Relationship characteristics associated with intimate partner violence among women in Moshi, Tanzania

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Word counts:

Abstract: 209 words

Main text: 3,872 words

1 Figure, 2 Tables

Acknowledgements
This study was funded by NIH/NICHD, RO1 HD 41202 to Ulla Larsen. The authors would like to thank Said Aboud, Mlemba Abassy, Emillian Karugendo, Fred Matola and Marianne Massawe for their very valuable collaboration in the data collection process.

Human Participant Protection
This research project has IRB approval from the Harvard School of Public Health (HSC Protocol # 0108ACOM), from the Kilimanjaro Christian Medical Centre Research and Ethical Clearance Committee and from the National Institute for Medical Research, the United Republic of Tanzania. Informed consent was obtained from each woman interviewed.

Context. To identify the relationship characteristics associated with intimate partner violence (IPV) against women in an urban population in Tanzania, and to report the prevalence rate of IPV in a population-based sample. *Methods.* A representative household survey in Moshi, Tanzania with face-to-face interviews of 1,444 women was analyzed using multivariate logistic regression. *Results*. The 12-month prevalence was 21.2% (95%CI, 18.5-23.9). Analyses confirmed that violence was more typical of couples where: men had multiple partners and did not contribute for children's health care; men's heavy drinking; having 5 or more children; problems conceiving; and women's lower educational attainment. *Conclusions*. Features of relationship investment correlate with IPV in this population. Some implications are to enhance men's commitment through promoting monogamy; enhance marital satisfaction through alcohol treatment for men and family planning to reduce fertility; and to provide women with alternatives through the promotion of education opportunities from secondary school to adult education.

Violence against women is endemic across most regions of the world, but rates vary across cultures.[1] In sub-Saharan Africa in Sierra Leone, a staggering proportion (67%) of women recruited in a convenience sample recounted lifetime exposure to partner violence.[2] Random household surveys have yielded rates in the rural Rakai District of Uganda with 30% of women reporting lifetime exposure, and 20% during the 12 months preceding the interview.[3] In South Africa, 25% had lifetime exposure, and the 12-month prevalence was 9.5%.[4] Partner violence is so commonplace in some regions that it is accepted as justifiable by more than half (53%) of the women themselves in Zimbabwe[5] and in rural Uganda (90%). [3]

To date no studies have established the population-based rate of intimate partner violence in Tanzania, yet partner violence has been identified among women in voluntary testing clinics and is associated with an increased odds of HIV (by a factor of 10) among women under the age of 30.[6] It is crucial to establish the prevalence and the associated patterns of risk for intimate partner violence (IPV) because of the potential burden such a stressor imposes on Tanzanian women and their children, and because of its putative association with the rising tide of HIV. Few countries hover on as dangerous a health precipice as Tanzania, ranking among the poorest of African nations with a life expectancy nearly the lowest worldwide (44.6 years). [7] Almost one in ten Tanzanians is HIV-positive and more women than men appear to be infected in young age cohorts. [8,9]

Characteristics Associated with Intimate Partner Violence (IPV)

Some of the characteristics associated with intimate partner violence for women in sub-Saharan Africa include incomplete education (under 8th grade),[3,10] having many children,[3] and child sexual abuse.[11] South African men who admit to sexually assaulting

their intimate partners (15%) are also more likely to be physically aggressive outside of marriage, to drink heavily, to express intolerance of their wives' autonomy, and are more prone to polygamy than non-abusive men.[12] Similar background characteristics pertain to violent couples in other regions of the world, including the West. One aim of our study is to measure in Tanzanian couples characteristics associated with IPV, and to organize such elements under a conceptual rubric to reflect the changing dynamics of marriage in sub-Saharan Africa. [13-17]

Patriarchy and the changing dynamics of marriage in sub-Saharan Africa

Throughout Africa marriage and sexual unions have long been managed through strong patriarchal traditions and institutions. Tanzania is no exception as can be observed in various practices of brideprice, polygamy, paternal control of the choice of marriage partners, emphasis on fertility, and a powerful marriage mandate for women. Evans-Pritchard noted forty years ago that there were no unmarried women in East Africa.[18] Yet many of these emblems of patriarchy are in decline. [13-15] Bridewealth has been supplanted by prospective husbands' payment for women's education fees and health care, [14] polygamy is less blatant and informal extra-marital relationships are now preferable, [8,14] women are generally free to choose their partner, [13] and while marriage and fertility remain mandated, women now exercise more control over birth spacing and birth control options.[13,16]

Such changes can be accounted for through increased westernization, [8] but they also reflect personal adaptation to scarce economic opportunities. As men leave the community to earn wages, their dominant role in the household wanes,[15] and during the past two decades women have been garnering more domestic power in both agriculture

and the household economy.[16] In much of East Africa women are responsible for maintaining crops and providing family sustenance in the absence of substantial support from their partners. In addition, many Tanzanian women have developed economic ventures of their own and have formed women's economic unions. There have also been notable gains in women's educational access. The gender gap in literacy and educational attainment is gradually closing providing women with alternatives to marriage,[14, 17] as expressed in the words of one young upwardly mobile woman in northern Tanzania "why shouldn't education be our husband?" [17]

Under such conditions women chafe at men's expression of traditional privileges that use up valuable resources (i.e., taking multiple wives or sexual partners, drinking). [15] Men, on the other hand, might be especially motivated to assert those privileges as an expression of dominance when their dominance is challenged, including his privilege to use violence to quell his wife's complaints or requests for support.

The Investment Model of Partner Violence

Explanations of intimate partner violence exclusively in terms of a culture of patriarchy overlook the subtle dynamics at play between men and women with separate agendas cast against the backdrop of economic strain, political instability and disease. Despite the power of cultural traditions to explain social behavior, what we perceive as culture undergoes dramatic and rapid changes as people confront transnational forces. Individuals will often deflect ostensible cultural values to pursue their own private self-interest.

Hence another approach to understanding the origins of domestic violence examines the dynamics of men's and women's behavior and the resources they bring to

the conjugal union. Such a model draws on theories of social exchange in marriage advanced by sociologists. [19-20] Proponents of social exchange theory contend that implicit or explicit contracts in conjugal relationships is universal, although what is exchanged and how such exchanges transpire are culturally governed. The social exchange framework has been further adapted to the special case of intimate partner violence. For instance, in Carol Rusbult's account of women's decisions to leave abusive relationships, women's choices are explained through a relationship investment model. Women less ostensibly invested are more likely to exit a violent relationship. [21] Such an investment or rational choice model also can apply to men's decisions, including their choice to use violence. Men least invested are most likely to become violent with their partners. The idea underlying "relationship investment theory" is that people make rational decisions about how they will behave towards their partners based on how much or little they have put into the relationship and what their other options might be. Overall investment is gauged by three elements: (1) commitment; (2) satisfaction; (3) alternatives.[21]

How can such a rational choice model shed light on the problem of domestic violence in Tanzania? We believe that many of the disparate characteristics associated with intimate partner violence can be re-framed in terms of relationship investment. Marriage is increasingly a matter of choice for both women and men in Tanzania, and expectations have changed, with an increasing emphasis on romantic love and mutual gain.[8] In the present study we assess features of relationship investment on the part of both men and women based on a representative household survey of women with partners. Figure 1 depicts the elements of relationship investment and the variables we

use to construct each element. Correlates of commitment on the part of either partner are: (1) marriage; (2) monogamy; (3) partner contribution to household expenses. Unmarried couples without children should be more prone to partner violence, while couples where the man contributes to the household would be expected to be less violent.

In the present study variables that are likely to bear on men's satisfaction with the relationship are: (1) a drinking problem; (2) has difficulties conceiving (3) number of children shared by the couple. It is expected that women's satisfaction with the union will wane if her partner: (1) has a drinking problem. She is also likely to be unhappy in the marriage if she is unable to conceive for some of the same reasons the husband would be less satisfied. Having many children could lower men's satisfaction in a union due to financial burdens. If either partner is dissatisfied more conflict would expect to result and subsequent abuse on the part of the men would be more likely.

Finally, women's alternatives are enhanced if she has an independent source of income or sufficient education to ensure career and financial autonomy. Women with more options may be perceived as more valuable by their husbands, perhaps by the extended family, and may have more power to "walk" should the husband become abusive. During the last 20 years there has been an increase in women's participation in the domestic economy in East Africa and the timing of this research therefore is set against a backdrop of increasing expectations and opportunities, albeit in an impoverished community by any world standard.

Several of the variables may encode a different meaning for women or men, and also could characterize different putative domains at the same time. For instance, while monogamy can be a sign of commitment, women may be more dissatisfied with the

union if her partner has other sexual partners; on the other hand, men's alternatives are increased if he has other wives or girlfriends. Also, while many children may lower men's satisfaction with the relationship, many children could also serve to restrict women's options more than men's (hence diminishing "alternatives"). The categories, therefore, are neither mutually exclusive nor definitive, but offer a loose conceptual organization to couple characteristics.

We therefore predict that women will more often report 12-month partner violence if they are unmarried, if they are childless, if they have numerous children, if they or their partners drink too much, if either have other sexual partners, and if she does not earn cash or is under-educated. Gender disparities and patriarchal institutions circumscribe the extent of men's license to use violence against their partners, as well as women's freedom to turn away a violent spouse. It is important to acknowledge in our study, therefore, that an investment model to explain domestic violence must be interpreted against assumptions about the status of women in Tanzania.

Conceptual model and hypotheses

Getting married and contributing financially to health care and schooling express commitment; therefore, married men and those who contribute financially should be less abusive than unmarried men or those who do no contribute. Women's options are measured by their ability to earn money and their level of education. Women who are less economically dependent or with more human capital in the form of education would also be perceived as more valuable by their husbands. It is also the case that men might be less likely to abuse women who show more cash-earning potential. On the other hand, there is the possibility that men might find either women's education or their independent

income threatening; men who drink, for instance, and who might be least capable of supporting wives, might be especially abusive to a wife who displays her own resources. We predict, therefore, an interaction between men who drink and women with education, with highly educated women being most vulnerable to partner violence. In addition, women with alternatives due to education may be less likely to tolerate negative behaviors on the part of their husbands, either by abusing alcohol or by having other partners. In either case, their intolerance may result in increased marital conflict and partner violence.

METHODS

Study Sample

Moshi Urban District contains 15 wards. Within each ward clusters were selected with probability proportional to the number of women age 20-44 years. One hundred and fifty clusters were selected for interviewing, and 18 households were selected randomly within each cluster. In selected households, all women aged 20 – 44 years, who were de facto or de jure residents of the household, were invited to participate in the survey interview. All interviews were in-person conducted in Swahili by local nurses. To protect confidentiality interviewers ensured privacy. The interview took between one and two hours. There was no monetary compensation. In the period from mid-November 2002 to mid-March 2003, 2,019 women completed the interview.

Measures

Intimate partner violence

One item was used from the Conflict Tactics Scale[22] and two items were used from the Abuse Assessment Screen[23] to ascertain 12-month and lifetime partner abuse. It

should be noted that the time span in the Conflict Tactics Scale is six months. Unfortunately the many other "tactics" included in the Conflict Tactics Scale could not be included in the present survey due to time limitations. Questions administered to Moshi residents were: "In the last 12 months [or ever in your life] how often has your husband or partner: (1) Insulted or sworn at you? (2) Threatened to hurt you physically?" (3) Hit, slapped, kicked or otherwise physically hurt you? In addition, women were asked one question from the Sexual Experiences Survey [24] also covering the past 12-months or lifetime: "Within your present relationship have you ever had sexual intercourse when you didn't want to because your husband or partner threatened or used some degree of physical force to make you? (Twisting your arm, holding you down, etc.)"

Verbal insults were commonly reported, but we excluded them from the measurement of intimate partner violence. Any positive response on the three remaining items (threats to physical abuse, physical abuse and forced sexual intercourse) was then counted to indicate the presence of intimate partner violence. The decision to include threats was made because such physical threats cast a somewhat wider net for abuse tactics than relying exclusively on physical contact per se, and they are usually violent in nature (i.e., towering over someone with a fist). Indeed, threats and physical attacks were highly concordant with 74% of the threatened women also reporting attacks. Concordance was equally high for sexual assault and physical abuse.

Survey questions covered a range of socio-demographic control variables including women's age, religion, tribal group membership, their employment and cash-earning activity, the number of children they had born, their marital status, and the level

of education they completed. Educational attainment was collapsed into two levels: completing primary school or less (0-8 years) and some secondary school and above (9^{+} years). Interviewers asked all women whether their partner had other wives or girlfriends, regardless of whether their current marital status. All women who reported that their partner had no other wives or girlfriends were classified as monogamous. Women also answered a set of screening questions about their own and their partners' alcohol problems from the Cage Alcohol Screening Questionnaire.[25]

Statistical Analysis

The cluster sampling design was taken into account using STATA version 8. [26] The prevalence of violence was estimated, and two time frames were represented: during the last 12 months preceding the interview and at any time during their life including reports provided for the last 12 months. The multivariate analysis was restricted to violence in the last 12 months because some characteristics measured at survey date had changed during the woman's life course, e.g., marital status and type of union. Missing indicator variables were used to maintain the full sample in the multivariate model. First, the association between the prevalence of intimate partner violence and each background characteristic was measured using the Pearson X^2 test. Second, relative odds ratios (OR) and 95% confidence intervals (95% CI) of violence and one independent variable were estimated using logistic regression analysis. Third, a multivariate logistic regression model including commitment, satisfaction, alternatives, and control variables was estimated. Finally, the hypothesized interactions between woman's education and her partner's alcohol use and between woman's education and her type of union were tested.

A correlation matrix including all the independent variables analyzed was also calculated to determine the extent of multicollinearity.

RESULTS

Analyses focused on the rates of violence and the risk factors identifying violence in the 1,444 women for whom complete data on violence histories were collected. From the total sample of 2,019 women that completed the interview, 28.0% (566 women) reported no current partner and were not asked the partner violence questions. Only 9 women with a current partner did not answer question about partner violence, resulting in missing violence history data of for less than 1% of the sample who reported having a current partner.

Prevalence Rates of Victimization

Table 1 displays the prevalence rates of women reporting violence by men. During the past 12 months 21.2% (95% CI, 18.5-23.9) were physically or sexually attacked or threatened with violence. Only slightly more women (26.1%; 95% CI, 23.0-29.1) reported *ever* being physically or sexually abused, including the past 12 month period. Many of the women received verbal insults from their partners during the past year (16.9%; 95% CI, 14.9-19.0).

Characteristics of all Women

A majority of the sample was either married (74.7%) or living with a partner (9.2%). Most women (76.2%) had between 1-4 children; 10.8% had no children while 13.0% had five or more children. One in ten reported that they had experienced problems getting pregnant (11.2%). Nearly 1 in 4 (22.7%) of the men met the CAGE criteria for

alcohol problems according to their wives' reports. Most of the women were Catholic, Protestant, or another religion (64.6%) (Table 2). Nearly half of the women were from the Chagga tribe (48.1%), 14.5% were Pare and the remaining 37.4% belonged to numerous different tribes.

Characteristics of Women Disclosing Intimate Partner Violence

Table 2 presents the percentage of women reporting intimate partner violence according to the variables used to test the investment model of partner violence and the control variables, as well as the unadjusted and adjusted models of these characteristics and partner violence. In the unadjusted analyses, commitment as signaled by marriage was unrelated to intimate partner violence, while polygamous unions yielded higher rates of violence (OR: 2.29; 95% CI, 1.70-3.08). Partners who did not contribute to children's school fees or health care for the woman or her children were more likely to abuse the women than partners who made some financial contribution. Satisfaction as measured by alcohol problems played a role for both women and men, as did problems conceiving. Violence also increased with the number of children, such that women with 5 or more children were at the highest risk of experiencing partner violence (OR: 2.05; 95% CI, 1.43-2.94). Finally, women's alternatives to marriage made a difference: women with secondary education were less likely to be abused, although cash earning did not distinguish abused from non-abused women. There were no associations between partner violence and any of the control variables (age, religion, and tribe).

Overall, in the adjusted model, the commitment variables seemed to differentiate abused from non-abused women. Marital status was not associated with partner violence; however, more violence was reported in polygamous unions (OR: 2.11; 95% CI, 1.52-

2.92). Whether a partner contributed for children's school fees or women's health care was not significantly associated with violence; however, those men who did not contribute towards children's health care were significantly more likely to be abusive (OR: 2.58; 95% CI, 1.23-5.43).

In the adjusted model, women's alcohol problems were no longer significantly associated with partner violence. Men's alcohol problems have long been associated with domestic violence.[27] However, here there is also an interaction between men's alcohol problems and women's education. While women with some secondary education and a partner who does not have problems with alcohol were at the lowest risk for experiencing partner violence, women with some education and a partner who has problems with alcohol were at the highest risk (OR: 9.78; 95% CI, 4.31-22.00). However, the risk of experiencing partner violence is also increased among those women who had less than secondary education; compared to women with some secondary education and non-alcoholic partners, those with non-alcoholic partners were more than 3 times more likely to be abuse and those with alcoholic partners were almost 7 times more likely to be abused. Among those women with alcoholic partners, there was not a significant difference in reports of partner violence based on educational attainment. Whether a woman earned cash was not associated with reports of partner violence. In addition, women who had problems conceiving had higher odds of being abused (OR: 1.70; 95% CI, 1.06-2.75).

DISCUSSION AND CONCLUSIONS

Overall, 21% of women in Moshi reported 12-month intimate partner violence, and one in four (26%) experienced partner violence at some point during their lifetimes.

The finding that lifetime experience with intimate partner violence was only slightly higher than the 12-month rate suggests that the majority of women with an abuse history were still with their violent partner. It may also be that lifetime experiences with partner violence were underreported. The prevalence of women facing intimate partner violence is similar to estimates obtained from studies in Uganda.[3] Violence is almost certainly underreported in our study because we selected so few items from the Conflict Tactics Scale and more diverse items result in higher endorsements.

The investment model received support. Men who displayed decreased commitment through having extra-marital sexual partners or not contributing to children's health care were more violent. In addition, abused and non-abused women were also discerned by the satisfaction variables. Women who posed liabilities such as a high number of children were more likely to be abused. While women's alcohol problems were not significantly associated with partner violence, partner's alcohol problems were associated with increased violence, and the effects on IPV were modified by the woman's education. More specifically, the risk of violence was lowest in couples were the woman had at least some secondary education and her partner had no alcohol problems, but the risk was highest among those women with at least some secondary education and a partner who has alcohol problems. Women with alternatives, as suggested by fewer (1-4) children or higher education level were least likely to disclose abuse, even controlling for age. Whether the women were cash-earning posed little buffer against violence, which was of some surprise. However, it is difficult to measure income in Moshi because it is seasonal and it contains both cash and goods.

A strength of this study is that this was a population-based survey and the findings are generalizable to urban women in Tanzania. However, there are some limitations to the present study. First, the data was cross-sectional, so the temporal relationship between these characteristics and partner violence cannot be established. Also, because all of the women included in the analyses had current partners, abused women who had left the relationship would not be included, which may affect the results. For example, the women with higher education who have stayed in abusive relationships may be on the brink of leaving and were captured before they had departed. Another limitation of the study is that it was conducted in an urban population, so the results may not be generalizable to the rural populations in Tanzania. While having lots of kids may be seen as a burden in an urban area, it may prove more necessary in a rural area.

In summary, a relationship investment model illuminates some of the reasons for intimate partner violence in Tanzania. Women are subject to violence when men show low rates of investment, or when women have few avenues for escape. Violence threatens the health of women in Tanzania and deserves further research and policy focus. It is especially important to determine whether intimate partner violence specifically heightens the risk for HIV infection, and to design prevention programs that can stem this potential source of suffering and disease propagation.

There remains a dire need for research into the epidemiology of intimate partner violence throughout many neglected parts of the continent. We still know too little about the cultural underpinnings of violence against women in sub-Saharan Africa. Such determinants are likely to vary across regions and tribes, but a better understanding could inform the development of interventions.

REFERENCES

1. Heise L, Ellsberg M, Gottmoeller M, A global overview of gender-based violence, *International Journal of Gynecology and Obstetrics*, 2002, 78(Suppl.1):S5-S14.

2. Coker AL, Richter DL, Violence against women in Sierra Leone: frequency and correlates of intimate partner violence and forced sexual intercourse, *African Journal of Reproductive Health*, 1998, 2(1):61-72.

3. Koenig MA, Lutalo T, Zhao F, Nalugoda F, Wabwire-Mangen F, Kiwanuka N, et al, Domestic violence in rural Uganda: evidence from a community-based study, *Bulletin of the World Health Organization*, 2003, 81(1):53-60.

4. Jewkes R., Penn-Kekana L, Levin J, Ratsaka M, Schrieber M, Prevalence of emotional, physical and sexual abuse of women in three South African provinces, *South African Medical Journal*, 2001, 91(5):421-428.

5. Hindin MJ, Understanding women's attitudes towards wife beating in Zimbabwe, *Bulletin of the World Health Organization*, 2003, 81(7):501-508.

6. Maman S, Mbwambo JK, Hogan NM, Kilonzo GP, Campbell, JC, Weiss E, Sweat MD, HIV-positive women report more lifetime partner violence: Findings from a

voluntary counseling and testing clinic in Dar es Salaam, Tanzania, *American Journal of Public Health*, 2002, 92(8):1331-1337.

7. CIA The World Factbook. Springfield (VA): National Technical Information Service (US), 2003, Accessed Dec 11 2003, Information regarding the economy of Tanzania. <http://www.cia.gov/cia/publications/ factbook/geos/tz.html#Econ>

8. Setel PW, *A plague of paradoxes: AIDS, Culture and Demography in Northern Tanzania* Chicago: University of Chicago Press, 1999, p. 19.

9. Kapiga SH, Sam NE, Mlay J, Aboud S, Ballard RC, Shao JF, Larsen U, The epidemiology of HIV-1 infection in Northern Tanzania: Results from a community based study, 2004, *Unpublished manuscript*.

10. Jewkes R, Levin J, Penn-Kekana L, Risk factors for domestic violence: findings from a South African cross-sectional study, *Social Science and Medicine*, 2002, 55(9):1603-1617.

11. Dunkle KL, Jewkes RK, Brown HC, Gray GE, McIntryre JA, Harlow SD, Gender-based violence, relationship power, and risk of HIV infection in women attending antenatal clinics in South Africa, *Lancet*, 2004, 363(9419):1415-1421.

12. Abrahams N, Jewkes R, Hoffman M, Laubsher R, Sexual violence against intimate partners in Cape Town: prevalence and risk factors reported by men, *Bulletin of the World Health Organization*, 2004, 82(5):330-337.

13. Hollos M, Larsen U, From lineage to conjugality: The social context of fertility decisions among the Pare of Northern Tanzania, *Social Science and Medicine*, 1997, 45(3):361-372.

14. Bledsoe C, Transformations in Sub-Saharan African Marriage and Fertility, *Annals of the American Academy of Political & Social Science*, *1990*, 510:115-125.

15. Silberschmidt M, Have men become the weaker sex? Changing life situations in Kisii District, Kenya, *Journal of Modern African Studies*, 1992, 30(2):237-253.

16. Larsen U, Hollos M, Women's empowerment and fertility decline among the Pare of Kilimanjaro region, Northern Tanzania, *Social Science and Medicine*, 2003, 57(6): 1099-1115.

17. Stambach A, *Schooling, community and gender in East Africa: Lessons from Mt. Kilimanjaro,* 2000, NY: Routledge.

18. Evans-Pritchard EE, *The position of women in primitive societies and other essays in social anthropology*, 1965, New York: Free Press.

19. Goode W, Force and violence in the family, *Journal of Marriage and the Family*, 1971, 33(4):624-636.

20. Safilios-Rothschild C, A macro- and micro-examination of family power and love: An exchange model, *Journal of Marriage and the Family*, 1976, 38(2): 355-62.

21. Rusbult CE, Martz JM, Remaining in an abusive relationship: An investment model analysis of nonvoluntary dependence, *Personality and Social Psychology Bulletin*, 1995, 21(6):558-571.

22. Straus M, The Conflict Tactics Scale Revisited, In MA Straus, R Gelles, eds, Physical *violence in families,* 1990, New Brunswick, NJ: Transaction Publishers.

23. McFarlane J, Parker B, Soeken K, Bullock L, Assessing for abuse during pregnancy: Severity and frequency of injuries and associated entry into prenatal care, *Journal of the American Medical Association*, 1992, 267(23): 3176-3178.

24. Koss MP, Oros CJ, Sexual Experiences Survey: A research instrument investigating sexual aggression and victimization, *Journal of Consulting & Clinical Psychology*, 1982, 50(3):455-457.

25. Ewing JA, Detecting Alcoholism: The CAGE Questionnaire, *Journal of the American Medical* Association, 1984, 252(14):1905-1907.

26. StataCorp, *Stata Statistical Software: Release 8.0*, 2003, College Station, TX: Stata Corporation.

27. O'Farrell TJ, Van Hutton V, Murphy CM. Domestic violence before and after alcoholism treatment: A two-year longitudinal study. *Journal of Studies on Alcohol*, 1999, 60(3):317-321.

Figure 1. Conceptual Model of the Investment Model

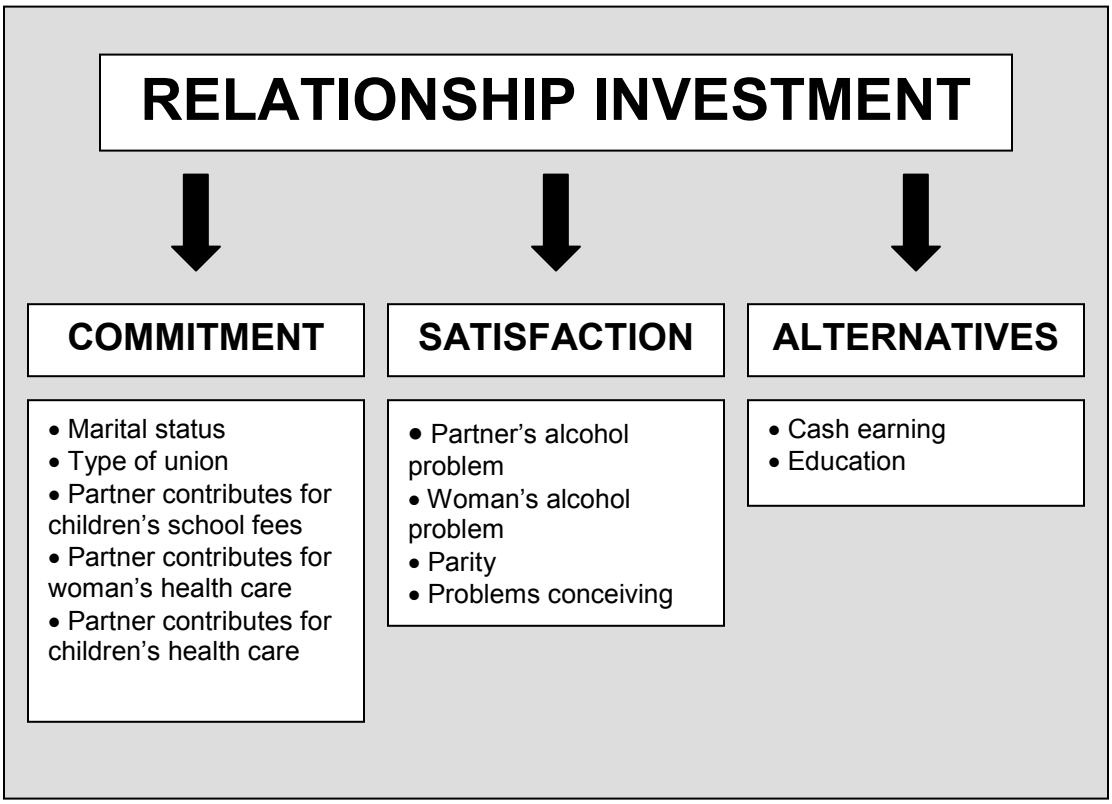

Table 1. Percentage of women reporting verbal, physical and/or sexual violence (N=1,444)

Type of Violence	Item	In the last 12 months		At any time (includes last 12 months)	
		Number of events	% (95% CI)	Number of events	% (95% CI)
Verbal					
	Insulted or sworn at you	234	16.9 (14.9, 19.0)	--	--
Physical					
	Threatened to hurt you physically	209	15.1 (12.9, 17.3)	243	17.4 (15.1, 19.8)
	Hit, slapped, kicked, or otherwise physically hurt you	234	16.2 (13.9, 18.5)	279	19.7 (16.9, 22.4)
Sexual					
	Ever had sexual intercourse when you didn't want to because your husband threatened or used some degree of physical force to make you	17	1.4 (0.7-2.1)	44	3.4 (2.3-4.5)
	Any physical or sexual violence	297	21.2 (18.5, 23.9)	361	26.1 (23.0-29.1)

Table 2. The associations between intimate partner violence in the last 12 months and background characteristics (N=1,444)

	Sample Size[1]	Overall[2]	Physical Violence	p-value[3]	Unadjusted OR[4] (95% CI)	Adjusted OR (95% CI) (N=1431)
		%	%			
Total	1,444		21.2			
Commitment Variables						
Marital status						
Currently married	1082	74.7	20.3	0.1585	1.0	1.0
Currently living with a man	128	9.2	28.5		1.57 (0.98-2.52)	0.94 (0.56-1.59)
Not married or living with a man	234	16.2	21.3		1.07 (0.72-1.59)	0.64 (0.38-1.08)
Type of union						
Monogamous	1057	72.8	17.1	<0.0001	1.0	1.0
Polygamous or partner has one or more girlfriends	384	27.2	32.1		2.29 (1.70-3.08)	2.11 (1.52-2.92)
Parity						
0	167	10.8	12.5	<0.0001	0.57 (0.34-0.96)	1.29 (0.43-3.93)
1-4	1097	76.2	20.1		1.0	1.0
5+	179	13.0	34.1		2.05 (1.43-2.94)	2.24 (1.52-3.30)
Partner contributes for children's school fees						
Yes	847	59.2	20.5	0.0002	1.0	1.0
No	243	17.7	30.9		1.73 (1.22-2.45)	0.87 (0.54-1.40)
Not Applicable	346	23.1	15.2		0.70 (0.47-1.02)	0.71 (0.40-1.29)
Partner contributes for woman's health care						
Yes	1241	85.8	18.8	<0.0001	1.0	1.0
No	158	12.0	38.5		2.70 (1.85-3.93)	1.31 (0.61-2.83)
Not Applicable	37	2.3	18.4		0.97 (0.39-2.46)	2.59 (0.96-7.00)
Partner contributes for children's health care						
Yes	1121	77.7	19.3	<0.0001	1.0	1.0
No	119	9.2	48.1		3.89 (2.54-5.95)	2.58 (1.23-5.43)
Not Applicable	199	13.1	13.1		0.63 (0.38-1.06)	0.56 (0.18-1.75)
Satisfaction Variables						
Husband's alcohol problem						
No	1128	77.3	16.0	<0.0001	1.0	
Yes	297	22.7	38.8		3.34 (2.46-4.54)	
Woman's alcohol problems						
No	1321	91.5	20.1	0.0019	1.0	1.0
Yes	110	8.5	33.6		2.00 (1.29-3.12)	1.32 (0.82-2.11)
Problems conceiving						
No	1287	88.8	20.3	0.0178	1.0	1.0
Yes	152	11.2	29.2		1.62 (1.09-2.43)	1.70 (1.06-2.75)
Alternatives Variables						
Education						
Primary complete and lower	1068	10.1	24.2	<0.0001	2.43 (1.67-3.52)	
Secondary incomplete and above	376	24.0	11.6		1.0	
Cash earning						
No	544	37.0	18.8	0.1049	1.0	1.0

Yes	894	63.0	22.7		1.27 (0.95-1.69)	1.25 (0.89-1.75)
Interaction:						
Education * Partner's Alcohol Problem						
Secondary education and higher; partner does not have an alcohol problem	311					1.0
Less than secondary education; partner does not have an alcohol problem	817					3.19 (1.76-5.80)
Less than secondary education; partner has an alcohol problem	235					6.99 (1.35-36.19)
Secondary education and higher; partner has an alcohol problem	62					9.78 (4.31-22.00)
Control Variables						
Age						
20-24	361	24.8	18.4	0.2181	1.0	1.0
25-29	373	25.7	21.4		1.21 (0.80-1.82)	1.03 (0.65-1.64)
30-34	316	21.9	19.4		1.07 (0.69-1.65)	0.69 (0.41-1.15)
35-39	219	15.2	23.0		1.33 (0.83-2.13)	0.68 (0.38-1.22)
40-44	175	12.4	27.5		1.68 (1.05-2.72)	0.59 (0.33-1.04)
Religion						
Muslim	503	35.4	20.4	0.6483	1.0	1.0
Catholic, Protestant, other, none or missing	941	64.6	21.6		1.08 (0.79-1.47)	1.19 (0.79-1.80)
Ethnic group						
Chagga	686	48.1	21.0	0.9846	1.0	1.0
Pare	199	14.5	21.0		1.00 (0.66-1.52)	1.18 (0.73-1.90)
Other	558	37.4	21.4		1.03 (0.76-1.38)	1.33 (0.93-1.89)

[1]Unweighted sample size.
[2] Proportion of the population in each strata.
[3] Pearson's χ^2 test
[4]Odds Ratio, OR; Confidence Interval, CI.