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Associations between peer network gender norms and the perpetration of intimate partner violence among urban Tanzanian men: A multilevel analysis

Marta Mulawa, Ph.D.[a,*,1], **H. Luz McNaughton Reyes, Ph.D.**[a], **Vangie Foshee, Ph.D.**[a], **Carolyn T. Halpern, Ph.D.**[b], **Sandra L. Martin, Ph.D.**[b], **Lusajo J. Kajula, M.Phil.**[c], and **Suzanne Maman, Ph.D.**[a]

[a]Department of Health Behavior, Gillings School of Global Public Health, University of North Carolina, Chapel Hill, NC

[b]Department of Maternal and Child Health, Gillings School of Global Public Health, University of North Carolina, Chapel Hill, NC

[c]Department of Psychiatry and Mental Health, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania

Abstract

Male perpetration of intimate partner violence (IPV) against women in sub-Saharan Africa is widespread. Theory and empirical evidence suggest peer networks may play an important role in shaping IPV perpetration, though research on this topic in the region is limited. We assessed the degree to which peer network gender norms are associated with Tanzanian men's perpetration of IPV and examined whether the social cohesion of peer networks moderates this relationship. Using baseline data from sexually active men (n = 1,103) nested within 59 peer networks enrolled in an on-going cluster-randomized HIV and IPV prevention trial, we fit multilevel logistic regression models to examine peer network-level factors associated with past-year physical IPV perpetration. Peer network gender norms were significantly associated with men's risk of perpetrating IPV, even after adjusting for their own attitudes towards gender roles (*OR* = 1.53, *p* = .04). Peer network social cohesion moderated this relationship (*OR* = 1.50, *p* = .04); the positive relationship between increasingly inequitable (i.e., traditional) peer network gender norms and men's risk of perpetrating IPV became stronger as peer network social cohesion increased. Characteristics of the peer network context are associated with men's IPV perpetration and should

*Corresponding author. marta.mulawa@duke.edu; marta.mulawa@gmail.com.
[1]Current Affiliation: Duke University, Duke Global Health Institute

Compliance with Ethical Standards

Conflict of Interest

The authors declare that they have no conflict of interest.

Ethical Approval

The study procedures and instruments were approved by the University of North Carolina at Chapel Hill Institutional Review Board as well as the Muhimbili University of Health and Allied Sciences (MUHAS) Senate Research and Publications Committee. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

be targeted in future interventions. While many IPV prevention interventions focus on changing individual attitudes, our findings support a unique approach, focused on transforming the peer context.

Keywords

peer network influence; intimate partner violence; gender norms; men

INTRODUCTION

Men's perpetration of intimate partner violence (IPV) is a prevalent global problem (Follingstad & Rogers, 2013; World Health Organization, 2013). IPV victimization has severe negative consequences for women including adverse mental health and reproductive health outcomes (Devries et al., 2013; Maxwell, Devries, Zionts, Alhusen, & Campbell, 2015). Among men, the perpetration of IPV has been associated with higher levels of sexual risk behaviors, elevated substance use, and negative mental health outcomes (Reid et al., 2008; Rhodes et al., 2009). Given its severity and scope, the prevention of IPV has been declared a public health and human rights imperative by the World Health Organization (World Health Organization, 2010).

Effectively intervening with men to reduce IPV perpetration requires an in-depth understanding of the determinants of men's IPV perpetration (García-Moreno et al., 2015; Jewkes, 2014). Social influence theory suggests that peer networks play an important role in shaping behaviors like perpetration of IPV (Kelman, 1958). The theory posits that individuals behave in certain ways because they feel pressured to conform with their peer network norms. One type of peer network norm that may contribute to increased risk for male IPV perpetration is peer network gender norms. Peer network gender norms, defined as collective norms about appropriate roles and behaviors for men and women (McHugh & Frieze, 1997), range from embracing inequitable gender roles based on traditional notions of masculinity and femininity (where men are expected to be breadwinners and women are expected to be housewives and caregivers) to those supporting more equitable, or egalitarian, gender roles (where men and women share responsibilities and decision-making within the household) (King & King, 1997; Larsen & Long, 1988). Empirical research on individual-level risk factors has found that men with more traditional, or inequitable, gender role attitudes are more likely to perpetrate violence against their intimate partners (Fleming et al., 2015; Shannon et al., 2012). This relationship is thought to exist because traditional gender role attitudes stress the importance of male power and control within relationships, and perpetrating violence against their intimate partners is one way for men to assert this dominance (Dobash & Dobash, 1979). Social influence theory would suggest that men within peer networks with inequitable gender norms may perpetrate IPV because they feel pressured to conform with their peer network norms, even if they do not privately hold traditional gender role attitudes. However, while existing research has found an association between individual gender role attitudes and IPV perpetration (Fleming et al., 2015; Shannon et al., 2012), no studies to date have examined the association between peer network gender norms and men's perpetration of IPV.

To further enhance our understanding of the determinants of men's IPV perpetration, it is also important to examine theoretically derived moderators of the association between peer network gender norms and men's perpetration of IPV. For example, social influence theory suggests that the social cohesion of peer networks (the degree of closeness and trust between group members) (Sampson, Raudenbush, & Earls, 1997) may work synergistically with peer network norms to influence behaviors like IPV perpetration. Peer network social cohesion may interact with peer network gender norms to shape behaviors because more cohesive networks allow for more rapid diffusion of information, like prevailing gender norms, between individuals (Valente & Fosados, 2006). Additionally, peer networks with higher levels of social cohesion may be characterized by more frequent contact and discussions between peers about various behaviors and the consequences of those behaviors (Burt, 1987). Therefore, men within highly cohesive networks may feel increased pressure to comply with network norms because of their heightened expectations of social rewards for complying with norms and intensified expectancies for consequences for transgressing against the network norms. Taken together, these theoretical perspectives suggest that increasing levels of peer network social cohesion may intensify the likelihood that individuals feel pressured to conform to peer network gender norms.

In this article, we examine the association between peer network gender norms and men's IPV perpetration using a unique dataset of men (n = 1,103) nested within 59 randomly selected peer networks locally referred to as "camps" in Dar es Salaam, Tanzania. Camps are social networks of mostly male members with an elected leadership structure, including a chairman and treasurer, which meet regularly in fixed locations. Previous research with camp networks found that the impetus for camp formation was often the desire for a space where young people could regularly socialize (Mulawa et al., 2016; Yamanis, Maman, Mbwambo, Earp, & Kajula, 2010). In this urban setting characterized by high levels of unemployment (National Bureau of Statistics (NBS) Tanzania, 2016), men join these camps to interact with and support one another. As members, they often sit and tell stories and engage in activities such as playing sports or occasionally participating in camp-led business enterprises.

We hypothesized that increasingly inequitable peer network gender norms would be associated with an increased risk of perpetrating IPV, above and beyond the association between individual-level attitudes towards gender roles. We also hypothesized that peer network social cohesion would moderate this relationship such that the positive relationship between increasingly inequitable peer network gender norms and men's perpetration of IPV would be stronger in increasingly socially cohesive peer networks.

METHODS

Data are from the baseline assessment of an on-going cluster-randomized HIV and IPV prevention trial among men who socialize in camps in Dar es Salaam, Tanzania (Kajula et al., 2016). The trial is examining the effectiveness of a 2-year, combined microfinance and health leadership intervention on the incidence of sexually transmitted infections and the perpetration of IPV. Prior to the baseline assessment, we enumerated all operational camps within the study area (n = 294) and assessed their eligibility for inclusion in our study.

Details of the enumeration procedures and eligibility criteria for the parent trial have been described elsewhere (Kajula et al., 2016). Briefly, to ensure sufficient sample size and to minimize variability across camp networks, eligibility for the parent trial was restricted to camps with more than 20 members and less than 80 members. Camps also had to have been in existence for at least 1 year and could not have participated in pilot studies with our team in order to be eligible. Camps in which research assistants felt unsafe or those in which a weapon had been used in a fight were also excluded. Five camps refused to participate, leaving 172 eligible camps. From these 172 camps, we randomly selected 60 camps for inclusion in our trial. Due to the density of camps in close proximity, we used a three step, probability-based sampling method to randomly select camps for the parent trial (for more detail, see Kajula et al., 2016). Next, we attempted to contact all members of these camps at least three times to assess their individual eligibility for the study. In order to be eligible, participants had to be older than 15 years, have been a camp member for more than 3 months, visit the camp at least once a week, plan on residing in Dar es Salaam for the next 30 months, and be willing to provide contact information for a friend or family member for participant tracing purposes. Of the 1,581 potentially eligible men, we collected baseline data from 1,249 (79.0%) men who were confirmed as eligible between October 8, 2013 and March 23, 2014. Trained interviewers conducted the behavioral assessments using tablets programmed with a custom-designed CAPI (computer-assisted personal interviewing) instrument. Since men who reported never having sex reported extremely low rates of IPV perpetration, likely because these men were mostly single, unmarried young men who may not have been involved in romantic relationships in which IPV could occur, we restricted the analytic sample for this study to sexually active men (n = 1,113 within n = 59 camps). We additionally omitted 10 individuals who declined to answer key predictor variables, resulting in a final sample of n = 1,103. Figure 1 displays the CONSORT flow diagram of camps and men in the study.

Measures

IPV perpetration—We assessed past-year physical IPV perpetration using an adapted version of the WHO Violence Against Women instrument (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006). Physical violence items (n = 6) included instances of slapping, pushing, hitting, kicking, choking, and threatening with a weapon. Men were asked whether they had ever (i.e., within their lifetimes) done any of these 6 behaviorally specific violence acts to a current partner or any other partner. For those who said yes to *ever* having perpetrated a specific act, they were asked to report how many times they had perpetrated that act *in the last 12 months*. Response options included never, once, 2–3 times, 4–10 times, and more than 10 times. Because of the skewedness of the data toward no violence, a dichotomous variable was created such that 1 indicated any perpetration and 0 indicated no physical IPV perpetration within the last 12 months.

Peer network gender norms—To measure peer network gender norms, we used a 15-item adapted version of the inequitable subscale of the Gender Equitable Men (GEM) scale (Pulerwitz & Barker, 2008). The GEM scale, originally developed to measure gender norms in Brazil, has been widely used in HIV and violence prevention research studies in sub-Saharan Africa (Gottert et al., 2016; Pulerwitz, Hui, Arney, & Scott, 2015; Scott et al., 2013;

Shattuck et al., 2013). Men were asked how strongly they agreed or disagreed with statements such as “it is the man who decides what type of sex to have.” Responses ranged from 1=strongly disagree to 4=strongly agree. We averaged the responses across the 15 items to create a composite scale for each individual (Cronbach’s α =.90). Next, we took the mean of the composite scores for all men within the same peer network to create an aggregated peer network-level score representing the peer network gender norm of each camp (higher score = more inequitable norms).

Peer network social cohesion—To assess social cohesion of each network, each participant was asked how strongly he agreed or disagreed with five statements about how well fellow camp members got along with each other, including “the members of my camp share the same values,” “people in my camp are willing to help each other,” “we are very close to each other in this camp,” “I can trust my fellow camp members,” and “the members of my camp get along with each other.” These items were adapted to the camp context from an existing measure of neighborhood-level social cohesion (Sampson et al., 1997). Similar to the network-level gender norms measure, responses to these items ranged from 1=strongly disagree to 4=strongly agree and were averaged for each participant (Cronbach’s α =.85). The individual scores were then averaged for each camp network to create an aggregated peer network social cohesion score (higher scores = more cohesive).

Covariates—We controlled for a number of individual characteristics that have been associated with men’s IPV perpetration, including age (in years), highest level of education obtained, marital history, number of past-year sexual partners, childhood victimization from physical violence (e.g., being hit, hit with an object, punched, kicked, or beaten up in a way that resulted in injury, severe pain or other serious harm), childhood victimization from sexual violence (e.g., experiencing any inappropriate touching or unwanted sexual intercourse), and each individual’s attitudes towards gender roles, which was the individual-analog used to measure peer network gender norms (Pulerwitz & Barker, 2008). At the peer network level, we controlled for the size of the peer network (number of members) as well as the peer network’s duration of existence (in years).

Statistical Analysis

We used multilevel logistical regression to model physical IPV perpetration reported by men because of the nested structure of our data (men were nested within camp-based peer networks). Following standard recommendations, all individual-level variables were group-mean centered and peer network-level variables were grand-mean centered (Raudenbush & Bryk, 2002). To test the study hypotheses, we estimated a series of models. First, we included the individual-level attitudes towards gender roles as well as other individual-level demographic characteristics and controls (Model 1). Next, we added peer network gender norms as well as the peer network controls (Model 2). Model 3 included the interaction between peer network gender norms and peer network social cohesion. To explore the interaction in Model 3, we then conducted post-hoc analyses using the “pick a point” approach (Hayes, 2013; Jaccard & Turrisi, 2003), which consisted of selecting representative values of the moderator (peer network social cohesion) and then estimating the effect of the peer network gender norms on men’s perpetration of IPV at those values. Specifically, we

computed the odds of perpetrating physical IPV associated with increasing levels of inequitable peer network gender norms for networks characterized with very low (16th percentile), low (33rd percentile), medium (50th percentile), high (66th percentile), and very high (83rd percentile) levels of social cohesion. All statistical analyses were conducted using SAS version 9.4. Statistical significance was evaluated with p< .05.

RESULTS

Descriptive Statistics

The characteristics of the peer networks are presented in Table 1 and the demographic characteristics of the men in our sample are presented in Table 2. Within this sample, 13.2% reported perpetrating physical IPV against a partner at least one time within the last year.

Results of the Hierarchical Logistic Regression

The results of the hierarchical logistic regression models are presented in Table 3. As shown in Model 1, increasing age was associated with a decreased odds of perpetrating IPV (*OR* = 0.95, *p* = .01). Men who were married had nearly twice the odds of perpetrating IPV compared to men who had never been married (*OR* = 1.88, *p* = .02). Increasing number of sexual partners within the last year was associated with increased odds of perpetrating IPV (*OR* = 1.46, *p* = .002) and men who reported sexual violence victimization before the age of 12 years had over three times the odds of perpetrating IPV in the last 12 months compared to men who did not report childhood sexual violence victimization (*OR* = 3.19, *p* < .001). Men who consumed alcohol within the last month had over twice the odds of perpetrating IPV against a partner compared to men who did not consume alcohol (*OR* = 2.12, *p* < .001). Men who endorsed more traditional, or inequitable, gender role attitudes had marginally higher odds of perpetrating physical IPV against a partner (*OR* = 1.26, *p* = .06).

The main effect of peer network gender norms was examined in Model 2. Consistent with study hypotheses, men within networks with increasing levels of inequitable peer network gender norms had an increased risk of perpetrating IPV. Specifically, a 1-unit increase in the level of inequitable peer network gender norms was associated with 1.53 greater odds of reporting physical IPV perpetration within the last year (*OR* = 1.53, *p* = .04), adjusting for controls, including the man's own attitudes towards gender roles.

The final model, Model 3, introduced the interaction between peer network social cohesion and peer network gender norms. The results of this model indicate that peer network social cohesion significantly moderates the relationship between peer network gender norms and the odds of perpetrating physical IPV (*OR* = 1.50, *p* = .04).

These results of the interaction analysis are presented in Table 4. Examination of these ORs revealed a positive and significant relationship between inequitable peer network gender norms and men's perpetration of IPV in peer networks with medium or higher levels of social cohesion. Among peer networks with medium social cohesion, increasingly inequitable peer network gender norms were associated with greater odds of reporting physical IPV perpetration within the last year (*OR* = 1.16, *p* < .001). This relationship was heightened in peer networks with high (*OR* = 1.26, *p* = .001) and very high (*OR* = 1.45, *p* = .

006) levels of social cohesion. Among peer networks with low or very low social cohesion, there was no statistically significant relationship between peer network gender and men's IPV perpetration.

The predicted probabilities of physical IPV perpetration associated with increasing levels of inequitable peer network gender norms for peer networks with varying levels of social cohesion are presented in Figure 2.

DISCUSSION

We found that peer network gender norms were associated with the risk of perpetrating physical IPV, even after adjusting for men's own attitudes towards gender roles and other individual-level and peer-level risk factors known to be associated with IPV perpetration. This is notable because while men's own gender role attitudes have been shown to be associated with the perpetration of IPV (Fleming et al., 2015), and these individual attitudes are often targeted for change in most IPV prevention interventions, the effect of broader gender norms of men's peers have not yet been explored. Our results are consistent with social influence theory, which posits that individuals may feel pressured to comply with prevailing peer norms even if they do not internalize the same beliefs (Kelman, 1958). This process, termed *compliance*, suggests that individuals comply with peer network norms, even without privately accepting them, because they feel pressured or hope to benefit in some way (Kelman, 1958). Thus, peer networks with inequitable gender norms may serve as a normative social environment that prescribes men's dominance and power within their romantic relationships and members of those networks, even if they do not come to internalize analogous gender role attitudes, may feel pressured by their peers to engage in behaviors, like perpetrating IPV, that comply with their peer norms. By demonstrating that the association between peer network gender norms and men's IPV perpetration exists above and beyond the effect of individual gender role attitudes, our findings highlight the importance of the peer context and suggest that changing individual gender role attitudes may not be effective if individuals remain in a peer environment that promotes gender inequity.

We further examined this relationship by determining the extent to which the relationship between network gender norms and perpetration of IPV was moderated by the social cohesion of the networks. We found that the relationship between increasingly inequitable peer network gender norms and men's risk of perpetrating IPV was significant and positive, as hypothesized, in peer networks with medium or higher levels of social cohesion. Additionally, this relationship became stronger as peer network social cohesion increased. This may be because the most cohesive networks allowed for rapid diffusion of information across members (Valente & Fosados, 2006). As a result, prevailing peer gender norms may have diffused more efficiently through these highly cohesive networks, increasing the likelihood that individuals perceived and felt pressured to comply with the norms. Furthermore, highly cohesive networks may have intensified the expectation of social rewards (or sanctions) for complying (or going against) the predominant norms. However, we found that peer network gender norms were not significantly associated with men's IPV perpetration in peer networks with low social cohesion. Networks with low cohesion had

lower levels of self-reported closeness and trust, and thus, it is plausible that these networks were more fragmented, restricting the spread of norms and reducing their influence on men's behavior.

Our study adds to the growing body of literature examining the associations between contextual factors and intimate partner violence in sub-Saharan Africa. Research in sub-Saharan Africa has documented associations between male-dominant and patriarchal societies and increased rates of intimate partner violence against women (Jewkes, 2002). These societies are characterized by collective gender norms that support inequalities between men and women, which have been found to contribute to the endorsement and justification of gender-based violence. A recent study found that across 44 countries, national levels of norms justifying wife beating were significantly associated with the population prevalence of past-year IPV victimization among women (Heise & Kotsadam, 2015). Another study in Nigeria found that state-level social norms within Nigeria were associated with increased rates of women's physical IPV victimization (Linos, Slopen, Subramanian, Berkman, & Kawachi, 2013). Our study builds on this work to demonstrate associations between peer network-level gender norms and men's perpetration of IPV and also underscores the importance of considering the level of cohesion of the peer context.

Our study highlights the importance of IPV interventions that move beyond the individual level, to transform gender norms within peer networks of men. Gender-transformative interventions aim to reconfigure norms for gender roles and masculinity to be more gender equitable (Dworkin, Treves-Kagan, & Lippman, 2013). Emerging evidence from evaluation studies suggests that these gender norms may be transformed with targeted interventions (Pulerwitz, Hughes, et al., 2015). Our findings suggest that engaging men's peer networks to transform gender norms related to IPV may be an important public health approach. Additionally, given that we found that social cohesion moderated the effect of peer network gender norms on men's perpetration of IPV, our findings also suggest that interventions seeking to reduce IPV should consider efforts to simultaneously increase social cohesion within networks while striving to make gender norms more equitable. Such a multi-pronged intervention would leverage the interaction between social cohesion and peer network gender norms to maximize the prevention effects on IPV perpetration. Additionally, since peer network norms were not significantly associated with men's perpetration of IPV in networks with low levels of cohesion, our results suggest that transforming gender norms may not be as effective in reducing men's perpetration of IPV if interventions are done within socially fragmented networks. It is also plausible that increasing the cohesion of a network with inequitable gender norms without improving those norms could potentially lead to increases in IPV perpetration. Since the focus of many IPV prevention interventions has been to change gender role attitudes (Jewkes, Flood, & Lang, 2015), our findings lend support to interventions that move beyond the individual-level to transform norms within the peer context.

The findings of this study have implications for future research. For example, future research should employ longitudinal analyses to explore mediation and moderation pathways that may explain the relationship between peer network gender norms and men's perpetration of IPV. For example, inequitable or traditional gender norms may have led men to engage in

other delinquent behaviors, such as alcohol misuse, which then increased risk of perpetrating IPV. This mediation mechanism warrants further attention given research linking traditional gender norms to alcohol misuse (Wechsberg et al., 2008) and studies linking alcohol misuse to IPV perpetration (Townsend et al., 2011). Additionally, while our study examined the effect of peer network gender norms on men's IPV perpetration, above and beyond the effect of individual-level attitudes towards gender roles, it is also possible that the effect of the normative peer context on IPV perpetration depends on men's individual attitudes. Future research should test this moderation hypothesis to explore whether men's inequitable gender role attitudes exacerbate the effect of inequitable peer network gender norms on men's perpetration of IPV.

Limitations

It is important to note that because our data were cross-sectional, it is not possible to determine the temporal sequencing of the variables and to make causal inferences regarding the associations found. For example, perpetrating IPV may have led to more traditional peer network gender norms rather than vice versa. Additionally, these cross-sectional data do not allow us to examine the extent to which social influence and/or social selection processes may have contributed to the findings. While the hypothesized associations, informed by social influence theory, were generally supported, it is possible that men sought out peers with similar gender role attitudes and IPV perpetration behaviors (i.e., social selection or homophily) (McPherson, Smith-Lovin, & Cook, 2001). Our understanding of the mechanisms contributing to this association would be improved with longitudinal data as well as in-depth qualitative research.

There were also limitations in the measures used in this study. Firstly, we assessed IPV perpetration using self-reported behavior, which may have been inaccurate due to potential recall and/or social desirability biases. Previous studies have raised concerns related to the validity of IPV perpetration measures, including concerns about underreporting violence perpetration (Follingstad & Rogers, 2013). While we attempted to limit biases by using behaviorally specific violent acts to assess perpetration (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) and also trained survey interviewers to establish good rapport with the participants, social desirability and other recall or reporting biases may have led to under-reporting of violent behaviors (Sugarman & Hotaling, 1997). Furthermore, it is possible that men within peer networks with inequitable gender norms may have been more likely to disclose perpetrating IPV as compared to men in peer networks with more equitable norms, and this reporting bias may have contributed to our findings. Additionally, to measure peer network gender norms, we assessed individual attitudes towards gender role attitudes and then aggregated those individual attitudes to the peer network level. This approach makes the assumption that the attitudes of all peer network members contribute equally to the peer network gender norms. Future studies should build on this work by exploring other ways to assess norms at the level of the peer network level, particularly in peer networks with low levels of social cohesion. Additionally, to measure gender role attitudes, we used an adapted version of the Gender Equitable Men (GEM) scale (Pulerwitz & Barker, 2008). While widely used, this type of scale has been critiqued for including items that assess acceptance of violence as well as items measuring gender role attitudes and masculinity norms (Reyes,

Foshee, Niolon, Reidy, & Hall, 2016). This is particularly important given longitudinal data from the US suggesting that the relationship between gender role attitudes and the perpetration of violence may depend on one's acceptance of violence (Reyes et al., 2016).

Finally, it is also important to note that our data come from men nested within camp-based peer networks in Dar es Salaam, and as such, may not be generalizable to other peer networks in sub-Saharan Africa. However, organized groups of mostly men have been described elsewhere in Africa (Covey, 2010; Soldan, 2004) and qualitative research has found that men's peer groups exert social and peer pressures on men's sexual behaviors across various sub-Saharan African settings (Barker & Ricardo, 2006).

To our knowledge, this is the first study to identify peer network-level factors associated with IPV perpetration among young men in sub-Saharan Africa. We found peer network gender norms were significantly associated with men's risk of perpetrating IPV, even after adjusting for their own attitudes towards gender roles. Furthermore, we demonstrated that the positive relationship between inequitable peer network gender norms and men's risk of perpetrating IPV became stronger as peer network social cohesion increased. Our results highlight the potential utility of IPV interventions that move beyond the individual level, engage peer networks to transform peer network gender norms, and simultaneously promote social cohesion within networks to maximize intervention effects.

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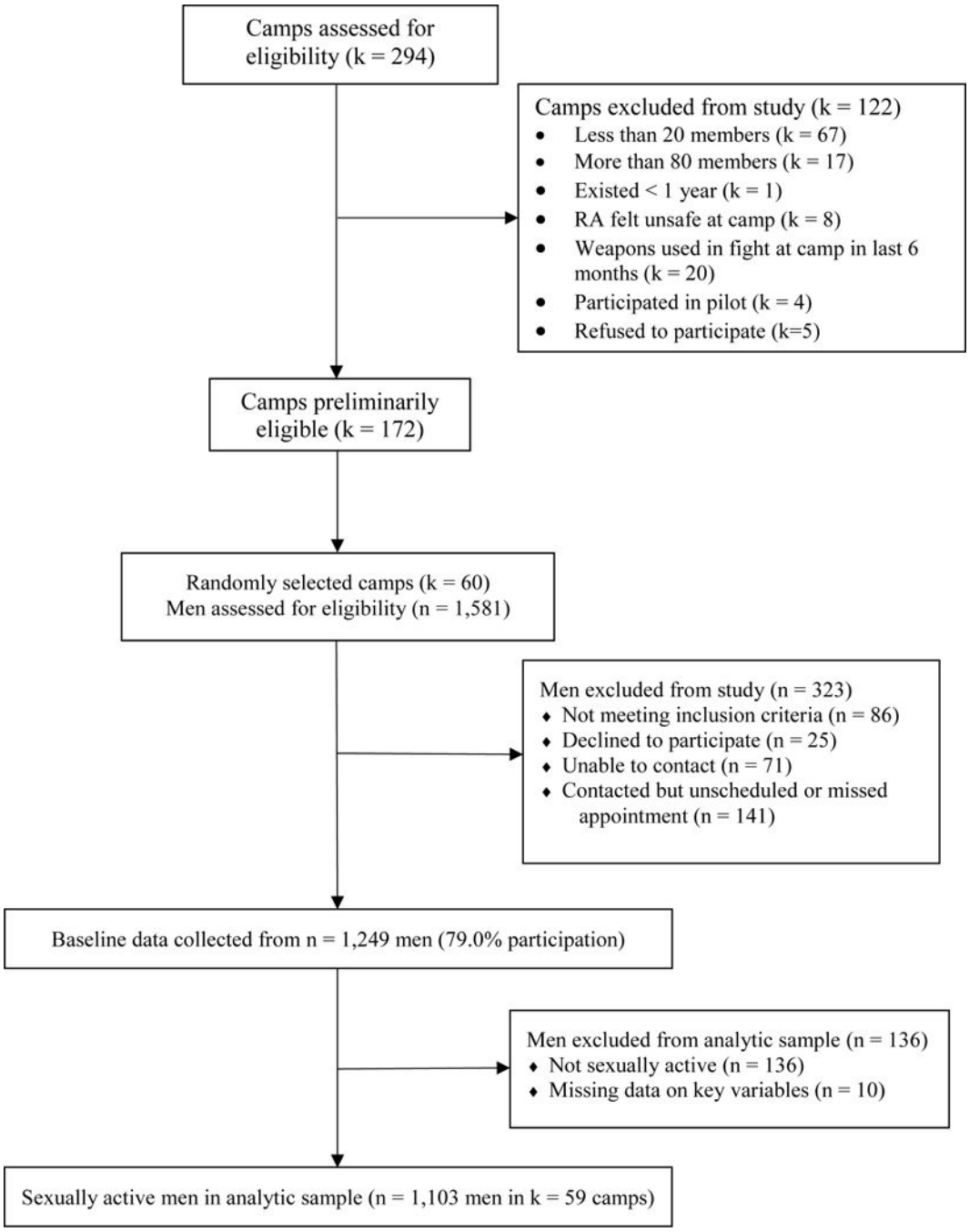

Figure 1.
Consort diagram representing selection and eligibility of camps and men

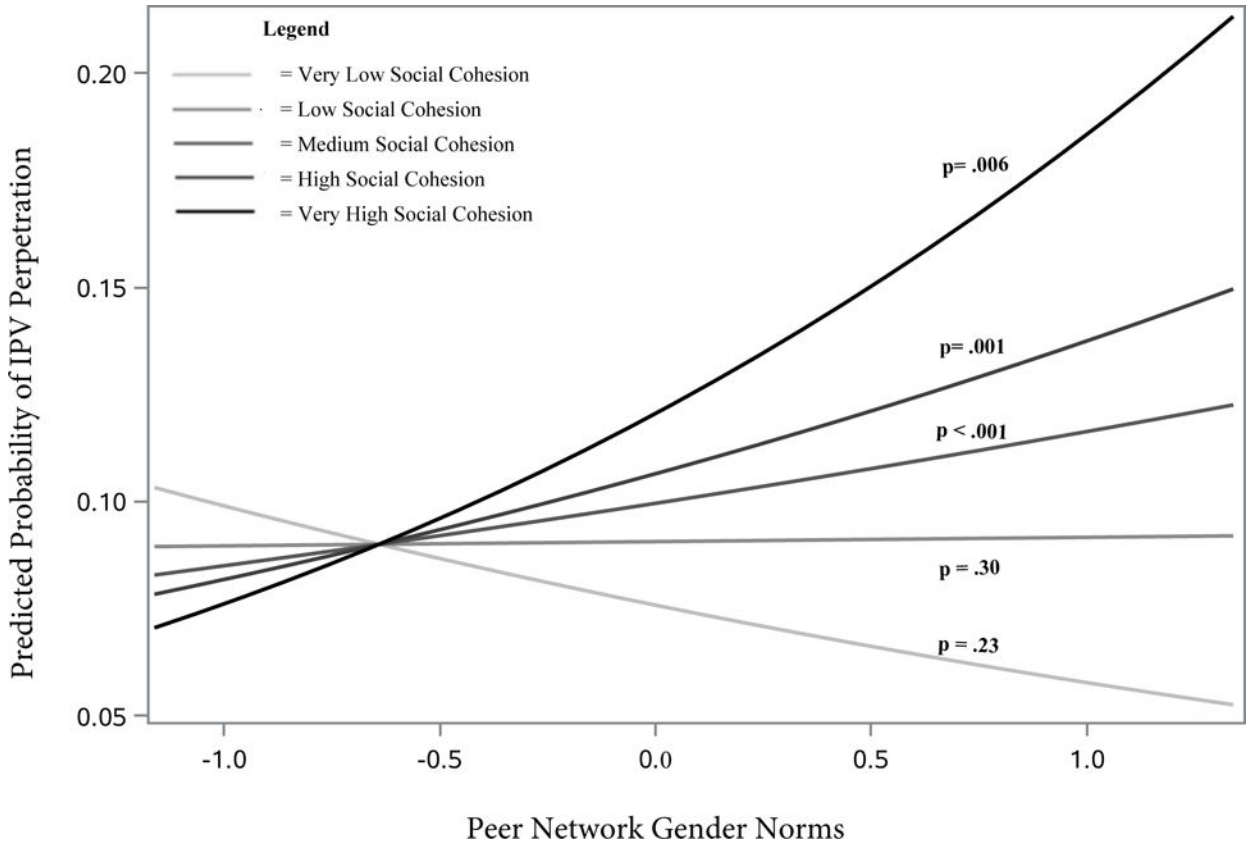

Figure 2.

Predicted Probabilities of Physical IPV Perpetration Associated with Increasing Levels of Inequitable Peer Network Gender Norms for Networks with Very Low (16th percentile) Low (33rd percentile), Medium (50th percentile), High (66th percentile), and Very High (83rd percentile) Levels of Social Cohesion

Table 1

Characteristics of Camp-Based Peer Networks (n = 59)

Characteristic	Mean	SD	Range
Overall network size (male and female)	32.6	12.4	20 – 77
Number of male respondents	21.2	8.9	7 – 40
Years of operation	3.7	1.0	1.6 – 4.9
Peer network gender norms	2.0	0.3	1.4 – 2.5
Peer network social cohesion	3.4	0.2	2.8 – 3.9

Table 2

Sample Characteristics (n = 1,103)

Variables	%	N
Age in years		
15–19	13.2	146
20–24	30.1	332
25–29	29.1	321
30+	27.6	304
Education		
Primary school or less	58.8	648
Some secondary school	10.4	115
Secondary school completed or more	30.8	340
Marital History		
Never married	75.1	828
Ever married	24.9	275
Number of Sexual Partners in Last year		
0	13.2	146
1	67.5	744
2	10.6	117
3+	8.7	96
Childhood Physical Violence		
No	94.5	1042
Yes	5.5	61
Childhood Sexual Violence		
No	92.8	1024
Yes	7.2	79
Alcohol Use Ever		
No	54.9	606
Yes	45.1	497
Frequency of Past-Year Physical IPV Perpetration		
No physical IPV perpetration	86.8	957
1 violent act perpetrated once	4.3	47
Multiple violent acts or frequency of act 2–3 times or more	89.0	99

Table 3

Results of Multilevel Logistic Regression of Physical IPV Perpetration (n = 1,103)

	Model 1		Model 2		Model 3	
Variable	**OR or Coeff.**	**95% CI**	**OR or Coeff.**	**95% CI**	**OR or Coeff.**	**95% CI**
Fixed Effects						
Intercept	−2.21***	0.14	−2.24***	0.14	−2.24***	0.15
Individual-Level Variables						
Age	0.95	(0.9	0.95	(0.9	0.95**	(0.9
Education	0.93	(0.7	0.94	(0.7	0.94	(0.7
Marital Status	1.88*	(1.1	1.89	(1.1	1.9	(1.1
# Sexual Partners in 12 mos.	1.46**	(1.1	1.45**	(1.1	1.44**	(1.1
Childhood Physical Violence	1.33	(0.6	1.37	(0.6	1.41	(0.6
Childhood Sexual Violence	3.19***	(1.7	3.11***	(1.7	3.07***	(1.6
Alcohol Use in Last Month	2.12***	(1.4	2.1***	(1.4	2.13***	(1.4
Attitudes Towards Gender Roles	1.26	(0.9	1.27	(0.9	1.27	(0.9
Peer Network-Level Variables						
Peer Network Size			1.01	(1.0	1.02*	(1.0
Years of Operation			0.9	(0.7	0.83	(0.6
Peer Network Gender Norms			1.53*	(1.0	1.12	(0.7
Peer Network Social Cohesion					1.31*	(1.0
Peer Network Gender Norms * Social					1.50*	(1.0
Random Effects						
Variance Components						
Intercept	0.27*	0.15	0.18	0.13	0.116	0.11
Fit Statistics						
AIC	814.86		813.77		811.37	
BIC	835.64		840.78		842.54	
−2 Log Likelihood	794.86		787.77		781.37	

Note.

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 4

Simple Slopes of Peer Network Gender Norms on IPV Perpetration for Very Low (16th percentile) Low (33rd percentile), Medium (50th percentile), High (66th percentile), and Very High (83rd percentile) Levels of Social Cohesion

Level of Social Cohesion	OR	95% CI
Very Low Social Cohesion	0.86	(0.67, 1.1)
Low Social Cohesion	1.05	(0.96, 1.14)
Medium Social Cohesion	1.16***	(1.07, 1.26)
High Social Cohesion	1.26**	(1.1, 1.44)
Very High Social Cohesion	1.45**	(1.11, 1.9)

Note.

* $p < .05$;

** $p < .01$;

*** $p < .001$