results of the current study indicated that CBT leadership significantly lowered anxiety and depression symptoms of youth leaders compared to other groups, and suggested that serving in a lay counseling role (regardless of CBT) may have enhanced self-esteem and reduced HIV stigma. Further exploration of the mechanism underlying findings would be beneficial. Specifically, qualitative techniques, longitudinal design and direct measurement of CBT skill acquisition could facilitate the disaggregation of active ingredients of providing CBT lay counseling that result in positive mental health changes. For example, it is possible that CBT lay counselors may have applied cognitive behavioral skills to their own lives and thus minimized use of avoidant coping strategies and subsequently decreased anxiety and depression. Further, the supportive techniques used by peer parents may have enhanced counselors' ability to view situations more positively (and would account for the finding that peer parents used more positive reframing than other groups). Further exploration is needed to evaluate these theories. It is also possible that the satisfaction attained from helping others, the empowerment of leadership, including possible increases in communication skills and self-advocacy, may be responsible for increases in self-esteem for both youth leaders and peer parents.

Regardless of mechanism, these results provide incentive for fostering the peer leadership paradigm more widely in Rwanda and perhaps other developing countries as well. Doing so is a parsimonious solution in countries with limited mental health infrastructure, as these findings indicate that it provides benefit to leaders themselves, in addition to previous literature indicating that it also benefits clients (Dow et al., 2018).

The current study also provides an important contribution to the coping literature. There may be two separate pathways that facilitate increased self-esteem in Rwandan young adults- one is comprised of coping strategies such as identification with others who have HIV, mindfulness and positive reframing. The other is an awareness of social inequities – raised social consciousness and social activism in the form of rejecting system legitimacy. Additional exploration is needed to determine whether such findings are replicable in other samples and cultures. Further, doing so might verify whether helping patients marry the self- compassion and present focus of mindfulness with the awareness of current social inequities would enhance coping related interventions. Additionally, the finding that identification with other HIV infected individuals was related to higher self-esteem suggests that facilitating an empowered narrative of HIV group identification within the context of a supportive environment may be therapeutic to HIV positive individuals even within a culture with stigmatizing views of HIV.

Limitations of the Current Study

The findings of the current study should be considered within the context of their limitations. There were a number of limitations related to the selection and size of the sample. CBT lay counselors and peer leaders may differ from community members on a number of factors other than leadership status. Members of both groups had been selected for this role based on multiple criteria including HIV health outcomes (high adherence and CD4 count, low viral load), and education (finished secondary school). Further, many CBT lay counselors had previously served and become known to the staff at CHUK as peer leaders. In addition to training in provision of CBT, CBT lay counselors received life skills training, as well as education about the study itself and the nature of research. They were provided with bank accounts and were paid for their counseling services. These factors may serve as limitations for several reasons: The fact CBT lay counselors were selected for their good HIV health outcomes and educational achievement may serve as a potential confound and impede definitive determination of whether positive coping styles and mental health outcomes in this group were specifically related to the training and provision of CBT lay counseling (though certain factors such as education were statistically controlled for in order to mitigate this potential confound).

Further, the fact that CBT lay counselors were financially compensated for their work caused many of them to perceive this position as a job. In addition to the financial benefits derived from employment, the beneficial psychological effects of employment (sense of purpose, feelings of efficacy and empowerment) may directly impact study outcomes, most notably, self-esteem, anxiety/depression and critical consciousness. Because these individuals reported lay counseling as employment, we elected not to control for employment as this would have created substantial covariance and confounding between employment and study group.

Another limitation related to participants is the fact that this was convenience sample. Subjects were recruited by word of mouth and many were in some way connected to or known to hospital staff. This may potentially limit the generalizability of study results more so than would the inclusion of a randomly selected sample. Because this was a convenience sample, we were ultimately unable to match groups on variables such as orphanhood and education, therefore future research may benefit from intentionally matching participants based on these demographics.

Another significant limitation was lack of study power. There were a number of unreported findings that reached the level of trends, but did not reach full statistical significance. Thus, it is impossible to discern whether failure to reject the null hypotheses reflected true lack of support for hypotheses or simply lack of power. Future explorations of similar topics may therefore benefit from larger samples in order to more accurately detect between group differences.

Further, because the data analyzed for the current study were collected at a single time point, the directionality of findings is not definitive. For example, while it is inferred that individuals who use denial coping experience a greater degree of anxiety/

depression, it is also likely that higher levels of depression/ anxiety might precipitate denial coping (which may then in turn exacerbate symptoms of depression). Additionally, the self-reported nature of the data may be subject to social desirability bias. This may be compounded by the fact that due to physical space constraints at the data collection site, multiple participants completed questionnaires simultaneously within a single room. Although they were spaced sufficiently to ensure privacy, it is possible that proximity alone was sufficient to heighten self-report biases.

Finally, future research might benefit from including additional measures. For example, although the Brief COPE has evidenced validity and reliability across a number of studies, further exploration might benefit from more comprehensive items for each coping type, since each BRIEF cope subscale is comprised of only two items. Furthermore, examining relationships between specific components of mindfulness (e.g. acceptance vs nonjudgement) in relation to other coping strategies (including system legitimacy) and health outcomes might better isolate the most effective mindfulness and coping components.

Additionally, the current study did not code the stressor that participants listed as their reference point for completing the BRIEF-cope. Due to variation in the descriptiveness and thoroughness of the responses, with some responses being extremely brief, the data were not complete enough to code. Therefore, future studies would benefit from exploring the ways in which relationships between coping strategies and mental health outcomes may be mediated by type of stressor. Specifically, appraisal of the degree of controllability is an important dimension that has been shown to mediate mental health outcomes (Forsythe & Compas, 1987; Vitaliano, DeWolfe, Mairuo, Russo & Katon, 1990). This type of research may be particularly important in Rwandan young adults facing a conglomeration of different types of stressors, many of which may be perceived as uncontrollable, as demonstrated by the qualitative research in the current study. Relatedly, research has shown that not only the type of coping, but also degree of flexibility and number of coping strategies employed impact mental health, with greater flexibility and larger numbers of positive strategies resulting in the most positive outcomes (Heffer & Willoughby, 2017).

Finally, because all of the different subscales of critical consciousness did not achieve sufficient reliability, the current study did not include a total critical consciousness score. Although all measures, including the CC measure, were created in collaboration with and pilot tested by Rwandan collaborators, it is possible that further preliminary research is needed to achieve a higher level of reliability among this population. This may entail conducting focus groups with a representative Rwandan sample to obtain a more comprehensive understanding of Rwandan societal power structure and possible available avenues for collective action. Similarly, while many of the measures used were either adapted prior to or for this particular study, the majority of existing measures were originally created by and normed for Western cultures. Therefore, future research might continue to benefit from close collaboration with a representative sample of Rwandan collaborators and stakeholders as well as a systematic analysis of the cultural validity of all measure items.

Conclusion

Despite these limitations, training young adult HIV+ lay counselors to deliver CBT may a be a promising method for reducing avoidant coping and increasing awareness of sociocultural inequities, thus fostering resilience by enhancing self-esteem and lowering anxiety/depression. Specifically, incorporating modules devoted to teaching mindfulness, fostering HIV collective identity, and raising awareness of sociocultural inequities into trauma informed CBT protocols may facilitate self-esteem, decrease generalized HIV stigma, and promote more adaptive coping for both HIV + and HIV- young adults facing multiple stressors. Learning these skills may allow individuals living with HIV to reconstruct and reclaim the narrative of what it means to have HIV in Rwanda and potentially set the stage for empowering social change.

TABLES

Table 1: Demographic Variables for All Participants

Variable		n		%	
Group					
Youth Leaders		17		24.6%	
Peer Parents		17		24.6%	
HIV+ Community Members		18		26.1%	
HIV- Community Members		17[a]		24.6%	
Gender					
Female		38		55.1%	
Male		31		44.9%	
Orphan Status		26		37.7%	
Household Items					
Electricity		57		82.6%	
Refrigerator		14		20.3%	
Car		3		4.3%	
	n	min	max	M	SD
Age in years	69	20	27	23.54	1.98
Years of Education	66	0	16	9.98	4.12
Age HIV Diagnosis	52	5	21	14.00	3.10

Table 2: Frequencies and Examples for Qualitative Themes: Stressors

Stressor Theme	Example	Frequency (n)	%
HIV/HIV stigma/ HIV Impact on Relationships	"Living with HIV makes me think that I do not have the right to love or be loved by any person I want."	28	54.9% (of HIV + participants)
Poverty (includes unemployment, hunger, prostitution)	"Being born in a poor family and for that reason I have to get everything by myself, I don't get any support from my family. I have to support myself and sometimes support my family too."	28	41.2%
Orphanhood/loss or separation from parent or caregiver	"Being an orphan at a young age has destroyed my life: I had to drop out of school, I had to start taking care of myself and finding everything on my own (finding a place to live, food, clothes)"	23	33.8%
Isolation (lonely, isolated, rejected, lack of love or support)	The loss of my parents which left me as an orphan. I did not find support, I went to school late, and I did not get [my] parent's affection."	17	25.0%
Education (lack of or stress related to)	"Not going to school because of less financial capacity. I feel like I am the one who is more in need of help compared to others."	11	16.2%
Pregnancy/Caring for Children	"After [learning] about my [HIV] status, I went crazy. That is when I got pregnant and gave birth without planning it. The fact that I raise my children without knowing how to raise a child- I too need to be raised."	6	8.8%
Psychological Distress (Stress/Depressed/ Suicidal)	"Being depressed and traumatized. That makes me want to commit suicide or stab myself with a knife."	6	8.8%
Sexual Assault/ Fear of sexual assault/ Abuse	… " being stressed by guys who I met on the street. They wanted to rape me but they couldn't."	3	4.4%
Unplanned/ Unwanted Pregnancy	"I had an unplanned pregnancy and I do not have financial capacity. In addition to that, I have HIV and do not have any person to support me."	3	4.4%
Other	"Genocide memorial week. [It] reminds me of the mass killing of Tutsis in 1994. I just feel unstable."	3	4.4%

Notes. One participant was missing data. Responses by a single participant could be coded into multiple categories.

Table 3: Frequencies and Examples for Qualitative Themes: Motivators

Motivator Theme	Example	Frequency (n)	%
Belief in Self-Capabilities (self-confidence, self-efficacy, self-awareness, self-care, working hard)	“Working hard, asking questions about what I don't know before doing it.”	33	54.9% (of HIV + participants)
Wanting to attain or achieve in the future (e.g. attaining job, family, home)	“Developing myself economically , being able to build a house, and get married.”	24	35.8%
Escaping/ overcoming difficult circumstances (e.g. poverty, HIV)	“To change the bad life that I grew up in”	10	14.9%
Identifying with role models who serve as sources of inspiration or advice	“What motivates me to succeed is the development I see others have achieved and that gives me the courage to do the same thing.”	10	14.9%
Spirituality	“knowing that God knows me better than any other person”	6	9.0%
Helping others/ Desire to make others proud/happy	“To live a good life and help others”	5	7.5%
Desire to prove others(who are pessimistic) wrong	“Striving to have a better future so that those who thought that I was going to die can be ashamed”	1	1.5%

Notes. Two participants were missing data. Responses by a single participant could be coded into multiple categories.

Table 4: Descriptive statistics coping, stigma and mental health variables- all participants

	N	*M*	*SD*
Power Discontent	69	3.66	.58
HIV Identification	52	3.77	1.31
Rejection of System Legitimacy	69	1.45	1.15
Collective Action Orientation	69	7.59	.35
Mindfulness	69	36.25	4.87
Approach Based Coping (composite)	68	27.29	3.91
Avoidance Coping (Composite)	69	13.93	4.28
Active Coping	69	7.06	1.21
Acceptance Coping	69	6.75	1.28
Positive Reframing	69	6.56	1.40
Religious Coping	68	6.91	1.48
Self-Blame Coping	69	4.22	1.82
Denial Coping	69	4.74	1.87
Behavioral Disengagement Coping	69	4.97	2.00
Generalized HIV Stigma	66	1.80	1.97
Internalized HIV Self-Stigma	52	25.56	5.78
Self Esteem	69	20.88	5.08
Anxiety/Depression	69	16.32	11.06

Table 5: Partial correlations between coping variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Power Dis		.06	.05	.10	-.03	.07	-.04	-.01	.08	.16	.12	.05	.14	.07	.10	-.02
2. HIV ID	.06		.36**	.15	.25	.35*	.43**	.24	.18	.19	-.04	.09	-.19	.04	-.48**	.04
3. Reject Sys Legit	.05	.36**		-.16	.11	.11	.24	.08	.06	-.04	-.17	-.05	-.33**	.03	-.23	-.10
4. Collect Action	.10	.15	-.16		-.1	.03	-.05	.08	.01	.04	-.18	.03	-.20	-.21	-.13	.11
5. Mind-ful	-.03	.25	.11	-.10		.55**	.54**	.36**	.39**	.31*	.04	.19	.00	-.11	-.07	-.05
6. Appro-ach	.07	.35*	.11	.03	.55**		.73**	.74**	.69**	.75**	.30*	.33**	.17	.18	-.24	-.08
7. Accept	-.04	.43**	.24	-.05	.54**	.73**		.39**	.38**	.38**	.02	.08	.02	-.04	-.19	-.02
8. Pos Refra-me	-.01	.24	.08	.08	.36**	.74**	.39**		.37**	.40**	.29*	.28*	.17	.21	-.25	-.19
9. Active	.08	.18	.06	.01	.39**	.69**	.38**	.37**		.33**	.19	.33**	.06	.06	-.22	-.02
10. Relig	.16	.19	-.04	.04	.31*	.75**	.38**	.40**	.33**		.35**	.28*	.24	.25*	-.06	.12
11. Avoid	.12	-.04	-.17	-.18	.04	.30*	.02	.29*	.19	.35**		.71**	.79**	.71**	-.02	.07
12. Self-Blame	.05	.09	-.05	.03	.19	.33**	.08	.28*	.33**	.28*	.71**		.37**	.23	-.01	.07
13. Beh Dis	.14	-.19	-.33**	-.20	.00	.17	.02	.17	.06	.24	.79**	.37**		.34**	.09	.07
14. Denial	.07	.04	.03	-.21	-.11	.18	.04	.21	.06	.25*	.71**	.23	.34**		-.15	.02
15. Gen Stigma	.10	-.48**	-.23	-.13	-.07	-.24	-.19	-.25	-.22	-.06	-.02	-.01	.09	-.15		.37**
16. Self-Stigma	-.02	.04	-.10	.11	-.05	-.08	-.02	-.19	-.02	.12	.07	.07	.07	.02	.37**	

Note: ***p* < .01; **p* < .05; all correlations including internalized self-stigma and HIV identification included HIV + participants only; covariates were education and HIV status (for models with all participants

Table 6: Partial Correlations Coping and SE/Anxiety/Depression

	SE	Anxiety/ Depression
Power Dis	-.08	.15
HIV ID	.25	.17
Reject Sys Legit	.23	.22
Collect Action	-.07	-.12
Mindful	.40**	-.09
Approach	.28*	.13
Accept	.25*	-.03
Pos Reframe	.35**	.04
Active	.22	.17
Religion	.02	.19
Avoidance	-.10	.26*
Self-Blame	.12	.13
Beh Disengagment	-.27*	.06
Denial	-.04	.30*
Generalized HIV Stigma	-.40**	.07
Internalized Self-Stigma	-.49**	.49**

Note: ***p* < .01; **p* < .05; all correlations including internalized self-stigma and HIV identification included HIV + participants only; covariates were education and HIV status (for models with all participants

Table 7: Multiple Linear Regressions: Generalized HIV Stigma and Coping as Predictors of SE

Predictor Variable	β	t	p	95% CI
Generalized HIV Stigma[a]	-.49	-2.76	.008	-.87- -.14
Approach Coping	.17	1.29	.204	-.09-.40
Mindfulness	.37	3.10	.038	.02- .51
Positive Acceptance	.16	1.22	.228	-.10-.39
Positive Reframing	.27	2.13	.038	.02- .51
Behavioral Disengagement	-.27	-2.08	.043	-.49- -.01
Rejection of System Legitimacy	.09	.66	.510	-.17-.34
HIV Identification	.06	.39	.701	-.25-.37
Gen HIV Stigma x Approach Coping	-.13	-.90	.371	-.25-.10
Gen HIV Stigma x Mindfulness	-.02	-.15	.881	-.30-.26
Gen HIV Stigma x Positive Accept	-.15	-1.02	.313	-.24-.08
Gen HIV Stigma x Positive Reframe	.13	1.01	.317	-.15-.45
Gen HIV Stigma x Beh Dis	-.06	-.41	.687	-.38-.25
Gen HIV Stigma x HIV ID	.01	.06	.956	-.21-.22
Gen HIV Stigma x Reject Sys Legit	-.11	-.69	.497	-.33-.16

Notes: Gen HIV Stigma= Generalized HIV Stigma; Positive Accept= Positive Acceptance; Positive Reframe= Positive Reframing; Beh Dis= Behavioral Disengagement; HIV ID= HIV identification; Reject Sys Legit = Rejection of System Legitimacy;
All models contained HIV+ participants only;
covariates included education;
all models include Generalized HIV stigma as a predictor;
[a]model including Approach Coping

Table 8: Multiple Linear Regressions: Internalized Self- Stigma and Coping as Predictors of SE

Predictor Variable	β	t	p	95% CI
Internalized Self-Stigma[a]	-.46	-3.76	.000	-.65- .-.20
Approach Coping	.24	2.07	.044	.01 - .44
Mindfulness	.46	4.36	.000	.25-.67
Positive Acceptance	-.20	-.34	.736	-1.39-.99
Positive Reframing	.32	2.84	.007	.09-.54
Behavioral Disengagement	-.16	-1.35	.182	-.40-.08
Rejection of System Legitimacy	.15	1.20	.237	-.10-.38
HIV Identification	.26	2.27	.028	.03- .52
Self-Stigma x Approach Coping	-.08	-.62	.541	-.32-.17
Self-Stigma x Mindfulness	.14	1.21	.234	-.10-.38
Self-Stigma x Positive Accept	.46	.75	.455	-.03-.06
Self-Stigma x Positive Reframe	-.03	-.25	.805	-.24-.19
Self-Stigma x Beh Dis	-.04	-.29	.773	-.25-.19
Self-Stigma x HIV ID	-.04	-.32	.754	-.26-.19
Self-Stigma x Reject Sys Legit	.13	1.10	.314	-.13-.38

Notes: Self Stigma= Internalized Self- Stigma; Positive Accept= Positive Acceptance; Positive Reframe= Positive Reframing; Beh Dis= Behavioral Disengagement; HIV ID= HIV identification; Reject Sys Legit = Rejection of System Legitimacy;
All models contained HIV+ participants only;
All models contained internalized self-stigma as a predictor
Covariates included education;
[a]model including Approach Coping

Table 9: Multiple Linear Regressions: Generalized HIV Stigma and Coping as Predictors of Anxiety/ Depression

Predictor Variable	β	t	p	95% CI
Generalized HIV Stigma[a]	.43	2.78	.008	.14-.88
Avoidance Coping	.06	.44	.663	-.23-.36
Denial Coping	.24	2.23	.030	.02 - .45
Rejection of System Legitimacy	.08	.73	.468	-.16-.33
HIV Identification	.05	.38	.706	-.25-.36
Gen HIV Stigma x Avoidance Coping	-.08	-.64	.528	-.53-.27
Gen HIV Stigma x Denial Coping	.05	.48	.632	-.16-.26
Gen HIV Stigma x HIV ID	.15	1.36	.114	-.07-.62
Gen HIV Stigma x Reject Sys Legit	.36	2.86	.006	.09-.52

Notes: Gen HIV Stigma= Generalized HIV Stigma; HIV ID= HIV identification; Reject Sys Legit = Rejection of System Legitimacy;
All models contained HIV+ participants only;
covariates included education and gender; all models contained Generalized HIV stigma as a predictor
[a] model included avoidance coping

Table 10: Multiple Linear Regressions: Internalized Self- Stigma and Coping as Predictors of Anxiety/Depression

Predictor Variable	β	t	p	95% CI
Internalized Self- stigma[a]	.36	3.21	.002	.14 - .59
Avoidance Coping	-.13	-.22	.829	-1.33-1.07
Denial Coping	.23	2.19	.019	.02 - .45
Rejection of System Legitimacy	.21	1.77	.084	-.03-.45
HIV Identification	.03	.27	.79	-.21-.28
Self-Stigma x Avoidance Coping	.28	.46	.646	-.04-.06
Self-Stigma x Denial Coping	.03	.25	.808	-.20-.26
Self-Stigma x HIV ID	-.02	-.26	.80	-.24-.18
Self-Stigma x Reject Sys Legit	.10	.82	.414	-.14-.34

Notes: Self- Stigma= Internalized Self-Stigma; HIV ID= HIV identification; Reject Sys Legit = Rejection of System Legitimacy;
All models contained HIV+ participants only;
Covariates in all models included education and gender;
All models included internalized self-stigma
[a] model containing avoidant coping

Table 11: Multiple Linear Regressions: Rejection of System Legitimacy and Coping as Predictors of SE

Predictor Variable	β	t	p	95% CI
Rejection of System Legitimacy[a]	.20	1.72	.091	-.03-.44
Approach Coping[b]	.23	2.10	.040	.01- .44
Mindfulness	.37	3.52	.001	.16- .58
Positive Acceptance	.18	1.64	.106	-.04-.40
Positive Reframing	.30	2.81	.005	.09- .51
Behavioral Disengagement	-.19	-1.69	.096	-.42-.04
HIV Identification[c]	.18	1.17	.247	-.14-.51
Reject Sys Legit x Approach Coping	-.11	-.96	.341	-.32-.41
Reject Sys Legit x Mindfulness	-.25	2.59	.012	-.50- -.06
Reject Sys Legit x Positive Accept	-.10	-.93	.357	-.29-.11
Reject Sys Legit x Positive Reframe	-.23	-2.32	.024	-.41- -.03
Reject Sys Legit x Beh Dis	.00	.04	.969	-.21-.21
Reject Sys Legit x HIV ID[c]	-.05	-.31	.755	-.29-.21

Notes: Positive Accept= Positive Acceptance; Positive Reframe= Positive Reframing; Beh Dis= Behavioral Disengagement; HIV ID= HIV identification; Reject Sys Legit = Rejection of System Legitimacy;
All models contained all participants, except for models containing HIV ID;
all models included rejection of system legitimacy;
education and HIV status were included as a covariate unless otherwise noted
[a] included approach coping in the model
[b] this effect was reduced to a trend once interaction Reject Sys Legit x Approach Coping was included in the model
[c] did not include HIV status as covariate since only HIV + participants were included in this model

Table 12: Multiple Linear Regressions: HIV Identification and Coping as Predictors of SE

Predictor Variable	β	t	p	95% CI
HIV Identification[a]	.13	.92	.360	-.16-.44
Approach Coping	.18	1.29	.204	-.10-.44
Mindfulness	.41	3.19	.003	.15-.66
Positive Acceptance	.17	1.16	.250	-.11-.41
Positive Reframing	.29	2.24	.030	.03-.53
Behavioral Disengagement	-.19	-1.38	.175	-.43-.08
Rejection of System Legitimacy	.13	.83	.411	-.17-.42
HIV ID x Approach Coping	-.14	-.98	.334	-.40-.14
HIV ID x Mindfulness	-.12	-.98	.331	-.41-.14
HIV ID x Positive Accept	-.25	-1.8	.078	-.42-.02
HIV ID x Positive Reframe	-.21	-1.72	.092	-.53-.04
HIV ID x Beh Dis	-.17	-1.24	.222	-.46-.11

Notes: Positive Accept= Positive Acceptance; Positive Reframe= Positive Reframing;
Beh Dis= Behavioral Disengagement; HIV ID= HIV identification; Legitimacy;
All models contained HIV + participants only;
All models contained HIV identification
Covariates included education;
[a] this result reflects the model that included approach coping

Table 13: Multiple Linear Regressions: Rejection of System Legitimacy and Coping as Predictors of Anxiety/Depression

Predictor Variable	β	t	p	95% CI
Rejection of System Legitimacy[a]	.15	1.34	.188	.08-.38
Avoidance Coping	.18	1.62	.110	-.04-.40
Denial Coping	.22	2.02	.047	.002 - .41
HIV Identification	-.07	-.62	.583	-.38-.20
Reject Sys Legit x Avoidance Coping	.01	.07	.94	-.18-.20
Reject Sys Legit x Denial Coping	.09	.89	.376	-.10-.27
Reject Sys Legit x HIV ID	-.18	-1.69	.098	-.41-.04

Notes. HIV ID= HIV identification; Reject Sys Legit = Rejection of System Legitimacy; Models contained HIV+ participants only, with the exception of those containing HIV ID; Covariates included education and gender;
All models included rejection of system legitimacy:
a model containing avoidance coping

Table 14: Multiple Linear Regressions: HIV Identification and Coping as Predictors of Anxiety/Depression

Predictor Variable	β	t	p	95% CI
Rejection of System Legitimacy	.05	.38	.706	-.22-.31
Avoidance Coping	.09	.76	.452	-.16-.35
Denial Coping	.15	1.37	.176	-.07-.39
HIV Identification[a]	.01	.12	.909	-.25-.28
HIV ID x Avoidance Coping	.07	.62	.536	-.18-.34
HIV ID x Denial Coping	.04	.38	. 706	-.19-.28

Notes: HIV ID= HIV identification; Reject Sys Legit = Rejection of System Legitimacy;
All models contained HIV+ participants only;
All models contained HIV identification;
Covariates included education and gender;
[a] Model included avoidance coping

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