Gender differences in prevalence and correlates of high sexual self-efficacy among adolescents in Soweto, South Africa: Implications for gender-sensitive research and programming

Sexual self-efficacy (SSE) - one's confidence in their ability to perform given sexual behaviours, has been shown to predict adolescents' HIV-prevention practices (e.g. condom use). Few studies within sub-Saharan Africa, where HIV incidence and prevalence disproportionately affects young women, have examined gendered differences in SSE. We used multivariable logistic regression to identify correlates of high-SSE separately among adolescent men and women (aged 14-19) in Soweto, South Africa using a previously validated SSE scale (high-SSE [>3 /6 items]; study-alpha=0.75). SSE scale items assessed self-efficacy related to sexual refusal and condom use. Adolescent women were significantly more likely to report high-SSE than adolescent men (72.3% versus 49.5%; $p<0.01$). High-SSE among adolescent men was associated with more positive beliefs about sexual relationships and negatively associated with probable depression. High-SSE among adolescent women was associated with increased HIV knowledge, more positive beliefs about condom use and sexual relationships, having an adult in the home, and negatively associated with being an older adolescent (16-17 versus ≤15), and ever experiencing physical violence. Differences in prevalence and correlates of SSE among adolescent men and women in South Africa highlight important areas for gender-sensitive interventions. Targeted efforts to reduce negative sexual beliefs, improve HIV knowledge and mental well-being may improve SSE and thus the uptake of HIV-prevention practices among adolescent men. For adolescent women, findings indicate programming should move beyond individual-levels determinants of behaviour to focus on improving enabling environments (e.g. reduced violence and improved family relationships) in which sexual agency can be enacted.

Key Words: Adolescent, HIV prevention, Self Efficacy, Gender, South Africa

INTRODUCTION

Several behavioural HIV-prevention interventions in sub-Saharan Africa have been driven and informed by behavioural theory, including Bandura's theory of self-efficacy (Fiscian, Obeng, Goldstein, Shea, & Turner, 2009; Hanass-Hancock, 2014; Jemmott et al., 2014). Self-efficacy is typically defined as one's confidence in their ability to perform a desired outcome (Bandura, 1977; Bandura, 1990). The theory posits, and evidence shows, that youth can perform difficult behaviours if they have the necessary awareness, supports, beliefs, skills and self-confidence to do so (Bandura, 1977). Bandura's theory (Bandura, 1977; Bandura, 1990) has been both theoretically (Bandura, 1990; Basen-Engquist & Parcel, 1992) and quantitatively associated with positive sexual health behaviours (including consistent condom use) among adolescents living in generalized HIV epidemics within sub-Saharan Africa (Guiella & Madise, 2007; Hendriksen, Pettifor, Lee, Coates, & Rees, 2007; Jama Shai, Jewkes, Levin, Dunkle, & Nduna, 2010; Sayles et al., 2006). Beyond Bandura's individual-level determinants of behaviour, a number of socio-structural determinants, such as harmful gender norms and sexual relationship beliefs, as well as experiences of violence or abuse, depression, and family support have been identified as significant factors influencing adolescents' agency within sexual decision-making (Barhafumwa et al., 2016; Jewkes, 2010). Despite widespread use of this construct and evidence that high-SSE is associated with consistent condom use among South African adolescents (Chirinda & Peltzer, 2014; Guiella & Madise, 2007; Hendriksen et al., 2007; Jama Shai et al., 2010; Maticka-Tyndale & Tenkorang, 2010; Matseke, Peltzer, Mchunu, & Louw, 2012; Puffer et al., 2011; Sayles et al., 2006), few studies have examined factors influencing SSE by gender (Bhana, Zimmerman, & Cupp, 2008; Sayles et al., 2006). This is concerning as adolescent women (aged 15-24) in South Africa, continue to have the highest HIV incidence rates, which are nearly four times higher than their male counterparts (Shisana et al., 2014).

Differing norms of masculinity and femininity often project condom use as un-masculine, while women are encouraged to have limited sexual partners and are often held responsible for condom negotiation, yet can be viewed as promiscuous for doing so (Carey et al., 2011). Moreover, given that men have more control over condom use, we undertook this analysis to address gendered gaps in the adolescent HIV prevention literature through an examination of the prevalence of SSE and the relational, behavioural and structural factors associated with high-SSE by gender.

METHODS

Study design

The Botsha Bophelo Adolescent Health Study (BBAHS) is an interviewer-administered cross-sectional survey conducted between 2010 and 2012 in Soweto, South Africa. The BBHAS explored socio-behavioural characteristics and sexual and reproductive health (SRH) outcomes of 830 adolescents. Interviews were conducted at the Kganya Motsha Adolescent Centre (KMAC) and the Perinatal HIV Research Unit (PHRU).

Participants

As described in detail elsewhere (Dietrich et al., 2017), participants aged 14-19 living in one of 41 identified townships were enrolled through community-based recruitment at places youth frequent (e.g community centres, shopping centres, recreation areas). To be representative of adolescents living within communities in Soweto, a minimum of 15 participants from each of the identified townships were enrolled. Also, to reflect the gendered dimension of the HIV epidemic in South Africa, we aimed to recruit 60% women and 40% men. Participants were reimbursed with a 50ZAR honorarium and were offered free HIV voluntary testing and counselling.

Data Collection

Participants completed a 45-60 minute interview-administered survey in English or Zulu with responses entered electronically using the online survey software (Survey Monkey, 2016).

Ethical Consideration

This study was approved by research ethics boards of the University of British Columbia (Providence Health Care) (H13-01845), Simon Fraser University (2016s0048), and the University of Witwatersrand (M090449). Parental consent and adolescent assent was received for all participants aged <18 years and written informed consent was received from all participants aged 18 or 19 years.

Measures

Outcome Variable: Sexual self-efficacy (SSE)

The primary outcome was an adapted SSE scale measuring adolescents' confidence in their ability to refuse sex, negotiate condom use, and initiate sexual health-related communication

with potential partners (Hanna, 1999). Participants responded “Yes”, “Probably yes”, “No” or “Probably no” to 6 questions including “Would you be able to… *avoid sex anytime you didn’t want it*?” and “… *use a condom every time you had sex*?”(Sayles et al., 2006). See **Table 2** for the full list of six items. Consistent with previous work (Hanass-Hancock, 2014), we dichotomized responses into “Yes” and “No”, which included “Probably yes”, “Probably no”, and “No” responses. The SSE scale ranged from 0-6, with scores >3 indicating high-SSE. We tested the validity of dichotomizing the SSE scale items and found 84% sensitivity and 100% specificity between the original and dichotomized coding of the scale, with substantial agreement. All 6-items were highly loaded (correlation factor > 0.49) on a single factor.

After dichotomizing, Cronbach’s alpha was the SSE scale was 0.75 overall (0.71 for adolescent men and 0.75 for adolescent women), similar to other SSE scales used among adolescents in sub-Saharan African settings (Fiscian et al., 2009; Hanass-Hancock, 2014; Hendriksen et al., 2007; Maticka-Tyndale & Tenkorang, 2010; Puffer et al., 2011; Sayles et al., 2006).

Explanatory Covariates

Socio-demographic explanatory variables included: age (14-15 versus 16-17 versus 18-19), sexual orientation (heterosexual versus gay/lesbian/bisexual/other), currently in school, housing type, and adult caregiver living in the home. Relationship status was assessed by asking participants: if they have had a boyfriend/girlfriend in the last 6 months (L6M), number of current boyfriends/girlfriends (none versus one versus ≥ two), and if their boyfriend/girlfriend was ≥5 years older than them (no versus yes versus no boyfriend/girlfriend in L6M).

Food security (low versus medium/high food security) was assessed using Kendall, Olson & Frongillo’s 1995 9-item validation of the Radimer/Cornell’s measure of hunger (study alpha = 0.81) (Kendall, Olson, & Edward A. Frongillo, 1995; Radimer, Olson, & Campbell, 1990). We also assessed **illicit drug use** (excluding marijuana) in L6M and lifetime history of **experiencing physical violence**. **Probable depression** was determined using the 20-item Centre for Epidemiological Studies Depression (CES-D) Scale (study alpha=0.81, range 0-60, with higher scores indicating greater depression symptomology) (Radloff, 1977). From previous work among adolescents, (Chabrol, Montovany, Chouicha, & Duconge, 2002) a CES-D score ≥ 24 was used to identify probable depression.

HIV knowledge was determined as a percentage of correct responses to Carey and Schroder’s 2002 18-item HIV knowledge test where participants were asked to answer

true/false questions regarding HIV such as "*coughing and sneezing DO NOT cause HIV*" (study alpha= 0.57) (Carey & Schroder, 2002).

Two principal component analyses (PCA) were conducted to determine patterns in survey item responses related to participants' **beliefs and attitude's about sexual activities**, including specific questions relating to **condom use** (Hendriksen et al., 2007). In the first PCA, 6-items regarding participants perceptions of statements regarding condom use (e.g. "*Condoms are safe to use*") were all highly loaded on a single component resulting in one 6-item factor (correlation factor >0.60). We refer to this 6-item scale as the "Positive Condom Use Belief Scale" (PCBS) (range=6-30, Cronbach alpha=0.86, with higher scores indicating more positive condom use beliefs). The second PCA initially included 21-items regarding **sexual beliefs** (e.g. "*it is ok to pressure someone into having sex when they do not want to*"). Seven items were removed (correlation factor<0.30). The remaining 14-items are referred to as the "Sexual Relationship Beliefs Scale" (SRBS) (Cronbach alpha=0.77, range=0-14, with higher scores indicating lower potentially harmful sexual relationship beliefs). Individual items and PCA test results for the PCBS and SRBS are presented in **table 3**.

Statistical Analysis

All analyses were conducted using SAS 9.4, stratified by gender. All enrolled participants identified as cis-gender. Differences in demographic variables and covariates of SSE scores were compared using Wilcoxon rank sum test for continuous variables and Pearson χ^2 or Fisher's exact test for categorical variables. Logistic regression was used to identify variables associated with high-SSE by gender. Multivariable models were built using backward selection entering all variables with univariable p-values of <0.20. Model selections were based on Type III p-values to reach the optimal (minimized) AIC (Lima et al., 2007). All statistical tests were considered significant at $\alpha<0.05$.

RESULTS

Of the 830 adolescents, 9.3% (44 men and 45 women) were excluded due to incomplete SSE data, yielding an analytic sample of 741 (89%).

Median age was 17 years (Q1-Q3=16-18). Overall, 12.5% of men and 17.4% of women identified as gay or bisexual. Adolescent men were more likely to report ever having had sex (64.3% versus 50.5%; p<0.001). A majority reported having a boyfriend/girlfriend in the L6M (80.4% of men and 75.6% of women), with 17% of women reporting a boyfriend who was ≥5 years older, versus 3% of men. Approximately half of participants reported low

food security. Median Sexual Relationship Belief Scale (SRBS) scores were significantly lower among men (12 [IQR:10-13], versus. 13 [IQR:12-14] for women; (p<0.001)). Men were significantly more likely to have used drugs (9.3% versus 2.8%), whereas women were significantly more likely to have high scores on the HIV knowledge test (78.0% versus. 72.0%) (**Table 1**).

Adolescent women were significantly more likely to have high-SSE compared to men (72.3% versus 49.5%, p<0.001, respectively) (**Table 2**). By scale item, women felt more confident they could refuse sex anytime they didn't want it (69.5% versus 42.8%, p<0.001), refuse sex if their partner did not want to use a condom (56.0% versus 34.9%, p<0.001) communicate with their partners about condom use (83.0% versus 74.6%, p=0.005), and communicate with partners about previous sexual partners (68.8% versus 58.5%, p<0.001),

In unadjusted analyses, high-SSE among men was significantly associated with higher SRBS scores (OR=1.15, 95%CI= 1.05-1.27), and inversely associated with reports of using drugs in L6M (OR=0.36, 95%CI=0.15-0.83) and having a girlfriend ≥5 years older (OR=0.11, 95%CI=0.01-0.87) (**Table 4**). High-SSE among women was significantly associated with high/medium food security (OR=1.59, 95%CI=1.04-2.44), and inversely associated with living in a shack (OR=0.46, 95%CI=0.27-0.80), using drugs in L6M (OR=0.26, 95%CI=0.08-0.84) and having a boyfriend ≥5 years older than them in L6M (OR=0.49, 95%CI=0.28-0.86), More sexually inexperienced adolescent women had high-SSE compared to those who are sexually experienced (57.1% versus 47.9%), although this was not statistically significant (OR=0.60, 95%CI=0.45-1.06) (**Table 4**).

In adjusted analyses, among men, high-SSE was independently associated with higher SRBS (aOR=1.15, 95%CI=1.05-1.27) and inversely associated with probable depression (aOR=0.57, 95%CI=0.35-0.95). For women, high-SSE was positively associated with having had an adult caregiver living in the home (aOR=2.08, 95%CI=1.06-4.05), having higher HIV knowledge, (aOR=1.33 per 10% increase, 95%CI=1.10-1.61), PCBS scores (aOR=1.08, 95%CI=1.03-1.14), and SRBS scores (aOR=1.09, 95%CI= 1.03-1.15), while inversely associated with being 16-17 years of age compared to 14-15 years (aOR=0.43, 95%CI=0.22-0.87), and ever experiencing physical violence (aOR=0.60, 95%CI= 0.37-0.97) (**Table 5).**

DISCUSSION

Among this large sample of adolescents living in Soweto, South Africa, we found significant gender differences in the prevalence and correlates of high-SSE. Consistent with other HIV

prevention studies conducted within sub-Saharan Africa, adolescent women had significantly higher levels of SSE than men (Louw, Peltzer, & Chirinda, 2012; Sayles et al., 2006). Our findings further highlight that beyond individual determinants of SSE outlined within Bandura's theory, for adolescent women a number of socio-structural factors are associated with high-SSE, including reduced experiences of violence and having an adult caregiver in the home.

Compared to a national representative sample of South African adolescents, we found that adolescents in our study had lower confidence in their ability to talk to their partners about condom use and refuse sex anytime they didn't want to (Sayles et al., 2006). This may be indicative of the unique experiences, including high levels of violence, poverty and poor access to quality sexual education, faced by youth growing up in Soweto (Dietrich et al., 2013; Hogg et al., 2016; Young et al., 2010).

Given the gendered epidemic in South Africa, HIV prevention efforts have targeted young women (Dellar, Dlamini, & Karim, 2015; Gibbs, Willan, Misselhorn, & Mangoma, 2012). Despite high sustained levels of HIV faced by young women in South Africa, higher levels of SSE found among women in our sample is likely indicative of increased awareness and education surrounding HIV prevention strategies including condom use negotiation and refusal of unwanted sex (Coffman, Smith, Flisher, & Caldwell). Disparities in SSE is concerning, as low-SSE among adolescent men was associated with factors that increase vulnerability to HIV-transmission, including more harmful sexual beliefs (e.g. it is ok to hit your boyfriend/girlfriend when you are angry with them) and probable depression. Moreover, compared to adolescent women, men had more negative beliefs about condom use, were more likely to initiate sex before the age of 15 and knew less about HIV transmission. In order to address gendered gaps in SSE within settings such as Soweto, it is imperative to include adolescent men in HIV prevention programming to shift harmful gender roles and norms, support mental health, and improve sexual communication skills within gender-sensitive comprehensive HIV prevention and educational interventions early in adolescence (Gibbs, Jewkes, Sikweyiya, & Willan, 2015; Gibbs et al., 2012).

Over half of adolescent women our study reported experiencing physical violence, which was associated with low-SSE, aligning with previous South African studies in which experiences of violence have been associated with reduced sexual negotiation of HIV preventative behaviours including condom use (Jewkes, 2010). This may be particularly important within intergenerational relationships (Leclerc-Madlala, 2008), which was associated with low-SSE at the univariate level. In line with Bandura's theory and other evidence from South Africa, we found that having an adult caregiver in the home was

associated with high-SSE, potentially indicating that positive familial modeling is important for developing self-efficacy, and simultaneously provides opportunities for increased sexual health knowledge, condom negotiation and delayed sexual initiation (Bandura, 1977; Bandura, 1990; Hanass-Hancock, 2014). We did not collect data regarding the quality of the relationship between adult caregivers and adolescents, however, this would be an important area for future research.

Through the inclusion of several factors that may impact SSE, the theoretically-informed methods in this analysis add to existing literature examining SSE among adolescent men and women in South Africa. Our findings add to an important body of research examining the gendered differences in sexual beliefs, attitudes and agency among adolescents in the critical transitional period of initiating and engaging in sexual relationships within HIV hyper-endemic settings such as Soweto.

There are limitations to this study. Data were cross-sectional precluding opportunity to determine directionality of associations or causality. By using a purposeful recruitment strategy our sample may not be representative of all adolescents living in Soweto. Data were based on self-report, which may be subject to recall and social desirability bias, particularly for more sensitive questions. Furthermore, constructs of SSE were developed in Western settings (Hanna, 1999; Kendall et al., 1995), and others have questioned the applicability of the items to adolescents in the global South (Connell, 2014). However, dichotomizing scores yielded improved internal consistency for SSE scales. Such observations warrant a recommendation for future studies developing questionnaires and scales to assess self-efficacy among adolescents.

Adolescents, and particularly adolescent women, remain the most vulnerable group for HIV acquisition within South Africa, thus it is imperative that research examine the multiple-intersecting factors that affect HIV-risk (Harrison, Newell, Imrie, & Hoddinott, 2010). Findings for adolescent men in our study align with previous South African studies and psychosocial theoretical frameworks of behaviour indicating that individual-level factors such as attitudes, beliefs and mental health are associated with increased confidence to engage in risk-reduction behaviour (Bandura, 1990; Magnani et al., 2005). As young men are and will become the sexual partners of young women, it is imperative to scale up efforts that promote HIV knowledge, and address harmful sexual relationship beliefs, so as to promote more equal relational contexts which allow for safe sexual negotiation to take place (Gibbs et al., 2012). For adolescent women, however, high-SSE was associated with socio-structural predictors including violence and having parents in the home, indicating that in order for

women to safely enact personal agency within their sexual relationships, efforts are needed to reduce acts of violence and promote positive family dynamics early in adolescence.

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Table 1 Socio-demographic, HIV and sexual behaviour, and substance use characteristics of adolescents (aged 14-19 years) by gender (n=741)

	Men (n=311)		Women (n=430)		P-value
	n	%	*n*	%	
Age in years: median (Q1, Q3)	*17*	*(16,18)*	*18*	*(16,18)*	*0.161*
Age Categories					
≤15	74	24.3	82	19.2	0.239
16-17	86	28.2	123	28.8	
18-19	145	47.5	222	52.0	
HIV Knowledge % score: median, (Q1,Q3)	*72%*	*(61, 83)*	*78%*	*(67, 89)*	***<0.001***
Positive Condom Belief Score: median (Q1,Q3)	*24*	*(22, 27)*	*24*	*(23, 28)*	*0.077*
Sexual Relationship Belief Score: median (Q1,Q3)	*12*	*(10, 14)*	*13*	*(12, 14)*	***0.000***
Sexual Orientation					
Straight	272	87.5	355	82.6	0.068
Gay, bisexual, lesbian or other	39	12.5	75	17.4	
Currently in School					
Yes	258	83.0	370	86.9	0.141
No	53	17.0	56	13.2	
Housing Type (shack)					
No	269	86.5	366	85.1	0.597
Yes	42	13.5	64	14.9	
Adult at Home					
No	43	14.1	59	13.9	0.948
Yes	263	86.0	366	86.1	
Boyfriend/Girlfriend in the last 6 months (L6M)					
No	61	19.6	104	24.4	0.127
Yes	250	80.4	323	75.6	
Number of Current Boyfriend/Girlfriend					
None	96	31.6	158	37.4	**<0.001**
One	113	37.2	229	54.1	
Two or more	95	31.3	36	8.5	
Boyfriend/Girlfriend ≥5 years older in the L6M					
No	229	76.3	248	58.8	**<0.001**
Yes	10	3.3	70	16.6	
No Boyfriend/girlfriend in the last 6 months	61	20.3	104	24.6	
Physical Violence Ever					
No	128	41.2	191	44.4	0.376
Yes	183	58.8	239	55.6	
Food Security					
Low	167	53.7	211	49.3	0.238

	Men (n=311)		Women (n=430)		P-value
	n	%	*n*	%	
Medium/High	144	46.3	217	50.7	
Sex Ever					
No	111	35.7	213	49.5	**<0.001**
Yes	200	64.3	217	50.5	
Sex in L6M					
No	72	37.3	70	32.7	0.331
Yes	121	62.7	144	67.3	
Age at First Sex					
Younger than 15	74	42.8	13	7.0	**<0.001**
15 or older	99	57.2	173	93.0	
Drug Use in L6M					
No	282	90.7	418	97.2	**<0.001**
Yes	29	9.3	12	2.8	
Probable Depression (CES-D≥24)					
No	216	69.9	268	63.2	0.059
Yes	93	30.1	156	36.8	

Centre for Epidemiology scale for depression,

CES-D; Last six months, L6M

Note: P-values in **Bold** are significant, *Italicized results are median Q1, Q3*

Table 2- High versus Low Sexual Self-efficacy and individual scale items among adolescents (aged 14-19) in BBAHS by gender (n=767)

	Men (n=311)		Women (n=430)		P-value
	n	%	n	%	χ^2 test
Sexual Self-Efficacy: *median (Q1,Q3)*	*3* *(2, 5)*		*5* *(3, 6)*		
Low (≤3)	157	50.5	119	27.7	**<0.001**
High (>3)	154	49.5	311	72.3	
Would you be able to avoid sex any time you didn't want it					
No, Probably No, Probably Yes	178	57.2	131	30.5	**<0.001**
Yes	133	42.8	299	69.5	
Would you be able to talk to your partner about his/her previous sexual activities					
No, Probably No, Probably Yes	129	41.5	134	31.2	**0.004**
Yes	182	58.5	296	68.8	
Would you be able to use a condom every time you have sex					
No, Probably No, Probably Yes	108	34.7	111	25.8	**0.009**
Yes	203	65.3	319	74.2	
Would you be able to use a condom during sex after you have been drinking or taking drugs					
No, Probably No, Probably Yes	162	52.1	164	38.1	**<0.001**
Yes	149	47.9	266	61.9	
Would you be able to refuse to have sex without condom					
No, Probably No, Probably Yes	174	56.0	150	34.9	**<0.001**
Yes	137	44.1	280	65.1	
Would you be able to talk about using condoms with your partner					
No, Probably No, Probably Yes	79	25.4	73	17.0	**0.005**
Yes	232	74.6	357	83.0	

Table 3- Positive Condom Use Belief Scale and Negative Sexual Relationship Beliefs Scale items and factor analysis

6-item Positive Condom Use Belief Scale (Cronbach alpha= 0.86)		
		Factor-1 (correlation)
1. Condoms are a good way to help stop AIDS and other sexually transmitted diseases.		**0.67**
2. Condoms are safe to use.		**0.74**
3. Using condoms is the responsible thing to do.		**0.85**
4. I and my partner are less likely to get AIDS or other sexually transmitted diseases.		**0.65**
5. Using a condom shows you care about yourself and your partner.		**0.77**
6. If I used condoms, my partner would respect me.		**0.64**
Sexual Belief Questions	**Factor1 (21-items) Cronbach=0.70**	**Factor1-sub (14-items) Cronbach=0.77**
1. It is more difficult to refuse sex with a partner who is older than you compared to a partner who is the same age as you.	0.17	

2. Condom use is a shared responsibility for both partners.	0.16	
3. It is cool to have a sexual partner who is older than you (5+ years).	**0.36**	**0.33**
4. It is okay to have sex with a sugar mommy, sugar daddy, or a person with whom you have sex so that they will buy you things.	**0.41**	**0.38**
5. Using condoms is a sign of not trusting your partner.	**0.37**	**0.36**
6. It is against my values for me to have sex while I am still a young person.	0.12	
7. It is okay to pressure someone into have sex when they do not want to.	**0.46**	**0.46**
8. It is okay to have many sexual partners.	**0.44**	**0.44**
9. It is okay to have sex with my partner even though my partner does not want to.	**0.53**	**0.53**
10. It is okay to have sex when I do not want to but my partner insists on having sex.	**0.52**	**0.51**
11. It is okay for people my age to have sex.	0.25	

12. In the future I want to be married or in a long-term relationship in which my partner and I only have sex with one another (a monogamous relationship).	0.14	
13. Oral sex is not sex.	0.16	
14. I have had dry sex, or I know people who have had dry sex. By dry sex we mean that before sexual intercourse, the vagina is dried with herbs or detergents.	**0.44**	**0.44**
15. Condoms carry viruses/diseases such as HIV/AIDS.	**0.42**	**0.42**
16. Sex is pleasurable.	-0.08	
17. It is cool to have a boyfriend/girlfriend who is younger that you (5+ years).	**0.34**	**0.33**
18. It is okay to hit your boyfriend/girlfriend when you are angry with them.	**0.44**	**0.45**
19. It is okay to force your boyfriend/girlfriend to have sex when you are angry at them.	**0.58**	**0.60**
20.It is okay for my boyfriend/girlfriend to hit me when they are angry at me.	**0.50**	**0.51**

21. It is okay for my boyfriend/girlfriend to force me to have sex with them when they are angry at me.	**0.63**	**0.65**

Bolded items were included in the final scale

Table 4- Univariable and adjusted analysis of variables associated with high versus low SSE among South African adolescent women (aged 14-19) (n=430) and men (n=311) enrolled in BBAHS

	Adolescent Women (n=430)					Adolescent men (n=311)				
	Low self-efficacy		High Self-Efficacy		OR (95%CI)	Low self-efficacy		High Self-Efficacy		OR (95%CI)
	n	(%)	*n*	(%)		*n*	(%)	*n*	(%)	
Age in years: median (Q1, Q3)	*17*	*15, 18*	*18*	*16, 18*	*1.06 –(0.93-1.22)*	*17*	*16, 18*	*18*	*16, 18*	*1.08 (0.94-1.25)*
Age Categories										
≤15	20	17.1	62	20.0	1.00	38	24.8	36	23.7	1.00
16-17	44	37.6	79	25.5	**0.43 (0.22-0.87)**	50	32.7	36	23.7	0.76 (0.41-1.42)
18-19	53	45.3	169	54.5	0.73 (0.37-1.42)	65	42.5	80	52.6	1.30 (0.74-2.28)
HIV-knowledge scale: median (Q1, Q3)	72%	61, 83	78%	72, 89	***1.43 (1.21-1.68)***	*72 %*	*61, 78*	*72%*	*61, 83*	*1.12 (0.97-1.31)*
Positive Condom Belief Score: median (Q1,Q3)	24	22, 27	24	24, 28	***1.10 (1.05-1.15)***	*24*	*22, 28*	*24*	*22, 27*	*1.02 (0.97-1.07)*
Sexual Relationship Belief Score: median (Q1,Q3)	12	10-14	13	12-14	***1.31 (1.17-1.45)***	*11*	*9, 14*	*12*	*11, 14*	***1.18 (1.08- 1.28)***
Housing type (shack)										
No	92	77.3	274	88.1	1.00	137	87.3	132	85.7	1.00
Yes	27	22.7	37	11.9	0.46 (0.27-0.80)	20	12.7	22	14.3	1.14 (0.60-2.19)
Adult at Home										
No	28	23.9	31	10.1	1.00	22	14.5	21	13.6	1.00
Yes	89	76.1	277	89.9	**2.81(1.60-4.95)**	130	85.5	133	86.4	1.07 (0.56-2.04)
Currently in School										
Yes	65	56.5	203	65.7	1.00	132	84.1	126	81.8	1.00

No	50	43.5	106	34.3	0.68 (0.44-1.05)	25	15.9	28	18.2	1.17 (0.65-2.12)
Ever experienced physical violence										
Ever	42	35.3	149	47.9	1.00	61	38.9	67	43.5	1.00
Never	77	64.7	162	52.1	0.59 (0.38-0.92)	96	61.2	87	56.5	0.83 (0.53-1.30)
Food Security										
Low	68	57.6	143	46.1	1.00	90	57.3	77	50.0	1.00
Medium/High	50	42.4	167	53.9	**1.59 (1.04-2.44)**	67	42.7	77	50.0	1.34 (0.86-2.10)
Boyfriend/Girlfriend ≥5 years older in the L6M										
No	61	53.0	187	60.9	1.00	113	75.3	116	77.3	1.00
Yes	28	24.4	42	13.7	**0.49 (0.28-0.86)**	9	6.0	1	0.7	**0.11 (0.01-0.87)**
No	26	22.6	78	25.4	0.98(0.58-1.66)	28	18.7	33	22.0	1.15 (0.65-2.02)
Boyfriend/girlfriend in L6M										
Sex Ever										
No	51	42.9	162	52.1	1.00	56	35.7	55	35.7	1.00
Yes	68	57.1	149	47.9	0.69 (0.45-1.06)	101	64.3	99	64.3	1.00 (0.63-1.59)
Drug Use in L6M										
No	112	94.1	306	98.4	1.00	136	86.6	146	94.8	1.00
Yes	7	5.9	5	1.6	0.26 (0.08-0.84)	21	13.4	8	5.2	**0.36 (0.15-0.83)**
Probable Depression										
No	98	63.2	118	76.6	1.00	98	63.2	118	76.6	1.00
Yes	57	36.8	36	23.4	0.53 (0.35-0.95)	57	36.8	36	23.4	**0.53 (0.35-0.95)**

Last six months, L6

Bolded text indicates statistical significance in adjusted model at p<0.05

Italicized results are median Q1, Q3

Table 5 Multivariable models of factors associated with high versus low SSE among adolescent men and women (aged 14-19)

	Men: Multivariable			Women: Multivariable		
Sexual Self-Efficacy	**aOR**	**95% CI**		**aOR**	**95% CI**	
Age Categories						
≤15				1.00		
16-17				**0.43**	**0.22**	**0.87**
18-19				0.73	0.37	1.42
HIV Knowledge				***1.33***	***1.10***	***1.61***
Positive Condom Belief Score				***1.08***	***1.03***	***1.14***
Sexual Relationship Belief Score	***1.15***	***1.05***	***1.27***	***1.19***	***1.08***	***2.07***
Adult at Home						
No				1.00		
Yes				**2.06**	**1.06**	**4.01**
Ever Experienced Physical Violence						
No				1.00		
Yes				**0.60**	**0.37**	**0.97**
Probable Depression						
No	**1.00**					
Yes	**0.57**	**0.35**	**0.95**			

Bolded text indicates statistical significance in adjusted model at p<0.05

Italicized results are median Q1, Q3

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