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Associations between Reproductive Coercion, Partner Violence and Mental Health Symptoms among Young Black Women in Baltimore, Maryland

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Abstract

This study examined the associations of reproductive coercion (RC) with mental health of Black adolescent and young adult women. We tested RC as a predictor of depression and post-traumatic stress disorder (PTSD) symptoms. We also explored the interaction of exposure to RC and physical and sexual intimate partner violence (IPV) as they relate to depression and PTSD symptoms. A primarily community-based convenience sample of 188 self-identified Black women ages 18 to 25 in Baltimore, Maryland, completed computer-based cross-sectional surveys. Lifetime RC (37.8%) and IPV (48.9%) were prevalent in this sample. Nearly 10% of the young women reported experiencing RC without IPV; 38% of the sample reported experiencing both types of violence. Depression (69%) and PTSD (47.1%) symptoms were more prevalent among women with RC than among women without RC. Adjusted results that revealed RC and IPV were independently associated with depression (AOR_{RC} [95% CI] = 2.86 [1.38–5.94] and AOR_{IPV} [95% CI] = 5.15 [2.47, 10.76]). Similarly, RC and IPV were independently associated with PTSD (AOR_{RC} [95% CI] = 2.41 [1.15, 5.08] and AOR_{IPV} [95% CI] = 3.04 [1.39, 6.63]). Findings suggest that RC and IPV independently contribute to mental health morbidities among this population of women. Current policies in healthcare practice increasingly recommend provision of screening for IPV, including RC. These practices should extend to women receiving services in community-based settings, thus strengthening the linkage to referral for further mental health treatment and victim service support. In the context of the social burdens affecting young Black women's health, a comprehensive approach that integrates mental health and reproductive/sexual healthcare is essential for women reporting RC experiences.

Keywords

reproductive coercion; intimate partner violence; domestic violence; depression; post-traumatic stress disorder

Empirical evidence shows associations between intimate partner violence (IPV) experiences and a broad range of mental health consequences; the most common are symptoms of post-traumatic stress disorder (PTSD) and depression, which disproportionately affect women across the United States (Decker et al., 2014; Devries et al., 2013; Golding, 1999). Women who have experienced IPV are more likely to report depressive and/or PTSD symptoms than women who have no lifetime IPV experiences, even if exposed to other types of trauma (Carbone-Lopez, Kruttschnitt, & MacMillan, 2006; Fedovskiy, Higgins, & Paranjape, 2007; Stockman, Hayashi, & Campbell, 2015). More severe IPV exposure, such as greater frequency and duration as well as the type of IPV experienced (e.g., psychological, sexual, physical), also have associations with mental health symptomatology (Lacey et al., 2015; Nathanson, Shorey, Tirone, & Rhatigan, 2012; Sabri et al., 2013).

Depression, an illness with mood, physical, and cognitive symptoms, affects two times more U.S. women than men (Pratt & Brody, 2014). National survey data show that this disparity begins early in the life course: 41.1% of adolescent women, ages 14–17, compared to 21.4% of adolescent men, report experiencing depressive symptoms (Kann et al., 2018). Symptoms of PTSD, a marker of extreme distress that can occur in response to traumatic events, affects three times more adolescent women (8.0%) than adolescent men (2.3%) (National Comorbidity Survey, 2005).

Excess mental health symptoms persistently affect Black people in the U.S. due to current and historical injustices. For example, the systematic enforcement of discriminatory complaints by private citizens and redlining—the practice of refusing to invest in individual loans deemed poor financial risks because of the neighborhoods where Black people in the U.S. reside—can influence health (Aaronson, Hartley, & Mazumder, 2017; Ocen, 2011). Specifically, these actions confine Black women and their families to impoverished communities, creating contexts for severe psychological distress and interpersonal violence (Lacey et al., 2015).

Black women consistently report high prevalence of IPV experiences and mental health symptoms (Black et al., 2011); however, the prevalence of mental health consequences of IPV among Black versus White women are less clear. For example, Black women are less likely to report PTSD symptoms but have a prevalence of depression similar to White abused women (Lilly & Graham-Bermann, 2009; Nathanson et al., 2012). Some researchers have hypothesized that resiliency and empowerment factors might affect Black women's responses to mental health screenings despite increased exposure to violence, racial and structural inequities, and discriminatory practices (Wright, Perez, & Johnson, 2010). Addressing the predictors of mental health morbidities among young Black women ages 15–24 is a priority because suicide and homicide—most often by an intimate partner—are leading causes of death (Centers for Disease Control and Prevention., 2018; Cogle, Resnick, & Kilpatrick, 2009; Petrosky et al., 2017). The rates of intimate partner homicide

are higher for Black women than for white (Jack et al., 2018; Petrosky et al., 2017). While links between IPV, depression, and PTSD are well established (Agardh, Tumwine, Asamoah, & Cantor-Graae, 2012; K.A. Alexander, Volpe, Abboud, & Campbell, 2016; Basile, Smith, Fowler, Walters, & Hamburger, 2016; Dillon, Hussain, Loxton, & Rahman, 2013), the independent effects of reproductive coercion (RC) on mental health morbidities among Black women are underexplored.

Reproductive coercion (RC) (behaviors by a male intimate partner in a relationship through interference in contraceptive use and decisions about pregnancy) disproportionately affects Black women (Holliday et al., 2017). Recent studies in clinical as well as community-based settings examining the prevalence of RC among Black women have consistently shown higher patterns for RC experiences in the previous year (28%) (Paterno, Moret, Paskausky, & Campbell, 2018) and lifetime (37%) (Holliday et al., 2017) (38%) (Alexander et al., 2016). These prevalence estimates are much higher compared to lifetime RC prevalence estimates reported in other studies, which range from 9 to 25% in general populations of women (Grace & Anderson, 2016). A 2014 study revealed that 12.5% of Black women reported experiencing RC in the previous 3 months compared to lower percentages of White (3.5%), Hispanic (8.8%), Asian (7.3%), and Multiracial women (5.9%) (Miller et al., 2014). Miller's study (2014) found that young women ages 16–24 were nearly twice as likely as women ages 25–29 to report recent RC. These differences highlight age and racial disparities regarding RC experiences that cannot be ignored and require greater scrutiny. Researchers still know little about the influence of these experiences on Black women's mental health.

Within the limited evidence base regarding RC and mental health is evidence from Côte d'Ivoire linking RC with PTSD symptoms (McCauley, Falb, Streich-Tilles, Kpebo, & Gupta, 2014). In the context of women in the United States, examinations of the mental health impact of RC are limited. However, one recent study conducted in Baltimore (a sample of 149 young adult Black women) found that the prevalence of depression (43.2%) and PTSD (63.1%) symptoms among women with lifetime RC experiences exceeded those in previous research (Alexander et al., 2016).

Because RC often co-occurs with IPV, investigations to clarify the role of RC in mental health should consider the possibility for confounding by IPV experiences (Miller et al., 2010a). Symptoms and diagnoses can be exacerbated by the severity, length of exposure to abuse, and experiences of multiple abuse forms (i.e., psychological, physical, or sexual) (Johnson, Giordano, Longmore, & Manning, 2014). Specifically, when sexual violence accompanies psychological and physical abuse by an intimate partner, some women have reported a greater number of depression symptoms and are far more likely to attempt suicide than women who reported experiencing physical or psychological abuse only (Pico-alfonso et al., 2006).

The confluence of living with limited financial resources and the high probability of exposure to neighborhood or interpersonal violence during a critical juncture of their reproductive life trajectory directly affects many young Black women's risk for mental health symptoms (Golin et al., 2017). Young Black women are among those at highest risk

for RC and IPV victimization due to a range of socioeconomic indicators, such as racism, discrimination, and poverty (Black, Basile, Breiding, & Ryan, 2014; Capaldi, Knoble, Shortt, & Kim, 2012; Pieterse, Todd, Neville, & Carter, 2012). Thus, there is an urgent need to examine the links between RC, IPV, and mental health morbidities to understand their influence on the lives of young Black women in specific urban contexts that severely limit the attainment of optimal health status for Black families.

To our knowledge, no study has evaluated the independent association between symptoms of depression and PTSD with RC. While the links between IPV experiences and mental health symptomatology are well established, there is little information regarding RC's influence independent of IPV. Thus, the present study aimed to: (1) test RC as a predictor of PTSD and depression, and (2) test the interaction of exposure to RC and IPV on PTSD or depression scores among young Black women in the economically vulnerable environment of Baltimore, MD.

Method

Setting

Baltimore City has a predominantly Black population (64%) that has endured decades of discriminatory practices detrimental to health and well-being (Williams, Lawrence, & Davis, 2019). In 2015, Baltimore City reported the highest numbers of domestically related crimes in Maryland (Police, 2016). Poverty (21.8%) and unemployment (5.7%) are also highest in Maryland (Boone, Buckley, Grove, & Sister, 2009; Pappoe, 2016; U.S. Census Bureau, 2016). Unintended pregnancies were also statistically greater among young women living in Baltimore compared to other counties in Maryland (Finer, 2010; Cheng, Horon & Apelberg, 2007). According to the state-administered Pregnancy Risk Assessment Monitoring System (2011), women in Maryland who reported higher rates of IPV were more likely to report experiencing unintended pregnancy and postpartum depression compared to Maryland women who did not experience IPV (Maryland Department of Health and Mental Hygiene, 2011).

Sample

This cross-sectional study includes data from 188 women enrolled in two parent studies. We combined data from these two similar studies to enhance the statistical power of the current analysis. Though distinct in their primary objectives, the parent studies shared key assessments, thus enabling a combined dataset to maximize statistical power. The first parent study—Young Women's Healthy Relationship Study (YWHR; N=149)—was designed to describe the prevalence and experiences of RC in a community-based sample of women. Women were eligible if they spoke English, self-identified as Black/African-American, were between the ages of 18 and 26, and reported sexual activity with a male partner in the previous 6 months (K.A. Alexander et al., 2016; Kamila A Alexander et al., 2016; Willie, Kershaw, Campbell, & Alexander, 2017). The sample was recruited from three Women, Infants, and Children (WIC) nutrition distribution centers, one community-based organization that focused on linking economically disadvantaged individuals to health insurance and health services, and two youth employment/educational centers—all

in Baltimore. All research activities were approved by the institutional review boards of BLINDED. Data were collected between February 2014 and July 2014 (a six-month period) using flyers and word-of-mouth advertising.

The second parent study, Project Connect (PC), evaluated a brief IPV/RC screening intervention in two publicly funded family planning clinics ($N = 132$) also in Baltimore (Decker et al., 2017). Women were eligible to participate in this study if they spoke English and were between 18 to 35 years old. Recruitment flyers were given to potential participants visiting the clinic, providing women the option to contact the research team. All research activities were approved by the institutional review board of BLINDED. Data were collected between January and April 2014.

Women from the two parent studies were deemed eligible for this analysis if they self-identified as Black/African-American ($n = 67$; 51% from PC and $n = 149$; 100% from YWHR). While sexual activity was not an eligibility criterion for the PC study, the vast majority of women reported recent sexual activity in the previous 3 months ($n = 99$; 83%), supporting the comparability of the samples. Ineligible women ($n = 28$) were missing key data to complete these analyses (i.e., incomplete RC, depression, or PTSD measures). Thus, a final sample size of 188 participants was included in the analysis.

Shared Data Collection and Procedures

Upon initial contact, women in each of the parent studies were screened for eligibility and provided information about the study's purpose and procedures. Eligible women completed informed consents and a questionnaire; data were collected in a private area of the recruitment site. Participants completed the questionnaire using a computer tablet or laptop at the recruitment site. After survey completion, participants were assessed for emotional distress by research assistants and provided a resource list that included support services for intimate partner violence, healthcare, substance abuse, and mental health. Participants received \$10 (PC) or \$20 (YWHR) remuneration for their time.

Measures

We assessed lifetime experiences of RC using 10 items developed by Miller and colleagues (Miller et al., 2010). Women who endorsed one or more of these items were classified as experiencing RC. Participants self-reported depressive symptoms by the Center for Epidemiologic Studies Depression Scale (CESD-10), which assesses past-week depressive symptoms (Range 0–29) (Andresen, Malmgren, Carter & Patrick, 1994). Scores were summed and categorized into either not suggestive of depression (score <10) or having symptoms suggestive of depression (score ≥ 10), consistent with past evidence establishing a score of ≥ 10 as an indicator of depression symptomatology (Andresen et al., 1994). PTSD symptoms were assessed by the 4-item Primary Care Post-Traumatic Stress Disorder Screen (PC-PTSD) (Prins et al., 2003), which measures past-month symptoms (intrusive re-experiencing, numbing, avoidance, and hyperarousal). Scores range from 0 to 4 and a cutoff score of 3 or higher is optimally efficient for detecting PTSD symptoms (Prins et al., 2003).

Single items assessed demographic characteristics, including age, race, relationship status, educational level, and number of pregnancies. Language in the survey referred to intimate partners as “someone you were dating or going out with.” Lifetime experience of physical and sexual violence was assessed using three items from the Sexual Coercion (2-items) and Physical Assault (1-item) subscales of the Conflict Tactics Scale 2-Short form (Straus, Hamby, Boney-McCoy, & Sugarman, 1996; M. Straus & Douglas, 2004). The CTS short form is comparable in concurrent validity to the full scale (.69 for physical assault scale and .67 for sexual assault) (Straus & Douglas, 2004). Endorsement of any of the 3 items was coded as yes to experiencing lifetime IPV.

Data Management and Analyses

The prevalence of RC and bivariate associations with depression and PTSD, respectively, were calculated for the total sample by performing chi-square and *t* tests. The following steps were taken for each respective mental health outcome. Separate logistic regression models were conducted to examine the bivariate and adjusted associations of each predictor (i.e., RC, IPV) and the outcome. Adjusted models included covariates that were deemed relevant given current literature. The next model included both IPV and RC as independent predictors of the outcome. To test moderation, the interaction term between reproductive coercion and IPV was entered into the logistic regression models. To evaluate the comparability of data generated from the two parent studies, we conducted a sensitivity analysis that stratified each model by the parent study; results confirmed consistency across the parent studies in the directionality and approximate strength of associations by site (data not shown). The significance of performing this step in the analysis was to establish that enough similarity existed across datasets to warrant combining them to answer our study questions. Missing data were minimal (<2%) and were recoded to the mode response for gender of sexual partners (men only), relationship status (dating one person), and total number of pregnancies (2 pregnancies). We compared the results from a complete case analysis and the single value imputation analysis. Results from the sensitivity analyses indicated that the no parameter estimate was modified by 1%. To maintain statistical power, we conducted a single value imputation analysis, confirming this approach.. All analyses were conducted using SAS 9.4 (SAS Institute Inc, 2013).

Results

Sample Characteristics

This sample consisted of 188 young, 18–24-year-old, self-identified Black/African-American women (Table 1). Approximately 43.1% had less than a 12th grade education, 31.4% finished the 12th grade, and 25.5% had some college education or finished college or graduate school. The majority (60.1%) of the sample reported having sex with only men. More than two in five women (46.3%) reported having two or more pregnancies, 29.3% reported one pregnancy, and 24.5% reported no pregnancies. More than half of the sample (59.0%) reported dating one person or in a relationship. Almost one-quarter (n=46; 24.47%) of the sample reported depression symptoms only and a smaller number (n=10; 5.32%) reported PTSD symptoms only. Forty-four (23.40%) women in the sample reported comorbid symptoms of depression and PTSD. Almost half of the sample (n=88; 46.81%)

reported no symptoms of either depression or PTSD. The number of women in the sample who reported experiencing RC only and depression/PTSD comorbidity was small ($n=5$; 2.65%).

Prevalence and Distribution of Reproductive Coercion

More than one in three women (37.8%) reported RC in their lifetime (Table 1). There were significant relationships between age and RC (21.2, $p<0.016$). Women with lifetime physical or sexual IPV experiences were more likely to report RC (57.6% vs. 42.4%, $p<0.001$). We found that of the 110 participants reporting RC, IPV, or both, about 30% reported experiencing only one type of violent experience (9.5% RC only; 20.7% IPV only); 28% reported both (Fig 1. RC - 9.5% $n = 18$; IPV – 20.7% $n = 39$).

Bivariate and Adjusted Associations of Depression with Reproductive Coercion and IPV

Forty-eight percent of the sample reported depression symptoms. Sixty-nine percent of women with RC reported symptoms consistent with depression relative to 35% of women without RC (OR = 4.13, 95% CI = 2.19, 7.75). Similarly, 68.5% of women with IPV experiences reported symptoms indicative of depression relative to 28.1% of women without IPV (OR = 5.55, 95% CI = 2.97, 10.38; Table 2). Associations persisted in models adjusting only for covariates ($AOR_{RC} = 4.69$, 95% CI = 2.39, 9.20; $AOR_{IPV} = 7.09$, 95% CI = 3.51, 14.28). In the full model adjusting for covariates and both primary exposures, RC and IPV remained significantly and independently associated with depression ($AOR_{RC} = 2.86$, 95% CI = 1.38, 5.94; $AOR_{IPV} = 5.15$, 95% CI = 2.47, 10.76). Interaction effects between IPV and RC experiences for depression symptoms were not significant.

Bivariate and Adjusted Associations of PTSD with Reproductive Coercion and IPV

Twenty-eight percent of the sample met the cut-off for PTSD. Nearly 45.1% of women with RC had PTSD relative to 18.8% of women without RC. Similarly, 43.5% of women with IPV experiences had PTSD relative to 14.6% of women without IPV (Table 3). In the bivariate analysis, PTSD was associated with RC (OR = 3.54, 95% CI = 1.83, 6.85) and IPV (OR = 4.51, 95% CI = 2.24, 9.08). In the models adjusting only for covariates (i.e., education, number of pregnancies, gender of sexual partners, relationship status, and recruitment site), PTSD was significantly associated with RC ($AOR = 3.44$, 95% CI = 1.72, 6.87) and IPV ($AOR = 4.09$, 95% CI = 1.96, 8.56). In the full model adjusting for covariates and both primary exposures, RC and IPV remained significantly and independently associated with PTSD ($AOR_{RC} = 2.41$, 95% CI = 1.15, 5.08; $AOR_{IPV} = 3.04$, 95% CI = 1.39, 6.63). Interaction effects between IPV and RC experiences for PTSD were not significant.

Discussion

In this study of young Black women, more than one-third (37.8%) had experienced RC in their lifetime. This prevalence aligns with previous research, highlighting a disproportionate burden of RC among young Black women (37.1%) and racial disparities compared to rates among multiracial (29%), White (18%), Hispanic (24%), and Asian/Pacific Islander (18.4%) young women found in other research (Holliday et al., 2017). These prevalence estimates

stand in stark contrast to results from the most recent national population-based survey of women in which only 9% reported experiencing RC behaviors from a male partner (Black et al., 2011). We extend past research by establishing the significant independent associations of RC with PTSD and depression symptoms.

Overall, both depression (69%) and PTSD (45.1%) symptoms were more prevalent among young women in our study who reported experiences of RC and IPV compared to women without these experiences. Almost half (48%) of our sample reported depression symptoms, a significantly higher prevalence than youth participating in the 2017 Youth Risk Behavior Surveillance System (YRBS) (32% of all youth participants and 29% of Black boy and girl youth participants) (Kann et al., 2018). Symptoms of PTSD were reported by 28% of the young women in our sample. This prevalence contrasts with findings from the National Comorbidity Survey Replication – Adolescent Supplement, in which 8% of female adolescents were diagnosed with PTSD (Merikangas et al., 2010). Although IPV is a well-established predictor for depression and PTSD symptoms, the effects of RC on depression and PTSD symptoms among young Black women has limited evidence in the empirical literature.

RC and IPV often co-occur (Grace & Anderson, 2016; Miller et al., 2010a). Thus a strength of this study is our evaluation of RC and IPV as independent predictors of mental health outcomes. We also evaluated the strength of the association of RC and IPV: characteristic of 28% of the sample. Participants in our study who experienced RC independent of IPV were significantly more likely than women without RC to report PTSD and depressive symptoms. This finding aligns with McCauley and colleagues' (2014) research, which found that recent (3-month) RC was independently associated with past-week PTSD. To our knowledge, previous research has not explored the associations of depression with RC experiences. The consequences of RC independent of IPV, however, have been associated with increased numbers of unintended pregnancies (Miller et al., 2014). Women experiencing RC also request more pregnancy and STI testing as well as emergency contraception (Kazmerski et al., 2015). Young women with depression have decreased and inconsistent use of contraceptives and are more likely to experience unintended pregnancies (Hall, Kusunoki, Gatny, & Barber, 2014; Hall, Moreau, Trussell, & Barber, 2013). The roles of RC, depression, and PTSD within this pathway require further study. In addition, the associations of IPV and unintended pregnancy in earlier research may be explained by unmeasured RC co-occurring with IPV (Pallitto, Campbell, & O'Campo, 2005).

Almost 50% of the young women in our study who reported experiencing lifetime RC or IPV reported that they had experienced both types of violence. This finding aligns with studies in which between 35–50% of samples who reported IPV also reported RC (Miller et al., 2010b). This is significant because we demonstrate the potential for identifying women at risk for or experiencing RC using existing IPV screening tools. Our study also found important evidence that IPV and RC do not always co-occur; nearly 10% of the violence-exposed women reported experiencing only RC. This confirms that RC and IPV involve differential behaviors and can occur in isolation; an important factor to consider when evaluating screening tools that do not include questions about RC behaviors. Given these findings, RC experiences might affect some women reporting symptoms of depression

or PTSD but could go undetected using the most recognized evidence-based IPV screening tools (Gerberding, Arias, & Hammond, 2006)

In the context of mental health, our findings demonstrate that experiences of RC and IPV can be distinct traumatic events that significantly and independently affect mental health outcomes for this population of Black women. Our findings align with prior, yet limited, research examining the associations of RC with mental health outcomes (Alexander et al., 2016; McCauley et al., 2014) and the broader, well-established research examining the associations between IPV and mental health (e.g., Pico-Alfonso et al., 2006). As significant independent predictors, there may be distinct pathways of influence on mental health outcomes that suggest further study.

There might be several possible mechanisms related to the current results. Prior research demonstrates that there can be some overlap between RC and IPV behaviors, such as using threats and physical violence as tactics for gaining power and control in an intimate relationship (Miller et al., 2010). However, an additional outcome of RC behaviors—unintended or unwanted pregnancy—is disproportionately experienced by young Black women (Finer & Zolna, 2016; Holliday et al., 2017). RC experiences and subsequent unwanted or unintended pregnancies might thus trigger perceived stress and low self-efficacy that are often associated with depressive and PTSD symptoms (Luszczynska, Benight, & Cieslak, 2009). For example, women reporting rape-related pregnancies are significantly more likely to have experienced RC than women raped by an intimate partner but who did not become pregnant (Basile et al., 2018).

Other studies have found a sequential pathway between PTSD and mood disorders in which the trauma and symptoms of PTSD likely precede those of depression (Cogle et al., 2009). Some RC behaviors include forms of sexual and psychological violence: forced condomless sex for pregnancy and hiding birth control pills/preventing contraceptive clinic visits. This suggests that PTSD symptoms might precede those of depression among women experiencing RC. Additionally, while we did not examine the sequence of mental health symptoms, we found comorbidity of depression and PTSD symptoms affected almost one-quarter of the women in our sample. This finding provides further evidence that comorbidity as a separate mental health state is a risk factor for RC and IPV (O'Campo et al., 2006). Findings from our study provide a greater understanding of the ways violence and trauma might impact the mental health of a population of women already experiencing disparate social outcomes. However, we acknowledge that longitudinal studies examining the effects of RC specifically on comorbidity would strengthen the existing body of knowledge.

Links between experiences of violence and mental health of young Black women are particularly important to explore due to the social and historical burdens carried by this population of people living in the U.S. Homicide is a leading cause of death among young Black women in the United States and more than 50% of those deaths are committed by an intimate partner (Petrosky et al., 2017). Women in our sample were recruited from an urban area in which economic strain is common for families. There is robust evidence that links poverty to increased experiences of violence and mental distress (Golin et al., 2017). Social disadvantages including low economic power and living in a vulnerable urban environment

may exacerbate depressive symptoms among women experiencing RC and IPV (Alexander et al., 2016; McCauley et al., 2014). Social factors such as experiences of racism, violence, and poverty likely perpetuate the symptoms of depression and PTSD among Black women (Banks & Kohn-Wood, 2002; Himle, Baser, Taylor, Campbell, & Jackson, 2009; Stockman et al., 2015). Social discrimination is associated with depression, stress, and increased risks for unintended pregnancies among young women (Hall et al., 2014). Persons living below the poverty level are more than twice as likely to have depression as persons living at or above the poverty level (Pratt & Brody, 2014) and poverty rates in the U.S. are highest for families headed by single women and Black people (Child Trends Databank, 2019; Proctor et al., 2016). This contributes to widening disparities in mental health according to race and ethnic identity. It also provides a platform for addressing IPV and RC as social determinants of mental health disorders (Allen, Balfour, Bell, & Marmot, 2014).

Another strength of our research design was the inclusion of women from both clinical and community-based settings. The majority of research focused on RC has been conducted with women in clinical settings (Holliday et al., 2017; Miller et al., 2014; Paterno et al., 2018). To our knowledge, no other studies have examined the prevalence of RC in community-based settings. Yet, our study demonstrated that women accessing community-based settings had comparable prevalence of RC to those in the clinical sample. Future studies need to adapt and scale up current prevention interventions for RC to explore and test for community-based settings. Specifically, given the disparities among Black women's experiences, there is a need for cultural adaptations that attend to social factors affecting power imbalances in Black intimate relationships and autonomy around reproductive decisions (Holliday et al., 2017; Nikolajski et al., 2015).

Limitations

This study might be one of the first studies to examine the independent associations of RC and IPV on mental health symptoms among Black women living in the United States; however, these findings should be interpreted in light of the following limitations. First, the associations we found are cross-sectional; thus, we are unable to determine the timeline of participant violence experiences in relation to mental health symptoms. While IPV and RC as correlates or risk factors for developing mental health symptoms are well-documented, the longitudinal etiology is still unclear (Okuda et al., 2011; Pico-alfonso et al., 2006). This is especially important to understand among Black young women due to the potential long-term impacts on well-being across the life course. Second, we are unable to determine whether responses (i.e., PTSD symptoms) to traumatic events were related to partner violence or other traumatic events that could have occurred in their lives (i.e., adverse childhood experiences). For example, some studies have found exposure to physical and sexual abuse as children are associated with increased odds for experiences of IPV (Afifi et al., 2009). However, few studies have examined this pathway when it excludes IPV experiences as an adolescent or young adult. Third, all data were self-reported and are subject to social desirability bias which could result in participant underreporting of sensitive experiences. Finally, the majority of our sample were low-income, Black women; therefore, our findings are likely not generalizable to other populations. Racial

discrimination and poverty experiences among Black women may have similarities to other groups, but are unique in the historical context of the U.S.

Conclusion

As our nation continues to face disparities in violence as well as mental health concerns, it is critical to understand interpersonal level factors, such as RC, that can influence these outcomes. Current results demonstrate that one in three women in the clinic and community-based settings sampled experienced RC, with a significantly detrimental impact on mental health. The nuances of RC experiences among Black young women require further examination. This information should lay the foundation for developing culturally relevant interventions that attend to contextual influences of resilience and social support while facing poverty and racial discrimination in the U.S.

Clinical and Policy Implications

The effects of violence on Black women's psychological states have implications for broader health risks and provides a potential marker for interventions to mitigate these risks. Participants in this study were connected to social and healthcare organizations, providing insight into a population that has accessed community resources. Interventions that build on existing social support networks to advance safety for Black women have demonstrated promising results and can be integrated into clinical as well as community programs (Constantino, Kim, & Crane, 2005; Simmons, Farrar, Frazer, & Thompson, 2011). There is also evidence that culturally-responsive psychoeducational interventions can improve mental health symptoms among African-American women (Kaslow et al., 2010). Adjunctive techniques such as mindfulness and yoga have also been tested among IPV survivors and have been found to decrease stress and symptoms of depression and PTSD (Clark et al., 2014; Kelly & Garland, 2016). Clinicians, program administrators, and policy makers might also consider using our findings to emphasize the need for IPV and RC universal education and assessment. This practice might reveal greater insight to women's existing stressors and disclosure of IPV and RC can guide referral to resources that expand beyond the clinical setting. Implementation of educational programs, screening, and referral could be beneficial to women accessing resources in other settings.

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Figure 1.
Venn diagram depicting intersection of RC & IPV lifetime experiences, N=188

Table 1

Demographics and Associations with Lifetime Reproductive Coercion among Young Black Women

	Total No. ^a (%) N=188	No. (%) no RC ^b N=117	No. (%)RC ^b N=71	<i>p</i> -value ^c
Reproductive Coercion	71 (37.8)	—	—	
Age, mean (SD)^d	21.3 (2.2)	21.2 (2.2)	21.3 (2.2)	0.016
Highest education level				0.124
Less than 12 th grade	81 (43.1)	46 (56.8)	35 (43.2)	
Finished 12 th grade	59 (31.4)	43 (72.9)	16 (27.1)	
Some college/Finished college	48 (25.5)	28 (58.3)	20 (41.7)	
Gender of sex partners				0.081
Men only	113 (60.1)	76 (67.3)	37 (32.7)	
Men & women sex partners	75 (39.9)	41 (54.7)	34 (45.3)	
Total Pregnancies				0.393
Never	46 (24.5)	32 (69.6)	14 (30.4)	
One	55 (29.3)	35 (56.4)	24 (43.6)	
Two or more	87 (46.3)	54 (62.1)	33 (37.9)	
Relationship Status				0.145
Single/Dating more than one person	68 (36.2)	48 (70.6)	20 (29.4)	
Dating one person/in a relationship	111 (59.0)	65 (58.6)	46 (41.4)	
Married	9 (4.8)	4 (44.4)	5 (55.6)	
Intimate Partner Abuse Experiences				
Lifetime Physical/Sexual IPV	92 (48.9)	39 (42.4)	53 (57.6)	<0.001
Recruitment Setting				0.589
Community-based Organizations	147(78.2)	90(61.2)	57(38.8)	
Family Planning Clinics	41(21.8)	27(65.9)	14 (34.2)	

^aColumn percentages^bRow percentages^cConducted with Chi-square or *t* test^dColumn mean

Table 2

Prevalence of Depression and Associations with lifetime experiences of Reproductive Coercion and Intimate Partner Violence

	% ^a w depression	% ^a w/o depression	OR 95% CI	AOR ^b 95% CI	AOR ^c 95% CI	Interaction Model AOR 95% CI
Depression						
Yes	48.0	—				
No	—	52.0				
Reproductive Coercion						
Yes	69.0	31.0	4.13 (2.19, 7.75)	4.69 (2.39, 9.20)	2.86 (1.38, 5.94)	5.17 (1.66, 16.18)
No	35.0	65.0	REF	REF	REF	REF
Intimate Partner Violence						
Yes	68.5	31.5	5.55 (2.97, 10.38)	7.09 (3.51, 14.28)	5.15 (2.47, 10.76)	7.46 (2.94, 18.93)
No	28.1	71.9	REF	REF	REF	REF
RC × IPV	69.8	30.2	—	—	—	0.37 (0.06, 1.32)

^aRepresents row percentages

^bAdjusted for education, number of pregnancies, gender of sexual partners, relationship status, and recruitment site.

^cIncludes reproductive coercion, IPV, education, number of pregnancies, gender of sexual partners, relationship status, and recruitment site.

^c**Bold** values indicate statistical significance at $p < 0.05$. Abbreviations: RC = reproductive coercion and IPV = intimate partner violence.

Table 3

Prevalence of PTSD and Associations with Reproductive Coercion and Intimate Partner Violence

	% w PTSD	% w/o PTSD	OR 95% CI	AOR ^a 95% CI	AOR ^b 95% CI	Interaction Model AOR 95% CI
PTSD						
Yes	28.0	—				
No	—	72.0				
Reproductive Coercion						
Yes	45.1	54.9	3.54 (1.83, 6.85)	3.44 (1.72, 6.87)	2.41 (1.15, 5.08)	4.21(1.20, 14.77)
No	18.8	81.2	REF	REF	REF	REF
Intimate Partner Violence						
Yes	43.5	56.5	4.51 (2.24, 9.08)	4.09 (1.96, 8.56)	3.04 (1.39, 6.63)	4.30(1.55, 11.94)
No	14.9	85.4	REF	REF	REF	REF
RC × IPV	49.1	50.9	—	—	—	0.43 (0.09, 1.96)

^aRepresents row percentages^bAdjusted for education, number of pregnancies, gender of sexual partners, relationship status, and recruitment site.^cIncludes reproductive coercion, IPV, education, number of pregnancies, gender of sexual partners, relationship status, and recruitment site.^d**Bold** values indicate statistically significance at $p < 0.05$. Abbreviations: RC = reproductive coercion and IPV = intimate partner violence.