Maladaptive Coping Mediates the Influence of Childhood Trauma on Depression and PTSD among Pregnant Women in South Africa

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Abstract

Antenatal mental disorders compromise maternal and child health, and women who have experienced childhood trauma may be at increased risk for such disorders. One hypothesis is that early trauma leads to the development and use of maladaptive coping strategies as an adult, which in turn could predict mental health difficulties during stressful transitions such as pregnancy. To test this hypothesis, this study examined the relationship between childhood trauma and mental health (depression, PTSD) in a sample of 84 pregnant women seeking antenatal care in Cape Town, South Africa, and explored whether maladaptive coping mediated this relationship. The majority of women (62%) met established criteria for antenatal depression and 30% for antenatal PTSD; in addition, 40% reported a history of childhood trauma. Childhood trauma, especially childhood sexual abuse and emotional abuse, was significantly associated with depression and PTSD. The relationships between childhood trauma and depression and PTSD were significantly mediated by maladaptive coping, even when adjusted for the woman's age, gestational age, and HIV status. Findings highlight the need for coping-based interventions to prevent and treat antenatal mental disorders among women with childhood trauma, particularly in high-trauma settings such as South Africa.

BACKGROUND

Maternal mental health during pregnancy impacts the wellbeing of both mother and child. Antenatal mental disorders such as depression and PTSD are linked to obstetric risks such as pre-term delivery (Grigoriadis et al., 2013; Straub, Adams, Kim, & Silver, 2012), pre-eclampsia (Kurki, Hiilesmaa, Raitasalo, Mattila, & Ylikorkala, 2000), and negative child

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outcomes including poor neonatal health (Misri et al., 2004), stunted infant growth (Grote et al., 2010; Stewart, 2007), and compromised development (Deave, Heron, Evans, & Emond, 2008). Moreover, antenatal mental disorders have been observed to be prevalent in low- and middle-income countries (Fisher et al., 2012), and contribute to a heavy burden of child and maternal consequences in these settings (Patel, DeSouza, & Rodrigues, 2003; Rahman, Bunn, Lovel, & Creed, 2007). South Africa is one such setting where mental disorders, particularly depression, have been detected at high levels among pregnant women (Hartley et al., 2011; Rochat, Tomlinson, Barnighausen, Newell, & Stein, 2011; Vythilingum, Roos, Faure, Geerts, & Stein, 2012). Less is known about the prevalence and predictors of antenatal PTSD among South African women, as well as behavioral opportunities for addressing either of these psychological morbidities during the pregnancy period.

One key factor that likely contributes to antenatal depression and PTSD in the South African setting is trauma history. South Africa is known to have high rates of interpersonal trauma (Gass, Stein, Williams, & Seedat, 2011; Jewkes & Abrahams, 2002; Jewkes, Penn-Kekana, Levin, Ratsaka, & Schrieber, 2001). In other settings, a history of interpersonal trauma has been associated with higher risk of mental disorders, both in general (Kaplow & Widom, 2007) and during the perinatal period (Howard, Oram, Galley, Trevillion, & Feder, 2013). Consistent with this, a recent South African study (Hartley et al., 2011) found that a strong predictor of antenatal depression was exposure to intimate partner violence (IPV). Not previously investigated in this setting, though, is the role of earlier life adversities such as childhood trauma in predicting antenatal mental health. Unfortunately, childhood trauma occurs at high rates in South Africa – with over a third of South African women reporting a history of childhood sexual abuse (Seedat, Van Niekerk, Jewkes, Suffla, & Ratele, 2009) – and has been linked to poor health and psychological outcomes (Troeman et al., 2011). Evidence suggests that childhood trauma may independently influence perinatal mental health regardless of recent victimization (Huth-Bocks, Krause, Ahlfs-Dunn, Gallagher, & Scott, 2013; Malta, McDonald, Hegadoren, Weller, & Tough, 2012) and must be examined for its specific impact during pregnancy. For example, a history of childhood trauma may raise stressful memories or cognitions during the transition to parenthood, which in turn could increase vulnerability for depression or PTSD especially in a context already fraught with stressors such as poverty, violence, and HIV (Shisana et al., 2014; Shisana, Rice, Zungu, & Zuma, 2010).

Given this constellation of stressors, one question that remains is how South African women cope during pregnancy, and whether this influences their mental health status. Coping strategies can be defined as cognitive and behavioral efforts to manage stressful demands (Folkman & Lazarus, 1986), and coping styles reflect the tendency to select certain strategies in the face of such demands (Carver, Scheier, & Weintraub, 1989). Coping strategies have been categorized broadly in different ways – active or passive, approach or avoidant, problem-focused or emotion-focused, as well as adaptive or maladaptive (Endler & Parker, 1994; Roth & Cohen, 1986; Zeidner & Saklofske, 1996). Trauma survivors tend to use maladaptive coping strategies, such as avoidance, self-blame and substance use, to cope with distressing memories of their traumatic experiences (Street, Gibson, & Holohan, 2005). While these strategies may reduce immediate distress, they can worsen long-term mental health symptoms (Briere & Elliott, 1994; Simoni & Ng, 2000). A tendency to use

maladaptive coping strategies is thus expected to negatively influence mental health among pregnant women who report trauma histories. Yet limited literature exists on how women in low-income settings cope during pregnancy (Dunkel Schetter, 2011) and especially how maladaptive coping affects mental health in a high-trauma setting such as South Africa.

Research is needed to specifically examine the impact of childhood trauma and coping on perinatal mental health among South African women. In a sample of 84 pregnant South African women, this study aimed to (1) examine childhood trauma as a predictor of depression and PTSD symptoms during pregnancy; and (2) explore whether the impact of childhood trauma on these symptoms was mediated by maladaptive coping style. Findings from this study may help guide interventions to treat and prevent antenatal mental disorders in this high-risk population, thereby optimizing maternal and child outcomes.

METHODS

Setting

The study was conducted in Cape Town, South Africa. Participants were recruited from an antenatal clinic in a peri-urban area where HIV prevalence among pregnant women is estimated around 20% (National Department of Health, 2013). The clinic serves a primarily low-income, Black community, and was selected based on existing partnerships, available resources, and proximity to central Cape Town. Access to the clinic was granted by the hospital administration.

Design

Pregnant women were approached in the clinic by research staff while waiting for a routine antenatal care (ANC) visit. Eligibility criteria for this study included: (1) current pregnancy, (2) known HIV status, (3) Xhosa, Afrikaans, or English fluency, and (4) no cognitive impairment. Participants with an obstetric emergency were excluded from the study. Due to an initial interest in HIV status as a study variable, HIV-positive women were intentionally oversampled. All eligible women approached agreed to participate and provided informed consent. The study coordinator orally administered the questionnaires in participants' preferred language (Xhosa, Afrikaans, English) in a private room at the clinic. On average, the survey took 45–60 minutes and did not interrupt participants from receiving their ANC care in a timely fashion. Participants received 50 South African Rands (approximately 5 USD) for their participation. All procedures were approved by the institutional review boards at [BLINDED FOR SUBMISSION].

Measures

Demographic information: Participants were asked to report their age, gestational age (in weeks), relationship status, education level, current employment, and HIV status.

Childhood trauma history: Childhood trauma was measured using the Childhood Trauma Questionnaire Short Form (CTQ-SF), a 28-item retrospective self-report questionnaire (Bernstein et al., 2003). The CTQ-SF yields five separate subscales that measure experiences of childhood physical abuse, sexual abuse, emotional abuse, emotional neglect,

and physical neglect, each consisting of five items. An overall trauma score is created by summing the five subscales, with possible scores ranging from 25–125. For this study, the continuous overall trauma score was used as the main childhood trauma variable. A dichotomous variable reflecting the presence/absence of overall childhood trauma was created for descriptive purposes, with participants categorized in the "no trauma" group if they had a score of 25–40, and in the "trauma" group if they had a score of 41 or higher. Dichotomous variables for each subtype of childhood trauma were also created, using the following cut-off scores: physical abuse 8, sexual abuse 6, emotional abuse 9, physical neglect 8, and emotional neglect 10 (Bernstein & Fink, 1998).

Antenatal depression: Antenatal depression was assessed using the Edinburgh Postnatal Depression Scale (EPDS), a 10-item screening tool for depression during pregnancy and through the first postpartum year. The EPDS has previously been used in South Africa for detecting antenatal depression (Hartley et al., 2011; Vythilingum et al., 2013). Items are scored on a four-point scale ranging from 0 to 3, with reverse-scoring on select items. Item scores are then summed to create a total score ranging from 0 to 30, with higher scores indicative of greater depressive symptomology. Based on previous research in this setting (Hung et al., 2014; Rochat, Tomlinson, Newell, & Stein, 2013), an EPDS score of 13 was used as the descriptive cut-off for antenatal depression.

PTSD symptoms: The severity and frequency of PTSD symptoms occurring in the past week were measured using the Davidson Trauma Scale, a 17-item self-report scale (Davidson et al., 1997). A total PTSD score is created by summing all items on the scale, with possible scores ranging from 0 to 136. A cut-off of 40 or more is used as a cut-off for likely PTSD diagnosis (Davidson et al., 1997), and was used to create a dichotomous variable for descriptive purposes.

Maladaptive coping style: Coping styles were measured using the Brief COPE (Carver, 1997), which consists of 28 items. To create the maladaptive coping subscale, we summed 12 relevant items from six subscales (Self-Distraction, Denial, Substance Use, Behavioral Disengagement, Venting, and Self-Blame) to form a composite score, as done in some previous research (Kasi et al., 2012; Moore, Biegel, & McMahon, 2011). Internal consistency was high in this sample, with a Cronbach's alpha of .80 for the 12 items. Possible scores on this subscale ranged from 12 to 48, with higher scores reflecting greater tendency to use these maladaptive coping strategies. Given the absence of established cut-offs for this subscale, the continuous variable was used for descriptive purposes.

Analysis

All analyses were conducted using SPSS (SPSS IBM v. 21.0, Armonk, NY). We first extracted descriptive statistics for demographic, mental health, and childhood trauma variables. Then we explored correlations between antenatal mental health scores and relevant predictors and covariates.

To assess mediation in a regression framework, we followed the steps outlined by Baron and Kenny (1986) for each mental health outcome, and used a bootstrapping method to

statistically test the significance of observed indirect effects. We first estimated the overall effect of childhood trauma on the outcome, antenatal depression (*c* effect). Second, we tested the unique relationship between childhood trauma and the proposed mediator, maladaptive coping (*a* effect). Third, we tested the unique relationship between maladaptive coping and antenatal depression (*b* effect). Finally, we re-estimated the overall effect of childhood trauma on antenatal depression adjusting for the effect of maladaptive coping (*c'* effect). If mediation is present, the first three estimated effects (*a, b, c*) should be statistically significant and the adjusted *c'* effect is expected to be smaller than the original *c* effect. If the c' effect is reduced but still significant, then partial mediation is suggested; if non-significant and zero, then complete mediation is suggested (Baron & Kenny, 1986). After examining the reduction of the *c'* effect relative to the *c* effect, we computed the mediated effect (*ab*) using unstandardized coefficients, and tested the significance of this effect with 95% bias-corrected bootstrap confidence intervals, using the INDIRECT Macro for SPSS (Preacher & Hayes, 2004). Then, we applied the formula *ab/c* to estimate the proportion of the relationship between childhood trauma and antenatal depression that was mediated by maladaptive coping. Finally, we reran the INDIRECT Macro to test the direct and indirect effects adjusted for covariates of theoretical relevance, i.e., woman's age, gestational age, and HIV status (Kapetanovic, Dass-Brailsford, Nora, & Talisman, 2014; Lee et al., 2007; Rich-Edwards et al., 2006). This entire sequence of mediation analyses was repeated using PTSD as the outcome.

RESULTS

Description of the Sample

Among the 84 participants (Table 1), most reported being in a relationship; among these, the majority indicated they were unmarried. Only 8% of the sample had education beyond the high school level. Most participants were currently unemployed and had a monthly income below 5000 South African Rands (approximately 477 USD). On average, reported gestational age was 26 weeks (SD=6, range=6–36). Since HIV-infected women were initially oversampled, many (60%) reported being HIV-positive.

Forty percent reported overall childhood trauma, as determined with a cutoff score of 41 or higher on the CTQ (Table 2). The mean CTQ score for the sample was 40 (SD=11.1), and scores ranged from 25–80. Notably, 56% of the sample reported physical neglect and almost half of all participants reported emotional abuse (44%) and emotional neglect (48%) during childhood. About one in four participants reported childhood physical (30%) and sexual (26%) abuse. Psychological distress was also common among participants, with 62% meeting the cut-off for antenatal depression and 30% meeting the cut-off for PTSD. Almost one in four (23%) participants met criteria for both disorders and could be classified as having comorbid depression and PTSD.

Variables Associated with Antenatal Depression and PTSD

Antenatal depression was significantly correlated with earlier gestational age, overall childhood trauma score, and maladaptive coping style (Table 3). Among trauma subtypes, antenatal depression was associated specifically with childhood sexual and emotional abuse.

Antenatal PTSD symptoms were significantly correlated with overall childhood trauma and maladaptive coping (Table 3). Among trauma subtypes, antenatal PTSD was associated with childhood sexual and emotional abuse, as well as physical abuse.

Maladaptive Coping as a Mediator between Childhood Trauma and Antenatal Mental Health

Considering antenatal depression as the outcome, all estimated effects in the mediation model (Figure 1) were found to be significant. Childhood trauma predicted maladaptive coping (*a* effect = .22, *p* = .005), and in turn maladaptive coping predicted antenatal depression (*b* effect = .22, *p* = .001). Overall, childhood trauma predicted antenatal depression (*c* effect = .11, *p* = .04), but its effect on antenatal depression was reduced by almost half and became non-significant when adjusted for the effect of maladaptive coping (*c'* effect = .06, *p* = n.s.), suggesting substantial mediation. This was supported by the indirect effects test and the 95% bias-corrected bootstrap confidence intervals, *ab* = .05, 95% CI [.01, .10]. According to calculations (*ab/c*), 45% of the effect of childhood trauma on antenatal depression was mediated by maladaptive coping. The direct and indirect effects remained significant when adjusted for covariates, with gestational age emerging also as a significant predictor of depression, *B* = −.17, *p* = .03, such that women with more advanced pregnancies had significantly lower depression scores.

Considering antenatal PTSD as the outcome, all estimated effects in the mediation model (Figure 2) were found to be significant. As before, childhood trauma predicted maladaptive coping (*a* effect = .22, *p* = .005), and maladaptive coping also strongly predicted antenatal PTSD (*b* effect = 1.73, *p* < .001). The overall effect of childhood trauma on antenatal PTSD was significant (*c* effect = .99, *p* < .001) and was slightly reduced, though remained significant, when maladaptive coping was included in the model (*c'* effect = .67, *p* = .008), suggesting partial mediation. This was supported by the indirect effects test and the 95% bias-corrected bootstrap confidence intervals, *ab* = .38, 95% CI [.11, .64]. According to calculations (*ab/c*), 38% of the effect of childhood trauma on antenatal PTSD was mediated by maladaptive coping. In addition, the direct and indirect effects remained significant when adjusted for covariates, with none of the covariates emerging as predictors of PTSD.

DISCUSSION

This study examined the relationship between childhood trauma, maladaptive coping, and mental health in a sample of South African women seeking antenatal care. Pregnant participants were characterized not only by sociodemographic risk in terms of poverty and low education, but also by high levels of childhood trauma and psychological distress in the forms of PTSD (30%) and depression (62%), occurring both independently and comorbidly.

We found that childhood trauma history was predictive of both depression and PTSD symptoms during pregnancy. In particular, childhood sexual abuse and emotional abuse were associated with both depression and PTSD, while childhood physical abuse was associated only with PTSD. These associations during pregnancy, novel to the South African context, expand the research base from developed settings in which early maltreatment has been found to be a risk factor for mental disorders in the perinatal period (Benedict, Paine, Paine, Brandt, & Stallings, 1999; Huth-Bocks et al., 2013; Kulkarni,

Graham-Bermann, Rauch, & Seng, 2011; Meltzer-Brody et al., 2013). A history of childhood trauma may predict antenatal mental health in various ways. For example, though we were unable to test this hypothesis in the current study, women who have experienced childhood trauma may be more likely to be victimized as adults (Desai, Arias, Thompson, & Basile, 2002), which can then more proximally predict mental health during pregnancy.

Results from this study suggested that another pathway by which another childhood trauma may affect antenatal mental health is via coping behavior. In general, women with a history of childhood trauma are more likely to use maladaptive coping strategies (Street et al., 2005), a tendency which was confirmed in our pregnant sample. Childhood trauma could lead to the development and utilization of maladaptive coping strategies as an adult, which may then be both a behavioral mechanism and exacerbating factor for antenatal mental health problems. In mediation analyses, maladaptive coping emerged as a significant mediator of the relationship between childhood trauma and both mental health outcomes, especially depression. For depression, accounting for maladaptive coping rendered the effect of childhood trauma insignificant, while for PTSD, the effect of childhood trauma remained significant. Among South African women who have experienced childhood trauma, maladaptive coping seems to be a key target for preventing and/or treating antenatal depression. On the other hand, given that maladaptive coping did not nullify the relationship between childhood trauma and PTSD, this finding suggests that intervening on maladaptive coping alone is helpful but not necessarily sufficient for addressing PTSD among pregnant women who have experienced childhood trauma.

In this study, we chose to examine antenatal depression and PTSD as separate mental health outcomes, despite some overlap in their occurrence and symptom construct (Gros, Price, Magruder, & Frueh, 2012). Our findings characterized PTSD and depression as sufficiently distinct psychological outcomes. For example, we found that depression and PTSD were differentially related to maladaptive coping as a mediator, as discussed previously, with a stronger mechanism of coping for depression. In addition, depression was predicted by the woman's gestational age, while PTSD was not. Women who were more advanced in their pregnancy tended to have lower levels of depression. Recent research in this setting has revealed that pregnancy recognition can be a stressful and often undesirable experience (Choi et al., 2014; Watt et al., 2014), so it is possible that women who are further along in their pregnancy may have more time to reconcile with their pregnancy status and adjust to the stressors brought on by pregnancy. Notably, however, one in four women in the sample did present with comorbid antenatal depression and PTSD. Comorbid depression and PTSD during pregnancy can be especially harmful for perinatal health, as one recent study found that a combined diagnosis of depression and PTSD quadrupled the risk of preterm delivery (Yonkers et al., 2014). Future work must explore this co-occurrence and how to treat both conditions simultaneously in South Africa (Abler et al., 2014).

This study had several limitations to note. First of all, the modest sample size precluded the use of formal structural modeling to test mediation. Second, we were unable to test other potential mediators (e.g., recent partner violence), which were not measured but have been previously associated with negative perinatal outcomes in South Africa (Koen et al., 2014). Third, we oversampled HIV-positive women, which raises questions about population

representativeness – though we found that HIV status was not related to antenatal mental health. While surprising based on the overall literature (Kapetanovic et al., 2014; Spies et al., 2012), our findings were consistent with a recent South African study (Rochat et al., 2011) that found both HIV-infected and non-infected women to be similarly at risk for antenatal depression, suggesting there may be other factors that override the psychological impact of HIV status in this setting.

Despite the limitations, this study had several important strengths. To our knowledge, it is one of the first to look at predictors of antenatal PTSD symptoms in South Africa, particularly childhood trauma, despite the high prevalence of interpersonal and community trauma in South Africa (Gass et al., 2011; Jewkes & Abrahams, 2002; Jewkes et al., 2001). It used a gold-standard instrument to measure childhood trauma, and drew on validated screening instruments to assess mental health outcomes. In addition, it explored the role of coping in mental health during pregnancy, which has important implications for developing and tailoring behavioral interventions but has not received sufficient attention to date, especially in low-resource populations (Dunkel Schetter, 2011).

In terms of intervention implications, this study highlighted maladaptive coping style as a useful target among these women. Reducing maladaptive coping among pregnant women with trauma histories and/or promoting positive alternative coping strategies may make a difference for mental health, especially depression. Interventions should also address women's trauma histories and symptoms for PTSD. Future areas of research include evaluating the effectiveness of coping-based interventions for pregnant women who have experienced childhood trauma. Research studies are also needed to examine whether specific forms of maladaptive coping (e.g., substance use, denial, etc.) are more common among pregnant women with trauma histories. Ecological momentary assessment (EMA) studies (Shiffman, Stone, & Hufford, 2008) may be useful in this population to track women's coping behaviors in relation to various stressors and symptoms. In addition, qualitative research may illuminate the motivations underlying the selection of certain coping strategies, thereby pointing to further intervention avenues.

Conclusion

High rates of childhood trauma, antenatal depression and PTSD exist among South African women receiving antenatal care. This study suggests that childhood trauma may lead to the development of maladaptive coping styles as an adult, which can then lead to and/or exacerbate mental health difficulties during pregnancy, a stressful time for many women in this setting. Findings raise the importance of addressing maladaptive coping among trauma-exposed mothers in order to improve antenatal mental health and its related outcomes.

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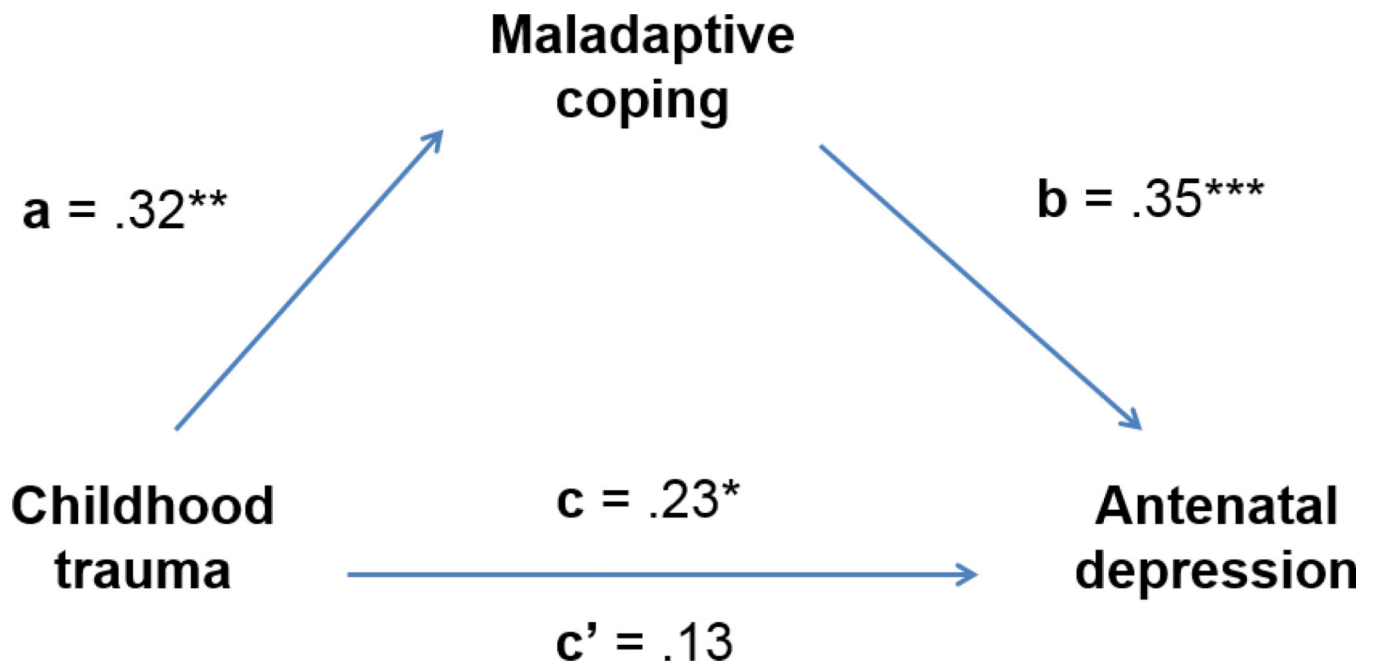
Yonkers KA, Smith MV, Forray A, Epperson CN, Costello D, Lin H, Belanger K. Pregnant women with posttraumatic stress disorder and risk of preterm birth. JAMA Psychiatry. 2014; 71(8):897–904. [PubMed: 24920287]

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Figure 1.
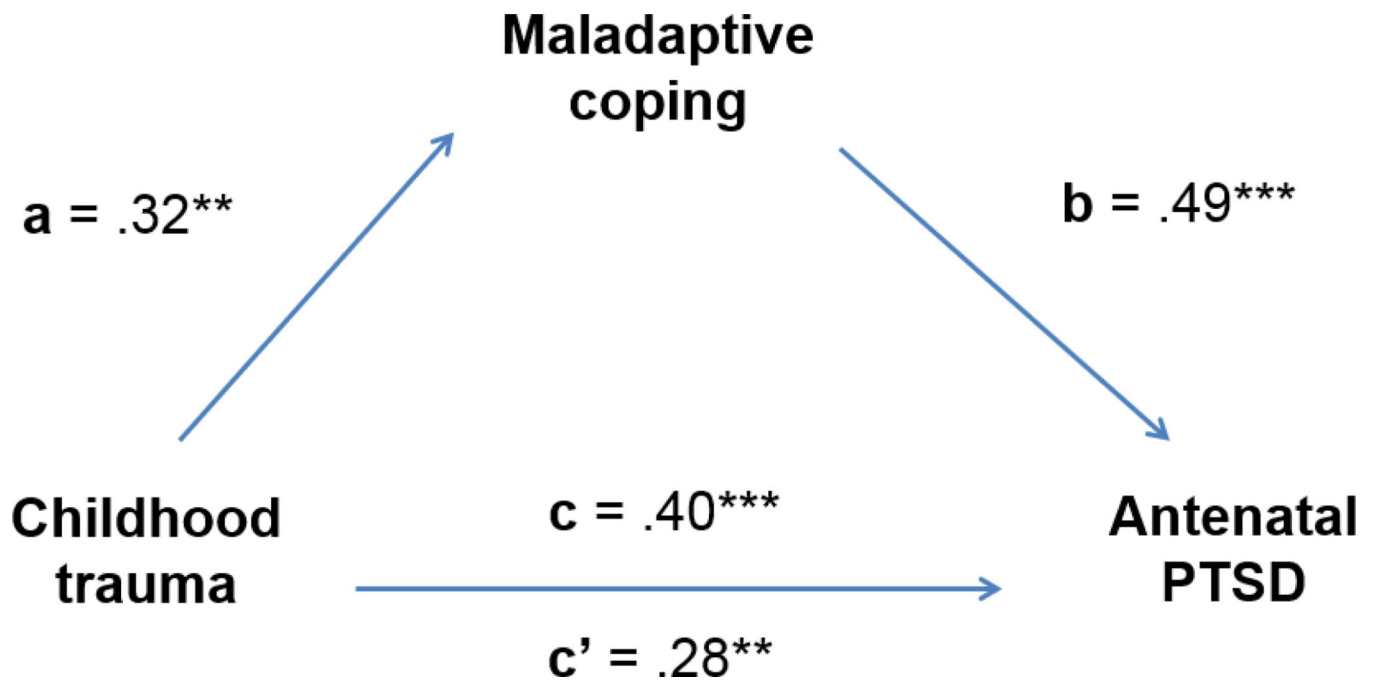Mediation model for antenatal depression outcome
Note: Standardized regression coefficients shown.
* p < .05, **p < .01, ***p   .001

Maladaptive coping

a = .32**

b = .49***

Childhood trauma

c = .40***

c' = .28**

Antenatal PTSD

Figure 2.
Mediation model for antenatal PTSD outcome

Note: Standardized regression coefficients shown.

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

Table 1

Sample characteristics

Variable	N (%)
Age	
<18	3 (3)
18–25	46 (52)
26–35	35 (40)
36+	4 (5)
HIV-positive	52 (60)
Relationship status	
Single	5 (6)
Married	15 (17)
In a relationship	67 (77)
Education	
Primary school	13 (15)
High school	68 (77)
Tertiary education	7 (8)
Unemployed	63 (72)
Monthly income below 5000 rand	73 (83)
Gestational age; mean (SD)	26 (6)
EPDS score 13	52 (62)
DTS score 40	26 (31)

Table 2

Proportion of sample having experienced childhood trauma

CTQ[1] Scale	N (%)
Physical abuse	26 (29.5)
Sexual abuse	23 (26.1)
Emotional abuse	39 (44.3)
Physical neglect	49 (55.7)
Emotional neglect	42 (47.7)
Overall trauma	35 (39.8)
Overall trauma score	Mean: 40.3 ± 11.1, Range: 25 – 80

[1]CTQ= Childhood Trauma Questionnaire

Table 3

Correlations between antenatal mental health and study variables

	Depression		PTSD	
	Coefficient	p-value	Coefficient	p-value
HIV status	−.01	.92	.02	.83
Age	.05	.65	.08	.50
Gestational age	−.25	.02[*]	.00	.98
Overall CTQ score	.23	.03[*]	.40	.00**
Child physical abuse	.21	.06	.29	.01**
Child sexual abuse	.25	.02[*]	.36	.00**
Child emotional abuse	.33	.00**	.41	.00**
Child emotional neglect	−.00	.96	.18	.11
Child physical neglect	−.01	.93	.21	.06
Maladaptive coping style	.35	.00**	.49	.00**

[*] Statistically significant at p<.05